ARCHLine.XP® 2020

Windows

INTERMEDIATE COURSE

**Interior Design Tutorial** 

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# What is ARCHLine.XP®?

We highly recommend the Intermediate Training Tutorial to our potential and current ARCHLine.XP® users who successfully completed the ARCHLine.XP Preliminary Courses.

The course contains eight workshops:

Material management, Importing architectural plans, Save and manage large-size projects, KBB - Modelling and furniture design, Stairs and railing, Roof design, Visual design, Upholstered furniture based on profiles. After accomplishing these workshops, you will be able to execute more challenging and advanced design tasks.

Enjoy the successful design! CadLine

# Start your design and work with ARCHLine.XP®

This training material is a guidance to help you to become familiar with the typical interior design examples, and enables you to create more complex designs. To get the most out of the tutorial, run the ARCHLine.XP® program and the appropriate YouTube video to try those features and tools which can be found in this training material.

To complete tasks please download **WORKSHOP PROJECT – INTERMEDIATE** from our website and install to your computer. This contains all projects for Intermediate workshops.

https://www.archlinexp.com/education/workshops/workshop-application-intermediate



Workshop 1: Material management



# 1. Workshop: Material management

During this workshop we will take a look on one of the most important aspect of the work of interior designers: How can we create good quality materials and textures for our plans that helps us present them even more realistically? Let's see the following steps:

#### Creating material

- Creating new material from color
- Downloading new material from the Showroom
- Dowloading new texture from the internet page of the manufacturer
- Creating new material from texture by copying or browsing the downloaded image file

#### Material properties

- Material properties settings
- Render styes

#### Material / Texture editing

- Editing a seamless pattern
- Material and texture coloring
- Materials with trasparent background Alfa channel
- Creating decals
- Bump mapping with the pattern of the original image

#### Color cards

To complete tasks please download **WORKSHOP PROJECT – INTERMEDIATE** from our website and install to your computer. This contains all projects for Intermediate workshops.

https://www.archlinexp.com/education/workshops/workshop-application-intermediate

 Open ..\Documents\ARCHlineXP DRAW\2020\Intermediate\_Course\Material management\1\_Material management\_Start.pro file.

# 1.1. Create new material

We will create a new material from color or texture.

#### 1.1.1. Creating a new material from color

Frist we will choose a color from the RAL color palette and we will use it as the basis of our new material.

- In the Design Center select the Materials Colrs RAL category, then Settings Create new material option.
- Click ont he color button and select a color from the RAL color palette: RAL 7031 Blue Gray-t



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Material properties					×		
		Render styles					
Category:		General	~				
COLOURS	~			1111			
Sub category:	RAL					×	
RAL	Colour tables				Reference		
Producer:	ARCHline.XP		<b>•</b>		Old		
generic	AutoCAD		RAL 7024 Graphite grev	^			
Material colour:	RAL		The Yoz Toraphice grey	-	New		
	Sikkens		RAL 7026 Granite grey				
	Paleta NCS		RAL 7030 Stone grey		Components		
Use texture image	Pantone StoColor System		RAL 7031 Blue grey		R: 71	H: 146 🔺	
Paste	TRUMATCH		RAL 7032 Pebble grey		G: 75 🔺	L: 75 🔺	
Browse			RAL 7033 Cement grey	~	B: 78 ț	S: 12 ÷	
	No	Layer					
Physical prope		Name	RAL 7031 Blue grey		OK	Cancel	
Appearance	ce in the second s	Blurriness of transpa	arency (e.g. frosted glass)	0.00		5	
Thermal param	neters			0.00			
Hatch in 3	D	Fresnel effect (d transmission bas	hanges the material reflection and ed on the viewing angle)				
Hatch on sec	tion	BIM parameters	OK	Cancel		<u> </u>	

• Select the Wall render style at the Appearance tab.

Material properties		x
RAL 7031 Blue grey	Render styles	
Category:	Wall	
COLOURS	✓	H
Sub category:		$\overline{TT}$
RAL	✓ Copy	$\langle \rangle \rangle$
Producer:	Paste	
generic	Transparency (Transmission)	0.00
Material colour:	Brightness	0.00
	Bump Amplitude	0.80
	Automatic surface by texture	~
Use texture image	Scale	0.05
Browse	Reflection (Reflection factor, Mirroring)	0.05
	Refraction (IOR, No refraction = 1)	0.03 1.52
Physical properties	Blurriness of reflection (Visually indistinct mirroring,	0.05
Appearance	Blurriness of transparency (e.g. frosted glass)	0.00
Thermal parameters		0.00
Hatch in 3D	Fresnel effect (changes the material reflection and transmission based on the viewing angle)	
Hatch on section	BIM parameters OK Ca	incel

• Drag and drop the new material ont he wall next tot he door. Use the As painting option.



### 1.1.2. Downloading material from the Showroom

We can use a material from the Design Center – Material library or we can download one from the Showroom. We will change the material of the curtain in the living room to a material downloaded from the Showroom.

 Select the Showroom – Gardénia Premium Classics – Denver – Denver\_A\_304 material and after dowload, drag and drop it on the curtain using the Replace one material with another option.





# 1.1.3. Downloading texture from the internet page of the manufacturer

We can not only create a material from color but from texture as well. It is worth to select the appropriate texture from the manufacturer's website.

In our example we will use a wallpaper from JAB (<u>www.jab.deu</u>) and we will apply itt o the wall behind the sofa. Before dowload we need to register on the website.

Search for the CASSOLO wallpaper and select a color.



Pay attention to the "*Length of repeat*" value ont he webpage. This will be the width of our pattern: 700mm. In the download section, select "*Image of pattern repeat*" option.

We have to specify the resolution of the pattern. It is not recommended to choose a too large resolution, because it will only increase the project size: 900 pixel.

JAR						JAB ANSTOETZ GROUP	🖉 Erika Harosi	♡ Favourites	Ħ
						Q	Produktsuche		
rticie:	CASSULU				-5%			Ste TR	
Brand:	CHIVASSO				- AMAS	1		an all	1
lumber:	CA8252/050								
olour variations:	4				A STATE		A CECCE	Ser. Althe	-
uality:	Wallpapers								
laterial:	100% vinyl								
structions:	े ≈ ∿ → ।	-							
Vidth/Length:	70 cm/28"								
ength:	1005 cm/396"								
ength of repeat:	70 cm/28"								
ength of roll:	1005 cm/396"								
Design:	Floral, Large-patterne	d							
send 💭			DEALER SEARCH	•		DOWNLOA	.DS 赴		
Question abou	ıt a product	$\sim$	You can find dealers in	your vicinity l	ру	Download ima	age material t	o this	
E-mail			entering your postcode field.	in the search		product by se and then the	lecting a med media format.	ia type first	1
Your message									
						Image of patte		`	$\checkmark$
			CHIVASSO		$\sim$	Office format	(900 px)	· · · · · · · · · · · · · · · · · · ·	$\sim$
	SEND		Your postcode		0				

After download we can choose

- Copy image this will place the image on the clipboard or
- Save image this will save the image file to our computer.

	View <u>I</u> mage
RG	Cop <u>y</u> Image
	C <u>o</u> py Image Location
	Sa <u>v</u> e Image As
	Email Image
1.0	Set As Desktop Background
20	View Image In <u>f</u> o

### 1.1.4. Creating new material from texture

The dowloaded material is ont he clipboard or is saved as an image file. We can create a new material from texture by pasting the elemen ton the clipboard or by browsing the downloaded image file.

• Select in the Design Center the Material – Wallpaper – Standard category, then Settings – Create new material option.





The Material properties dialog appears.

- Type in the name of the new material.
- If you have the image on the clipboard, click ont he **Insert** button.
- If you have saved the image to your computer, click on the Browse button and search for it on the computer.
- On the Physical properties tab, type in the value of "*Length of repeat*" form the website: 700 mm as the Horizontal dimension.

Material properties				×
Cassolo	Position:		Tile	~
Category:	Material manaina basiasa		700	
WALLPAPER ~	Material mapping norizor	Ital	700 mm	
Sub category:	Material mapping vertica	l size:	696 mm	Ľ
Standard 🗸	Direction:		0	~
Producer:	Recalculate UV mapp	ing		
generic 🗸				
Replacement colour:	Crea	te a conv as	a color card	
Use texture image  Paste Browse  ClipboardImage 1586964174.png				
Physical properties				
Appearance				
Thermal parameters				
Hatch in 3D				
Hatch on section	BIM parameters		OK	Cancel

Ont he **Apperance** tab we will set the display properties. The most impotant task is to select the appropriate Render style. The parameters of the selected Render style can be modyfied carefully.

Material properties	×
Cassolo	Render styles
Category:	Wall ~
WALLPAPER ~	
Sub category:	
Standard $\checkmark$	Сору
Producer:	Paste
generic 🗸	Transparency (Transmission)
Replacement colour:	Brightness
	Bamp Amplitude
	Automatic surface by texture 🗸 🗸
✓ Use texture image	Scale
E Pasta	Bump Softness
	0.05
Browse	Reflection (Reflection factor, Mirroring)     0.03
ClipboardImage 1586964174.png	Refraction (IOR, No refraction – 1)
Physical properties	Blurriness of reflection (Visually indistinct mirroring,
	Blurriness of transparency (e.g. frosted glass)
Appearance	0.00
Thermal parameters	Fresnel effect (chappes the material reflection and
Hatch in 3D	transmission based on the viewing angle)
Hatch on section	BIM parameters OK Cancel



After closing the dialog drag and drop the wallpaper on the wall behid the sofa, and select the As painting option.



# 1.2. Material properties

When creating the materials, we saw how the **physical and appearance properties** of the material can be set. These properties can be modified later.

Render styles are a great help in setting the appearance properties of materials.

Let's try different render styles for example on the dining table glass. The result is best seen in Rendering, but the difference is also visible in the Textured display mode in the 3D window. (This assumes using DirectX 11.)

For example, from the **Design Center - Catalogs - Render styles**, drag the Matte style onto the glass, and then the Mirror style then reset it to Glass.





# 1.3. Material/Texture editing

Textures you receive or download from the Internet may need to be readjusted so that we can use them in our project. For example, the pattern is not continuous, not a seamless pattern, so it shows a square like repetition when applied to the surfaces, or some part of the pattern is transparent in real life, or the color of the pattern may not what we want. In such cases, we need to edit the texture.

### 1.3.1. Creating a seamless pattern

#### 1. What is a seamless pattern?

A continuous, endless pattern that shows no square like repetition in either direction when appylied on a surface. "A pattern is actually a small image that, when repeated one after the other in each direction, forms a seamless pattern, and you can fill the available space with it as long as you repeat it. Because the pattern is repeatable, you don't see the image being interrupted anywhere. "

With the **Create Seamless Pattern** command, it is possible to convert the imported texture to a seamless pattern (endless pattern). This means that the pattern row and column become continuous. This makes it possible to edit the texture within ARCHLine.XP and we do not have to use an external image editing program. The pattern edited this way can be saved as material and may be used in the model immediately. By using seamless patterns we can avoid that for example the wallpaper applyied to the wall looks like a "checkered tablecloth".

- Let's create a material from the Dandelion.jpg texture from the ...\Material management\Textures folder, and use i ton the wall behind the sofa. In the image, we can see that it is not a seamless pattern.
- Let's place the material from the Design Center ont he floor plan as a raster image.







Click on the pattern and from its local menu select the Edit – Make seamless pattern option.



By clicking on one of the sides of the pattern, the program complete the pattern into a 3x3 pattern. Move the cursor til the pattern is overlapping

Repeat it with the other side, then Enter. The seamless pattern is ready.

The command can only be used with textures that has a repetition.

•

ļ

• Save the seamless pattern as a material. In the appearing dialog, set its properties.



Drag and drop the seamless pattern on the wall.



### 1.3.2. Coloring material and texture

How can we use the same material or texture with different color alternatives in ARCHLine.XP? It is possible to add a background color to a material or texture, so we will have another color alternative.

#### **Coloring material**

The Adding Color option can be turned on at the material properties. Click the Color button to select the appropriate color from the color tables. The added background color can be turned off at any time, this is just a property of the material, it does not affect the texture.

The advantage is that you can try many color variations quickly, the result is immediately visible in the 3D model.





#### Coloring texture

The pattern on the floor plan can be recolored using the **Local menu - Edit – Recoloing image** option. After that the texture can be saved as a material.

In contrast to the Material Coloring method, we create textures that are actually recolored here, as well as the materials saved from them. The disadvantage is that the result will only appear in the model later when these textures are used as material.



## 1.3.3. Materials with transparent background – Alfa channel

We might need an image with a transparent background. Such an image for example is a wall sticker.

We also use a transparent image when we want to display a lamp shade that has a cut through a pattern and the lamp illuminates through that pattern.

The solution is the ALFA channel. This means that we can mark the colors on the image that are transparent.

Let's create images with transparent backgrounds:

- Place the Cantallops\_pattern.jpg ont he floor plan from the ...\Material management\Textures folder.
- Select the Local menu Edit Make a picture transparent option.
- Selet the color you want to make transparent with the eyedropper tool. Here the white.
- Set the value of the transparency: 255. Enter,





Save the texture as material then drag and drop it on the lamp above the dining table.



### 1.3.4. Bump mapping – with the pattern of the original image

By adding bump map to a texture we can create a 3D depth. We call it bump mapping.

#### Bump mapping

Bump Mapping makes the appearance of surfaces uneven, creating a much more realistic effect. During the procedure, a more uneven surface is created by freely modifying the direction of the normal vectors of the model, thus creating the illusion of a more complex, uneven surface. These normal vectors are stored in a texture. These



textures are called **Normal Map**. It corresponds to the RGB 3 color (red, green, blue) of the 3 axes of the coordinate system, so that the blue color falls on the axis pointing towards us. Therefore, Normal Maps are mostly bluish.

Google norma	I map	Ō I	= 🌷 Q	
Q, Öss	zes 🔚 Képek 🔀 Térkép	▶ Videók 🖽 Hírek 🚦 Egyebek E	eállítások Eszközök	
bump curvature	bump map tiles bump r	mapping blender displacemen	it map 3ds max tang	ent space xnormal low po
LearnOpenGL - Normal Mapping learnopengl.com	How to get a smooth curvature blender.stackexchange.com	How to use normal maps? : Corona R coronarenderer.freshdesk.com	Why are normal maps predomi gamedev.stackexchange.com	How are normal maps made? guora.com

The bump map of a material can be set 3 way in the Material properties:

- Automatic by the texture of the material
- By selecting a built-in Normal map from the list
- By using our own Normal map texture

#### Automatinc bump mapping by the texture of the material

For materials with texture, if the scale factor is other than 0, a normal map is automatically added, creating the illusion of a 3D effect. The surface roughness must always be corrected by smoothing the roughness, otherwise a too rough effect is obtained.

Specifying a surface roughness with a scale factor only makes sense on a suitable texture, on a color based pattern it is meaningless.



#### Bump mapping with built-in Normal map texture

Normal Map texture can be used on texture based material or on color based material. Normal Map textures can be built-in textures, or you can specify your own Normal Map texture pattern. The built-in Normal Map textures can be selected from the list below:



#### Built-in Normal map on texture based material

Let's try the Leather surface on the gray sofa.

If the material is applied on a non-flat surface it is advised to turn on the Recalculate UV mapping option in the material properties. It is especially important in the case of patterned materials.

Material properties		x
Textil szürke	Position:	Tile ~
Category:	Material mapping borizontal	191 mm 💻
FABRICS (TEXTILE, CURTAIN, LEATHER) $\qquad \qquad \lor$		×
Sub category:	Material mapping vertical size:	164 mm
Textile 🗸	Direction:	0 ~
Producer:	Recalculate UV mapping	
generic 🗸		
Replacement colour:	Create a copy as	a color card
Use texture image		
31727074-0923-4CB9-9CD6-8C817ACC621E.PNG		
Physical properties		
Appearance		
Thermal parameters		
Hatch in 3D		
Hatch on section	BIM parameters	OK Cancel



Materials In Model		
Direction: 0*	100	
Direction: 0	- I	
Render styles Fabric		
	-1	and the second s
Transparency (Transmission)	0%	
•		
Brightness	75%	
0	-1	and the second
Reflection (Reflection factor, Mirroring)	0%	All and the second seco
♀	- 1	
Refraction (IOR, No refraction = 1)	2	
<b>⊕</b> ∎	- 1	
Blurriness of reflection (Visually indistinct mirroring, Anizotropic	0%	
Blurriness of transnarency (e.g. frosted glass)	0%	
<b>•</b>		
Fresnel effect (changes the material reflection and transmissi	ion ba	
Bump Amplitude Leather Surface	100	
Scale	30	
Bump Softness	40	
1	_	
Drag and drop the texture over the drawing or use the related commands in the menu with gear icon		
Properties Design center		

#### Built-in Normal map on color based material

• Let's change the materal of the sofa for example to the RAL coldgrey color and set the built-in Leather Normal map.



• Set the bump mapping og the material of the chairs as well.



# 1.4. Color cards

The purpose of a color card is to make the color or texture selction on the 3D model easier, without modifing the plan. The house or flat can de displayed in a new color just by one click.

We can create a color card 2 ways:

- 1. Create a new color card
- 2. Create a color card from an existing material. In the Design Center Project folder select the material that we want to tranform to a color card. Then select the **Create a copy as a color card** option by clicking on the cogwheel icon.



In the color card manager dialog:

Change its name: Living room wallpaper. Add new materials. You can delete here as well.

When you modify the current material, the program automatically replaces the entire 3D model with the new one. Attention, the name of the material will not change!



Color card manager				x
Name of the new material:				
Living room wallpaper				~
Category:				
COLOR CARD				$\sim$
Sub category:				
Other				~
Producer:				
generic				~
(Use \ to organize into tree-s	structure eg: Myro	om\Furniture )		
Current:				
Dandelion_seamless				
Name Dandelion_seamless Cassolo Cassolo light				
The Color card is a collector of number of materials in the lis presented by selecting anoth to walls, windows, furniture, APPLY MATERIALS IN THE PR	of real material and t. It has the advar er element in the l etc., then their m ROJECT CATEGOR	d displays the cu ntage that differ ist without chan odifications will n Y ONLY.	rrently selected material. Y ent versions of the same 30 ging the project. If material iot affect the 3D model in g	ou can list any O model can be Is are directly linked eneral. YOU CAN
			OK	Cancel

• Drag and drop the color card (Living room wallpaper) on the wall behind the sofa.



27

From now on, the materials of the 3D model can be changed to the materials on the color card.

• Click on the color card icon in the upper left corner and select the new material in the apperaing dialog.



Repeat it for the material of the sofa. Now we have two color cards.



After that the color cards can be organized into styles so the different variations can be displayed immediately.

• Select the Project material library – Settings – Color card manager.



• Create 3 variations.



Workshop 2: Importing architectural plans



# 2. Workshop: Importing architectural plans

During this workshop, we look through all options how we can import an architectural floorplan into ARCHLine.XP then create a 3D architectural model on that basis. The time to complete the model depends on the imported file type. Going down on the list below the time significantly lessens.

We can get the floorplan in the following formats.

- image as .jpg, .png format
- raster image as PDF format
- geometry as PDF format
- ✤ as DWG drawing
- ✤ as IFC model
  - Open your browser and watch the following video tutorial:
- <u>https://www.archlinexp.com/education/workshops/workshop-application-intermediate</u>

## 2.1. Import floorplan as image

In many cases, we usually start working on an existing floor plan. Therefore, an architectural design process is needed.

We can get the floorplan in different formats. Let's look at the simplest case when the floorplan is available as raster image.

#### 2.1.1. Import raster image

- First import the previously saved raster image. Select File / Import / Raster image command.
- Choose the folder ...\ARCHlineXP Draw\2020\Course\_Intermediate\2\_Importing architectural plans\JPEG and the file Beetroot\_Bar\_floorplan.jpg-
- Now the Image Property window appears:

Image			×		
File		General Properties			
Name	Beetroot_Bar_floorpla	an Browse	😨 8 - Bottom-most 🗸 🗸		
Path	C:\Users\Cadline\Do	cuments\ARCHlineXP Draw\2020\Cou	🗸 🗾 🖉 Raster image		
	Attached	~			
Insertion	Point fy on screen	Size	Rotation		
X: Y:	0 mm	Length 1000 mm	Angle 0 ~		
Preview		Resolution: 2410 x 3437	Transparency 0		
E	IM parameters		OK Cancel		

Click on "OK" to close the dialogue, then place the image by defining two corner points.





• Then it is recommended to use "Fit to view" command to get the optimal zoom of the image.

# 2.1.2. Calibration

- The imported image is not scaled. Now we have to calibrate the drawing. On the image, there are dimensions such as wall length.
- Use the shown wall length for calibration:



- Click on the image, then choose "Calibrate" from the local menu.
- Now define endpoints of the selected wall and enter the actual size (4000 mm).

e Poszciság 0.699 m Ge Director de la construint de la co	
e ge	
600	ARCHLine.XP 2020 × Input the real world distance between the points
	New value: 4000
	OK Cancel

- Now use the "Fit to view" command again.
- It is advisable to check the accuracy of the calibration. The quickest way is going to the Ribbon menu / Dimension / Measure and select Distance tool.

Drafting	Dimension	Do	cumentation	1	
ckets Lam	os on wall	Edit	() Measure		
rior		Edit	+ Distance		
	Floor plan -	Default ·	+? Dis	tance	

• As you can see the "Measured distance" is 4 000 mm, so the calibration was accurate. Now we have a scaled floor plan.

Info about distance		×
Measured distance	4000.8 mm	
Measured distance in x	U mm	
Measured distance in y	4000.8 mm	
Copy to clipboard		Close

Next step is to draw walls.

## 2.1.3. Create wall styles

- Now we create a new wall style which can be used for all projects:
- First set the wall properties. Go to Ribbon menu / Building / Properties and choose Wall.

File				00		$\overline{}$	0 •			+?	×	Ean	view	Bullair	ig
				Cor	nection	•	•								Y
Prop	erties	Wall •	Ø	Edit	t <b>•</b>		Door T	Window •	Curt	ain w	all	Column	Beam	Slab T	R
闘	Wall			•	EE \	Vall		Openi	ng					Structur	e
					122	van				•	P	🗱 Fine		-	=1
4	Openin	g		•		liche				Д.	×				_

• Set the wall "Total thickness" to 200 mm, and "Unconnected height" to 2700 mm (1).



Wall		× s	tyles	×
General properties     General properti	Finish Face: Interior	Bright_white	1 layered 06 wide wall 1 layered 08 wide wall 1 layered 10 wide wall 1 layered 12 wide compac 1 layered 25 wide compac	t brick t brick
Unconnected Height 2700 mm	Slant angle	Styles		×
Base offset from the floor 1 0 mm  Total thickness: 200 mm	Wall status Location line	Folder		~
Edit Compound Walls	Inclined wall section height Wall I	Subfolder Folder and subfolder specification is not If you specify these, the given style name	mandatory. e will automatically fit into the hierz	∽
	U-value: 2.60 W/(m2*K)	Scope Available in this project only Available in all projects	5	Cancel
Preview V				
Axis line attributes     Attributes of the Finish Face: Interior		<u> </u>	New	3
Visibility of sides     BIM Parameters     I layered 38 wide wall		6 OK Cancel	Activate Rename	Modify Delete

- Click on the **Style** button (2).
- In the "Styles" dialogue window, click on "New" to create a new style (3).
- Name the new style "1 layered 20 wide wall" (4). This style can be used in any projects. Hit OK (5) to close the dialogue window.
- The new style activated automatically. Close the wall dialogue window (6).

#### 2.1.4. Draw a wall

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• Let's draw walls by choosing the Ribbon menu / Building / Wall command.



• To redraw walls, you have to give the starting and endpoints. Be careful the wall thickness should fall to the good side of the reference line.

From the floating menu, choose "**Right side**" then click on the wall endpoint. Now follow the image and draw all walls on the floorplan.



To complete the entire model, you can use other ARCHLine.XP tools such as door, window, slab.





# 2.2. Import floor plan from raster image as PDF file

In the next example, we received the PDF file as a raster image.

There are two types of PDF file:

- The PDF file content is real raster image
- The PDF file content is a geometry drawing.

How can we decide which type of PDF file we received?

Open the image from File Explorer and zoom out the floor plan, before importing it.

1. As you can see, the more you zoom in, the more pixelated and blurrier the image will be. Therefore, we need to download the PDF as an image.



2. In case the quality of the downloaded image does not change while we are zooming in, then we received a PDF geometry.





Regardless of the PDF file contains a raster image or a geometry drawing; the same PDF import option is applicable. The result will be a raster image or a geometry drawing.

## 2.2.1. Import a PDF file as a raster image

36

We received the floorplan as raster image in PDF file.

- Select from File menu / Import / PDF command.
- Choose the folder ...ARCHlineXP Draw\2020\Course\_Intermediate\2\_Importing\_Architectural\_Plans\PDF and the file Charleville Mansion.pdf.



In the appearing dialogue window, you can find the settings, leave them unchanged. For the moment we are working with a raster image; therefore *Layers and PDF import options* will not affect the course of actions.

Now select the 1<sup>st</sup> page of the PDF file.

PDF import options		×						
Data to import	Layers  Layers are created based on layer names from the input .pdf document  Imports all visible PDF objects to the current layer	PDF import options  Join line and arc segments  Convert solid fills to hatches  Apply lineweights						
The selected PDF document contains 2 page(s)								
O All pages								
Selected pages	1							
Enter a list of the selected page numbers e.g, 1;3;6-12	and/or ranges,	OK						

In the appearing dialogue window set the scale factor to mm.



The program automatically places the PDF file at the origin. You can also set a new drawing origin if that is necessary.
Use optimal zoom if you need it.

### 2.2.2. Calibration

The raster image is not scaled; therefore, we have to calibrate. Zoom in the raster image and select a wall which has a dimension value.

• Go to Ribbon menu / Drafting / Raster image and select Calibrate tool and then the image.

File			( ) X	L 🗌 🗌 🤇	• 📲 🗶 🍼	∃ =×= -	□ +?		View	Buil	lding Interio	r Dra	fting
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Prope	rties	Point	Line	Polyline	الم Spline	Circle	Ellipse	Arc	Hatch	Text	Raster image	Group	3D
						Dra	afting	10			Place		
5	Existing	g State		- E- All			•	<i>8</i>	Fine	-			
Propert	ies						<b>口</b> >	<	Δnr	irov	Calibrate		

• Select the first point (1) then the second point on the parallel wall (2).



• In the appearing dialogue window enter the dimension given by the imported floorplan 4,200 mm.

ARCHLine.XP 2020	×
Input the real world distance between the points	
New value: 4200	
ОК	Cancel







#### 2.2.3. **Create walls**

- Now, images are scaled. Use the "Fit to view" option.
- Create a new wall style with 200 mm width.
- Clicking on Ribbon menu / Building / Wall option, on the left side under properties wall styles will come up.
- Choose the previously created 200 mm wide wall style (1 layered 20 wide wall) from the appearing list and start to redraw ٠ the external walls.

When you finished with it, you can see other walls of different widths on the floorplan.

- Under properties, you can easily swap between different wall thickness without closing the drawing command. Choose "1 layered 38 wide" wall, and draw the last wall.
- Now open "Layers Properties Management" and turn off "Raster image PDF" layer, this way only the newly drawn floorplan will be visible.

Now we completed the floorplan. This method helps us to reproduce quickly and precisely the existing architectural floorplan.



# 2.3. Import floorplan geometry from PDF file

In the case of the architectural design process, as we have already seen, the floorplan can be obtained in different formats. Let's see an example when the floorplan is available in PDF geometry.

Before importing Happy House first floor.pdf, open the image from File Explorer and zoom in. The more you zoom in, the lines remain lines, and it won't be pixelated as we have seen in the previous example. Therefore, you have to import it as PDF geometry.

#### 2.3.1. Import PDF geometry

- Now select Ribbon menu / Import / PDF command. •
- Choose the folder ... ARCHlineXP Draw/2020\Course\_Intermediate/2\_Importing\_Architectural\_Plans\PDF and the file Happy House first floor.pdf.

The PDF import options are including vector geometry, raster image, True Type text, Layers, drawing scales and other minor features.

Merge files		×
Insert as external reference		
Place with new drawing origin	1	
Place as new building	-	
	OK	Cancel

1 layered 20 wide wall	
Style	-
🚰 1 layered 06 wide wall	
🗹 1 layered 08 wide wall	
🗹 1 layered 10 wide wall	
1 layered 12 wide compact brick	
🔁 1 layered 20 wide wall	
1 layered 25 wide compact brick	
🗹 1 layered 25 wide wall	
🗹 1 layered 30 wide wall	
≤ 1 layered 38 wide wall	

ч×

Properties



In the appearing PDF import option dialog window turn off "Apply lineweights", and select all pages. We recommend to try different import options as well.

PDF import options Data to import Vector geometry Solid fills TrueType text Raster image Shading objects	Layers	EDF import options Join line and arc segments Convert solid fills to hatches Apply lineweights
The selected PDF document contains	s 1 page(s)	
Enter a list of the selected page num e.g. 1;3;6-12	ibers and/or ranges,	OK Cancel

In the appearing dialogue window enable the preview and set the scale factor to mm.

Scele factor		
	The ruler displays the unit of measurement	
		20 cm

- The program automatically places the floorplan at the origin. In the popup window, you can select "Place with new origin" option; then you can place the PDF file anywhere on the floorplan.
- As you can see, the scale is 1:100 on the plot stamp.
- Now check if the drawing is scaled. There is a wall of 13,000 mm length, go to Ribbon menu / Dimension / Measure and choose Distance tool.



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- This is around 130 mm.
- This means we have to scale the PDF file up to 100 according to the given • scale factor.
- We can enlarge the following way. Ribbon menu / Edit / Move / Scale and ٠ select 100:1 scale factor.
- Now select the PDF as a group and use "Optimal Zoom". ٠
- Now let's check if the floor plan is now scaled accurately. Go to Ribbon menu / Dimension / Measure and use Distance . tool.

100

1000 1:1000

1:100



The result is 13 773 mm. So, the plan is now accurate. The imported PDF file is a group on the floorplan. As you can see, hatches are applied on the walls, which might be disturbing during our work. If you open this group, then you can select and delete them. In this example, we deleted them.

- Now we place the group layer to "Carry Over" layer.
- Open the Layer Manager, and lock "Carry Over" layer. Then under Group Properties now activate "Force layer", this way
  each layer of the group items will be locked. Now if you click on the floorplan, the group will not be selected, but you can
  refer to its objects.

### 2.3.2. Draw walls on DWG floor plan

Let's continue our work with drawing walls. First set the properties.

- Set the height to 2,700 mm.
- Select Ribbon menu / Building / Walls on DWG drawing command.



• By using this command, we can easily draw a wall without knowing the width of the walls. The technique is the following. First click near to starting point (1) and then the endpoint (2), finally click on the opposite side of the wall (3).



- Now redraw the entire floorplan.
- As a final step, it's worth to connect the main wall into an already existing L connection. Click on Toolbar; there you can
  find wall connection commands, find T connection and then specify the wall to be connected and select the already
  connected walls.



• The partition walls are still missing. Draw them by using Walls on DWG drawing.

Now we finished. If it is necessary, we can improve on wall connections by using L or T connections.





## 2.3.3. Creating niche

Next, we are going to create a niche:

- When you click on the wall (1) click on Component mode (2).
- Activating this command now you can edit only one side of the wall.
- Click on the inner side of the wall and choose "Add polyline", now you can insert a niche here.



## 2.3.4. Place openings

Let's continue the work with placing openings.

#### Doors

• First set the door properties.

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	7			 Conr	ection	•	1				Ō			ト	$\bigcirc$	m
	Prope	rties	Wall	Edit	•		Door	Window	Curtain	wall C	olumn	Beam	Slab	Roof	Ceiling	Railin
	FTT							Openi	ng				Structure			
		Wall					д	×								
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		Wind	dow													

- Select "Flash" door and set its distance from the wall to 0 mm.
- Now from Ribbon menu / Building / Door / Door by two points command.
- Give the door first (1) and second point (2) on the floor plan and finally set the opening direction (3)
- Repeat these steps for placing other doors.

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Door	Window Curtain wall	Column Beam Slab Roof Ceiling Railin	
	Placing door	Structure	
ŀ	Door by two points		1 2
ŀ	Door not hosted by wall		

If it is necessary, we can modify its distance from wall under properties later.

#### Windows

Now place windows.

• First set the windows properties.

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		Nich	e		[ 0]											

- Now select the "Flush" window and set the distance from wall to 400 mm.
- Now select from Building / Window / Window by two points





- Now give the window starting and endpoint on the floorplan. Now the window is placed.
- Repeat the same to place other windows.

The program placed the window on the exterior of the wall, so it is necessary to mirror it.

• Select the window and by clicking on the "Mirror" marker, choose "Mirror" command.



- Originally the distance from wall is 100 mm, now modify this value to 400 mm.
- Now mirror other windows and change the distance from the wall too.

## 2.3.5. Create window chamfer

If you zoom in, you can see on the floorplan that the connection between window and wall is slightly bevelled; therefore, a chamfer is needed.

• To create chamfer, click on the inner side of the wall (1) and choose from the local menu Wall connection / Complex editing (2) command.





- Since this is not just a typical slope cut, as the wall goes straight for a while and then it becomes slope. Therefore, we have to insert a node.
- Click on the marker and choose Insert node command and place it.
- The chamfer ending point can be placed by Move node command. Hit Enter to finish.
- Finally click close to the left inner side of the window and from the local menu, choose **Wall connection / Mirror** command. This way, the chamfer can be easily copied to the other side.



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Now repeat these steps on other walls. The window chamfer is created.
 You completed importing the floorplan and architectural design process.





# 2.4. Importing DWG drawing

In this example we are going to import a DWG drawing. It also means a geometry import, so as a result, we get a calibrated drawing, which contains lines, polylines, curves, notes, hatches, dimensions, in other words, 2D elements. These items after importing can stay on the original layers, or all object can be placed on one single layer. Based on this DWG drawing, we will now create a two-level building.

- Choose from Ribbon File menu / Import / DWG command.
- Choose the folder ... ARCHlineXP Draw\2020\Course\_Intermediate\2\_Importing\_Architectural\_Plans\DWG and the file Scholtz\_Gabor\_E-Invest\_Bp\_XXII\_plan\_03\_DWG-Ground floor.dwg.

If you click on "Open" the following window will come up:

Open DWG/DWF/DXF file	×
Preview options: Preview - enabled for files less than 3Mb V	
Model-space Paper-space Layout selection	
Interpret AutoCAD unit as	
	The ruler displays the unit of measurement
	1 cm1
Advanced options	OK Cancel

- Select a unit of measurement from the drop-down list. By selecting the correct unit helps to ensure that you have an accurately sized imported drawing.
- By pressing "OK" import the file.
- In the appearing dialogue window choose "Place with the new origin" option. And place the drawing close to the origin.

Merge files	x
Insert as external reference	
Place as new building	
OK Cancel	

- Now check if you gave the correct scale unit.
- The **Distance** command can also be found on the Quick Access Toolbar.

File 🖿 🖬	I 占 🌔 Ռ 🖁 🗇 👗 🗇	∥ × ⊣ ⊣	Edit View Building Interior
	Connection 🔻		Distance
Properties •	Wall 🥒 Edit 🔻	Door Window Curt	A Measures the distance between two points.
Properties	Wall	Opening	2. Define the second point.





Importing a DWG drawing, we get a good quality floor plan. In DWG format the program automatically recognizes the dimensions, notes, these can be easily adjusted or removed from the floor plan.

Now place the left corner point of the floorplan to the origin. You can do this the following way:

On the Status bar select Global Coordinate System.



- Select from Ribbon menu Edit Move "Relocate project from origin" (1) command.
- Select the left corner point of the supporting wall (2), then click on the Yes in the dialogue.



- Use "Fit to View", now you can see that the selected corner is now in origin.
- In the followings step in the Layer Manager", let's look through layers.

We are going to draw walls again; our work gets significantly easier if layers only corresponding to walls are turned on.

 Now open the Layer Manager, select all layers by pressing CTRL+A key combination (1). Turn off all layers by clicking on one bulb. Only A Walls layer has to visible and editable, so unlock it. Currently, on the floorplan, there are many unnecessary drawing items for redrawing walls (2).



Layer Properties Managem	ent								×
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Raster image	8	6	8		Simple	0 mm			
Roof	9	6	8		Simple	0 mm			
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• Close the window with "OK" so now only walls and openings are visible on the floor plan.



#### 2.4.1. Drawing walls on DWG floor plan

Let's draw the walls again.

Select Building / Wall / Walls on DWG drawing command. •

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- You can set the wall properties in advance, or you can select from the pre-defined wall styles on the left side.
- Choose "1 layered 38 wide" wall.
- Click close to the wall starting and endpoint, then on the opposite side of the wall. The wall immediately appears in the 3D window.
- Use this method to draw all walls. •



**A** 

In case the 3D model is incomplete, choose from the Toolbar, L or • T wall connections and apply them where it is necessary.

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#### Display Lineweights on screen

Now let's look through how to show lineweights on the screen. Under **Graphics settings** by clicking on the drop-down menu next **Line weights scale**, we can choose from several options. These values will affect the representation on the screen only and won't change the print settings.

By default, the lineweight is 1:20.



In case later you want to print the floorplan at a scale of 1:100 and also want to see the corresponding lineweights on the screen, then you should choose 1:100 scale factor as Lineweights.

#### "None" Lineweights

The "None" lineweights means that lines are represented in the smallest unit (1px) in the screen, i.e. the lineweights are turned off. It can be useful for editing on floorplan because clear visibility of endpoints and other particular points will improve the accurate work.

1:100







## 2.4.2. Place openings on the DWG floor plan

Let's start with the doors. We will place doors according to the DWG drawing so that the DWG drawing will define the door width.

• Select Building / Door / Door by two points command.

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Door	Window	Curtain wall	Columr	Beam	Slab •	Roof	Ceiling	MM Railin
	Placing do	or			Structure			
	Door by tw	o points						
ŀ	Door not h	osted by wall						

- You can set door properties in advance or use pre-defined doors from the left side. (1)
- You can view the "Normal door" below the list (2) and also you have an option to see its detailed properties and change those if necessary (3).
- In this case modify the "Distance from wall line" to "0" (4) because those will be inserted into 100 mm wide partition walls.

perties 4				Floor plan - Def	ault - Grour	id floor (0 mm)	*	
3								
Normal door								
40								
1000 x 2100 mm door in load-bearing wall								
1000 x 2100 mm door in partition wall								
750 x 2100 mm door in load-bearing wall								_
750 x 2100 mm door in partition wall		Door						×
200 x 2100 mm door in load-bearing wall								
Normal door	1	Main parameters	Width:		900 mm	1 –	Redraw	
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			Line weights	0 mm				
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	1	BIM Parameters	Normal door				ОК	Cancel
								//
operties Design center								

- Close the dialogue by pressing "OK".
- Now set the first and second point of the door and then the opening direction.
- Use this method to insert other doors.

Let's place windows.

• Select from Ribbon menu / Window / Window by two points command.

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• Choose "Single window".

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• Select two corner points of the window by clicking on the inner side of the wall. Place all windows.

When we finished by placing openings, let's continue our work with placing slab.

• Select **Building / Slab / Slab by walls command**. Press Enter and the slab is ready.

After turning off the DWG drawing wall layer and placing dimensions for openings, we get the following results:





Edi	t View	Bui	lding	Interior
Slab •	Roof Cei		Railing	ہے۔ Stair
5	Slab in Sketch	n mode	2	Stai Floor plan -
R	Slab by walls			
\$	Sloped slab		+	

### 2.4.3. Create corner window

We create corner windows by using previously placed windows. You can join any combination of standard windows. Wall ends allow window joins. It is allowed to pull them apart and to use the trim/extend to wall corner.

- There are two methods to create the corner windows:
- 1. Automatic
- 2. Manual

#### Automatic

- Place two windows very close to the wall corner on each side. (these are already on the floorplan)
- Use Window / Windows on wall corner/ Join two openings on wall corner command. Now select the first and the second window.
- The program automatically creates the corner windows and mullion.

#### Manual

Select the first window, and drag it to the corner until you see the window snaps to the end of the wall. Click on the wall corner and choose **Resize void** command from the appearing window.

This way you can extend the void separately on left or right side of the door/window, breaking the wall properly on wall junction.



In this example, we use the automatic method to create a window on the corner.









Use Layer Walk to open all used layers on the floorplan.



### 2.4.4. Create First floor

We have already seen before that we are currently working on a 3-level building. We have already finished with the ground floor. Next step is to create the 1<sup>st</sup> floor.

• For this click on "Ground floor" button on the Status bar, now the "Edit Level" dialogue window appears.



• Now activate the first floor, then close the dialogue by pressing "OK.



We will import the DWG drawing of the first floor to this level. You can do this not only by using File/ Import command, but by opening the File Explorer we can drag and drop the floor plan into the program.



• In the pop-up window interprets AutoCad unit as 1000 mm and press "OK".



• Place the drawing in new origin.

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The coordinate system should be "Global":



- Select the floor plan, choose the Edit menu Move Move command and select the left corner point of the supporting wall. Type "0 0" (0 space 0), finally hit Enter.
- Using "Fit to view", you can see that the corner point was placed into the origin.

Shift levels with blue arrows you can move between the Ground floor and First floor, it can also be seen that two DWG drawings are precisely overlapping each other.



In this case, it is not worth drawing the walls on the first floor, as main walls in buildings are the same at different levels. These have been previously created on the ground floor,

- Now go to ground floor, select the entire floor plan and copy it to the first floor.
- For this open Edit level dialogue window and use "Copy objects to other floor" command 23. Select the 1<sup>st</sup> floor in the pop-up window.
- Close the window by pressing "OK", the walls were copied to the first floor.

Now the walls, openings, slab are copied to the first floor which is nicely represented in 3D view.

- Based on the original floorplan, we have to modify the walls. Delete those walls which are non-existent on the first floor.
- Move existing walls to the previously drawn place, then use L and T wall connection tools.





This how easy and fast you can create a multi-level building based on DWG floor plan.

# 2.5. Importing IFC model

Architects can provide us with the floor plan in many formats during the architectural design process. These can be .jpg, .png, raster PDF, PDF geometry, DWG drawing or IFC model.

ARCHLine.XP is IFC Coordination View 2.0 Import certified design software. Thanks to this we can get floor plans and 3D models at a higher standard from designer using other software like ARCHICAD®, Revit®, Allplan®....

Importing IFC allows us to download real walls, slabs and other elements from a co-designer using another software, then edit them as real walls, slabs, and other elements. Finally, we can pass on the completed plan as an IFC file to co-designers, so they can work on it with convenience using other software.

Now let's see the case when we get the project as IFC model.

- First import IFC file.
- Click on File/ Import / IFC command. Now you have three options:



Choosing the **first** option, we open a new project file, and the IFC model will be imported here, then we can work on it.

The **second** option is recommended to use if we are working on a project, and we want to open a new window where to import the IFC model. As later on, we want to use or copy some of its part onto the currently opened floor plan.

Using the third option, we import the object as IFC element.

In our case, we want to import a floor plan as IFC; therefore, we choose the first option.

- Now choose IFC file from Documents\ARCHlineXP Draw\2020\ Course\_Intermediate \2\_Importing\_Architectural\_Plans\IFC folder, then click on Open.
- In the previous examples, we demonstrated how much work is to process an architectural floor plan. In case of IFC, the architectural design process will be the fastest.
- We got the entire floor plan and 3D model during the import, but the IFC model does not contain drawing elements such as dimension or labels.



• During IFC import, the model keeps its original level structure. We can check this by opening the Level Manager.



- Now let's see the 3D model. The terrain, other objects and the building are included in the 3D model. We can modify them.
- Now delete trees to make it easier to see through the model.
- Now let's examine the building closer.





• Click on one of its items, e.g. a wall. On the left side under Properties, you can see that it was brought in as a wall in the model. These items not only correspond to ARCHLine.XP item classification, although these can be adjusted/modified.



• Now click on a wall and change the height. Now click on the wall and increase the height.



• This is wall remained a wall so we can place opening there. For example, place some windows.



Not all walls conduct this way. Let's check this wall with windows. The program shows at two places that this is a wall.



• Now place a window on this wall. As a result, you can see that the window was placed, but it is not visible.



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It could happen when the software imported the item is 3D fixed. It can be checked on the side menu too. In this case, we have to unlock fixation to execute any modification.

Properties		<b>4</b> ×			
Wall		Ŧ			
No style					
Property	Value	^			
☆ General					
Layer	A-WALL	$\sim$			
Colour					
Line type	Simple Line	$\sim$			
Line weights	0 mm	$\sim$			
Draw Order	8 - Bottom-most	~			
Move objects to other floor	Level 2				
Copy objects to other floor	Level 2				
BIM parameters	Edit				
BIM name	Basic Wall:SIP 202				
Height	3716.9 mm	~			
Base Elevation	-800 mm	~			
GUID	38NblWsDL 118DljLv	/			
Set ID	000000000000000000000000000000000000000				
3D fixed					



After resolving the fixation, the previously placed window now ٠ appears on the wall.



- The wall dimension has also changed; the bottom is now much ٠ below. Change the height back to the original position.
- Now click on the wall, in the appearing pop-up menu choose "Change height" command.
- Align to the next wall endpoint.
- Now remove previously placed window, as there will be no need for it during our work. •

The imported items can be an architectural item such as walls, slab.

Now click on the handrail. As you can see, this is an IFC element. •







Now let's start our work, the task is to furnish the room on the first floor facing to the balcony.

- For this, we have to create a perspective view.
- To set the correct height of the view, choose front view (1) option in the appearing pop-up dialogue window. Now move the camera point to the shown position, i.e. to the first floor (2).



- Set 2D view. (1)
- At the first view set the perspective to look the room from outside. (2)
- If the preferred view is set, press green cross to add to the list of the saved views.



- Add 3-4 more views; this way, you can practically view around in the given room.
- Press OK to close the dialogue window.
- Start from "View 0" and delete the man standing on the balcony.

Shifting views we can gradually look around in the room.

Let's see some examples of how to work in an IFC model. The workflow is the same as we had built the model in ARCHLine.XP using architectural elements.



- First, we put colours on the walls.
- Therefore, we have to go to the Design Center then Catalog / Materials and here you can choose a colour.
- Use drag and drop to place the chosen colour on the wall and then from the appearing menu choose "as painting" option.



- Click on the second wall, a warning comes up, as we cannot apply the paint on the selected wall. The reason for this that this had been previously 3D fixed.
- Now unlock it.
- Try again to place colour on this wall.
- Apply colours on other walls too.
- In case of the wall shown below you have to unlock the 3D fixation.



- Now modify the floor material and put a carpet there.
- Select a carpet from Catalog / Material / Fabrics / Carpet folder and then choose a colour. Place it "as painting" on the carpet.

Continue the design the same way.

• You can also place here furniture, let's see an example.



- From the Design Center / Catalog / Objects / Bedroom library, select a bed and place it on the floor plan.
- Activate the floor plan and place the bed shown on the picture.





We demonstrated a few methods on how to dress up a room to create the interior design plan.



Workshop 3: How to save and manage large-size project



# 3. Workshop: How to save and manage large-size projects

This tutorial explains how to save project files in different ways, and also gives you essential guide how to manage large size projects.

- Save Project
- ✤ Backup archive
- \* Automatic save
- Project management
- Large size project management
- Open File Explorer and watch the following tutorial videos on this topic: www.archlinexp.com/education/tutorial-videos/archline-xp-level-2/organized-modelling-level-2
- Choose the folder ...ARCHlineXP Draw\2020\Workshop\_Intermediate\3\_ Project\_ Management and the file Little\_John\_Living\_room.pro

# 3.1. Save Project

- Before starting your work on the project, save it under a new name.
- Select Ribbon menu / File / Save Project as command, then name the project and select the folder where to save it.

#### Categorization

 Now save the project under the folder with the name of the customer. ARCHLineXP Draw\Customer\_name\project\_name.pro, Here we can create sub-folders for different documentations: PI. PDF, Render, 3D\_Views, Wall\_views

ARCHIINEXP Draw > Little John
Name
3D_views
PDF
Render
Saved
Wall_views
🔃 Little_John_Living_room

# 3.2. Backup archive

In ARCHLine.XP there is a Backup Archive function, this can help us to restore a project at a previous stage. It is important to know this does not replace Save and does not contain the latest version. The backup archive help us to restart our work on the project due to an unexpected computer crash, when the operating system, stops functioning properly and exits. Every day the program always makes a copy when opening a project. During the daily work another two can be created, altogether three *.pro* extension flies can be stored under ARCHLine.XP Draw /2020 folder, in a hidden subfolder dated on that day. Backup archive properties can be set manually

- Click on the cogwheel in the left bottom corner and find Backup Archive under "Open and Save". Here we can set the followings:
- Create Backup archive
- Delete backup file that is older than the given time interval.
- Set the interval of archiving to 12 weeks.



📮 Graphics			^
Open and Save	* Open and Save		
	Project default path (requires restart)	D:\Munka - Cadline\Ar	
Units and angles	Image Path	D:\Munka - Cadline\AR	
□ Snap and grid	Google Drive - Download folder	D:\Munka - Cadline\Ar	•••
S Cursor and marker	Enable project backup to your personal Google drive		
	✓ *Save 3D database (significant increase in size)		
User interface	Transfer settings and files from one computer to another	Edit	
🚱 Item settings	Migrate custom settings and files from previous releases	Edit	
e	Tag/Schedule template folder	D:\Munka - Cadline\Ar	
	* Manage styles		
	Copy project settings to other projects	Apply	
	Restore your defaults to factory settings	Apply	
	Export styles	Edit	
	* Backup Archive		
	Create Backup Archive - Daily backup copies for recovery purposes		
	Use the ARCHLine.XP Drawing Recovery Manager ONLY to recover data.		
	AUTO-ERASE all backup archive that is older than the Archive Preservation Period		
	Archive Preservation Period in weeks:	12	$\sim$
	Erase Backup Archive older than 12 weeks	Edit	
	The Backup Archive stores up to 3 backup copies of a project daily.		
	* *Save autorecover information		
	Save autorecover information		
	Save frequency (steps)	5	$\sim$
	Free space now on C:	84387 MByte	
	* Creating Network Share		
	Network Sharing requires a folder to which all users' computers have access with netv	vork permission.	
	Shared styles package name (create or select)		$\sim$
	Specify the network location of the shared styles (requires restart)	C:\ProgramData\Cadli	
Close	Copy project settings to shared style package	Apply	
		46-7	
🔍 III 斗 🕹 🖉 🕻	🗼 🛃 🚓 Földszint 🗸 🔺 🎝 🔻	Fal - Tehe V	

Please note switching off the auto-erase function means that archived files will use your PC memory. Deleted archive files go to Trash.

## 3.2.1. Recover Backup Archive

To use the Backup Archive folder, do the following steps:

- Create a wall and save the project.
- Draw an other line and save the project again.
- Repeat the previous step one more time.

It is very easy to recover files from Backup Archive. Click on File / Tools / Drawing Recovery manager.

File		9 0	× = = = - +? = EC	dit	View	Build
	New project	Q	Drawing recovery manager			
	Open project Ctrl+O	XREF	External reference			
	Save project Ctrl+S	XREF	Import from Project (XREF)			
	Save project as Ctrl+Shift+S	۲	Download from Google Drive			
E.	BIM	۲	Logout from Google Drive			
	Import					
	Export					
Ô	Options					
	Tools					
	Teamwork					
	Print Ctrl+P					
4	Print to PDF					
	Print queue					
(					2	× Exit

- In the appearing dialog window select the folder you want to search through, by default it is the ARCHLine.XP Draw folder.
   (1)
- Than enter the key word in your project name (2), select the "archive directory" option from scroll down menu, the program will run a search in here (3).
- Click on "Search" (4) and the program lists the results.
- If you find the requested file (5) by clicking on **Open** you can download it.

Find projects and drawings	
Project     Orawing     C:\!!sers\balin\Documents\APCHlineYP Draw	Proven
Search In	Browse
Search for Little 2	Search 4
Search results in archive directory: 3   Project contents list	t
Image: Constraint of the second se	
File info Browse the folder in which you want to start your search. Enter a file mask. Example: AB will search for all files that contain AB pattern. Start the search with the 'Search' button. You can open a file with the 'Open' button, or check the preview by clicking Proj	ect content list
Press ESCAPE to stop searching Open	Cancel



After opening the file, a message appears on the screen: the file is in the RECOVERED folder



# 3.3. Automatic save

The automatic save helps in the recovering a project with a little loss due to unexpected system failure. We call this function "Save Autorecover".

The Automatic save function DOES NOT ENSURE SAVING THE PROJECT! The content of this folder is automatically deleted when the program is closed normally.

Ø

- Click on the cogwheel icon in the left bottom corner.
  - Under "Open and Save" find Save Autorecover information. Here you can modify the default properties:
- You can activate the autosave function and set the frequency of autosave: 5 steps

🖵 Graphics		^						
Open and Save	Open and Save							
	Project default path (requires restart) D:\Munka - C							
Units and angles	Image Path	D:\Munka - Cadline\AR						
□ Snap and grid	Google Drive - Download folder	D:\Munka - Cadline\Ar						
S Cursor and marker	Enable project backup to your personal Google drive							
	✓ *Save 3D database (significant increase in size)							
User interface	Transfer settings and files from one computer to another	Edit						
Item settings	Migrate custom settings and files from previous releases	Edit						
	Tag/Schedule template folder	D:\Munka - Cadline\Ar						
	* Manage styles							
	Copy project settings to other projects	Apply						
	Restore your defaults to factory settings	Apply						
	Export styles	Edit						
	A Backup Archive							
	Create Backup Archive - Daily backup copies for recovery purposes							
	Use the ARCHLine.XP Drawing Recovery Manager ONLY to recover data.							
	AUTO-ERASE all backup archive that is older than the Archive Preservation Period							
	Archive Preservation Period in weeks:	12 ~						
	Erase Backup Archive older than 12 weeks	Edit						
	The Backup Archive stores up to 3 backup copies of a project daily.							
	* *Save autorecover information							
	Save autorecover information							
	Save frequency (steps)	5 ~						
	Free space now on C:	81667 MByte						
	* Creating Network Share							
	Network Sharing requires a folder to which all users' computers have access with network permission.							
	Shared styles package name (create or select)							
	Specify the network location of the shared styles (requires restart) C:\ProgramData\Cadli							
Class	Copy project settings to shared style package	Apply						
Close		46-7						
🏟 🏭 🎞 🗳 🖉 🖸	🗼 📘 🗟 Ground floor 🗸 🕇 🦊 🧞 🔹 🗖	Wall - Lo 🗸 🥩						
- It is important to know that this function **does not replace Save**. When you turn off the computer in the normal way, this file is automatically deleted, and if you choose "Exit without save" and you rely on only Save Autorcover function you will lose all modifications on the project you have done since the last save.
- In case of large-size projects it's worth increasing the frequency (number of steps). It can be bothering saving a large content after every five steps which may take several seconds.

## 3.4. Organizing projects

Proper organization is needed for well-ordered, self-explanatory and easy to use projects. We have to do two important things.

- Handling and organizing layers properly
- Setting and naming views correctly

#### 3.4.1. Organizing layers

The consistent layer management is necessary to see our project through easily. Layer management helps to handle objects, walls, and furnishing of other rooms in groups. This way the objects can be modified together.

With the help of the layer visibility groups we can save different states, so we can for example show the equipment of on one room at the time without having to enter the Layer manager and setting the layer visibility separately.

- Open "Layer Manager". In the appearing dialog window you can find layers.
- Go to All layers group and create a new layer by clicking on "Add new layer" button.



Now you can see, that in this project the objects are placed on three layers: Object, Slab and Wall – Load bearing.

Our aim is to handle the two premises separately in this project: the **Living room** and the **Dining room**. Also we want to handle the objects, the decoration and the lamps separately in these rooms. This kind of folder system helps the rendering process, it is much quicker to change the views.

Layer Properties Manage	ment									
🐟 🐟 🐟 The nar	me of cu	rrent la	ayer: V	Vall - Loa	id bea	ring			Show visible layers only	
Name	On	L	P	Ele	с	Line-type	Line	Description		<b>_</b>
🧼 Object	· 💡	<u> </u>	9	3946		Simple	0 mm			
🧼 Slab	<b>?</b>	<u> </u>	9	22		Simple	0 mm		- All layers	
🖋 Wall - Load bearing	Ŷ	Ē	4	178		Simple	0 mm		Used layers	

• Now switch off the Show visible layers only option.

Now all of the layers in the project will appear. You can see that we created preset layers for the architectural objects (these are automatically assigned to the object types) and the facilities so the architect can easily place the furnishes, lamps and decorations on separate layers. If you need a room that is not included in the list, you can create new layers for them.



Layer Properties Management									
The name of current layer: Wall	- Load-l	bearin	g wall						Show visible layers only
Name	On	L	P	Ele	С	Line-type	Line	De: ^	
Interior - Kitchen - Decoration	<b>?</b>	<u> </u>	6	0		Simple	0 mm		
Interior - Kitchen - Furnishing	<b>?</b>	Ē	9	0		Simple	0 mm		- All layers
Interior - Kitchen - Lighting	9	Ē	9	0		Simple	0 mm		Used layers
Interior - Living room - Decoration	9	Ē	8	0		Simple	0 mm		
Interior - Living room - Furnishing	9	Ē	9	0		Simple	0 mm		
🗇 Interior - Living room - Lighting	9	Ē	9	0		Simple	0 mm		
Lighting	9	<u> </u>	9	0		Simple	0 mm		
<ul> <li>Lighting - Exterior</li> </ul>	<b>?</b>	Ē	9	0		Simple	0 mm		
Lighting - Interior	9	Ē	9	0		Simple	0 mm		
Ine 🔷	9	Ē	9	0		Simple	0 mm		
I MEP	9	Ē	9	0		Simple	0 mm		
I Object	9	Ē	8	3946		Simple	0 mm		
Object - Exterior	9	Ē	8	0		Simple	0 mm		Layer filter restricts the layers displayed in the
Object - Interior	9	Ē	9	0		Simple	0 mm		the selected layers onto the layer filter
I Point	9	Ē	8	0		Simple	0 mm		, ,
I Polygon	9	Ē	8	0		Simple	0 mm		Variations
In the second se	9	Ē	9	0		Simple	0 mm		🖸 🕂 🗙
🗢 Raster image	<b>?</b>	Ē	6	0		Simple	0 mm		
I Roof	9	Ē	8	0		Simple	0 mm		
Room survey	9	Ē	9	0		Simple	0 mm		Combination No. 1
Iab 🧼 Slab	9	Ē	8	22		Simple	0 mm		Dimensions off
I Solid model	9	Ē	8	0		Simple	0 mm		Dimensions on
I Space	9	Ē	8	0		Simple	0 mm		
I Stair	9	Ē	8	0		Simple	0 mm		
I Terrain	9	Ē	9	0		Simple	0 mm		
I ext	9	Ē	8	0		Simple	0 mm		
Text - Annotation	<b>?</b>	Ē	8	0		Simple	0 mm		
Text - Notes	9	Ē	9	0		Simple	0 mm		
Title box		<u> </u>	8	0		Simple	0 mm		A layer variation saves all the layers with the
✓ Wall - Load-bearing wall	<b>?</b>	dî 🗌	9	178		Simple L 💌	0 mm 💌		current states. It helps switching between
Wall - Partition wall	<b>9</b>	Ē.	4	0		Simple	0 mm	、 <sup>×</sup>	possible layer variations in one step.
<b>`</b>									
Do not delete used layers	Copy to o	lipboa	rd	Protoc	ol for L	ayer Namin	g		OK Cancel

In the project there are two "rooms": Living room and Dining room. The layers for the Living room are already done, so now create 3 layers only for the Dining room.

#### Creating new layers

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- Click on the Add new layer icon. Now the new layer is created: "Layer 1".
- Rename it by double clicking on it Interior Dining room Decoration, then hit Enter.
- Now create two new layers for the *Furnishing* and the *Lights*.

You can create new layers only if all the layers are visible.



• After finishing with all three layers, click on OK to close the window.

#### Moving objects to other layers

- Now select all furniture in the Living room area.
- Go to Properties on the left side of the screen and select "Interior Living room Furnishing" layer from the dropdown layer menu.
- Place all the other objects on the correct layers too.



#### Layer variations

Now create three main layer groups, one for both rooms one for Living room and one for Dining room.

- Activate the 2D window.
- Open Layer Manager.
- In the appearing dialog window click on the "Show visible layers only" category on the right side.
- On the right side in the middle click on the New variation icon.
- A new group is created. Click on it with the right mouse button and select the *Rename* option: *Furnishing plan*. On the left side you can see that all the used layers are visible in this group.



• Switch off the lightbulb icons on the *Dining room* layers and click on the *New variation* icon. Now rename the group to Living room furnishing plan.



 Select the Furnishing plan group and now deactivate the Living room layers. Click on the New Variation icon and rename the group: Dining room furnishing plan.



The name of current	t layer: Interior - Dinir	ig room - Decor	ration	Show visible layers only
Name Interior - Dining room - Decoration Interior - Dining room - Furnishing Interior - Dining room - Lighting Object Slab Wall - Load-bearing wall	On 9 9 9 9	L P Ele	e C Line-type Line Descri; 26 Simple L 0 mm 18 Simple 0 mm 3 Simple 0 mm 5 Simple 0 mm 2 Simple 0 mm 8 Simple 0 mm	Filters    All layers    All layers     All layers
<			>	Variations
Do not delete used layers	✓ Copy to cli	pboard Pr	rotocol for Layer Naming	OK Cancel

If you select now these variations, you can see that the settings of these layers change based on it.

• Click on OK to close the window.

On the plan in the Drawing tools bar you can change the variations easily, you don't have to open the Layer Properties Management every time you want a different variation.

<b>1</b> :100 <b>▼</b> − 1:20 <b>▼</b>	Dining room furnishing plan 🔻
h - Architecture - Ground floor (0 m	All layers
	Dining room furnishing plan
	Furnishing plan
	Living room furnishing plan

#### Layer walk

With Layer walk, you can narrow or expand the appearance of items within a selected layer group. It can also be used to check that the elements have been placed on the correct layers. It's worth a try, you can work with it very quickly and spectacularly.



In the example below we selected the Living room furnishing plan.



Press CTRL and click on the layers you want to make invisible. Press on the invisible ones again to make them visible. Let's leave only the Living room furnitures on.



#### Saving new layers

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The new layers are saved automatically only in the project.



If you want to save these layers into new projects as well, than you have to save these settings. This is how you can do it:

Select the *Gear icon* in the bottom left corner and select the *Open and Save* tab. Select the **Copy project settings to other projects** option and select the **Layer structure** option.

Graphics			Save current settings			
Open and Save	☆ Open and Save					
	Project default path (requires restart)	D:\Munka - Cadline\Ar	The new projects will start with the selected project settings.			
Units and angles	Image Path	D:\Munka - Cadline\AR				
Snap and grid	Google Drive - Download folder	D:\Munka - Cadline\Ar	Current graphic settings			
· · ·	Enable project backup to your personal Google drive		- Layer structure			
<ul> <li>Cursor and marker</li> </ul>	*Save 3D database (significant increase in size)		- Default styles for all element types			
User interface	Transfer settings and files from one computer to another	Edit	- Graphic Override			
A Item settings	Migrate custom settings and files from previous releases	Edit	Would you like to save current settings as new default?			
er kennootango	Tag/Schedule template folder	D:\Munka - Cadline\Ar				
	A Manage styles					
	Copy project settings to other projects	Apply				
	Restore your defaults to factory settings	Apply	Current graphic settings			
	Export styles	Edit	Layer structure			
	* Backup Archive		Building and floor structure      Default at the feasibility of the structure			
	✓ Create Backup Archive - Daily backup copies for recovery purposes		Derault styles for all element types     Graphic override			
	Use the ARCHLine.XP Drawing Recovery Manager ONLY to recover data.					
	AUTO-ERASE all backup archive that is older than the Archive Preser	vation Period				
	Archive Preservation Period in weeks:	12	~			
	Erase Backup Archive older than 12 weeks	Edit				
	The Backup Archive stores up to 3 backup copies of a project daily.		ОК			

## 3.4.2. Settings and labelling the perspective views

The other essential part of the project organization is setting the views properly in the well-ordered projects. If you consistently follow the same logic (even clockwise), to set perspectives in the 3D window and name them appropriately, it will be easier to navigate through them.

In case of multilevel buildings, it can be useful to put numbering before the name of the perspective views. This way we can easily distinguish from the ground floor: 0\_Living\_room\_01 to first floor: 1\_Bathroom\_01.

- Now move to the 3D window.
- From Navibar select the right bottom "Perspective dialog" icon.
- The program automatically will put all views in alphabetical order. Always put serial number after the name of the consecutive perspective views.





If you follow the instructions above perspective views always will be orderly arranged in your projects, which makes easier and more transparent your work and project.

 Open the following project: ARCHlineXP Draw\2020\Workshop\_Intermediate\3\_ Project\_ Management\Little\_John\_Living\_room\_02\_Layers

B

## 3.5. Managing large-size projects

#### Project size

The size of the project is defined by 2 parameters:

- File size
- Surfaces in the 3D model

In Windows Filemanager you can check the size of the file you saved on your computer. This project is approximately 36 MB.

Name	Size
3D_views	
PDF	
📕 Render	
Saved	
Wall_views	
🔃 Little_John_Living_room_01	27 502 KB
Little_John_Living_room_02_layer	36 103 KB

Quick 3D model					
Build 3D model					
Create cut-away 3D view					
Space volume computation					
3D Section Box					
▼ Interior ∨					
	Quick 3D model   Build 3D model   Create cut-away 3D view   Space volume computation   3D Section Box   Interior				

The **Surface** number is displayed in the Build 3D model window. In the pop-up window you can see that this project currently has **131 288** 3D surfaces. Quit this window with the "Cancel" button.

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In case you use a mid-range laptop, it is recommended to keep the surface number under **1 000 000**.

#### Reducing the size of a project

The size of a project can significantly increase while we are working on it. It's worth spending some time to clear the project that can reduce its size. This contains three steps:

- Remove superfluous 3D solids
- Delete too large objects and
- Delete those contain too many materials.
- Delete unused materials in your project

#### 3.5.1. Delete superfluous 3D solids

There might be 3D solids in the project that were temporarily used during 3D modelling, we did not create an object and accidentally remained in the project.

3D solids only appear in 3D, they do not have a floor plan symbol.

These unnecessarily increase the project size; therefore, we have to delete them.

Open the following project: ARCHlineXP Draw\2020\Workshop\_Intermediate\3\_Project\_ Management\Little\_John\_Living\_room\_ 03\_3D\_body

🔃 Little_John_Living_room_01	27 502 KB	
Little_John_Living_room_02_layer	36 103 KB	
🔃 Little_John_Living_room_03_3D_bo	37 684 KB	
Surfaces	165268	

How can we find quickly these 3D solids and delete them from the model?

- Now select from Status bar the "Create cut-away 3D view" option. The software automatically switches to floor plan view.
- Select an area on floor plan view which length is the same as the drawing and doesn't contain any 2D items.

Based on the blank area, the program builds the 3D model up, so we must get a blank model. If there is an item in the 3D window, then those are 3D solids, or maybe 2D drawing elements. Select the Axonometric view for the view representation.

Resolution		
High		$\sim$
Minimal resolution of a circle	32	$\sim$
Maximal chord height	3 mm	
Surfaces	131288	





- Select objects in 3D window and delete them.
- Rebuild the 3D model.
- Now click again on 3D build tool Rebuild 3D model. As you can see the number of surfaces decreased from 165.268 to 132 351.

Resolution		
High		$\sim$
Minimal resolution of a circle	32	~
Maximal chord height	3 mm	
Surfaces	132351	

# 3.5.2. Delete too large objects and those contain too many materials

It might happen the we download objects from the 3D Warehouse which are too large or contain too many materials. These objects can greatly slow down the operation of the program. The program warns us in the following three events:

- When the object is too large, so it contains more than 50 000 polygons
- When the object contains more than 50 materials, or
- When the physical extension is larger than 100 m

Now let's look at an example of too large objects.

• Open 3D Warehouse, this can find under Ribbon menu / Interior / Place / 3D Warehouse.

File 🛅 🗖		- 🗋 🥑	🧷 🗙 🚽 🗆		F = Edit	View	Building	Interior	Drafting
		(	ਜ	Ð					₩
Properties •	Room maker ▼	Material T	Single object	3D warehouse	BIM libraries	Tiling ▼	Sweep	Soft furnishing	Lighting T
Properties	Room		PI	ace			Decorat	ion	

- In the search field type "crystal chandelier".
- Select "Baccarat Zenith Chandelier crystal". By clicking on the object, we can see its properties on the right side. Here we have to pay attention to the polygon number which is 60 405 in this case.
- Download the object and place it on the floor plan.

0

0



Now a pop-up warning message will appear. If you click No, the object will not be downloaded. Now select "yes". •



Place the object on the floor plan. •

Let's look at an example when the object contains too many materials.

- Open 3D Warehouse again.
- Type "Kettle teapot" in the search filed.
- Choose one and download it. .



• The program indicates in a popup message how many materials this object contains. The amount of materials under 50 can be considered normal and easy to use in the program. In this case there are 290 materials. In the pop-up window, we opt for "Yes" the object will be downloaded which might take longer and slows down the work on the project. If in the pop-up dialog window, the answer is No, the downloading happens without materials. Later we can assign any materials to this object.

	Resolution			
	High	~		
	Minimal resolution of a circle	32 ~		
	Maximal chord height	3 mm		
	Surfaces	212242		
Message ×				
This object contains 290 materials. Using it can cause slow-down in the project. Continue anyway? No means import without materials.				
Yes No				

- Place it on the floor plan.
- Now check the number of the surfaces by using 3D Build tool after placing the two objects. Now there was an increase from 212 242 to 132 351.
- Now save the project under the name Little\_John\_Living\_Room\_4\_Large.pro.



In order to reduce the project size, we have to delete superfluous, large objects and those contain too many materials. The complex objects can be easily found and deleted.

- Activate 3D window.
- Go to Ribbon menu / Dimension / Measure and click on "List of elements".
- In the pop-up dialog window, we can find the 5 objects take the most space in the memory and the 5 items use the most materials. Here you have an option to "Delete selected item" straight away. In case you cannot identify the item, you can use "Show selected item" command. Last two downloaded objects are the largest in both categories. Delete them.

nfo about space		ļ
Property	Value	^
These solids take the most space in the mem	ory:	
Element ID: [3D=3196] [2D=3598]	31148[KB] (3D surface: 76494) (Object: Baccarat Zenit	
Element ID: [3D=205] [2D=1654]	2750[KB] (3D surface:8781) (Object: almohada 3d)	
Element ID: [3D=275] [2D=3776]	2750[KB] (3D surface:8781) (Object: almohada 3d)	
Element ID: [3D=228] [2D=2542]	2750[KB] (3D surface:8781) (Object: almohada 3d)	
Element ID: [3D=254] [2D=3212]	2750[KB] (3D surface:8781) (Object: almohada 3d)	
These items use the most material:		
Element ID: [3D=4011] [2D=15606]	865 (Object: kettle, teapot, чайник)	
Element ID: [3D=102] [2D=301]	9 (Object: NEG TV Te 1)	
Element ID: [3D=836] [2D=3598]	7 (Object: Baccarat Zenith Chandelier crystal(1))	
Element ID: [3D=100] [2D=238]	6 (Object: candle 11)	
Element ID: [3D=120] [2D=435]	5 (Object: Flower 2)	v
<	>	
Show selected item	Delete selected item Close	

- Now check again the number of surfaces by using 3D Build tool. By deleting these two large objects the number decreased to **132 351**.
- Save project under a new name Little\_John\_Living\_room\_05\_cleaned.pro, use "Save project as... "command.

#### Filter the surfaces in the directory

It is recommended to filter the objects in the Design center based on the surface count and delete the large ones.

Select the Objects in the Design center and in the properties click on the **Filter objects by complexity** option. This filters the objects in the Design center and you can organize them by size or date. On the right side you can collect the objects that you want to delete.

Design center 📮 🗄	×	
[Search in all items] Q Brands	;	
A Objects		
< <back 196="" elements<="" th=""  =""><th>f</th><th>Multi selection mode</th></back>	f	Multi selection mode
⊞ MY	V	New object
3D IMPORT	×	Delete
III 3D WAREHOUSE		Sort in categories
	1	Import
ACCESSORIES	₽	Export
■ BATHROOM	Ð	Export to Live
BEDROOM		Filter objects by complexity
⊞ CARS	R	Select all

Sort by complexity	~	]			Delete
List of objects by complexity:			Objects selected to delete		Delete All
Name  Vasinhos+concreto Maxiving Mimo Sofa kitchen+decoration untitled1575592805 Bowl of Roses Radeco ATOM design radiator RABALUX RAINA PENDANT 5766 Baccarat Zenith Chandelier crvs	Model complexity (surfa 254552 (Extra large) 146755 (Extra large) 137935 (Extra large) 136915 (Extra large) 90194 (Very large) 86530 (Very large) 76366 (Very large) >	->	Name DINING SET vasinhos+concreto Maxliving Mimo Sofa kitchen-decoration untitled1575592805 Bowl of Roses	Model compl 254552 ( Ext 234713 ( Ext 136915 ( Ext 136915 ( Ext 90194 ( Very	exity (surfaces) ra large ) ra large ) ra large ) ra large ) ra large ) ra large ) / large )
					ОК

#### Filter 3D Warehouse® by surface count

The 3D Warehouse  $\ensuremath{\$}$  also helps you filter large objects. After you searched the object you can filter the results on the left side.

3D Warehouse						
🗲						
🕸 3D Warehouse	All Categories	table	Q	/ SketchUp		<u>↑</u>
CATEGORY	Showing resu	lts from all categor	es (1,000+ items found)			
Category All Cotegories	MODELS	COLLECTIONS	PRODUCTS	CATALOGS	Re	levance 🥠
Subcategory 🗸		~		F	4	
PROPERTIES	table	JzK Tabl	e SK	Table	Lable Tαble table	Bαs 🕁 47κ
Polygons 0 - 50 K						1
o <u> </u>	Table Table	↓ bo 25K table	<b>х <u>У</u> в ВК</b>	box table	J Tαble_ 2K Table	Book 🔟
ADVANCED	we re to the second sec					
Reset All Filters	House	.↓ tal	ple 🗸	loft leeg	,↓ poiuyt	
	Table	SK table	e 10K	table	6K table	

! We recommend to set the Polygons to max. 50K. This way the search engine shows only those objects that have maximum 50 000 polygons. Now the needlessly big objects, that ARCHLine.XP® doesn't support won't appear in the list.

#### 3.5.3. Delete unused materials in the project

When we delete the large-size objects, the linked materials will stay in the project. There might be hundreds or thousands of materials in a large-size project which significantly increases the project size and slow down the operation. Mostly these materials are not used, so we have to remove them.

• Select **Design Center / Catalog / Materials / In Model**, here you can see that the project contains **696** materials.

Now delete not used and superfluous materials in the project. The deletion is carried out by **Removing Materials**. To do this, **YOU HAVE TO BE EXTRA CAUTIOUS**:

- Open all layers
- Build up every item in 3D
- Save Project under the original name,

After these safety actions, delete unnecessary and unused materials from the project.

- Save the project under a new name, by using Save project as... command.
- In the pop-up window activate "Purge unused materials which are not applied on the floor plan and 3D model".
- Finally click on Save.
- The new project name is: Little\_John\_Living\_Room\_5\_Cleaned.pro

You have to save the project under a new name in case we made a mistake we can easily upload from the original project:

Project properties				
Name Nappali_alaprajz Nézet 2	Visible ତୃ	Delete	State Floor plan - Current 3D - Image - Curren	d t
Preview				Notes
Save 3D database (significant increase	in size)			
Purge unused materials which are not a	pplied on the	floor plan a	and 3D model Save	Cancel



Check the number of materials.

Click again on Design Center / Materials / In Model.

Now the number of the materials decreased **from 696 to 103** items. Deleted materials increased the project size unnecessarily.

Design center		<b>p</b> ×
[Search in all items]	٩	Brands
A Vaterials In Model		
< <back 696="" elements<="" td=""  =""><td></td><td>•</td></back>		•
P P		
		-

After all these steps it can be seen that our project size significantly decreased from 47 075 KB to 26 032 KB. Thanks to the clearing, more storage space is left on our computer.

Little_John_Living_room_01	27 502 KB
Little_John_Living_room_02_layer	36 103 KB
Little_John_Living_room_03_3D_body	37 684 KB
Little_John_Living_room_04_large	47 075 KB
Little_John_Living_room_05_cleaned	26 032 KB

If you follow these instructions, your projects will be transparent, traceable and you can work faster without any disruptions.

## Workshop 4: KBB, Modelling and furniture design



## 4. Workshop: KBB - Modelling and furniture design

During this lesson you can learn how to use the furniture design tools in ARCHLine.XP, this way you can easily create customized kitchen cabinets.

- Using different front on the same cabinet
- Creating fronts with hidden handles
- Creating a custom shaped, curved cabinet
- Creating a custom shaped, curved countertop
- Creating an Excel list
- Open your browser and watch our tutorial videos: <u>https://www.archlinexp.com/education/workshops/workshop-application-intermediate</u>

#### Refresh your skills

In order to understand this lesson completely, the basic knowledge of the furniture design tools is required. Before starting this workshop, it is recommended to repeat the preliminary level Kitchen design workshop. This project can be found among the files of the Preliminary course files.

The tutorial videos can be found here: <u>https://www.archlinexp.com/education/workshops/workshop-application-preliminary</u>

#### Start

- Open ARCHLine.XP software.
- Click on Open Project button.
- Open the following project: ...ARCHlineXP Draw\2020\Course\_Intermediate\4\_KBB-Modelling\_and\_furniture design\01\_KBB\_Modelling\_and\_furniture\_design.pro

#### Save project as...

- Before starting the work save the project file with another name.
- Choose File / Save project as... command and specify the name and location.

## 4.1. Adding drawers, changing fronts

During this workshop we will modify the kitchen in the opened project.



• Click on the high cabinet from which the drawers are missing and open its properties.



• In the dialog click on the Dividers tab and add a Single horizontal divider. Before placing the divider with the green tick, activate the *Only division* option.

Cabinet		
		Bottom Front Back Core Back Core Top
	<b>**</b>	
Single Multiple borizontal	Multiple vertical single custom 340 mm 240 mm From unit top	50% 340 mm P: From unit bottom: 360 mm Custom offset 0 mm V V
Dividers		Automatic refresh on page OK Cancel

• Click into the upper division and add a Single drawer with front, then repeat this step in the other division.

Cabinet	
	<ul> <li></li></ul>
R ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) (	
l/1 Single Multiple Single with Multiple Multiple	● Full Overlay ○ Traditional
front with front with single	Opening (%)
	100
Drawers	Automatic refresh on page OK Cancel

• Select the newly added upper drawer using the blue arrows on the left. On the third vertical tab deactivate the Apply the default option.

Ī <u></u>			P 🖉 🔤 🚺	a	
↓ ↓ 1/2 ★ <th>Apply the default     Hide object     Use original item s</th> <th>ze Walnut Weng</th> <th>ye Wenge- mirror mirror 3</th> <th>Wood 11 Wood 11 WS front WS front WS</th> <th>- üveg Strong</th>	Apply the default     Hide object     Use original item s	ze Walnut Weng	ye Wenge- mirror mirror 3	Wood 11 Wood 11 WS front WS	- üveg Strong
Drawers		Rotate X	Rotate Y 0° ~	Rotate Z       0°     Mirror       Ø Automatic refresh on page     O	OK Cancel

- Using the blue cross on the right, search for a front named *Wood11 front* in the library, then close the dialog with the OK button.
- Change the one front of three further cabinets to the *Wood011 front*. To do that select the cabinet and open its properties. On the Doors tab select the front to be modified, then with the learned method change its front to the desired one.



• You should have a similar result as the picture above.



## 4.2. Creating a front with hidden handles

In modern kitchens non-traditional solutions are often used at the handle design. With the handy tools of ARCHLine.XP you can easily create alternative variations.

The Cabinet door command is an extremely flexible tool with which you can define the shape of the front, insert or extract profiles in order to create more unique pieces.

- Start the Cabinet Door command from the Ribbon bar / Interior / KBB group.
- Select Old\_Ashtree as the material of the front.
- Select the fifth tab from the left, the Subtract profile tab. With this option we can define a frontal profile (on the first vertical tab on the left) along which the section profile (chosen on the second vertical tab on the left) will be drawn.
- Select the profile named *horizontal1* as the frontal profile.
- The four values on the right indicate the distance of the profile from the edges of the front. Rewrite the upper value to 0, then deactivate the Same offsets option and unlock the bottom padlock. By fixing the two side values we can assure that the front fits on cabinets of all sizes and the handle does not end after a specific length but adjusts to the cabinet size.

	There are no items to list
front_chate horizontal1 oval porto slingo verona vertical1	Same offsets 0 mm v 0 mm v 0 mm v 10 mm v 1

After this select the section profile. This will be a simple rectangle. After selecting it, click on the cogwheel icon on the right to access its properties. Here set the dimensions: width: 40 mm, height: 20 mm. Select the upper left corner as a reference point. This defines the point with which the section profile is connected to the route drawn by the frontal profile. (The appropriate point is different in every situation, so it is possible that you will not find it at the first try.)

This profile operation is important because first we will subtract a profile from the front, then add another, which will be the handle. In order to place the handle 'inside' the front and not 'on' it, we have to subtract a handle profile size part of the front to have space for the other profile (handle) and to prevent it from overhanging.

Edit profile			-		
₽ <sup>1</sup> 2	<mark>е</mark> 1 С		Rectangle Simple	Mirror on X Mirror on Y Rotate tion Height: 20 mm	
Select Profile	Redra	aw		,	
Name	Value				
Height [ 1 - 100000 mm ] Width [ 1 - 100000 mm ]	20 40				
			OK		Cancel

 Close the profile properties and make sure that both green profiles are inside the front, then click on the green tick in the right bottom corner.



- Click on the sixth tab from the right, the Add profile tab. This option operates on the same principle as the Subtract profile
  option with the difference that here a profile will be added not subtracted.
- Select the profile named *horizontal1* as the frontal profile and set its distance from the front edges the same way as the at the subtracted profile.
- After this, on the second vertical tab on the left select the profile named *aluminium2* as the section profile. Click on the cogwheel icon to access its properties. Its dimensions do not require further modifications, just select the upper left corner as the new reference point of the profile.



Edit profile		
Select Profile	d <sup>1</sup> d <sup>0</sup> d <sup>1</sup> d <sup>1</sup> d <sup>0</sup>	aluminium2          Mirror on X         Mirror on Y         Rotate         Uniform 3D scaling operation         Width:       Height:         40 mm       20 mm
Name Width [0.0001 - n.a. mm] Height [0.0001 - n.a. mm]	Value 40 20	OK Cancel

• On the third vertical tab set a custom material for the profile, then click on the green tick.



• Save the front on the last tab with another name: front with hidden handle 01 - ashtree.

## 4.2.1. Creating alternative front variations

In order to vary the handle positions and front colours in the kitchen we need to create alternative variations from the front created previously.

• Let's create the front with the *Pine\_011* material. It can be done by selecting the second vertical tab on the Frontal profile tab and here choose *Pine\_011* material.

Cabinet Door	à à .	
		ADD profile: Unit doors can     SUBTRACT profile: Unit door
		5 9 9 <b>9</b> 8 8
	<corrogate Shiny&gt;2 Dark_grey Old_ashtre e Pine_011 Sabbia Stained bee Beech</corrogate 	• / @ x
Material direction	0°	

- After this save the new front with another name: *front with hidden handle 01 pine* Let's create the other two alternatives. It will have the handle at the bottom of the front. The easiest way to do so is to modify the position of the subtracted and added profiles.
- Click on the Subtracted profile tab and open the upper lock and close the one at the bottom.

$\sim$			Width		Same offsets
			600 mm	$\sim$	0 mm 🗸
		2	Height		
for a baba		Ô	0 mm	~	0 mm ~ _ 0 mm ~
tront_chate	horizontal1				
ului		0			
					<b>—</b>
					Resize profile
					Rescale $\checkmark$

• After this, modify the reference point of the section profile to the upper right corner by clicking on the cogwheel icon on the second vertical tab on the left.





- Repeat these modifications on the Add profile tab.
- Save this front with another name: front with hidden handle 02 - pine
- After this, modify the material to *Old\_Ashtree* on the first tab, then save it with another name on the last tab: *front with hidden handle 02 ashtree*.
- As a last step, change the fronts on the cabinets to the appropriate one. This can be done by selecting the front in the Design Center and with the drag and drop method place it to the cabinet. This method, however, will only modify the default fronts of the cabinet. If you would like to modify a front which is not a default one, you can do it by selecting it in the Cabinet dialog window.





## 4.3. Creating a curved cabinet

In ARCHLine.XP you can create bespoke furniture. In this example we will create a custom shaped, curved cabinet to the place marked with blue lines on the layout.

- Start the Cabinet command from the **Ribbon bar / Interior / KBB group.**
- First, set the default front of the cabinet on the second tab. This will be the front with hidden handle 01 ashtree.
- Hide the default handle since the chosen front already has built-in handles. This can be done on the second vertical tab on the left.

1	Default door front and handle selection. You can also apply custom drawers, shelves and lose					_		► \$	Ŀ,	Offset left/rig	ght (red)
	iegs.	Bedford shelf	dad	Debba_c abinet_h	Debba_c abinet_h	Gilmore TV leg	ctangl Bar andle handle	si 🧷	Ľ,	0 mm Offset down/	vn (blue)
	Hide handles	Rotate X		Rotate Y		Rotate Z		<b></b>	Ł	<b>4</b> 0 mm	
G	eneral unit door properties	00	~	00	~	00	Automatic refresh on pa	ge 📀		ОК	Cancel

- Set the default side panels of the cabinet on the third tab. This will be the Old ashtree front.
- On the sixth tab you can select the shape of the new cabinet. Choose the custom option here. On the appearing tab click
  on the star icon on the right to create a new shape.

Cabinet		
		Gorde Core Front Core Eack Top
		-
19 • • • • • • • • • • • • • • • • • • •	\$ C C 💀 🕢 🖬	
45° corner         Arc corpus         Arc corpus           shape         corner         corner mirr	Clossure shelf walls kitchen Curved left Curved left furniture sloped furn	Depth Sloped Sloped Sloped Sloped sloped furn furniture b furniture lef furniture ri
CI		<b></b>
You can define the shape of the unit by selecting an object Shape	t. Objects of one single solid are accepted only.	refresh on page 🕥 OK Cancel

• We will create the new shape of the cabinet using the 3D shape tool. You can edit the default solid cube with the help of three profiles (front, side and top view). The active profile is always the red one. In this case the top profile should be the active one. Click on the star icon to define the profile.



🐟 ARCH IN E.🕏



• The command automatically activates the 2D layout, where you can draw the shape of the cabinet along the blue line.



• When you have finished drawing, click on the Close button on the Ribbon bar. The new top profile is automatically engraved on the top of default cube, and now it is modified to the desired shape.

100

3D Shape		
		<b>8 9 9 9 9</b> 2
Width         606.3 mm         Constraints         E           Depth         Image: Constraints         Custom         E           Height         profile         60/19/25         E		
Sizes and profiles	Automatic refresh on page	OK Cancel

• Press the OK button and the program switches back to the cabinet dialog, where the cabinet is created from the customized shape.



- Click on the first tab and set the dimensions. The total height of the cabinet is 850 mm, the carcass height is 700 mm, and the space for legs is 150 mm.
- On the seventh tab you can customize the panel properties. This means that you can change flexibly the type of the
  panels, so a you can make a front panel from a side panel; or a top panel can be turned into a back panel. This is useful in
  situations like this one.
  In the next step we will modify the curved side panel of the cabinet to a front; so, a door can be assigned to it. Navigate

with the blue arrows on the left side until the colour of the contour of the curved panel is marked with red. After this, select the front type from the options below.





Click on the Doors tab and assign a door to the curved part and set its opening direction to the right.



After this, click on the other front and add a fix door.

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102

•

Cabinet					
		t			<ul> <li>i Bottom</li> <li>i Front</li> <li>i Dor - Fix</li> <li>i Back</li> <li>i Core.</li> <li>i Top</li> </ul>
		🥙 🖾 🖬			🕂 🗗 🎽 🍽 💀 🔎
1/1	Flip up Flip down Fix	2, 3 or 4 sided Sliding	Multiple side Bifold	Full Overlay     Traditional	
Doors			Automatic re	fresh on page	OK Cancel

- On the penultimate tab, switch off the automatic dimensioning.
- As a last step, save the cabinet to the library.
- Close the dialog and place the cabinet.
- You should have a similar result as the picture below.



## 4.3.1. Creating a curved countertop

In the following, we will create the countertop. In order to fit to the kitchen cabinets, you have to turn few of its edges into curved ones.

• First, delete the existing countertop.



- After this activate the 2D layout and start the **Ribbon bar / Interior / KBB / Countertop / Countertop by profile** command.
- Draw the countertop on the 2D layout. When you are done, close the command with the green tick on the Ribbon bar.
- In the appearing dialog window, you can see that the countertop does not follow the curves of the cabinets so further modifications are needed. Close the dialog with the OK button.



• Select the countertop on the 2D layout and from the Local menu, start the Component mode. The Component mode allows you to edit every edge of the countertop flexibly, you can move nodes or insert new ones.



• In Component mode adjust the contour of the countertop to the blue line by moving and inserting nodes, and turning edges into curved ones. You should get a final result similar to the picture below.



- Click on the countertop and open its properties.
- On the first tab set the colour of the countertop: a colour named g110.
- On the second tab select the No joint option. With this option the countertop will appear in one piece.



• On the seventh tab activate the Countertop edge on the right side as well, then select the profile named *Platner* as the edge profile.





As a last step add wall strip to the countertop on the sixth tab. Search for the profile named *Rectangle* in the library and set its dimensions: width: 10 mm; height 30 mm. On the second vertical tab select the colour of the wall strip: *g110*.



### 4.3.2. Modifying the plinth

In the next step we will adjust the plinth to the curved cabinet.

- Activate the floorplan window.
- Click on the last node of the plinth and in the appearing edge menu select the Move node option.



 Move it to the beginning to the curved part, then click on it again and select the Append line option from the appearing menu.



• Adjust the endpoint to the end of the curved part, then by clicking on the new part select the *Turn into curved edge* option from the appearing menu. Adjust the arc to the blue line.





## 4.4. Creating an Excel list

At the end of the work we can create the Excel file, which is necessary for the production of the cabinets, with a few clicks.

- Start the Ribbon bar / Documentation / Quantity take-off / Excel list command.
- In the appearing dialog select the Interior Calculation option.

Make Excel report	
Building calculation	
H Interior Calculation	
Tiling	
m <sup>2</sup> Rooms	
* Terrain calculation	
B List by manufacturers	

Cabinet         Cabinet Door         Countertop         Electrical Accessory         Kitchen         Lamps         Loft         Luminous text         Moulding         Object         Picture on wall         Pipe         Smart Object assembly	Class	es		×
☐ Ignore invisible layers and its items ☐ Select elements ☑ Export BIM parameters		Cabinet Cabinet Door Countertop Electrical Access Kitchen Lamps Loft Luminous text Moulding Object Picture on wall Pipe Smart Object ass	ory sembly	
		jnore invisible laye elect elements xport BIM paramet	rs and its items ers	
- From the appearing list select the types to be listed: Cabinet, Cabinet door, Countertop, Kitchen, Object.
- Finally save the Excel worksheet, which opens automatically if Excel is installed on your computer.



For more practice and interesting tutorials please visit our website: www.archlinexp.com/education/tutorial-videos/archline-xp-interior-level-2/kbb-furniture-design-interior-level-2



Workshop 5: Stairs and railing



# 5. Workshop: Stairs and railing

In this lesson, you can learn how to create stairs with different geometry and their railing.

- Placement and editing stairwell with U-shaped stairs and its expanded railing
- Creating a gallery
- Placement and editing of a Spiral Stairs
- Customized railing
- Customized stairs
- Floating staircase with support
- Open your browser and watch the following video tutorial.
   <u>http://www.archlinexp.com/education/video-tutorials/foundation/staircase-and-railing</u>

#### How to start

- Start ARCHLine.XP software
- Click on "Open Project" button
- Open the following project file without any furniture ... \ARCHlineXP Draw\2020\Course\_Intermediate\1\_Stair\_and\_Railing \Stair\_and\_Railing\_START.

### Save project

Before doing anything, first you must save the project under a different name.

Choose File menu / Save project as command then you can give the new project name and location to be saved.

## 5.1. Placing stairwell and stairs

The first type of stairs we are going to create in the project will be a U-shaped stair with expanded railing in a stairwell.

Activate the floor plan window, then go to the Ground floor.

We will place stairs on this level:



- Go to Ribbon bar / Building / Stair. Here you can find tools for creating and editing stairs.
- Select U-form category and "U-form winded" option.



Building Ir		Interi	ior	Drafting	Dimensio	on	Documenta	tion
Ceiling Railing Stair		<ul> <li>Ramp</li> <li>Stair by run and landing</li> <li>Stair by treads</li> </ul>			Room and area			
			Straig	ht				<b>^</b>
			+	+				3
			U form	n —				
						U form win	• ded	

• Move the cursor over to that area where you will place it, and define its four-corner point.



• After placing the fourth corner point the stairs will be automatically created.

### 5.1.1. Modifying properties of the previously placed stairs

• When you placed the stairs, modify its properties. To do this, click on any points of it, and select the pencil icon from the floating menu.



• Now the "Stair and ramp" window will appear. Set the following values:

### Floor height:

Activate the "Take the floor height" option, this value will be automatically overwritten as per the project to 300 cm.



### Action and entry parameters:

Unchanged now, since these will be derived from the number of the steps. These parameters should fall within that range is defined by standards. If they don't, the program will indicate in red. The stairs can be placed in the plan anyway.



### Number of the steps:

It can be changed here. Enter the new value 19.

246 1357 n = 19
--------------------

n1, n2: In the case of winded stair, the values of n1, n2 define the number of non-winded steps on the straight side. Both should be 6.

24			
PHT I	n1 = 6	n2 = 6	
13			

### Width:

It is shown here, which is currently 100 cm.

Ĵ₽ <del>ŦŦ</del> ₽	100 cm

#### Side parameters:

These three values show the length on each side of the stairs, shown below:



### Rounded radius can be found at the bottom.

5511111	
2 Minin	10 cm
HT <b>R</b>	10 Cm

When you finished with the settings, close the dialog window by pressing "OK". Now the program will create the stairs with the modified parameters. Active the 3D window, switch to that view point from where the stairs can be well presented.

♣ <sup>2</sup> Floor : Ground	~		1	₽
-------------------------------	---	--	---	---





### 5.1.2. Create handrail

In the next few steps we will add railing to the previously created stairs.

- Select the stairs and open its properties.
- Click on "Balustrade settings" tab.
- Activate the "Style on right side", and select the "Steel" profile type.

Stair and ramp				×
Preferences Stair Calculator Stair properties Support	Railing settings			
<u>Step geometry</u> Railing settings Representation on t	Glass railing with frame Glass railing with frame Style on right side Steel profile	✓		
BIM Parameters	Alapértelmezett	ю a –	OK	Cancel

• Close the window with OK, and the program creates the railing.

The railing follows the stairs' line and goes up. The railing is a separate element, so the stairs and railing can be selected separately.

Further changes should be implemented to use this stair in practice.

- Select railing and open its properties.
- Select Primary Balustrade tab and then set the followings (1):
- The value of Last baluster distance from post will be zero (2),
- Activate the Clear spacing between items instead of Center to center spacing, its value will be 120 mm. (3)
- Offset from path will be -30 mm. (4)
- Now go to Handrail option. Set Offset from path to -30 mm. (5)
- Go back to Primary Balustrade and activate Adjust bottom of balustrades to stair, finally set the Bottom Ending condition to perpendicularly ending. (6,7)
- Click OK to close the window, now the railing is finished. (8)

Railing				×
	Increase or decrease the height of 0 mm	all balusters: Full regeneration using sa distribution on all parts Regeneration by parts	ime	Edit path segments
	Distribution of primary balusters bet	ween balusters by big steps. May insert panels a	nd bars here	Automatic refresh on page
	Profile     Object     Width 20 mm	Uniform step Fix step Fix step, centered Minimum step value X: S*	S >= S* S* Y	
Canada attinga		Optimal step (nearest to given value)	100 mm	
Balusters		Last baluster distance from post (X)	100 mm	
✓ 1 Primary balusters	Profile from Library	$\bigcirc$ Center to center spacing (S)	140 mm	
Intermediate balusters	Steel	Clear spacing between items (D) 3	120 mm	
Papels and bars	Copy to baluster clipboard	Offset from path(>0:right) 4	-30 mm	
	Paste from baluster dipboard	Base offset from the path (<0:down)	) mm	
Newel posts at the turn	Adjust bottom of balustrades to stair 6	Baluster height Ending condition	1000 mm	
Balusters by big steps	Adjust balusters to a top profile	Тор		
✓ 5 Handrail	Top profile	Bottom 7		
	Steel profile BI	IM Parameters		8 OK Cancel

Since our building consists of several levels, the stairs should continue. The simplest way is to copy the existing stairs and railing to other levels.



- Activate the floor plan window.
- Select both, the stairs and the railing, holding down CTRL key, then open Edit levels dialog window.
- Select Copy objects to another floor.

Edit levels

<hr/>	🖌 🥪 😂 🤜				💦 👄 🗆	ist of buildings
Num	Name	Bottom eleva	Height	State	Le Copy objects to	o other floor
3	Level 3	10000 mm	3000 mm	Off	0 mm	
2	Level 2	6000 mm	4000 mm	Off	0 mm	
1	Level 1	3000 mm	3000 mm	Off	0 mm	
0	Ground	0 mm	3000 mm	Active	0 mm	Edit

In the popup dialog window, select the first level, and then click OK to finish copying.

Select floors		x
Numbering	Name	
3	Level 3	
1	Level 2 Level 1	
		Pseudo Copies
		Full copy
		<ul> <li>Rectangle profile</li> </ul>
		O Polygon profile
		OK Cancel

Finally let's create a Pseudo copy on the second floor. The bottom line is that the floor plan symbol of the stairs will appear only, which is not visible in 3D. Using this method, both the floor plan and the model will be unified.

The course is the following:

- The floor plan window is active
- Go to the first floor, and select railing, stairs by holding CTRL key down.
- Now open Edit level dialog window and Select "Copy objects to other floor" command.
- In the popup dialog window select second floor and activate Pseudo copies option.

Select floors		x
Numbering 3 0	Name Level 3 Level 2 Ground	Pseudo Copies  Full copy  Rectangle profile  Polygon profile  OK Cancel

• Click on "OK" to finish.

There is another faster and easier way to create a copy to other floor. Select items to be copied on the floor plan, then on the property grid next to "Copy to other floor" option, choose the requested floor. Click on OK to finish.

## 5.2. Create gallery

Before moving forward, now create gallery on both floors. These galleries will be made of timber slabs. Let's see how to create them.

- The floor plan window is active.
- Go to Ribbon menu / Building / Properties / Slab and set the followings.
- First set the material "Wood-pine". Click on the name of the current material, this will bring up the material library. Here go back to the core library by clicking on the house icon. Type "pine" in the search field.
- From the appearing list select "Wood-pine", then click on "OK" to close the window (1).
- Set the new material for all sides (2).
- Set the total thickness to 100 mm (3).
- To set the structural properties click on "Beams and block flooring system" (4).

Slab properties x						
▼ General properties /						
0 mm 🗸 💋 0 1_Födém1 🗸	1 Wood-pine					
Simple Line 8 - Bottom-most V	Wood-pine					
The slab border doesn't display on the floor plan in print	S Wood-pine					
Base offset from the floor 0 mm ~	Slant angle					
Total thickness: 3 -100 mm ~	Slab type Slab ~					
Slab layers	Cut the walls					
4 Beams and block flooring system	Cut by roofs 🛛 📈 No cutting 🗸 🗸					
	U-value: U-value: Not calculated 3D fixed Fill color on floorplan					
BIM Parameters 1 réteg vb föd 30 OK Cancel						

- In the appearing dialog window under "Beams in slab", activate "Create" option (5).
- Select rectangle profile by clicking on E-24 style. This is the current profile.
- In Edit Profile window click on select profile button and find rectangle.
- After selecting it, set the main beam parameters. The value "A" defines the distance between the beam ends and the slab. Here can be set that the beam ends should be at a certain distance from the slab or be exactly next to each other.
- "B" stands for the distance between beams. Now set this value 1,000 mm (6).
- "C" defines that height we can raise beams against the lower plane of the slab. Overwrite this value to 200 mm, this way the beam is placed under the 100 mm layer of the slab (7).

Bea	Beams and block flooring system ×							
Bea	ams in slab							
	Create 5							
	Rectar	ngle Simple		H				
А	0 mm	W 100 mm						
в	1000 mm 6	H 200 mm						
с	-200 7	<ul> <li>Use profile</li> </ul>		C C				
	Regenerate	○ Use object	Layer of framing 1. Layer(100 mm) $ \!$	Wood-pine				

- Now go back to Rectangle profile and overwrite parameters. Click on "Rectangle" label, then switch on "Uniform 3D scaling operation" (8).
- Now set the height 200 mm and width 100 mm (9).

Edit profile			x
			Rectangle Simple
			Mirror on X
			Mirror on Y
			Rotate
		8	Uniform 3D scaling operation
			Width:         Height:           100 mm         200 mm
Select Profile		Redraw	
Name	Value		
Height [ 1 - 100000 mm ] Width [ 1 - 100000 mm ]	200 100	9	
			10 ок Cancel

Finally set the material "Natural pine". •

Bea	3eams and block flooring system 🔹 🗴							
Bea	ims in slab							
$\checkmark$	Create						W	
	Recta	ngle S	imple				ИН	
Α	0 mm	W	100 mm					
в	1000 mm	н	200 mm					
С	-200		Ouse profile				C C	
	Regenerate		O Use object	Layer o	of framing 1. I	Layer(100 mm) 🗸	Wood-pine	

- Close the window and draw slab by using polylines. ٠
- Go to First floor and make the Ground floor visible by clicking on the light bulb icon. •



Go to Ribbon menu / Building / Slab and choose Slab in Sketch mode command. Draw around the slab by using polylines. ٠



- When you finished copy the gallery created on the first floor to the second floor. Now go to "Edit level". Click on the Copy
  objects to another floor. In the appearing dialog window select second floor and click on OK. Now the copying has
  finished.
- Finally modify the direction of the beams in Slab. Select the gallery and choose from the local menu Beams in Slab / Span direction.



Hold SHIFT button down and modify the direction by 90 degree. It is important to hold SHIFT key down, this will secure
that we could modify the direction along a straight line.





Now repeat this procedure on the second level.

# 5.3. Placing Spiral Stair

The next step we will place a Spiral stair, which will be the passage between the galleries.

- Activate the floor plan window.
- Go to Level 1. We will place the spiral stair where blue circle is on the floor plan, let's place the centre point here.



Go to Ribbon menu / Building / Stairs and select "N spiral" stairs from the list.



• Place it in the middle of the pre-drawn circle.





- Give the starting point of the handrail. Here it is very important the distance and direction. Therefore, we have to choose from the top right menu "Right" option. This way our reference point will be placed on the external radial line.
- Type the radius of the external circle which is 1100 mm, then hit Enter. Finally place the end point exactly onto the starting point.







# 5.3.1. Modify Spiral stairs properties

- When the stairs are placed modify its properties. Click on the stair, then select "pencil" icon.
- First activate "Take floor height" option. The previous value is updated to 3,000 mm.



- The values for step in and step-up haven't been updated.
- Now modify the number of steps to 18.





• The stair width to 1000 mm and the radius of the stairwell is 100 mm. This is how we got 1100 mm which had been used at the first time to place the stairs.

↑ <b>₽ŦŦŦ₽</b>	100 cm		R	10 cm		R R	110 cm
+		+			=		

• The difference between the starting and end point is 360°. This means that the stair runs along a whole circle.



• The last parameter helps to define the walk line. Along this line the program automatically calculates the values of tread and riser. The walk line of the spiral stair is not in the middle. This should be closer to the outer circle somewhere around the 2/3 of the total width. It means that the walk line will be 66 % away from the centre point and that way the tread will be wider outside.

		1
Ħ	66 %	

• Now close the window by pressing **OK** and changes will be applied.

This stair is concrete we like some lighter structure instead. On the other hand, we have to cut the slab and place railing. Let's edit its properties.

- First, we modify the visual presentation in 3D. Activate 3D window and change the viewpoint from where the stairs look good.
- Click on the stairs and check its properties.



- In order to make changes on the structure click on Support tab.
- Turn off "Waist slab" and switch on the "Support". This command refers to the support representation which follows the steps straight or the bottom edge of the steps.
- Sides of stairs are different, so we will place a column inside. Therefore, switch off the "Same on both side" option.

Stair and ramp					2
Preferences	Support				
Stair Calculator					^
Support	Ramp	Waist slab material		PANTONE S 41-8	
Step geometry Railing settings	Waist slab	Thickness	150 mm		
Representation on t	Construct the landing l	like a slab			
< >	✓ Tread	Material		Beech	
		Noising depth	20 mm		
		Tread thickness	40 mm		
	Riser board	Riser board material		Beech	
		Riser board thickness	20 mm		
	Support	Support material		Beech	
	Same on both sides				
		Left support type	None		~
		Left support width	40 mm		
		Height from tread top	40 mm		*
XAX	Connection to the upper	slab			
	A: 100 mm B: 100 mm	n		C: 300 mm	<b>V</b>
	Connection to the botto	m slab			
	A: 100 mm B: 100 mm	m D: 150 mm E: 2	00 mm	C: 300 mm	ľ ľ
BIM Parameters	Alapértelmezet	t 🖒 🖓		ОК	Cancel

Go further down, then select Sharp from The Right support type. Close the dialog by clicking on OK.



We still need to create the column in the middle, and ceiling cut, and railing.

## 5.3.2. Placing handrail

•

• Now go back to the stair properties and select Balustrade settings. We set the style on the right side to Steel profile.



Stair and ramp				x		
Preferences Stair Calculator	Railing settings					
···· Stair properties ···· Support	Style on left side		Regenerate			
Railing settings	Glass railing with frame	~				
Representation on t	Style on right side Steel profile	~	Regenerate			
< >						
XAX						
DIM Deservations	41	$\sim$	0%	Canad		
BIM Parameters	Alapertelmezett S		UK	Cancel		

- The railing is created but still not perfect. To modify further open its properties.
- First click on Primary Balustrade tab (1) and activate Clear spacing between items to 120 mm (2).
- Activate Adjust bottom of balustrades to stair and Adjust balustrades to a top profile (3), also select perpendicular ending condition on top and bottom (4).
- Close the dialog by clicking on OK.

Railing			x
	Increase or decrease the height of a	all balusters: Full regeneration using same distribution on all parts Regeneration by parts	Edit path segments
	Distribution of primary balusters betw	een balusters by big steps. May insert panels and bars here	Automatic refresh on page 📀 🗗
	Profile     Object		
	Width 20 mm	Uniform step     S >= S	
	i	O Fix step	a III A
		○ Fix step, centered	
		Maximum step value	
		Minimum step value     X     S*     S*     Y	
		Optimal step (nearest to given value)	
General settings		First baluster distance from post (X) 100 mm	
Balusters		Last baluster distance from post (Y) 100 mm	
Primary balusters	Profile from Library	Center to center spacing (S) 140 mm	
Intermediate balusters	Steel 2	Clear spacing between items (D)	
Panels and bars	Copy to baluster clipboard	Offset from path(>0:right) 0 mm	
	Paste from baluster dipboard	Base offset from the path (<0:down) 0 mm	
Newel posts at the turn	Adjust bottom of balustrades to	Elevation on top of profile 1000 mm	
3	Stair	Ending condition	
Balusters by big steps	Adjust balusters to a top profile	10p 4	
	Top profile	Bottom	
Handrail		1	
	Steel profile BIM	M Parameters	5 OK Cancel

### 5.3.3. Placing column

Now place a column in the middle of the spiral stair.

- On the floor plan go to the ground floor, make visible the first floor by clicking on the light bulb icon with the left mouse button.
- Go to Ribbon menu / Building and select Column.
- Place it into the middle of the circle and check its properties.

P Level 3	
👤 Level 2	
😧 Level 1	
🟹 Ground	
<	>
🛃 Ground	~



- Specify the value of the section profile. Change the column section profile. Click on Profile from library and select Circle and set the Radius to 200 mm and the Shell thickness is zero.
- Click on Ok to accept changes.

Edit profile			x
		Cirde	
		Mirror on X	
		Mirror on Y	
		Rotate	
		Uniform 3D scaling operation	
		Width:         Height:           200 mm         200 mm	
Select Profile	Redraw		
Name	Value		
Diameter [ 1 - 100000 mm ] Shell thickness [ 0 - 100000 mm ]	200 0		
		OK Cancel	

Its' material is "Steel", before closing the dialog window, we still have to modify the height of the column. In order to
calculate the correct height use "Edit Level" tool. Open Edit level dialog window, here you can see that the total height



from ground floor up to 2nd level is 6,000 mm. In addition, if the stair ends on the first floor, the handrail is needed here, therefore we have to add 1 000 mm. To be on the safe side, we use slightly higher value 7100 mm.

• Close the dialog by clicking on OK.

olumn								
				^				
		Visualization						
		Colour						
		Layer	31_Oszlop1	~				
		Line weights	0 mm	~				
/	$\backslash$	Line type	Simple Line	~				
/	\	Draw Order	8 - Bottom-most	~				
1		On which floors visible? (Excep	ot for its own floor)					
		All floors	Edit					
		Hatch	Hatch 38					
		Same materials	Same materials					
\ /		Solid material	Steel					
$\backslash$	/	Surface material	Steel					
$\backslash$		Constrains	Constrains					
		Base offset from the floor	0 mm	~				
		Height	7100	~				
		Angle of inclination	90°					
		Direction of inclination	0°					
		Insert into wall						
ofile	Circle	Make only hole in the wa	all					
Dee	Cla Cara Library	Make only hole in the slab						
Pro	nie from Library	Slab-roof cutting						
	Edit profile	Structural properties	Column	~				
idth•	Height:	\$ Other						
00 mm	200 mm	Cutou	t - Recess - Attachment					
	200 1111	2D not visible						
		Show 3D		~				
BI	M Parameters	No style	ОК	Cancel				
		no ocjie						

## 5.3.4. Cutting the slab

Finally, we cut the slab above the stair.

- Go to the first level.
- Click on the stair and select from the local menu "Cut slabs above stair" command.



• Now the cutting is done. Go to the next level, here you can see the result.



- Now let's modify the size of the cutting.
- Select the cutting line. Move your cursor over the selected area, and click when the cursor changes.
- From the appearing local menu use Modify arc command, type the value of 1400 mm.







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- Next click on this node and move it into the middle top point of the circle.
- We repeat these steps on outer circle as well and move it to the other point line.





## 5.3.5. Handrails along the slab cutting

We can create handrail in ARCHLine.XP individually, not just only by placing them on the edges of steps.

Now we create handrails following the line of the slab cutting.

- Activate the floor plan window, now the second floor is active.
- First go to Ribbon menu / Building / Properties / Railing and choose "Steel" from the library, then close the window by
  pressing "OK".

Railing		Styles
General settings Balusters Primary balusters Primary balusters Panels and bars Newel posts at the turn	Threese or decrease the height of all balusters:  Threese or decrease the height of all baluste	Classical balueters Column with sphere Glass railing with from 2 Glass railing with roots 2 - left Metal railing with roots 2 - left Metal railing with roots 2 - left Metal railing with roots 2 - left Steed profile Wooden pale
Balusters by big steps		New
Handrail		Activate Modify
	Steel profile BIM Parameters OK Cancel	Rename Delete

- Place the railing. Go to Ribbon menu / Building / Railing and draw the railing by using polylines.
- After placing the first two points (1,2) choose from the top right menu Arc option (3). Place the third point too (4), and pull the arc to the proper place.







- When you finished the drawing, close the command by hitting OK twice.
- This handrail is still not perfect we have to set those properties we have done before.
- First click on Primary Balustrade tab (1)
- Activate Clear spacing between items to 120 mm (2).
- Activate Adjust bottom of balustrades to stair and Adjust balustrades to a top profile (3).
- Select perpendicular Ending condition on top and bottom (4).
- Furthermore, we also have to adjust the Offset from path to 30 mm (5), also change this value to the 30 mm under Handrails tab (6).
- Close the dialog by clicking on OK.







If like to apply the same material on the gallery and stairs too, change it under the Stairs properties to "Natural pine".

# 5.4. Handrail on gallery

Let's create a separate railing on the gallery.

- The floor plan window is active. Go to level 1.
- Go to Ribbon menu / Building / Railing, now draw a line following the outer side of the gallery.



• When you finished press Entre twice.



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• The railing is finished.

## 5.4.1. Modify the style of the handrail

- Modify the style of the handrail.
- Select the ready railing and open its' properties
- Click on the name of style Steel profile in the appearing dialog window below, this opens the library.

Railing		×
	Increase or decrease the height of all balusters:  Mathematical methods and the second distribution on all parts  Mathematical methods and the second distribution of the second distr	Edit path segments
		Automatic refresh on page
	🚍 Railing V RC 8 - Bottom-most V	
	Simple Line	
	Representation by centerline	
	Dimension path on layout	
General settings	Elevation of handrail reference point from the floor or 0 m	
Balusters		
Primary balusters		
Intermediate balusters		
Panels and bars		
Newel posts at the turn		
Balusters by big steps		
Handrail		
	Steel profile BIM Parameters	OK Cancel

• Now select GALLERY\_RAILING style.



- Close the dialog by pressing OK, now the railing is modified.
- Repeat these changes on the gallery on the second floor. In Edit level dialog window copy the previously created railing.





Draw the railing to the staircase, by using GALLERY style. Choose Ribbon menu / Building / Railing command.



# 5.5. Customized Handrail

Now we will create a new handrail style which will be used on the gallery. This way you can learn the basic steps of creating customised handrails.

• First, go to Ribbon menu / Building / Properties and click on Railing. In the appearing dialog window select handrail styles. For that click on the name of the previously used handrail style, now the list of the styles will pop up on the right side. Double click on the Steel style, now it is activated and it will serve as the base of the new handrail style.

Railing		2	Styles ×
	Increase or decrease the height of all balusters:  Omm  Raling  Simple Line  Representation by centerline  Dimension path on layout	Automatic refresh on page 💽 🕑	Classical balusters Column with sphere 2 Column with sphere 2 Golars railing with frame Metal railing with rods 1 Metal railing with rods 2 - Infit Metal railings with rods 2 - Infit Metal railings with glass Metal railings with glass
General settings	Elevation of handrail reference point from the floor or 0 mm from the selected stair	IIIIIIIII	
Balusters			
Primary balusters	Balusters		
Intermediate balusters	Overhang at start: 0 mm		
Panels and bars	Overhang at end: 0 mm	Three starting	
Newel posts at the turn	Eliminate gaps on handrail less than:		
Balusters by big steps			New
Handrail			Activate Modify
	Steel profile BIM Parameters	OK Cancel	Rename Delete

- Now click on the Primary Balustrade option (1) and set the followings.
- Set the distance from the first and last post to nil. (2).
- Set "Center to center spacing" 1200 mm (3).

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• Now select the rectangle column profile from "Profile from Library", then change the values of height and width to 20 mm.

Railing					x
	Increase or decrease the height of O mm Distribution of primary balasters bet	all balusters: ween balusters by big steps. May insert panel	s and bars here		
	Profile     Object				
	Width 20 mm	Uniform step	S >= S*		
		Fix step     Fix step			
		Maximum step value			
		Minimum step value	S* Y		
		Optimal step (nearest to given value)			
General settings		First baluster distance from post (X) 2	0 mm		
Primary balusters	Profile from Library	Last baluster distance from post (Y)	0 mm		
	Steel	• Center to center spacing (S) 3	1200 mm	I I I	
Intermediate balusters		Clear spacing between items (D)	0.00	· ·	
Panels and bars	Copy to baluster clipboard	Offset from path(>0:right)	0 mm		
Newel posts at the turn	Paste from baluster dipboard	Base offset from the path (<0:down)	1000 mm		
	Adjust bottom of balustrades to stair	Ending condition			
	Adjust balusters to a top profile	Тор			
Balusters by big steps		Bottom			
Handrail	Top prome				
	Steel profile B	IM Parameters		ОК	Cancel

- Activate "Newel posts at the turn" and then click on it (1).
- Change the profile to rectangle like the previous way (2), then set the material to "Steel" (3).
- Change the value of the first and the last balusters to -10 mm (4).
- The Offset from path is 10 mm (5).
- The base offset from the path is 100 mm (6).

Railing					×
	Increase or decrease the height of mm Ratestee on podes of path segments	all balusters:			
	Baldsters of hodes of path segments	, 		Automatic refresh on page	€ ∎
	Profile     Object     Width 20 mm	C Empty space			
General settings		First baluster distance from the beginning	-10 mm		
Balusters	4	Last baluster distance from the end of path	-10 mm		
Primary balusters	2 Profile from Library				
Intermediate balusters	Steel 3			· · ·	
Panels and bars	Copy to baluster dipboard	Offset from path(>0:right)	0 mm		
	Paste from baluster dipboard	Base offset from the path (<0:down) 5	10 mm		
Newel posts at the turn	Adjust bottom of balustrades to	Baluster height 6	1000 mm		
Balusters by big steps	stair	Тор			
		Bottom			
Handrail					
	Steel profile BI	M Parameters		OK	Cancel

• Now click on Handrail tab (1). There is only one handrail and its profile are circle by default. Add another one by clicking on "Insert new" button, then modify the diameter to 20 mm by clicking on the circle profile. Close the dialog by pressing "OK" and change the material to steel.



Add/remove handrail

Automatic refresh on page	2
General settings     Move up     2 Insert new     Plane of profile perpendicular to path or overtical       Balusters     Move down     Delete     Image: Setting	1
Intermediate balusters     Offset from path(>0:right)     0 mm       Panels and bars     Invisible	1
Newel posts at the turn     Elevate by general increasing/decreasing of       Exchange endings       Bottom (start) ending	
Balusters by big steps	

- Click on "Insert new" add three more, this way you will add three handrails with the previous settings.
- Now modify Shift vertical values as per followings:
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- 2<sup>nd</sup> handrail value: 800 mm.
   3<sup>rd</sup> handrail value 600 mm.
- 4<sup>th</sup> handrail value 400 mm.
- 5<sup>th</sup> handrail value 200 mm.
- 2 Circle 800 mm 0 mm 0 mm 3 Circle 600 mm 0 mm 0 mm 4 Circle 400 mm 0 mm 0 mm Circle 200 mm 0 mm 0 mm

x

P....

P....

P....

• Finally modify the profile of the first handrail to rectangle. Change the height to 20 mm and width to 50 mm

(2), move the reference point to the centre with a single click (3).

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idit profile			×
4	1		Rectangle Simple
3			Mirror on X
12			Mirror on Y
		T	Rotate
			Uniform 3D scaling operation
tj		d	Width: Height:
			0.05 m 0.02 m
Select Profile		Redraw	
Name	Value		
Height [ 0.001 - 100 m ] Width [ 0.001 - 100 m ]	0,02	2	
maar[oloo1 100m]	0.00	] _	

 The handrail is finished and save it as a new style. Bring up the style library and click on "New" and give a name to the new style. Click on "Activate", the close the window by pressing "OK".

New name of style	
Classical balusters	~
Folder	
	~
Subfolder	
	×
Folder and subfolder specification is no If you specify these, the given style na	vt mandatory. ame will automatically fit into the hierarchy.

Check the result. Place the handrail by using Ribbon menu / Building / Railing / Railing. Later this style can be used any time.

## 5.6. Customised stairs

We will create customised stairs which is leading from the ground floor to the first-floor gallery.

Activate the floor plan window. Go to the first floor. On the area marked by blue we will place stairs. Now you have to draw it step by step, then the program will automatically put together the model of the stairs.

/	
Classical balusters Column with sphere Column with sphere GALLERY_RAILING Glass railing with fra Metal railing with ro Metal railing with ro Metal railing with ro Metal railings with g Steel profile Wooden pale	e 2 2 ame ids 1 ids 2 - left ids 2 - right Jlass
New	
Activate	Modify
Rename	Delete

• Go to Ribbon menu / Building and choose Stair by treads commands.



- From the appearing floating menu Choose "Internal point of chain" tool. As you can see the cursor shape has changed, move it over the lowest stair, and click on every step one by one, preferably in one line.
- After the first click, the program will ask for the height of steps. This should be 150 mm and if it is necessary, we can modify it later.



• When finished, close the command with double Enter.

✓ Stair by treads
Rectangle
Polygon
Previous reference point
Internal point of chain
Chain one by one
Close



If you switch to 3D view, you can see that the top of the stair does not reach the correct height. We want that the top step to be at the same height as the first-floor level. Please do the followings:

- Click on the stair and look at the properties.
- The User defined stairs dialog window appears. Here we can find the general properties, now let's go to Step Geometry tab. (1). In the preview window you can see all steps were created individually. At the bottom of the window you can set the New Height of stair, now change it to 3,000 mm (2). Click on Apply (3), then the program will automatically re calculate the rise of stairs.
- Click on OK to close the window

User defined stairs					
Preferences	Modify inc	lividual step geome	etre		
- Stair properties		<b>&gt;</b>			
Support	Step Nr.	Rise (including t	Tread thickness		^
Step geometry	1	16.666667 cm	4 cm	The step is a landing	
	2	16.666667 cm	4 cm	The step is a landing	
Representation on a	3	16.666667 cm	4 cm	The step is a landing	
	4	16.666667 cm	4 cm	The step is a landing	
	5	16.666667 cm	4 cm	The step is a landing	
	6	16.666667 cm	4 cm	The step is a landing	
	7	16.666667 cm	4 cm	The step is a landing	
	8	16.666667 cm	4 cm	The step is a landing	
	9	16.666667 cm	4 cm	The step is a landing	
	10	16.666667 cm	4 cm	The step is a landing	
	11	16.666667 cm	4 cm	The step is a landing	
	12	16.666667 cm	4 cm	The step is a landing	
	13	16.666667 cm	4 cm	The step is a landing	
	14	16.666667 cm	4 cm	The step is a landing	
	15	16.666667 cm	4 cm	The step is a landing	
	16	16.666667 cm	4 cm	The step is a landing	
			*	·	
	The heigh	t of stair			
			2 New height of	stair: 3000 mm 3	Apply
BIM Parameters		Alapértelmezett		ОК	Cancel

Modify the material of the tread.

- Select the stairs, and open its properties.
- Click on Support tab.
- Under "Cut the walls" select All floors option.
- Now set Tread properties, select material Natural pine and set tread thickness to 40 mm.
- Now activate Riser board option, set its material Natural pine.



### • Close the dialog by pressing OK.

User defined stairs					×
Preferences	Support				
- Support		0			^
··· Railing settings	Dievation 3D creation	U mm			
····· Representation on t	Cut the walls	All floors 🗸 🗸			
	Ramp	Waist slab material	PANT	ONE S 41-8	
	☑ Waist slab	Thickness	150 mm		
	Construct the landing	like a slab			
	Tread	Material Neising depth	20 mm	ood-pine	
		Tread thickness	40 mm		
	Riser board	Riser board material	W	ood-pine	
		Riser board thickness	20 mm		
	Support	Support material		Beech	
	Same on both sides				*
	Connection to the uppe	r slab			
	A: 100 mm B: 100 m	m	C: 300 mr	• –	Ť Ť
	Connection to the botto	om slab			
	A: 100 mm B: 100 m	m D: 150 mm E: 2	00 mm C: 300 mm	n	
BIM Parameters	Alapértelmeze	tt		ОК	Cancel

## 5.6.1. Handrail on stairs

Now create the same handrail to this stair which can be found on the gallery. First modify the handrail of the gallery complying with step up.

- Activate the floor plan window. Move to the first floor.
- Make visible the ground floor.

_	
💡 Level 3	
💡 Level 2	
🗸 Level 1	
Ground	
<	)
	~

- Select railing, by using "move node" command place the railing line to the right place.
- Close the command.


Now simply place handrail on the stairs:

• On the Ground Floor go to Ribbon menu / Building / Railing and choose "Create railing on stair" command, now click on the stairs.

Buil	ding		Interior	Drafting [			
	Railir	T	ہے۔ Stair	Ramp Boundary Stair by treads			
	m	F	Railing				
	ΠT	0	Create Railing On Stair				
	/	Edit railing layout					

The railing is placed now.

- Open railing properties. Click on "Primary balusters", and active "Adjust bottom of balusters to stair" option. Then select
  perpendicular "Ending condition".
- Activate "Newel posts at turn" and activate "Adjust bottom of balusters to stair" option.
- Close the window by pressing OK.



Railing			×
	Increase or decrease the height of	all balusters: Full regeneration using same distribution on all parts	Edit path segments
	0 m	Regeneration by parts	< > 1/1 part ~
	Distribution of primary balusters bet	ween balusters by big steps. May insert panels and b	bars here 🛛 Automatic refresh on page 🛛 🕑 🟉
	Profile     Object		
	Width 0.02 m	Uniform step	S >= S*
*		Fix step Fix step, centered Maximum step value	
		Minimum step value	
General settings		First baluster distance from post (X) 0 m	
Balusters		Last baluster distance from post (Y) 0 m	
Primary balusters	Profile from Library	Center to center spacing (S)	m
Intermediate balusters	Steel	O Clear spacing between items (D)	B m
Panels and bars	Copy to baluster clipboard	Offset from path(>0:right) 0 m	
	Paste from baluster dipboard	Base offset from the path (<0:down) 0 m	
C Newei posts at the turn	Adjust bottom of balustrades to stair	Baluster height 0.98 Ending condition	Bm
Balusters by big steps	Adjust balusters to a top profile	Тор	
Handrail	Top profile	Bottom	
	Egyedi korlát Bi	IM Parameters	OK Cancel

• Finally select the handrail on the floor plan, use Offset to pull it closer to stairs by 50 mm.

### 5.6.2. Place wall along the stairs

Now we will place a wall under the customised stairs, this area now can be built-in.

Please do the followings:

- The floor plan window is active. Go to Ground floor, where the customized stairs can be found.
- Modify this stair to a lightweight structure stair.
- Select stairs and open its properties.
- Select Support tab and switch off "Waist slab" option.
- Close the dialog by pressing "OK".
- Go to Ribbon menu / Building / Properties / Wall.

													<u> </u>	
	File	D 6			$\mathbf{O}$	XO	🗂 🍼	1 🗙 🚥	47.	A +?	≠ Edit	Vie	ew Buil	lding
				Cor	nection 🝷				0			ト		m
	Properties	Wall	Ø	Edit	*	Door	Window	Curtain wall	Column	Beam	Slab	Roof	Ceiling	Railin
	F77						Openi	ng			Structure	÷		
I	Wall					<b>p</b> ×								
	Doo	r		Ŧ		Q,	1							

• Modify the total thickness to 100 mm and change the colour to orange.

Wall			x			
General properties			× •			
0.3 mm ~	줄 11_Fal1 🗸 🗸	Finish Face: Interior	Deep_orange			
Simple Lin <del>e</del>	🕫 8 - Bottom-most 🗸 🗸	Finish Face: Exterior	Deep_orange			
		<b>.</b>	Brick3			
Unconnected Height	2700 mm 🗸	Slant angle	90°			
Top offset from the floor top level (	> 0: Up) 0 mm	Structural wall	Non-bearing wall $\sim$			
Base offset from the floor	0 mm ~	Wall status	New ~			
Total thickness:	100 mm	Location line	Finish Face: Interior $~~$			
Edit Compound	d Walls					
		Inclined wall section height	1000 mm			
		Wall Framing				
	_	U-value: 5.20 W/(m2*K)				
		Skip this wall over room bour	nding			
Preview	2D view $\checkmark$					
Axis line attributes						
Attributes of the Finish Face: Interior	/		▲ <b>▼</b>			
► Visibility of sides			A •			
BIM Parameters	No style		OK Cancel			

- Draw a wall along the outer line of the customised stairs. The wall reference line is this outer line. You can change this in the appearing right floating menu. Click on right side option.
- The wall under the stairs is ready.

# 5.7. Floating stair with steel support

In the program, it is possible to create different stair types. We will now see an example of these. Let's suppose there is a cloakroom at the entrance in place of the present U-shaped staircase, and a steel-structured staircase leads upstairs along the wall.

#### 5.7.1. New stair

- In the Layer manager place the already existing stair to a new layer.
- Open the Layer manager dialog and create a new layer. Name them "Stair01" and "Stair02"."



Layer Properties Management										x
The name of curi	rent lay	/er: 41_	Stair 1							Show visible layers only
Name	On	Lock	Pr	Elem	с	Line-type	Line-w	Description	^	Filters
00 Laver 0	0	<u>-</u>	4	156		Simple Line	0 mm			
01 Other 1	ě	Ä	Ā	0	=	Simple Line	0 mm			🖃 All layers
✓ 02	ē.	8	Ā	0		Simple Line	0 mm			····· Used layers
02 Other2	<u> </u>	8	ā	0		Simple Line	0 mm			
03_Other3	9	8	ā	0		Simple Line	0 mm			
04_Other4	9	8	8	0		Simple Line	0 mm			
05_Other 5	9	8	9	0		Simple Line	0 mm			1
06_Other6	9	8	9	0		Simple Line	0 mm			
07_Other7	9	<u> </u>	9	0		Simple Line	0 mm			
08_Background	9	<u> </u>	8	0		Simple Line	0 mm			
09_Room stamp	8	<u> </u>	9	0		Simple Line	0 mm			
🧼 10_Area	9	<u> </u>	9	0		Simple Line	0 mm			Layer filter restricts the layers displayed in the
🧼 11_Wall1	<b>?</b>	<u> </u>	9	362		Simple Line	0 mm			Layer list to the selected layers. Drag and drop the selected layers onto the layer filter
✓ 12_Wall2	8	<u> </u>	9	0		Simple Line	0 mm			
🧼 15_Wall5	8	<u> </u>	9	0		Simple Line	0 mm			Variations
16_Wall6	9	<u> </u>	9	0		Simple Line	0 mm			
17_Wall7	9		ė	0		Simple Line	0 mm			
18_Wall8	9		ė	0		Simple Line	0 mm			
19_Wall9	¥.			0		Simple Line	0 mm			Andyera
20_Wall10	Y	Ë,		0		Simple Line	0 mm			
21_Slab1	¥.	<u>,</u>	e	45		Simple Line	0 mm			
22_Slab2	Ţ.			0	_	Simple Line	0 mm			
23_Slab3	¥.			0	=	Simple Line	0 mm			
24_Slab4	¥.			0	_	Simple Line	0 mm			
	ă.			0		Simple Line	0 mm	_1		
20_SIAD0	×.		a a a a a a a a a a a a a a a a a a a	0		Simple Line	llo mm	<b>•</b>		
~ 2/_3ldD/	v e		a A	0		Simple Line	0 mm			A layer variation saves all the layers with the
20_5iabo	e i		di a	0	=	Simple Line	0 mm			current states. It helps switching between
29_51809	¥		Ē	0		Simple Line	Umm		~	possible layer variations in one step.
								/		
Do not delete used layers		$\sim$	Copy	to clipboar	d 🗌	Protocol for La	ayer Namir	g		OK Cancel
🧼 87 Line		0		r e	2	62	s	imple Line	0 m	m
and a circle		ŏ		r A	2	1		imple Line	0 m	m
<pre>line</pre>					2 7	406		imple Line	0 m	m
Chair 01		Å	6		2 2	276		imple Line	0	
Star 01		The second secon	C		99 7	2/6	5	imple Line	U n	m
🥟 Stair 02				r e	9	315	5	imple Line	0 m	m

• Place the U stair and its railing to the layer "Stair01". Place the previously created 1<sup>st</sup> gallery railing to this layer as well.





• Turn off this layer by activating the Layer walk dialog and CTRL + click on the "Stair01" layer.



• Select the Ribbon Bar / Building / Stair / Straight run type, the click on the Reference option on the Status bar below.



• Select the outer wall corner of the cloak room as reference and drag the cursor down 4500 mm. Select the inner cornerpoint of the cloak room as the endpoint of the stair.





• Modify the properties of the stair: tick the Take the floor height option, change the number of steps (n) to 17, and set the width to 130 cm.

Stair		×
Preferences 	Step properties	Regenerate     Take the floor height   Min   Max   60 cm   64 cm   26 cm   37 cm   30 cm   31 cm   31 cm   31 cm   32 cm
BIM Parameters	Normál lépcső 🛛 🖌 🔪	Cancel OK

The following stair will appear in the 3D window:



## 5.7.2. Selecting the stair support

Many different stair support can be created. These can be accessed from the Ribbon bar / Building / Stair / Convert to floating stair. The stair supports listed here are integrated into the program and you can activate them with just one click on the stair.



• Select the Middle stringer stair support – Basic style, the click on the stair boundary on the floor plan.

Left stringer stair support - Cantilever
Left stringer stair support - Simple
Left stringer stair support - Simple L
Middle stringer stair support - Basic
Middle stringer stair support - Simple L
Middle stringer stair support - Simple T
Right stringer stair support - Simple
Right stringer stair support - Simple L



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• Let's try another stair support style: select the Left stringer stair support – simple L and click on the left side of the stair on the floor plan. Then select the Right stringer stair support – simple L and click on the right side of the stair.



• Finally select the Right stringer stair support – Cantilever from the list. Click on the right side of the stair, then hit Enter. Delete the remaining left stair support from the drawing.



#### Editing the stair support

Upon entering the properties of the stair support, the editable parameters of the stringer beam and the tread support appear. With these options the whole stair support can be customized.

Stair stringer		x
	Select an object that includes tread plate and plate riser wedges from library to support tread cover. On the Stringer Beam tab, select a profile (railing) that will follow the staircase layout.	
	Automatic refresh on p	oage 📀 🗗
	Index Profile Shift verbcal Overhang at st Overhang at end: 1	
General settings		
Stringer beam		
_	Plane of profile perpendicular to path or	
✓ Tread support	vertical O	
BIM Parameters	Shift vertical along landings     0 mm       Offset from path(>0:right)     0 mm       Material     Steel       Exchange endings       Bottom (start) ending     Horizontal ending       Top (other) ending     Vertical ending	
ldali lépcsőtámasz - konzol	ОК	Cancel

## 5.7.3. Creating a glass railing

 To create the railing of the stair select the Ribbon Bar / Building / Railing option and click with right mouse button, and select the Properties option.



• In the appearing dialog click on the name of the railing, then click on the Steel profile style on the right.

Railing		2	Styles X
	Increase or decrease the height of all balusters:  Omm  Omm  Omm  Omm  Omm	Automatic refresh on page	Acryle railing 
	Image: state		Metal railing with rods 2 - left Metal railing with rods 2 - right Metal railings with glass Metal railings with glass - left Metal railings with glass - right Statieves start live . left
General settings	Representation by centerline		Stainless Steel Tube - right
Handrail	Unify sections smaller than the specified size: 0 mm	111	Steel profile - left
Balusters	Elevation of handrail reference point from the floor or from the 0 mm		Total glass - left
Primary balusters	selected stair		Wooden pale
Intermediate balusters	Distribution of balusters by stair steps		
Panels and bars	Overhang at start: 0 mm		2
Newel posts at the turn	Overhang at end: 0 mm		
Balusters by big steps			New
BIM Parameters			Activate Modify
Steel profile		OK Cancel	Rename Delete

There are many ways to create a railing. We will now see an easy example.

• Turn off the Primary balusters and on the Handrail tab add another handrail element with the Insert new button. We will convert this to a glass plate. Click on the profile in the new row.





• In the appearing dialog click on the Select profile button and select the Rectangle profile from the library, then hit OK.



• Set the profile width to 6 mm and its height to 1200 mm, then hit OK.



• Set the vertical shift of the profile to -200 mm, then modify its material to "Glass26".



- Select the handrail in the first row with the circle cross-section and set its vertical shift to 950 mm, and its offset from path to 50 mm.
- Open the library by clicking on the button in the lower left corner, then click on the New button and name the railing as "Acrylic railing".



Add/remove handrail			Stules
	Increase or decrease the height of all balusters; 0 mm		Styles z . New name of style Acrylc rolling / Folder
	Index         Profile         Shift vertical         Overhang at st         Overhang at st         Overhang at st         T           Image: Circle         950         0 mm         0 mm         Image: Circle         950         0 mm         Image: Circle         950         0 mm         Image: Circle         0 mm         Image: Circle         950         0 mm         Image: Circle         0 mm	Automatic r	Subfolder
General settings			Scope Ovaliable in this project only Ovaliable in all projects
Balusters Primary balusters Intermediate balusters	Move up Insert new Plane of profile perpendicular to path or Move down Delete vertical		UK Lance
Panels and bars Newel posts at the turn	Offset from path (- Osright)         50           Material         Beech           Drivible         Drivible		
Balusters by big steps BIM Parameters	Event of y center and ceasing/sect ceasing vicin.           Exchange endings           Bottom (start) ending           Yertical ending           Top (other) ending           Vertical ending		New Activate Modify
Steel profile		OK	Cancel Rename Delete

• Select the stair on the floor plan and select its properties. In the dialog, on the Railing tab, tick the Railing automatically added to the left side option. Select the "Acrylic railing" from the drop down list, then hit OK.

Stair				x
Preferences	Railing settings			
Stair Calculator				
- General properties				
Support	Railing automatically added to left side		Regenerate	
	Acrylic railing	~		
Representation on t	Railing automatically added to right side		Regenerate	
	Glass railing with frame	~		
BIM Parameters	Normál lépcső	n ca 🛛	OK	Cancel

• The railing automatically appear in the 3D window as well.



• Put the recently created railing and stair and the 2<sup>nd</sup> gallery railing to the "Stair02" layer.



In the Layer manager you can switch between "Stair01" and "Stair02" versions. This way you can easily and quckly activate different versions.

The end result using the "Stair01" layer:



The end result using the "Stair02" layer:



Finally switch on Object layer from the used layers in the Layer properties management and display the entire project including furnishing.

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Workshop 6: Designing roofs



# 6. Workshop: Designing roofs

This workshop guides you through how to design a roof.

- Settings, creating styles
- Roof plane with three points
- Automatic roof
- Extruded roof
- Roof slab
- Roof window, customized window, curtain wall

## 6.1. Open and save project

#### Start

- Open the following project:
  - ...\ARCHlineXP Draw\2020\Course\_Intermediate\6\_Roof\01\_Roof\_START.pro

#### Save project

- Before you start working on the project, save it under a new name.
- Select File / Save project as... command and rename the project, then select the folder you want to save it.

## 6.2. Settings and creating styles

The roof is one of the most complex architectural design elements. As it has loads of fine details that goes beyond simple roof plane representation, which can be sufficient for a conceptual design plan.

Let's see how we can achieve that all details are visible and also how we can design a simple roof with roof planes for a conceptual plan.

### 6.2.1. Roof - settings

First let's check the roof properties:

• Go to Ribbon menu / Building / Roof tool and right-click on it. From the pop-up menu choose Property command.



Now the "Automatic roof" dialog window will come up.

Automatic roof		×		
⊬_L-₩₩7	General properties	< > Plane: 1 of 4		
General Properties	Simple Line       Image: Simple Line         Materials         Image: Pine_natural         I			
Eaves purlin     Middle purlin (1/1)     Rafter (1/1)     Collar beam (1/1) (Rafter:1)     Ridge beard	F         3.15 m           F         3.49 m           G         3.42 m           Base offset         8.7 m			
Roge board     Batten (1/1)  Roof tiles  Projections and cut Layers and geometry	Show Four layers in 3D (main switch) Show Battens in 3D (main switch) Show beams 2D representation (main sv			
Pitch and shape Information		Delete and rebuild all rafters and purlins Delete and rebuild all battens Redistribute tiles		
BIM Parameters	tetõ1	OK Cancel		

This property window has three sections. On the left side we can choose from the main property categories which can be modified in small details. The middle section shows all details of the selected main category. Finally, there is a "preview" window on the right side, here we can check the result of all modification. Clicking on the "3D preview mode" icon we can set other 3D representation mode.

- Select "Textured" view.
- We are currently on General Properties within the Main Categories. Now change the finely detailed 3D representation to much simpler one. That means to turn off other options under "Visible in 3 D" and leave on "Show roof layers in 3D".

	×
< > Plane: 1 of 4	Site
Update	No preview
	Wireframe
	Hidden line removal
	Textured
	Consistent colour
	-

Automatic roof				×
Automatic roof	General properties           General properties           Image: Simple Line           Materials           Image: Pine_natural           Image: Pine_natural           Image: Pine_natural           Reference point for roof elevation	51_Tetõ1 ~ 8 - Bottom-m ~	< > Plane: 1 of 4 Update	
General Properties  Eaves purlin  Middle purlin (1/1)  Rafter (1/1)	A         3.12 m         Eaves overham           B         Theoretic wall to           C         2.7 m           D         2.97 m           E         3.15 m           F         3.49 m           G         3.42 m	g (L) 0.5 m width 0.38 m		
Collar beam (1/1) (Rafter:1) Ridge board Batten (1/1) Roof tiles Projections and cut Layers and geometry	Visible in 3D Show roof layers in 3D 3D fixe Roof layers Show rafter/purlin structure in 3D (main swith Show Battens in 3D (main switch) Show beams 2D representation (main sw	d ch)		
Pitch and shape Information BIM Parameters	tető1		Delete and rebuild all rafters and p Delete and rebuild all battens Redistribute tiles OK	ourlins s Cancel

- At the bottom can be found the "Visible in 3D" settings, first turn off "Show beams 2D representation" main switch.
- For the simplest representation "Show Battens in 3D" and "Show rafter / purlin structure in 3D" main switches should be also turned off. (If this is an architectural plan and these will be needed later then come back here and turn them on)
- In this example we don't need "Roof layers" so let's turn it off.
- In order to see changes, click on "Update" button above the preview window.
- Now change the roof material. Currently it is "Pine\_natural" on side plane and bottom plane. Click on the name and set "Cream\_01".
- Change the material on the bottom plane as well.
- When you finished update the preview, press "Update" button. The changes immediately can be seen.

	General properties  General properties  O mm  Simple Line  Materials  Cream_01  Cream_01  Reference point for roof elevatie  A 3.12 m B	on Eaves overhang (L) 0.5 m Theoretic wall width 0.38 m	< > Plane: 1 of 4	
General Properties	● C 2.7 m			
Eaves purlin	OD 2.97 m			
Middle purlin (1/1)	OE 3.15 m			
Rafter (1/1)	OF 3.49 m	Page offerst 9.7 m		
	⊖G 3.42 m	Base onset 8.7 m		
Collar beam (1/1) (Rafter:1)	Visible in 3D			
✓ Ridge board	Show roof layers in 3D	3D fixed		
Batten (1/1)	Roof layers			
Roof tiles	Show rafter/purlin structure	e in 3D (main switch)		
Projections and cut	Show Battens in 3D (main s	switch)		
Layers and geometry	Show beams 2D representa	ation (main sv		
Pitch and shape			Delete and rebuild all rafters and	purlins
Information		Delete and rebuild all batter	IS	
			Redistribute tiles	
BIM Parameters	tetõ1		ОК	Cancel



×

- On the left side click on the "Roof tiles", here can be set the material and the type of the roof tiles.
- Detailed roof tiling is not needed now, as we are preparing the interior design plan so turn off "Ridge" and "Valley" options.
  Updating the preview, the "Ridge" has disappeared. (Valley wasn't on the original model.) Now there is only a simple
- connection line between two planes.



- Now click on the "**Projections and cut**" category. Here you can set where the roof cut the different walls. It can be set to cut or not, depending on which level was the wall created and connects to the roof. You can determine depending on which level you created the wall which connects to the roof to cut it or not.
- Select "All floors", so anywhere walls are coming from those will be chopped by the bottom of roof plane by all means.
- The next setting is to make visible the roof not just on that level it was originally created, but furthermore on the level above or below. You can also set the line type.
- Now turn off both options, so now the roof line can be seen where it was originally created.

Automatic roof						×
Automatic roof	Cut No cutting Cut No cutting No cutti	Distance of cutting surface from bottom surface of roof (> 0: upside) 0 m	< >	Plane: 1 of 4 Update	purlins	
Pitch and shape Information			Del	ete and rebuild all rafters and Delete and rebuild all batter	purlins	
				Redistribute tiles		
BIM Parameters	tetõ1			ОК	Canc	el

- Now let's go back to **General Properties** and see through Roof elevation and reference points settings. There are several values from A to G, the diagram on the left side can help to interpret them.
- In this example we have to define "A" representing the wall knee height.
- Activate "A" and enter 1 m. Then set the "Eaves overhang" to 0.
- It is recommended to set the "Theoretic wall width" to the same value as the wall width on the original plan. If there is a difference the software alters the interior structure of the roof differently. Now it is 380 mm, this should not be changed.

Automatic roof		×	
	General properties	< > Plane: 1 of 4	
⊬L₩W	0 mm v 51_Tető1 v	Update	
	Simple Line 8 - Bottom-m V		
	Materials		
	Cream_01		
	Cream_01		
	Reference point for roof elevation		
	A 1 m Eaves overhang (L) 0 m		
	B Theoretic wall width 0.38 m		
General Properties	OC 1.03 m		
	OD 1.3 m		
	OE 1.03 m		
Middle purlin (1/1)	OF 1.38 m		
Rafter (1/1)	G 1.3 m Base offset 7 m		
Collar beam (1/1) (Rafter:1)	Visible in 3D		
✓ Ridge board	Show roof layers in 3D 3D fixed		
✓ Batten (1/1)	Roof layers	1	
Roof tiles	Show rafter/purlin structure in 3D (main switch)		
Projections and cut	Show Battens in 3D (main switch)		
Lavers and geometry	Show beams 2D representation (main sv		
Dist and share		Parlate and askedd all an fear and a solid an	
Pitch and shape		Delete and rebuild all rafters and purlins	
Information		Delete and rebuild all battens	
		Redistribute tiles	
BIM Parameters	tetõ1	OK Cancel	

We customized the settings.



#### 6.2.2. Creating styles

We finished with modification of the roof properties, let's save it as a new style.

There is a button to do so at the bottom of the dialog window with the currently used style name on it.

Automatic roof		× (	Styles ×
General Properties         Eaves purin         Middle purin (1/1)         Rafter (1/1)         Collar beam (1/1) (Rafter:1)         Ridge board         Batten (1/1)         Roof tiles         Projections and cut         Lowers and acometry	General properties         Image: Simple Line         Simple Line         Simple Line         Image: Simple L	< > Plane: 1 of §  Update Update	Complex roof with tiling layer only Simple roof Steel Roofing 900 Ventilated roof roof1
Pitch and shape		Delete and rebuild all rafters and purlins	
Information		Delete and rebuild all battens	New
BIM Parameters		Redistribute tiles	Activate Modify
roof1		OK Cancel	Rename Delete

- Click on "roof1", then the list of styles will appear on the right side. Here are those styles which can be used after installing the software.
- Now save it as a new style under the list. Click on "New" button.
- Enter the name of the new style "Roof\_Interior", then press "OK".

	×	Styles		
< > Plane: 1 of 4 Update		Complex roof with	n tiling layer only	
	Styles			
	New name of style Roof_Interior Folder			~
	Subfolder			~
				$\sim$
	Folder and subfold If you specify these	ler specification is not man e, the given style name wil	datory. automatically fit into the hier OK	archy. Cancel
	74			
Delete and rebuild all rafters and	purlins			
Delete and rebuild all batten	s	New		
Redistribute tiles		Activate	Modify	
ОК	Cancel	Rename	Delete	

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• From now on the newly created style is active. This is indicated by the name of the style button on the bottom toolbar. You can continue to work with this new style settings until another one is activated.

Roof interior	
Kool_interior	

B New style can be activated by clicking on the selected style, then you choose "Activate" command at the bottom.

• Now the "Roof\_Interior" style should be active, close the dialog by pressing "OK".

Using this style, we are going to create a new roof structure.

## 6.3. Creating roof plane with 3 points

In the first example we are going to create a roof by using three elevation points that we had measured before. This is where we are going to start:

Select Ribbon menu / Building / Roof / Roof plane – p3 command.





• After starting the command, we have to define the roof contour. Click on four corner points alongside the outer wall.



Now enter three elevation values, which were measured at the site.

Click on the corner point inside and type 1,8 m, then hit "Enter".



- Click on the second corner point inside and type 1,8m, then hit Enter.
- Finally click inside of the third corner point and type 2,6 m, then hit Enter.
- The roof is finished, which is indicated by only contour lines on the floor plan. The modification is not striking as the roof contour overlaps other contours.
- On Navibar click on I "Magnify window" button and zoom in the 3D window, here you can see changes.
- Previously you set that the roof cuts walls. You have to update the model in order to cut walls according to the settings.
- The floor plan window is active. Click on 3 "3D hammer" icon on the Toolbar to rebuild the model.



## 6.4. Auto roof

In the next example we are going to create a roof structure, which is automatically generated.

The roof will be drawn along inner walls; therefore, we have to modify the value of "Eaves overhang" by adding the wall thickness to it. So, the roof will overhang just that much to cover the walls entirely. Please do the followings.

• Click on Ribbon menu / Building / Roof and select properties with right-click.

• Modify the "Eaves overhang" value to 0,38 mm. You have to add the wall thickness to the existing value.

Automatic roof				
L-W-	General p	roperties 0 mm ple Line	<b>⊊</b>	51_Tetõ1 ∨ 8 - Bottom-m ∨
	Materials			
		Cream_01		
G D C E A	Cream_01			
║┷┷┷╈	Reference	e point for roof elevati	ion	
	۸	μm	Eaves overhang (L)	0.38 m
	O₿		Theoretic wall width	0.38 m
General Properties	Оc	0.69 m		
	OD	0.96 m		
	OE	1.03 m		
Middle purlin (1/1)	ОF	1.38 m		
✓ Rafter (1/1)	G	1.3 m	Base offset	: 7 m
Collar beam (1/1) (Rafter:1)	Minihla in	20		

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Accept changes by pressing "OK". •

Now draw the roof.

- Activate floor plan window.
- Click on Ribbon menu / Building / Roof / Auto roof command.

The software basically wants us to select walls. From interior designer point of view, it is easier to draw the contour of the area we want to cover.

For this select the polygon option from the floating menu, and start to draw the contour along the corner points. Click on all ٠ corner points except the conservatory area as we have created a roof there in the previous example.



- Auto roof
Rectangle
Polygon
Circle
A Parallel shifted
Chain one by one
Select
Last value







- When you finished the program automatically brings up the Automatic roof property window.
- Set the 3D preview mode to "Consistent colour" so you can see changes better.



Now let's see another option how to modify a roof.

- On the right side of the "Automatic roof" dialog window, select from the main categories "Pitch and shape". Here we can modify the roof plane settings.
- In the middle section we can find the top view of the roof, here we can click on any roof planes to modify.



- Let's start working on the roof plane shown in the picture below. You can find the number of roof planes above the Update button. You can easily swap between planes by using arrows next to numbering.
- Simply change the roof plane to "Gable end" on 3/8 roof plane. Activate the "Gable end" option and click on "Update" above the 3D preview. The changes are striking. It looks that a roof plane disappears and a saddle type of roof is created instead.

Automatic roof		×
	Additional plane Hipped Main slope	< > Plane: 3 of 8  Update
General Properties  General Properties  Kaves purlin  Middle purlin (1/1)  Kafter (1/1)  Collar beam (1/1) (Rafter:1)  Ridge board	Gable end     Gable end	
Batten (1/1) Roof tiles Projections and cut Lavers and neometry	Eaves overhang on this 0.38 m	
Pitch and shape	Section plane created with hatch	Delete and rebuild all rafters and purlins
Information	Section height from floor: 2 m 🖉 0.3 mm	Delete and rebuild all battens
		Redistribute tiles
BIM Parameters	Roof_interior	OK Cancel

- Repeat the same on the roof planes to create Gable end roof planes until you get the same result as in the picture below.
- When you finished press update. The result is shown immediately.



The continuous changes on the roof structure is noticeable. As we turned off some of the roof planes, then roofs that remained unchanged are now connected to each other different way. Different edges, ridges, and valleys are formed accordingly as it is shown on our model.

Often, we want to change the roof inclination. Let's see how we can do it.

- Select a roof plane with a single click.
- Under "Main slope" you can define the way how the inclination is to be changed.
- In case you are working on an architectural plan, it is worth to set the inclination in degrees. In this instance all you have to do is to enter the value in the field.
- In this case enter 30° and refresh the 3D preview. You can see the roof became flatter.



Automatic roof		x
		< > Plane: 4 of 8
		Update
	Additional plane	
General Properties	Gable end	
Eaves purlin     Middle purlin (1/1)	Half-hipped	
<ul> <li>✓ Rafter (1/1)</li> <li>✓ Collar beam (1/1) (Rafter:1)</li> </ul>	Hipped with gablet	
Ridge board Batten (1/1)	Elevation of reference line 0 m Eaves overhang on this 0.38 m side	
Roof tiles	2D representation of roof	
Projections and cut	Symbolic top view	
Layers and geometry	O Horizontal section of roof in plan-view	
Pitch and shape	Section plane created with hatch	Delete and rebuild all rafters and purlins
Information	Section height from floor: 2 m 🦉 0.3 mm	Delete and rebuild all battens
		Redistribute tiles
BIM Parameters	Roof_interior	OK Cancel

• If you want to apply this value on all roof planes, then activate "Apply for all planes" option, then update the preview.

Automatic roof		×
	Additional plane Additional plane	< > Plane: 4 of 8  Update
General Properties	Gable end	
Eaves purlin     Middle purlin (1/1)	Half-hipped	
Rafter (1/1)     Collar beam (1/1) (Rafter:1)	Hipped with gablet	
Ridge board       Batten (1/1)	C Mansard Elevation of reference line 0 m Eaves overhang on this odd 0.38 m	
Roof tiles	2D representation of roof	
Projections and cut	Symbolic top view	
Layers and geometry	O Horizontal section of roof in plan-view	
Pitch and shape	Section plane created with hatch	Delete and rebuild all rafters and purlins
Information	Section height from floor: 2 m 🦉 0.3 mm	Delete and rebuild all battens
		Redistribute tiles
BIM Parameters	Roof_interior	OK Cancel

Using degrees for defining a roof plane inclination can be very effective when we are designing the roof structure by ourselves. But if we are working with data collected from the site then we have to define the roof inclination by ourselves this is much more difficult situation. This can be only derived from the measured values such as distances, heights, projections. To avoid these calculations in the program exists an input method.



Click on the option button again. One of the three options is when a right-angled triangle appears.

- In essence the software calculates the inclination based on the measured length of a right-angled triangle. As you can see on the picture this value is a/b. Where "a" represents the vertical side and "b" is the horizontal side of the triangle.
- You can determine these values based on the values measured at the original site in this ratio pair.

Let's see an example:



In this case we can measure the knee length 1m, then a vertical 1,7 m and a horizontal 1.9 m length.

• Now type 1.7 as the vertical length, then 1.9 values as horizontal length.



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It is important to separate values with forward slash, but also enter space before and after it. Now these values will be interpreted as ratio pair not division. The inclination will be calculated accordingly.

- To set the inclination at the same time for all roof planes activate "Apply for all planes", then update the 3D preview.
- Now the inclination has been modified. If you click again on the option button, the software calculates the inclination in degrees according to the given values.



- Now close the dialog by pressing "OK", now the roof is completed.
- Finally fix the wall connections, by clicking on the 3D hammer.

As you can see in some cases the walls are not high enough to meet some of the roof planes. Now we have to adjust these values accordingly.

- Activate 3D window. Select any of those walls mentioned above.
- On the left side under properties change the wall height to that value which might reach the roof top point.
- In this example it is 8m. Enter the value and press OK.





Properties 🛛 🗘 🛪			Nézet 4 [Image] *
Wall			
Property Value			
* General			
Layer 11_Fal1 v Colour			
Line type Simple Line 🗸			
Line weights 0.2 mm v Draw Order 8 - Bottom-most v			
Move objects to other floor Ground			
Copy objects to other floor Ground BIM parameters Edit			
BIM name			
Height 8 V			
Constrains			
Absolute elevation 0 m Total thickness: 0.38 m			
Structure Edit		Automatic	
Floor framing Edit Slant angle 90°		Annuality	When the second
Fill pattern orientation: Default orientation is			
Finish Face: Interior Cream_01			A A A A A A A A A A A A A A A A A A A
Finish Face: Exterior Cream_01			Wall (ID3D:85) - 1/2
Body material Beech Wall Function New		~	
Colouring on the floor plan No			×
Skip this wall over room bounding			A start A
Structural properties Non-bearing wall	-		
Attributes of the Finish Face: Interior			
Colour			
Line type Simple Line Line weights 0 mm	+		_
X Visibility of sides	-		
The reference line is invisible			
Properties Design center			
Wall			x
▼ General properties			▲ <b>▼</b>
0.2 mm ~	🗧 11_Fal1 🗸 🗸	Finish Face: Interior	Cream_01
Simple Line	8 - Bottom-most 🗸 🗸	Finish Face: Exterior	Cream_01
		<b>_</b>	Beech
Unconnected Height	8 m ~	Slant angle	90°
Top offset from the floor top level (>	• 0: Up) 0 m	Structural wall	Non-bearing wall V
Base offset from the floor	0 m ~	Wall status	New ~
Total thickness:	0.38 m	Location line	Finish Face: Interior 🗸
Edit Compound	Walls		
		Inclined wall section height	0 m
		Wall Fra	aming
		U-value: U-value: Not calculate	ed
	// //		
		Skip this wall over room bou	unding
Preview	2D view 🗸		
Axis line attributes			
Attributes of the Finish Face: Interior	/		
Visibility of sides			
Visibility of Slues			
BIM Parameters 1 ré	tegû 38-as fal		OK Cancel

• After this modification the roof meets the wall. Due to the roof settings the roof cuts the wall anyway.



 Rotate the model to the opposite side, select all three walls by holding the CTRL key down, and modify heights to 8m on the left side under properties. Hit Enter.



 In order to remove the border lines, surface integration is necessary. Use 3D hammer and those will disappear immediately.



# 6.5. Extruded roof

this part we will create an extruded roof. It will be placed on the floor plan marked by blue.







When creating extruded roofs basically there is no need for predefined editing lines, but in our case, those will be very helpful.

• . The 3D window must be activated, rotate the model to see the top roof plane as shown below.



- Now go back to the floor plan and activate it.
- Select Ribbon menu / Building / Roof / Extruded roof command.

In the pop-up dialog window change the followings:

- Under "Projected roof" change the values "A and B" to 41.82°, this will be automatically converted into degrees and minutes.
- Leave other properties unchanged. Close the dialog by pressing "OK".

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Projected roof				×			
* Roof							
	Roof properties		PA				
(RA) Ridge inclination	0°	$\sim$		-			
Roof elevation From	A Lower roof pane	$\sim$					
Roof elevation	-2.2 m	$\sim$	AN TANAN AND AND AND AND AND AND AND AND AND				
Elevation from roof top	0 m	$\sim$					
Fixed width	4 m	$\sim$					
Place on roof	$\checkmark$						
Ridge path	Line	$\sim$					
Predefined roof							
Туре	Triangle	$\sim$	🗙 🕨 Update		(A)	41°49'	~
(A)	41.82	$\sim$			(B)	41°49'	~
(B)	42°	$\sim$			J	······\$	
Side roof	0 m	$\sim$					
Bottom of side roof	0 m	$\sim$					
🎗 Hip roof							
Hip roof							
Hip roof angle	35°	$\sim$		B			
Hip roof elevation	3.5 m	$\sim$					
Hip elevation from r	0.5 m	$\sim$					
Tip: The rows in yellow canno	ot be modified after placement.		No style				
			NO SLYIE				
			OK	Cancel			

- In the pop-up dialog window, you can characterize the extruded roof how to be projected into the main roof. The most
  common default setting can be found here, when the projected roof creates a cut-out along the contour of the connection
  underneath it. So, the projected roof is accessible and not a closed roof plane.
- Close the dialog by pressing "OK. As you can see the cursor shape has changed.

Proje	cted roof
(	The program will automatically cut out the part of the target roof which lies under ne extruded roof.
	The target roof will not be changed.
	☐ The extruded roof will be extended in accordance with the target roof plane and inserted onto its apparent extrusion.
	The length of roof plane under the projected roof

- Next you have to define which roof plane to use for the projection. Click on the eaves lines next to predefined lines.
- The software recognized the selected roof plane and the current roof can be moved according to the current settings.
- Click on one point and place the projected roof.



- Close the dialog by pressing ESC, as we don't need any more projected roofs as per the original floor plan.
- Use 3D hammer to generate the 3D model based on the floor plan.



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The material and tiles are not the same compared to the previously created ones, in this example we didn't modify those relevant settings which can be found in Projected Roof dialog window under Roof properties. Obviously, these can be changed later as well.

## 6.6. Loft slab

Now we are going to move the whole roof structure to another level. In this example we are going to use this to eliminate the roof edge lines. This is also useful when we want to work out the fine details of the roof structure in a completely separate drawing.

### 6.6.1. Managing levels

At the moment we are working on the Loft level. We can add new layers in the "Level Edit" dialog window.



- Click on "Loft" tab at the bottom toolbar, then the Edit level dialog window will come up. Here we can find all levels which are here by default.
- Insert a new level by clicking on "Add-up" button (1).
- Click on the label twice and rename it to "Roof". We are going to move the roof structure to this level. Doing so now an empty Roof level is created above the Loft where all three roofs can be moved together.
- Close the dialog by pressing "OK".



- Select all three roofs by right clicking on "Roof" icon under Ribbon menu / Building, then "Select All" command. As you can see all three roofs are selected in 2D and 3D.
- On the left side under properties press the "Loft" button next to "Move objects to other floor" and select "Roof" from the pop-up dialog window, finally press "OK".

Properties		Ļ				
Roof (3)			Í	Select floo	ors	 ×
* VARIES	5 *			Number	Name	
Property	Value			1 -1	Roof First floor	
* General				-2	Ground floor	
Layer	* VARIES *	~	1			
Colour			1			
Line type	Simple Line	~	1			
Line weights	0 mm	~				
Draw Order	8 - Bottom-most	~				Pseudo Copies     Eull copy
Move objects to other floor	Loft					Rectangle profile
Copy objects to other floor	Loft					O Polygon profile
BIM parameters	* VARIES *					OK Cancel

That happened exactly what we were expecting in the 2D window, but in 3D as result the roof is now placed 3m higher. Now let's move downwards.



m

Add to Quick Access Toolbar

Slab

Structure

R

R

沷

•⊕ 6) Property

Select all

Keyboard shortcut

Check Video Tutorial

- You can do this in the quickest way as follows. First select all three roofs in 3D.
- Then click on the vertical blue arrow, then select "Move" command.



- Move down the roof and type 3m.
- Accept changes by pressing Enter, now the roof is placed correctly in 3D window as well.



 Activate the floor plan window. You can easily swap between levels (Roof, Loft) by using the blue arrows at the bottom toolbar. These levels now can be managed as completely separated items.



## 6.6.2. Creating Slab

Now we will create the slab on the Roof level.

- For this we have to move to Roof level by using blue arrows.
- In order to make visible it for editing later you have to choose the level down below, select the arrow next to Roof and open the level list.
- Click on the bulb icon next to Loft. Now it has changed to yellow.
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🛹 Roof		
♥ Loft ♥ Level 1 ♥ Ground		
<	>	 
<mark>€</mark> 2 Roof	~	Ŧ

On floor plan window the effect of this modification can be immediately seen. This method allows you to see different levels including the level you are currently working on.

Before creating the slab, check its properties.

- Go to Ribbon menu / Building / Properties / Slab tool.
- Now the Slab properties window will come up. Now select a new wall style. For this click on the currently use style name at the bottom. On the right side select from the style list the 300 mm thick reinforced concrete slab "1 layered r.c. 30 slab".
- Click on "Activate" button. Under properties all relevant details have changed, which are needed for later.
- is very important to set "Cut by roofs" option to "All floors". So, if the slab meets the roof structure, the roof overlay will be automatically cut off by the roof.
- Close the dialog by pressing "OK".

Slab properties			Styles
General properties      General properties      General properties      O mm     Simple Line     General construction      The slab border doesn't display on the floor plan in print      Base offset from the floor     O m	Slant angle	Cream_01 Cream_01 Cream_01 O° O	1 layered 08 r.c. slab         1 layered 15 r.c. slab.         2 layered r.c. slab 19+11         Coated drift 4+5+2         Coated drift 4+7         Coated flat roof1         Coated floor1         Coated floor2
Total thickness: -0.3 m	Slab type Cut the walls	Slab ~ No cutting ~	Coated green roof Concrete flat roof Counter slab15+5+1+20+7 Floor on the ground1
Beams and block flooring system	U-value: U-value: Not calcu	All floors ~	Floor on the ground2 Floor slab + hardcore Reinforced concrete 19+4+5+2 Reinforced concrete 19+4+7 Susp.celling 5+15+19+11
	3D fixed Fill color on floorplan	No	
			New Modify
BIM Parameters 1 layered 30 r.c. slab.		OK Cancel	Rename Delete

- Draw the slab by using Ribbon menu / Building / Slab / Slab in Sketch mode command.
- Click on the outer corner points except the conservatory and press Enter.
- The slab is ready.



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# 6.7. Placing openings

Now we will place windows on this building.

# 6.7.1. Placing roof window

Let's start our work with placing roof windows.

• Activate 3D window rotate the model to make clearly visible the roof plane is shown below:



- Click on floor plan window and activate it.
- Select Ribbon menu / Building /Window and Roof Window command.



- The shape of the cursor has changed. Select that roof plan on which you want to work where you like to place roof windows.
- The program immediately brings up "Window on roof" dialog, here you can define window properties.
- It is important to select roof window. This makes sure that roof windows will be correctly represented on floor plan and 3D model.
  - According to the current example, the window type should be a roof window. For this click on the "Default" button below the preview, this way we can have an access to the window library.
  - Select from Window / Roof / Single folder "Window on roof" type.



- The width 1m, thickness/ height 1.8m.
- Close the dialog by pressing "OK".



Window on roof							
Main parameters	Width:		1 m	~		Redraw	•
Representation	Height:		1.8 m	~			
Roof connection	Thickness:		0.1 m				
Basic geometry							
Outer handle	Distance from upper ro	0.03 m					
Inner handle	Sill height	-1.69 m					
	Layer	00_Layer 0		~			
Accessories	Colour						
	Line type	Simpl	le Line	~			
	Line weights	0 m		~			
	Draw Order	8 - Bottom-most		$\sim$			
		Thermal parameters					
	Ratio (Illumination area)	100%					
	Material Solid Glass material External frame material Internal frame material	Value Beech Glass26 Default material Default material		×			
						Window on roof	
BIM Parameters		No style			ОК		Cancel

Now place windows.

- By default, the software places roof windows at a fixed height which not the case now, therefore choose "Free option" from the floating menu on the right.
- Place four windows with one click to anywhere you like. You can follow the changes in 3D window too.





- If you want to place window on a separate roof plane, then press Enter to close the command and select the new roof
  plane.
- Close the pop-up dialog "Window on roof" dialog by pressing "OK", then place the window.



• Close the command with double Enter.

### 6.7.2. Place customised windows

Now we are going to create a customized window.

To create the window first we have to move to Loft level. We place the window on the wall is shown on the picture below:



- Activate the 3D window and change the perspective to an external view.
- Rotate the model to see the selected wall properly.





- Activate the floor plan window.
- Go to Ribbon menu / Building / Curtain wall and "select Reshape curtain wall" command.



- Now select the inner side of the wall with one click, then place its layout, but not to overlap the floor plan.
- Now a question will pop-up: "Do you want to keep the layout of wall?"- answer: YES.
- An alert message will appear asking to specify a profile in order to describe the frontal shape of the curtain wall. Please press "OK".



• Click around the shape is shown below:



- When you close the polygon "Curtain Wall" dialog window will appear, here you can customize the window.
- At the moment we are going to keep the settings, close the dialog with "OK".
- The curtain wall now is visible on the floor plan and 3D window.



The mullion can be modified which we will demonstrate in the following example. Now close the command with ESC. Now the customized window is ready.

# 6.7.3. Conservatory with curtain walls

The last openings that will be placed in this project will transform the walls of conservatory into curtain walls.

• Activate 3D window and rotate the model to clearly see the conservatory.





- The modification can be done in 2D and 3D window.
- Select Ribbon menu/ Building / Curtain wall / "Convert wall into curtain wall" command.
- As you move the cursor you can see that the software recognizes wall planes. Click on one of the conservatory walls, then
  it turns into curtain wall with the current settings.
- Modify other walls.
- Close command with Enter, now the conservatory has glazed walls.



Let's see an example how to customize curtain walls.

- Select the curtain wall on the left side and open its properties.
- Click on "Basic geometry" tab. On this tab you can define Curtain wall properties that are related to divisions, representation and even the geometric representation of the window.
- In this example we modify only one thing the division.
- Now change the number of glasses horizontal and vertical to 1-1, then press OK to close the dialog.

lain parameters			
epresentation	A Mullion properties		
	Mullion thickness	0.05 m	
real	Mullion width	0.05 m	
a accomation	Mullion material	Steel	
geometry	Offset of mullion (>0: aw	0.02 m	
handle	Mullion placement relative to	Middle	~
	A Basic geometry		
handle	Glass width	0.01 m	
orion	Glass material	Glass26	
ones	Offset of glass (>0; away fr	0.04 m	
or and exterior sills	Fixed Distance		
1.1.4	Horizor	ntal Spacing	
n details	Vertic	al Spacing	
	No. of glasses in horizontal:	1	
	No. of glasses in vertical:	1	
	Glass Transparency		
	* Frame properties		
	Frame width	0.03 m	
	Frame Thickness	0.1m	
	Frame material	Steel	
	Top frame		
	Bottom frame		
	V Left frame		
	Mullion on left side when fram	e is OFF	
		e is ei f	
	Mullion on right side when fra	me is OFF	
	Corrier countriexists		

- Repeat the same on other walls.
- Finally, open properties again and change the number of glasses in horizontal to 2.
- Close the dialog with "OK" and now the conservatory is ready.





## 6.7.4. Creating complex roof window

Let's create a complex roof window with the combination of a roof window and a window in the wall.

• Activate the 2D window and navigate to the left roof window.

 Place a window with the *Placing window* command and make sure that it intersects the lower plane of the roof window. Then click on the upper end point fo the window and select the *Change size* command and align its edges to the roof window.







• Modify its parapet height to 0 m.



- On the left side, on the Properties panel modify its height to 1.16 m.
- Change the window type to fixed amongst its properties.



Select the roof window and by clicking in its upper left corner, select the Resize option. Extend the roof window to the
outer boundary of the window in the wall.



The roof is still cutting the window, so in the next step we will modify the contour of the roof, so it won't intersect the window.

• Select the roof and click on its boundary. Among the appearing options select the Insert node.





• Insert a node to each two corner points of the window, then click on the roof contour between the two new nodes and select the *Offset* command. Drag the roof plane to the inner side of the window, and place it with a click.



• The window is ready, the end result should look like in the picture below:



# 6.8. Blinds and curtains on roof windows

We can place curtains and blinds on different window types. Now we will place an aluminium Venetian blind on the roof window.

• Activate the floor plan and select the Ribbon Bar / Interior/ Soft furnishing / Venetian blind.



• Place the Venetian blind on the floor plan. First select the lower corner point of the window, the the upper.



• In the appearing dialog set the following parameters: Bottom height: 0.6 m, Angle of inclination: 48.19 (since we measure the angle from the vertical and the rotation point is on the top of the blind)

Venetian blind			x
			<b>a</b> 🖌 🖉 🔁
Top height         Angle of indination           2.4 m         ~           Bottom height            0.6 m         ~           Width            1 m         ~           Height            1.8 m         ~	Beech Beech-tree Default material Steel	Cream_01	•
Position and sizes		Automatic refresh on page	OK Cancel

• The program automatically places the blind before the roof window.

Venetian blind			x
Strip width           -0.03 m           Spacing           0.027 m	Strip rotation 81		
Venetian blind		Automatic refresh on page	OK Cancel

- Set the retraction of the blind by clicking on the second tab.
- Place a blind on the lower, fixed window as well with the following parameters: width: 0.85 m, height: 1.03 m, relative elevation: 0.07 m.



This is how the complex roof window looks like with the blinds and furniture:





Workshop 7: Visual design



# 7. Workshop: Visual design

The knowledge and acquisition of different tools of visualisation is a basic demand to represent our project and also to impress our clients.

You can learn the following conception:

- Creating animation
- Creating look around animation
- Creating Panorama 360
- Open your browser and watch the following video tutorial: <u>www.archlinexp.com/education/tutorial-videos/archline-xp-interior-level-2/visualization-interior-level-2</u>

#### Recommendation:

To understand and master the lesson, you need to know the basics. Therefore, we highly recommend to look through the "Rendering" workshop training material, which can be found within the Preliminary course materials. Also, you can find the video tutorials here: <a href="https://www.archlinexp.com/education/tutorial-videos/archline-xp-interior-level-1/rendering-interior-

#### Start:

- Open the following project:
- C:\Users\Erika\Documents\ARCHlineXP Draw\2020\Workshop\_Intermediate\7\_Visual\Visual\_Design.pro

#### Save project

- · Before you start working on the project, save it under a new name.
- Select File / Save project as command, rename the project and define the folder you want to save it.

## 7.1. Material settings

In order to obtain realistic images, we have to pay attention not only to the lights or shapes of the downloaded objects but also to the material settings. Now let's see some examples how to make the image of bedroom far more realistic with some minor changes on materials.

### 7.1.1. The blurriness of transparency and the blurriness of reflection

#### Lampshade of ceiling lights

First let's check the material of the ceiling lights. This lamp covered with a textile linen and from here one or two light sources emit lights.

- Go to Ribbon menu / View / Render and select "Standalone rendering real-time draft" command. This way we can follow the changes and compare to the current settings. Right now, the result is not convincing.
- Right-click on the lamp and select from the appearing menu "Find material" command. As a result, in Design Centre the properties of the lamp material will be displayed.

The current material is a light colour textile slightly transparent, to let the light come through. This is not a reflective surface and there is no blurriness of transparency at the same time.

• Now increase the Blurriness of transparency by 30-40% and check result on the interactive rendering.

Now the image of the light source is not so clear behind the lampshade so it has more realistic effect. Using the blurriness of transparency, we can create life-like surfaces but only if the surface itself doesn't emit light, so the light goes through it.

• Now increase further the value of Blurriness of transparency to 70%. Check the result on the interactive rendering.

Now the image changed slightly, the effect is not so visible. Sometimes it may also cause grainy or gritty effect. This is normal in case of a draft render, obviously this effect will improve with better quality render.

Details		
Parameters	Value	
Texture 🗠	textillinen2.jpg	
Position:	Tile	$\sim$
🗆 Maintain	aspect ratio	
Height:	400 mm	
Width:	400 mm	
Direction:	0°	
Туре	Fabric	$\sim$
Transparence	cy (Transmission)	63%
•		
Brightness		50%
•		
Reflection (	Reflection factor, Mirroring)	0
≌ —		
Blurriness o	f reflection (Visually indistinct mirroring, Anizotropic)	0
<u>ا</u>		
Blurriness o	f transparency (e.g. frosted glass)	0



#### Curtain

In the case of slightly transparent curtains, it is worth paying attention to the Blurriness of transparency

• Right-click on the curtain and from the floating menu choose Find material command. As a result, in Design Centre the properties of the curtain will be displayed.

The curtain material was made of a normal textile type with high transparency without reflection and blurriness of transparency.

• Check the result on the interactive render while increasing the Blurriness of transparency by 3-4%.

Here we can see the same just like at lampshade, that the surface will appear more realistic. In real life the area behind the curtain is kind of blurred and there is no sharp contoured view here. The small size of modification can result such effect in case of this type of curtain material.

Without Blurriness of transparency:



With Blurriness of transparency:



#### Lampshades of the bedside lamps

•

It is also important to see what makes the lampshade of the bedside lamps even more reflective.

 Right-click inside of the lampshade and from the pop-up menu choose "Find material" command. As a result, in Design Centre the properties of the lampshade material will be displayed.

This is a chrome type material which was created from a mirror. To get the desired effect we have to modify the Reflection and the Blurriness of reflection. It often happens that the lampshades are covered inside with a reflective material. Now change the material to Metal and check the result on the interactive rendered image.

The current metallic effect is reflected perfectly, so the light source in the lamp is concentrated in the zenith.

• Now increase the Blurriness of reflection to 30% and check the result.



It can be seen that the reflection of the light effect is much more dispersed on the surface and thus gives a much more realistic representation.

Without Blurriness of reflection:



With blurriness of reflection:



# 7.1.2. Mirror

When there is a mirror in the interior, it is a dominant element of the space, it is important to set its properties right.

- Change the representation view from where the mirror door of the wardrobe opposite to the bed can be well seen.
- Now check how the mirror appears on the rendered image.

Right at the moment this is more similar to a reflective plastic surface then a real mirror. In the next example we can see how the size of the reflection and colour representation of the mirror are related to each other.

- Right-click on the mirror and from the pop-up menu choose "Find material" command. As a result, the mirror material appears in Design Centre.
- Change the value of Reflection to 100%, check the result on the interactive rendered image.

Details	
Parameters Value	
Colour 🗸	
Position: Tile	$\sim$
Type Mirror	$\sim$
Transparency (Transmission)	0%
Brightness	47%
•	
Reflection (Reflection factor, Mirroring)	100%
♀	—-I
Blurriness of reflection (Visually indistinct m	nirroi 0%



The picture shows that the reflection in this case may have been too perfect since there is no sign of the original turquoise shade, and in vain sun illumines this surface we cannot see anything from it.

• Now change it to 70%.

In the preview we can see that the original turquoise shade slightly appears. On the interactive rendered image there is a direct light as the reflection of the space, and also the illuminated surface gets a slightly turquoise shade.



### 7.1.3. Emissive materials

We have to spend some time on the settings of those surfaces which emits lights (such as TV screens, PC monitors)

Right-click on TV screen and from the pop-up menu choose "Find material" command. As a result, the material of TV screen appears in Design Centre.

Now this type of material is Matte which appears as an illuminated poster on the interactive rendered image. In this case the best solution to choose a material which emit lights, so it acts as a material and a light source at the same time.

- Now change the type to "real emissive". You can set the light intensity in case of this type of material.
- Using interactive rendering try to find that intensity setup which results the most realistic view.





Setting the type of materials in some cases we can choose between Real Emissive and False Emissive. The Real Emissive material not just only burns-out on the rendered image as it is even more contrasting, more intense compared to other materials in its environment, but actually illuminates its environment. For example, in a night scene, without lights, it can illuminate the objects around.

Opposite to this the False Emissive doesn't illuminate its environment but on the surface, we have applied it on, it also burns-out. The reason of using the False emissive material type can be the saving of render time, because the calculation of an emissive are can increase the render time. However, the most convincing result can be achieved using real light on the area.

# 7.2. Light settings

After setting the materials right, the other key to realistic rendering is the light settings. In CAD design both natural and artificial lights can be displayed. In the following we will see a few examples of displaying and setting lights.

### Realistic display of a light bulb

Next, we will show an example how to set the properties of a lamp with a light bulb. On the rendered image we want to create the impression that the light bulb is turned-on.

- Download pendant lamp from the 3D Warehouse®. Go to Ribbon menu / Interior and start Warehouse command.
- Now find a lamp within the search result with a bulb is clearly visible.



- Now download the selected lamp, place on the floor next to the wall, then change the elevation as later we need a vertical light-absorbing surface, which is in this case the wall.
- After downloading check, the image on the interactive rendering but before switch off all other light-sources, so now you
  can be sure that you can see the downloaded lamp light effects only.

Now select the pendant lamp if there appears a yellow light bulb than this lamp has light source. The software automatically recognizes keywords now that we downloaded a lamp with a light source then the software assigns a light source to it. However, the position needs to be modified in all cases. As you can see in our case the black cross which represents the light source is slightly lower in space, so it is unlikely that the light will come out of the light bulb.

• Select the lamp and click on the yellow light bulb icon. Now with the help of the axis move it inside the light bulb.



 Now check the image on the interactive rendering. If the image is unchanged refresh the 3D model or start again the realtime rendering.



On the result we can see that light bulb doesn't light up at this time, as the downloaded object doesn't contain all information regarding the surfaces which can be transparent or glossy.

- Right click on the bulb and from the appearing menu choose "Find material" option. As a result, on the left side in the Design Centre will come up the bulb material properties.
- Change the material type to Glass.

It is likely that not just only one material is assigned to the light bulb as we have seen in this example. This happens in many cases.

- Now open the lamp properties and edit material.
- In the preview window click on light bulb. The material of bulb surface automatically will be selected from the list of materials. That way we can easily identify that material which should be modified now.
- Click on Modify button after selecting the material with wrong settings now choose the Glass type instead.

Edit material						x
	[Metal_Alu	Default material	[Color_007]	[Color_008]1	[Color_000]	
	[Transluce	[Color_002]	[Color_001]1			
	Modify			OK		Cancel

• In the preview check that the light bulb is translucent, then close the dialog with OK.

If you check the interactive rendered image now you can see that light comes out of the bulb. Now there might be two more problems one of them is the light intensity, the other is the glass settings which might cause the impression that the bulb doesn't emit lights.

- In order to make the bulb glow change the transparency from 100% to 98%. Now the light makes the right impression.
- Now select the pendant lamp, go to "Properties" tab on the left side and from the drop-down menu change from Object to Light sources.

		(
Dotaile		
Parameters	Value	
arameters	Tanac.	
Colour 🖂		
osition:	Tile	~
ype	Glass	$\sim$
ransparenc	y (Transmission)	100%
U		
Brightness	_	50%
Reflection (I	Reflection factor, Mirroring)	100%
¥		

	ņ
	$\sim$
ple Line	$\sim$
	~
nost	~
Ground	
Ground	
Edit	
	$\sim$
IGAZgA0wrqJx\$	reconstruction
000000000000000000000000000000000000000	
)	000000000000000000000000000000000000000

• Now increase the Dimming level to 200%.

Properties		Д.
Object		
l.	No style	6
Property	Value	
General properties		
Name		
Туре	Sphere	$\sim$
Category	Compact	$\sim$
Luminous Flux	600 lm	$\sim$
Colour		
Fall-off	Inverse to distance	$\sim$
Own parameters		
On	✓	
Dimming level	200%	$\sim$
Light solid radius	30 mm	~



• Now check the result on the interactive rendering, and move it to its final position.

# 7.3. Creating Panorama 360

Using Panorama 360 tools we can create a virtual walkthrough which grants the overview of the entire living space in 360 degrees. The Panorama 360 is freely accessible by our client, can be discovered. First step is to place cameras through which the plan can be seen.



## 7.3.1. Placing camera

- Click on Ribbon menu / View / Panorama 360 / Placing camera command.
- In the dialog name the camera and define its height, place in the bedroom.
- Place another camera on the corridor. You can add as many cameras as you like, but now select the cancel option.

On the floor plan the camera lens icon indicates that direction where the camera will be pointed when we enter into a given virtual point. This can be freely modified.

- Click on the camera and use Rotate commands to set the proper direction of the camera lens.
- Check if you got the desired perspective view. Click on the local menu Set up perspective view command.
- If you are not satisfied you can still modify the camera position by using move and rotate commands until you get the desired result.



## 7.3.2. Placing link hot spots

We can join two cameras by placing link hot spot.

- Start Panorama 360 / Placing link hot spots between cameras command.
- Define the height of the hot spot.
- Now select two cameras which will be linked by the hot spot.
- Place the hot spots preferably on doors, because there we will look for them. If you don't need more hot spots, close the dialog by pressing Cancel.



## 7.3.3. Placing info point

In case we like to add more information to the virtual tour, there is an option to place info points on the floor plan.

• Click on Panorama 360 / Place info point command.

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- Select the camera from where the info point will be visible.
- In the dialog you can add description which will be assigned to that object you want to provide more information on. Also, there is an option to insert link, furthermore you can set the info point height.
- Place the info point by pressing" OK".

Properties	×
Description	lamp
URL	www.archlinexp.com
Height	1300 mm
	OK Cancel

### 7.3.4. Build Virtual Tour in draft and render mode

We can create virtual tour in two different qualities. First is the draft quality, which can be done within seconds and the result can be seen immediately.

- Click on Panorama 360 / Build virtual tour (Draft mode) command.
- Save the file on your computer.
- The virtual tour immediately opens up in your internet browser. You can look around using your mouse, by clicking on info
  points you can read the previously given descriptions and also you can switch between cameras by clicking on hot spots.



The rendered quality panorama can be viewed the same way, but it takes longer to create since the software should calculate reflections and light-effects. This panorama therefore has a more realistic effect. We can launch this command by clicking on Panorama 360 / Build virtual tour (render model).



# 7.4. Creating animation from 3D view

Using Animation tools, we can record our plan with the help of "Walk-in" animation.

Click on Ribbon menu / VIEW/ Animation / Path / Define path command.



- Click to define tangent points on the floor plan.
- To close the command hit Enter.

When you finished next you have to define the camera view point. It is recommended to choose the forward-looking camera view (not to the left or right looking camera views) to result better quality animation.

• Click to define observer points that you look at from the animation tangent points.



• To finish press Enter.

After pressing Enter in the pop-up dialog window you can change the height of the camera view point one by one or selecting all at once. It is useful to set the height of the observer and tangent points at the same height.

• Change the camera height to 1400 mm and close the dialog by pressing "OK" button.

imation p	ath			
Point	Observer height	Target height		
1	1500 mm	1500 mm		
2	1500 mm	1500 mm		
3	1500 mm	1500 mm		
4	1500 mm	1500 mm		
5	1500 mm	1500 mm		
6	1500 mm	1500 mm		
7	1500 mm	1500 mm		
	1400		1400	ОК
	Editsele	ction	Edit selection	Cancel
	Editsele	ction	Edit selection	Cance

• After closing the pop-up window, the Animation editor window will come up.

# 7.4.1. Animation editor window.

You can alter the animated view in the Animation editor window. On the timeline in the bottom left corner, the "Play" toolset lets you view the animated video, or use these buttons to skip in the video. The Animation editor window can be also opened if you select the animation route and click on Ribbon menu / View / Animation / Path / Create amination command.





Next to play buttons, by clicking on the cogwheel, you can modify the followings:

- $\dot{\mathbf{v}}$ The speed
- \* The number of frames per second
- The camera angle
- The resolution

# 7.4.2. Modifying views

To make our animation more realistic, we need to do some minor changes on the model. First, we will open the door so during the animation we don't have to pass through the closed door.

- Select the door. .
- On properties tab on the left side find "Opening angle" and change to 70°. •

Now we will change the background picture. This is needed because the moving video has an unnatural effect on the static background which doesn't follow the camera's motion.

- Click on the 3D window header and select "Environment background" option. ٠
- In the pop-up dialog window change the background to "Panorama" and select one from the drop-down menu. •

	-
A Properties	
Width:	910 mm
Height	2100 mm
Distance from wall line	0 mm
Sill height	0 mm
Outer sill height:	0 mm
Absolute elevation	0 mm
Distance from wall corner	415 mm
Lining and architrave	Edit
Structure	Edit
Opening angle	70°



Now close the dialog by pressing "Close".



## 7.4.3. How to modify animation

Now let's watch the previously created amination. This is still too fast, 7 seconds. Now change the time period.

- Click on the cogwheel and set the time to 15 seconds.
- Now watch the animation again.

On the timeline there are green dots, these are the key frames. These points have been previously placed on the animation path. The software automatically fills the gap between key frames and combines altogether into a playable content. Key frame heights can be modified in the Animation editor window. It is enough to hold down the mouse scroll wheel for pulling down the camera view point.

If we watch the animation now, we can see that it starts with a slight take-off then at the second green dots reaches the original unchanged camera height (1400 mm). This way we can give individual height for each key frame. It is important to stay on the selected key frame otherwise changes will not be

applied. It is recommended to find the key frame on the time line by using "Jump to previous/next key frame" buttons.



## 7.4.4. Save animation

The animation can be saved as AVI file and also can be uploaded to internet.

• Click on "Create AVI" icon.



- Now name the file and select the folder you want to save it.
- In the pop-up dialog you have to set the video compression properties. Without compression the size of the file can significantly increase. Close the dialog by pressing "OK" and create AVI file.



When saving the animation, the software takes photo of the animation from frame to frame. This way the video file is created, which can be watched by using any kind of video player or we can upload it to the right place.

### 7.4.5. Create look around animation

There is an option to record such a motion picture when we look around in one selected room. For this we can use animation tools.

- Start Ribbon menu / View / Animation / Path / Define Path command.
- After selecting the first key frame point a floating menu will come up. Here select "Closed" option. This way we selected a closed path.
- Define the path with four opposite points which result roughly a circle. Now close the dialog with Enter.
- Now define the observed points from the animation tangent points. It is useful to select the
  observed points opposite to tangent points.

<ul> <li>Define path</li> </ul>	Ň
Closed	
Close	







- The end point and the first point should be the same, this make sure the animation returns to original starting point.
- To finish press Enter.
- In the appearing dialog set the Observer and the tangent points heights. In both cases the height should be 1300 mm.

Point	Observer height	Target height		
1	1500 mm	1500 mm		
2	1500 mm	1500 mm		
3	1500 mm	1500 mm		
	1300		1300	OK
			1000	OR

#### Modifying Animation.

In the Animation editor window, we can modify and watch the animation. On the timeline we can see that this is a very short movie, lasts only for 4 seconds.

Click on cogwheel and change the time to 25 seconds. Close the dialog by pressing "OK".

0	1'''' 1	<mark>0</mark> · · · · 2	3 4	5	۰۰۰۱ 6	•	''''' 8	9	10	11	12	• I ' '	14	•
		K		▶				۲	Ô					1

The look around animation can be modified the same way as we shown in the previous example. The height and position of the camera can be changed in green key frames. This animation can be also saved as creating AVI file which can be watched by using any video player.

# 7.5. Creating renders with Depth of Field

You can make visual designs even more realistic by retrofitting renders. So far, we've made the finished images come true with color and light settings, and in this chapter, we enhance the realistic look of the images by obscuring certain parts of the images. This feeling can be easily achieved by adjusting the depth of field.

- Activate the 3D window and select the "A1Bedroom1\_5" view.
- Start a Standalone render with the following settings:

Photorealistic Rendering

Resolution	1280x720 (Widescreen 16:9 - HD)	$\sim$			
Render quality	Interior - Quick render	~			
Visualize the light sources					
Enable artificial lights	$\checkmark$				
Enable sunlight	$\checkmark$				
Bump mapping	$\checkmark$				
Background	Image	$\sim$			
Print Raster	City sky - Cloudy	~			
Specify a folder to save render i	D:\Munka - Cadline\Archline 2020_alap\20				
Background brightness	100 Brighter, for exterior scenes	~			

- When the render is finished, select the DoF tab on the left side of the window, then activate it.
- Select the Custom option from the drop-down menu.

Decreasing and increasing the *Intensity* adjusts the amount of blur in out-of-focus areas. *Focal distance* determines how far the focus is from the camera lens. Use the *Focal range* to adjust the size of the sharp area.

• Set the Intensity to 80, the Focal distance to 1 m and the Focal range to 1 m.



- On the picture the close objects (flower, books) are sharp, while the distant objects (lamp, pillows, door) are blurry.
- In the nex step set the focal distance to 4 m.



• Focus switches to more distant subjects immediately, so close subjects are blurred


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Workshop 8:

Upholstered furniture based on profiles



# 8. Workshop: Upholstered furniture based on profiles

In this tutorial, you can learn how to assemble furniture by using ARCHLine.XP tools; this way, you can easily design customised upholstered furniture. You can learn to use the loft tool, which helps to create the legs for furniture and Smart Object Assembly tool, which supports creating the seat and the back panel. Also, you get to know how to assemble the furniture parts.

- Creating Esmeralda ottoman components
- Assemble Esmeralda pouffe
- Drawing profiles for Marseille chair
- Creating components of Marseille chair
- Assemble Marseille chair
- Open your browser and watch the video tutorial here: <u>https://www.archlinexp.com/education/tutorial-videos/archline-xp-interior-level-2/upholstered-furniture-interior-level-2</u>

#### Start

- Start ARCHline.XP software on your computer.
- Click on New project button.

### Save project

- Before starting your work, save it under a new name.
- Choose File / Save project command and enter your project name and save it under your preferred folder.

# 8.1. Esmeralda ottoman

During this workshop first, we create Esmeralda ottoman, as it is in the picture below. Before doing anything, let's check how many parts the ottoman has. There are three components such as legs, the base and cushioned seating. After analysing the furniture, you can start the design.



# 8.1.1. Creating Esmeralda legs

#### First, we create legs.

As you can see, these are particular legs, not a regular cuboid. Profiles on the top and at the bottom, are different and the whole 3D shape is slanted.

- Select from Ribbon menu / Interior / Sweep / Loft command. Now we use the Loft tool to create a 3D solid or surface in the space between several cross-sections. We pull a drawn cross-section profile all along a specified path for the lofted solid.
- The path is going to be a vertical profile. On the first tab, set the height to 140 mm.





Loft		x
		<b>1 1 1 1 1 1 1 1 1 1</b>
Vertical Horizontal Chair leg EB profile 1 Chair leg EB profile 2 60/19/25	ifcassishap kagylo_pat Marseille_c profil_lab_0 e h hair_profile 1 profile005	◆ ☆ ⊘
Surface resolution	Bottom (start) ending Top (other) ending	
Meaium	Perpendicular ending V Perpendicular ending V 140 mm	×

On the second tab, define the section profiles.

- The bottom profile is 30x30 mm rectangle. Enter the new width and heights values. Click on the refresh button to see the changes.
- Add the top section profile, by clicking on the green cross icon (1), then enter its values (width: 50; height:50 mm) (2). Now you have to define its position. This profile is on the top; therefore, move the slider to the value 100% to the right side (3). Finally, click on the green tick to apply changes (4).



When we thoroughly checked the leg, we saw that the basic shape is a truncated pyramid, which has two vertical sides and two slanted sides. To get this shape, we have to modify the reference points of the profiles.

• Now the top profile is active as it is highlighted with red. So, if you click on the cogwheel, in the appearing "Edit profile" window you can designate the new reference point. That should be the left bottom corner. Now click on "Ok" to accept changes.

Now in the "Loft" window, you can see that the centre point of the bottom profile is connected with the reference point of the top profile. The section profile is pushed to the side, so we have to repeat the same at the bottom.



• Let's change the bottom reference point. Click on the blue arrow to swap between profiles; the selected profile is activated and marked with red.



Click on the profile properties and set the reference point. Here this should also be the bottom left corner point.

Edit profile					×
¢	<u>d</u> 1		Leg section profile 01 squ	are	
				Mirror on X	
12	đ	13		Mirror on Y	
				Rotate	
			Uniform 3D scaling open	ration	
<u> </u>	10	et	Width: 100 mm	Height: 100 mm	
Select Profile		Redraw			
Name	Value				
Width [ 0.0001 - n.a. mm ] Height [ 0.0001 - n.a. mm ]	100 100				
			ОК		Cancel

Now the 3D shape of the leg has the desired shape; two sides are vertical, others are slant.

- On the next tab, select the material. We use "Beech-tree" for legs.
- On the next tab under "General settings" set the type of the representation in 2D. We recommend to use the Simplified version.
- Finally, save the leg. On the last tab by clicking on the "Save as "command, you can give the name, category, subcategory. In this case we recommend to use Living room as the main category, and accessories for sub-category. Components and other furniture parts are good to save under this section. If you like, you can enter the producer name here too.





Loft		
	Create new item in the library	×
	Name of the new item in the library:	
	Esmeralda leg 🗸 🗸	
	Category:	_
	LIVING ROOM	<u> </u>
	Sub category:	_
	Accessories Producer:	
	CadLine	
€ • ๙ ≱	BIM parameters OK Cancel	
Save the current item into the library, or select a new	one to edit	
	] - •	Save as
Amboise Ceiling Ceiling console_l _lab_01 Main Ru Molding eg	dad esmerald Gilmore Leg_01 Leg_02 Leg_02 Leg_03 Marse a_leg TV leg Leg_01 Leg_02 Leg02 _100x10 _leg_0	ille OvalnyP
	Description	✓ Restore default from:
Save	Automatic refresh o	n page OK Cancel

• Finally, place the leg on the floor plan.

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# 8.1.2. Create the base for Esmeralda ottoman

The next session is about to create the seat of the ottoman.

• For this use Ribbon menu / Interior / Smart Objects and choose Smart Object parts command.

Interior	Drafting	Dimension D	ocumentati	on	
	$\overline{\mathbf{k}}$			🌲 3D Shape	F
oft furnishing	Lighting	Electrical accesson	y KBB	🚇 Smart Objects 🔻	Virtual
n		Lighting		Smart Object parts	s al
	Floo	r plan Ground flo	or (0 mm) *	Assembled object	

• In the appearing dialogue set the horizontal orientation.

Smart Object parts						×
10 🚔 🐐 🖊 🧐	*•*					A 2
Orientation Horizontal V	Base profile width 600 mm Base profile height 800 mm Thidness 100 mm Center	Width 600mm Height 100mm Depth 800mm	Round all edges       Side rounding       0 mm       Front rounding       0 mm       Back rounding       0 mm	Surface resolution Medium ✓ Show grid		
Position and sizes			Au	tomatic refresh on page	ОК	Cancel

• On the fourth tab, you can set the frontal profile, select from the list "Frontal profile 1". There are two main profiles, one with rounded edges, the other one without these.



- Now go back to the first tab, under position and sizes set the Base profile width to 600 mm, Base profile height to 450 mm and Thickness to 100 mm (1).
- Set the surface resolution to high (2).
- Round all edges to 10 mm (3).



Smart Object parts						×
2 🖌 🖌 📕 🗞	🔹 🔖 🚺 🖬					<b>₽ ♥ ♥</b> ₽
Orientation Horizontal ~ 1	Base profile width 600 mm ~ Base profile height 450 mm ~ Thickness 100 mm ~ Thickness orientation Center ~	Width 600 mm Height 100 mm Depth 450 mm	Side rounding 10 mm	s Surface resolution High ~ Show grid	2	
Position and sizes				Automatic refresh on page	Ð	OK Cancel

- On the fifth tab, you can select materials from the Library, now choose "Textil\_linen 2.
- Finally, on the last tab, save the base by clicking "Save as " command. The category should be Living room, for subcategory we recommend to use accessories for furniture components. Now enter the producer name, which could be the model manufacturer.
- Now place it on the floor plan.

### 8.1.3. Create Esmeralda seat cushion

Let's continue our work on the seat cushion.

- Go to Ribbon menu / Interior / Smart Objects and select "Smart Object Parts" command.
- The seat cushion is similar to the base, therefore open the previously created base. Go to the last tab and select the Esmeralda base from favourites then save it under a new name.
- Next, under "Position and sizes" tab set the new parameters. The Bas profile width and height remain the same, but change the Thickness to 160 mm.
- Edges are rounded, keep the value at the same: 10 mm.



Let's get familiar with decoration effects. Tools for effects are stored on two tabs next to material settings. One is adding decoration to the top; the other is adding to the bottom alternatively if you have a vertical 3D shape to the front and the back.

- Pillow effect is added to the cushion; which you can create in the following way. Select the first decoration effect tab, which adds effects to the top side.
- Select "Pillow" effect (1) and set the padding depth to 100 mm (2). This value indicates how much the pillow effect is rising from the top of the item. To apply changes, click on green tick (3). As you can see, the padding depth is adding to the base height.

Smart Object parts	×
1/1 Tufted Tufted Nailing Pillow Sewing	Affected area Full surface ~
Padding depth 100 mm V	Automatic refresh on page OK Cancel

• Save the changes on the seat cushion, go to last tab and press "Save". Overwrite the changes on Esmeralda seat cushion and place it on the floor plan.

### 8.1.4. How to assemble Esmeralda ottoman

As we have created all three components for the Esmeralda ottoman, now the next step is to put them together.

Open "Assembled objects" command from the Smart Objects group.

Interior	Drafting	Dimension D	Ocumentat	ion	
<u> </u>				🜲 3D Shape	[
ft furnishing	Lighting	Electrical accessor	у КВВ	🚇 Smart Objects 🔽 V	/irtua
		Lighting		Smart Object parts	
Floor plan - Default - Ground floor (0 mm) *			Assembled object		

- First select Esmeralda base. Select the new item from the library by pressing the blue cross.
- The selected item appears. If the selected item is red in the dialogue window, that means the item has not been placed there yet. Therefore, click on the green tick.





If we choose another item now, this is highlighted in red which refers to its selected status.

Let's add legs to the bottom of the Esmeralda base.

 Now click on the green cross icon. By default, the program puts the new item on top of the previously placed item. Now select from the library Living room / Accessories / Esmeralda leg.



 You can see that the program placed the new item in the middle of the base with the leg centre point. By clicking on the desired surface, you can designate the side of the base where the leg should be placed. Click on the bottom of the base.

You can also click on any corner points to place the leg. Now you can see that the leg is placed with its corner point. Click on the green tick to create leg.



- Follow these steps to place all four legs. Click on the green cross, select the bottom side of the base, click on any corner points. Finally, create it by pressing the green tick.
- You finished with placing legs. However, not all legs are positioned correctly. The leg is in a good position when its two
  vertical sides are facing outside. We have to adjust legs accordingly. Select the leg and set the value "Turn right (blue)" to
  90, 180 or 270 degrees.

If you zoom out, you can see that we still have to make some adjustments as the legs are stretching over the base. It happened because we set rounded edges for the base. So, we have to push legs inside a bit. The colour coordinate system helps us moving it. The red, blue, and green arrows define the coordinate system; these can be found in the dialogue window. We have to be aware of the direction of the arrows.



 This leg should be adjusted to left by 10 mm, so change the value on the red axis in a positive direction, on the green axis in a negative direction.

Smart Object assembly	×
	S & @ B
Amboise_la Chairback Chairlen Circular cristal Esmeralda Esmeralda Esmeralda	Offset left/right (red)     Width     600 mm     Offset front/back (green)     I    I    mm     Offset front/back (green)     Height     Zdf rmm
▶_01 Chain book Chain reg Seat Shape Chain alap lab párna	Offset down/up (blue) Depth
H Inrn up (red) Turn forward (green) Turn right (blue)	450 mm
0° V 0° V Mirror Relative coordinates	Reposition object
You can adjust the placement plane and reference point of this object by dicking the stickers on the 3d preview! Automatic ref	fresh on page 📀 OK Cancel

- The next one should be adjusted on the green and red axis in a positive direction.
- The third one on the green axis in a positive direction and on the red axis in a negative direction.
- The last leg should be moved on both axis in a negative direction. It is the way how you can fit precisely all four legs.
- The final task is to place the seat cushion on top of the Esmeralda pouffe. For this, select the base then add the seat cushion from the library / Living room / Accessories category. The software automatically places it in the middle, finally click on the green tick to create it.



- Now the Esmeralda ottoman is assembled. As a final step, save it in the Library on the last tab. Click on "Save as" button; don't forget to give the producer name.
- Finally place it on the floor plan.

# 8.1.5. How to modify assembled object?

Let's check the difference between the original and the newly created Esmeralda Ottoman. There is a tiny dissimilarity. Between the base and the cushion seat, there is a little more space at the original one. The aim is to adjust this gap without making it too large so that we could see through between them. For this, we have to modify the newly assembled

furniture. Whenever we create a new furniture with the "Smart object" tools, by double-clicking on the item again, the "Smart Object Assembly" dialogue window opens up and here can modify any components. In this special case we will adjust seat cushion.

- Select the cushion in the Smart Object Assembly dialogue window, then click on the pencil icon. This way, you can go back to the Smart Object Parts dialogue window.
- Here, you can see that the pillow effect was only added onto the top side and not to the bottom. If you click on the second
  decoration effect tab, there you can add padding depth to the bottom. The padding depth value is 50 mm. Click on the
  green tick to apply changes. Now the pillow effect nicely appears.



- Save the changes, then go back to Smart Object Assembly dialog.
- If the Offset down/up value is zero, the bottom of the seat cushion will be placed right on the base. Now change this value
  to minus 30 mm, this way the pillow effect will nicely pushed into the base.



• Now save the changes and close the dialogue window.

Whenever you want to use the newly created ottoman, simply find it in the Library under Living room / Armchair subcategory.



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# 8.2. Marseille chair

The following example will be more exclusive chair. We will show how to create Marseille chair. We have found it on the internet, and we have only three parameters such as the depth, height and length. Also, we found three photos see below them.



The photo of the back of the chair will be handy for us later on. Using the parameters mentioned above, let's start our work. First, we have to investigate what makes this chair special and also analyse how the components are built-up, such as the cushion seat, curved legs, curved back panel.

#### Start

Open the project which has already included the ready model and profiles before you start the work. Here you can find the project:

...ARCHlineXP Draw\2020\Course\_Intermediate\8\_Upholstered\_furniture\Marseille\_chair.pro

### 8.2.1. Drawing profiles

#### The profile of back of the chair

Now let's see the profile of the back, how it can be created.

• Import the previously mentioned photo of the back chair: ...ARCHlineXP Draw\2020\Course\_Intermediate\8\_Upholstered\_furniture\Photos From **Ribbon menu / Drafting / Raster image** choose "Place" command.



The photo is not scaled, but suitable to get the profile of the back panel. To work with a scaled back panel first, we have to calibrate it.

Click on the chair and from the local menu choose "Calibrate" command. The height of the chair is 1170 mm; using this
value, you can calibrate the chair. Draw a straight line starting from the bottom of the leg to the top of the back. Holding
Shift down, you can easily draw a vertical line. In the pop-up dialogue window enter 1170mm the height of the chair.



This is a perspective image and not suitable for getting more information about the chair. We aim to get the shape of the back of the chair. This photo is scaled now; we have to draw its profile.

• Use Polyline command from Ribbon menu / Drafting.



 We are going to draw the half of the profile of the chair. First, select the "Half division point" from the snapping options and define the half division point of the back panel. The option can be found on the toolbar at the bottom.



 Draw a line on the top; after placing its endpoint, the program automatically sets the starting point of the polyline in the half division point. From here, you can start drawing the profile.



- First draw a line then an arc. You can draw an arc by using three points. The first is given, then select the endpoint, finally a middle point which helps to define the arc.
- Continue the drawing with a line and a smooth arc. To draw the arc, select option from the pop-up menu, first select Smooth then Arc option.
- · For the next line, select "No smooth" command.



- Continue with an arc.
- Draw the last line until the perpendicular projection of the half division point. Close the drawing command, the half of the profile is ready.
- Select this profile and from the local menu choose "Mirror a copy" command.
- This way, the missing part of the profile is created. Now the profile is completed. Now move it next to the photo.



Next, we have to draw the upper part of the back panel. If you check the model from a bit closer, you can see that the pillow effect is smaller on legs, then on the other parts. We have to define another profile to reach this pillow effect.

- Select the profile and create another copy of it.
- Try to find the seat height and start to draw a straight line from there.
- Use Delete between point command from the top toolbar to remove unnecessary lines. The second profile is ready.



To complete the chair back profile, we need the front profile and the previously created top profile. Also, the back of the chair is curved. Therefore, this is a vertical base profile, and we use for modelling.

- Draw an arc; the height is 1170 mm.
- The curve of the back panel leans a bit backwards. It is not a regular arc as this one is drawn here. Lean backwards the
  profile by moving the endpoint.

### Seat profile

Let's look at the next item, the seat. To create it, we will use a rectangle.

• From Ribbon menu / Drafting / Polyline start the "General rectangle" command. From the appearing local menu choose "Define rectangle X/Y size..." option and enter the sizes. Draw a 500 \* 500 mm rectangle. We already know that the total

length of the chair is 500 mm and depth 580 mm, which includes the back of the chair. We assume the size of a rectangle will be enough for the seat.



If you check the photos, then you can see that we have to fillet edges. There are more options to do that.

 From the local menu, select "Edit" then "Fillet" command. From the appearing menu now, you can choose how to round edges by using radius, diameter etc. If you click on the other side, the selected method will be applied for rounding.

So, we can create the seat this way. However, in our example, it looks a little bit different; the arc is not fitting so nicely.

- Place a rectangle again and inside draw an arc from the half division point until the quarterpoint by using the arc command.
- Mirror the arc by using Mirror a copy command.



• Then use "Delete between points" command to remove unnecessary lines. The top view profile of the seat is ready.

#### Leg profile

One more profile needs to be created for legs. Here we have to draw an arc again; the leg is 350 mm high and curved.

- Draw an arc which is 350 mm high.
- Lean it backwards slightly by moving the endpoints.



Now we created all profiles for the Marseille chair. Delete these items and use Smart Object commands to create the chair components.

### 8.2.2. Creating Marseille legs

When we have all profiles, we could continue working on modelling the furniture. First, we create the components such as the leg, back and the seat.

- Select from Ribbon menu / Interior / Sweep then Loft command. It means we draw a profile along a selected path.
- First, select the path to use for drawing the profile. In this case, this is a special one, therefore click on the yellow start icon and choose "Custom profile" option. Here you can select, the previously drawn profile on the floorplan.
- Now choose from Ribbon menu / Profile editor mode the "Select an item" command and select the leg profile with one click.

• Ā	Profile Editor	mode						
R	표표 표 ⊕	[0]	C.	∎≣	-	$\sim$	$\checkmark$	×
Closed loop	Multiple profile	Edit boundary	Select an item	Select from list	Last defined outline	Select connected lines	Finish	Cancel
	Dra	w					Edi	tor

• When the profile is selected, then the software automatically brings up the Loft dialogue window. We recommend to set the high resolution and define the bottom and top ending to horizontal.

Loft		×
		R
Vertical Horizontal Custom profile Chair leg profile 1 Chair leg	g EB ifcassishap kagylo_pat Marseille_c profil_lab_0 profile005 Orientation 2 60/19/25 e h hair_profile 1 profile005 Height 330 mm	~
Surface resolution	Bottom (start) ending Top (other) ending	
High Connect section profile corners	Horizontal ending V Horizontal ending V	
Position and sizes	Automatic refresh on page OK Cance	lê.

- The next step is to set the size of the top profile on the leg. It is a 50\*50 mm rectangle. Set the parameters on the second tab.
- Set the size at the bottom that is a 10\*10 mm rectangle. For this, click on the green plus icon and enter the parameters. Now set the position on the path. When you finished, apply changes by pressing the green tick.

Loft	×
	R R 2
	Position on the path         100%         0 mm           354.9 mm         0 mm         0 mm           Width         Torsion         0%
disprofil e kuyro_r kuyro_r profile 01 s	Height Sharp ✓ Connection Offset 10 mm ✓ Join to previous 0.00 ↓ Rescale ✓ Join to next
Security promes	Automatic refresh on page OK Cancel

• It is optional to add a third profile which is a 30\*30 mm rectangle. Change its position on the path by moving the slider; the shape of the leg will also change. We also recommend to set the "Smooth fit" to smooth.



Loft	×
2/3 friz2 fuggoleges ifcassishap kagylo_1 kagylo_2 Leg section profile 01 s	Position on the path     63%     131.3 mm       223.5 mm     63%     131.3 mm       Width     Smooth Fit     0%       30 mm     Smooth Fit     0%       30 mm     Join to previous     0.00       Rescale     Join to next
Section profiles	Automatic refresh on page OK Cancel

- We select the material on the third tab.
- Finally, save the leg on the last tab. Click on "Save as..." first enter the name, then category. The category the Dining room; then we recommend to save the leg under Accessories sub-category. All furniture components should be saved here. Enter the producer name, Wenga.
- Now place the chair on the floor plan.

### 8.2.3. Create the seat cushion

The next component is the seat cushion which we will create for Marseille chair.

- Select "Smart Object Parts".
- Set the seat cushion position to horizontal.

Smart Object parts						×
	🔌 🔌 🛛 🖬				6 4	A 2
Orientation Horizontal	Base profile width 600 mm Segment Segm	Width 600 mm Height 100 mm Depth 800 mm	Round all edges Side rounding 0 mm V Front rounding 0 mm Sack rounding 0 mm V	Surface resolution Medium ~ Show grid		
Position and sizes			Autom	natic refresh on page	ОК	Cancel

• Set the frontal profile on the fourth profile. Click on the yellow star icon and from the floorplan select the seat profile.

File		0010	<b>-</b>	1 🗶 =	T A	➡ Profile Editor	mode						
$\bigwedge$	$\diamond$		$\diamond$	+	Ŕ	ΞΞ Ξ ⊕	[0]	Ē.		<u> </u>	$\sim$	$\checkmark$	×
Polygon	General rectangle	Rectangle HV	Box	Circle	Closed loop	Multiple profile	Edit boundary	Select an item	Select from list	Last defined outline	Select connected lines	Finish	Cancel
						Dra	w					Ed	itor

- On the first tab, set the parameters. The base profile width is 500 mm, the base profile height is 500 mm, and the thickness is 100 mm. The resolution is high.
- Now round edges, sides and front will be 20 mm, and the back rounding will be 10 mm. Smart Object parts



- Now Set the material on the 5<sup>th</sup> tab. Choose Cream\_01.
- On the following next two tab, you can add effects to the seat. On the first tab, you can set the top effects; on the second, you can add effects to the bottom. Now we will add pillow effect to the top. The padding depth should be 50 mm. Click on the green tick to apply changes.

Smart Object parts					×
				6 🍳 🖗	RR
1/1 Tufted Tufted Nailing Pillow	Sewing	Affecte Full sur	area face V		
Effects	Padding depth 50 mm	✓ Automatic refresh on page	Ð	ок	Cancel



• Final step is to save the seat. On the last tab, click on "Save as... "command, first enter the name and the category. The category should be the dining room, choose Accessories for sub-category.

It is crucial to save components before closing the dialogue window. If we close the dialogue without saving the component, then always place it on the floorplan. If none of these happen, then we could lose our work. In case we placed the item on the floorplan, but that is still unsaved that we could do that anytime. Select the item on the floorplan, choose the properties; this will open the Smart Object Part dialogue window, here you can save the item.

## 8.2.4. Create the back of Marseille chair

There is one more component missing, that is the back of the chair. We will continue the work modelling this.

- Select Smart Object Parts.
- The back profile of the chair is a vertical item, so this setting is correct.

Smart Object parts				x
j 🖉 🐳 🌲 🤫	🗞 🔇 🔅			
Orientation Vertical V	Base profile width 600 mm v Base profile height 800 mm v Thidrness 100 mm v Thidrness orientation Center v	Width 600 mm Height 800 mm Depth 100 mm	Round all edges     Surface resolution       Side rounding     Medium     ~       0 mm     Show grid     Show grid       Front rounding     0 mm     ~       Back rounding     0 mm     ~	
Position and sizes			Automatic refresh on page	OK Cancel

• On the fourth tab, define the frontal profile. Select it from the floorplan, by clicking on the yellow star icon. Here, we have to use the "Closed Loop" command and click inside the profile.

Smart Object parts	x
超 🐐 🐳 🍯 🐟 🔹 🖉 🖬	
Custom profile alap Frontal Frontal Frontal Frontal Frontal Frontal Profile 5 Profile 6	Frontal Frontal Marseille_c
Frontal profile	Automatic refresh on page OK Cancel

On the first tab, we can set the parameters. Here we have to mention that so far, there was no need to use the second and the third tab. Here we can customise the vertical and the horizontal base profiles.

• In the case of the Marseille chair, the vertical base profile is an arc. Select this arc from the floorplan, for this use "Select an item" command. Select the arc then define the reference point with one click.

Now the software will pull over the back-frontal profile on this vertical base profile.



It is important to note that the height of the back cannot be modified on the first tab. It happens because the vertical base profile defines the height.

- It works as above-mentioned in the same way on the horizontal base profile. In our case, we do not have to modify it. So, the width will not be defined by the horizontal base profile. Here we leave unchanged the horizontal line as a base profile.
- Now go back to the first tab, the vertical base profile defines the height, but we should set the length, which is 430 mm, and the depth is 40 mm. The resolution is high, and the rounding is 20 mm. In case of the back of the chair, the rounding value cannot be more than this value.

77 🛎 👗 📕	🙈 🔕 🐼 🗔 🗖
12 👋 🐳 🖊 -	🤏 🔹 🖗 🖬
Orientation	Base profile width
Vertical $\checkmark$	600 mm 🗸
	Base profile height
	1170.6 mm 🗸
	Thickness
	100 mm 🗸 🗸
	Thickness orientation
	Center 🗸
Position and sizes	



Smart Object parts			×
	k K K		
🛛 🐐 🐐 🤗 🔹 🕅 🗖 🗖			
Orientation Vertical V Base profile height 1170.6 mm V Thickness 1170.6 mm V Thickness orientation Center V	Width Round all edges 430 mm Side rounding Height 20 mm V Depth 143.7 mm	Surface resolution High	
Position and sizes		Automatic refresh on page	OK Cancel

The next, we add pillow effect on the front. The padding depth should be 30 mm and affects the full area.

Smart Object parts	×
12 🚔 🚔 📣 🚺 📦 🖻 🖬	
1/1 Tufted and pleats Nailing Pillow Sewing	Affected area Full surface
Padding depth 30 mm 💙	Automatic refresh on page OK Cancel

In this case, the pillow effect is more significant on the backside. Therefore, we add another pillow effect and the affected area will be a customized area.

• Click on the green cross icon to add further effect. Now select from the drop-down menu the "Custom area" option.

:Ø		<b>6</b> 🖌 🖓	A P
	Affected area Ful surface ~ Ful su	]	
	Padding depth 30 mm v		<ul> <li>✓ Ø</li> </ul>
Effects	Automatic refresh on page	ОК	Cancel

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- The customized area can be given by using the yellow star icon. The program offers the chair back profile. We have to fit it right on top of the smaller back seat profile. Then we have to use the "Closed loop" command to click inside this profile. As you can see the second pillow effect is created on the upper part of the back chair.
- Add further effect, like "Tufted" nailed shape. The padding shape and padding radius should be 50 mm. Click on the green tick to create the effects.

Affected a	area	
Custom a	rea	$\sim$
		0

		×
12 · · · · · · · · · · · · · · · · · · ·	<b>1</b>	A 2
<ul> <li>I/3</li> <li>Tufted and plea Nailing Pillow Sewing</li> </ul>	Affected area Custom area Custom area Custom area Custom area Custom area Custom area Custom area Custom area Coffset left / right 0 mm ~ Custom brock 50 mm ~ Spacing horizontal 215 mm ~	]
Padding shape Nailed V S0 mm V S0 mm V	Direction Spacing vertical	Cancel

Now set the nailing properties, our aim to place the nailing effect in one row. You can reach this if you half the length 430 mm, so 215 mm will be the value for the horizontal spacing. The vertical spacing will be 250 mm. Finally set the front/back offset to 50 mm.



- Finally set the material Cream\_01.
- The back chair is ready. You have to save it in the library. Use "Save as ... command, the category is the Dining room, sub-category is accessories, producer is Wenga.
- Now place the back chair next to other parts.



### 8.2.5. Assemble Marseille chair

The last task is to assemble the Marseille chair components.

- Select Smart objects / Assembled objects command.
- First, you have to select the components from the library. Place the back of the chair first. You can find this component in the Accessories subcategory of the Dining room category.
- The component appears in red in the dialogue. It means that the back of the chair has not been placed yet. Click on the green tick to do so.



- Add the subsequent parts: the legs. First, click on the green cross icon.
- Find the legs in the library.
- It is placed on the top of the back. Click on the front, now it is active, and then click on the lower middle point.

Smart Ob	oject assembly										x	
	2 🕫 🖬										R 2	
	sofa_classic _parna	sofa_classic _tamla1_1	sofa_classic _tamla2_1	sofa_classic _tamla3	sofa_classic _tamla4	Trapezoid Seat Shape	Wenga Cannes ar	Wenga Cannes bac	Offset le Constant Const	eft/right (red) mm v b ront/back (green) mm v b own/up (blue)	Width 430 mm Height 1172.3 mm	
li C	Turn up (red)	~	Turn forward ( 0°	green) Tu V (	rn right (blue) °	→ Mirror		Relative coordinates		mm 🗸 🕨	Depth 157.4 mm	
You can a	djust the placer	nent plane and	reference poir	nt of this objec	t by clicking the	stickers on the	3d preview!	Automati	ic refresh on page	ОК	Cancel	

• Click on the green tick to place the leg, and then move 200 mm along the red axis.

Smart Object assembly	×										
	A 2										
2/2         Image: Constraint of the second sec	h 3 mm										
sofa_classic sofa_	ht 2.3 mm th 4 mm										
0°     √     0°     √     Mirror     ✓     Relative coordinates     Repos	ition object										
You can adjust the placement plane and reference point of this object by clicking the stickers on the 3d preview! Automatic refresh on page OK OK	Cancel										

- The next element that we place is going to be the other leg, so leave the leg selected and click on the green plus icon.
- Click on the front, now it is active.
- Click on the green tick to place the leg.
- Since the lower middle point was the reference point; you have to move this leg along the red axis with -200 mm due to the symmetry. Also, you have to keep in mind that you have to turn it right with 180 degree.



- Let's place the seat cushion. Click on the green plus.
- Select the seat cushion from the library.
- Click on the green tick to place the seat, which appears now at the bottom as for positioning we selected the lower middle point before.
- We have to elevate the seat cushion to 350 mm because of the height of the legs. Therefore, you have to move it 350 mm along the blue axis.





• Move the seat cushion to the right position along the green axis.



• The last task is to place the legs in the right position. After selecting, move it -350 mm along the green axis. If you do not know the exact value, you can move it by using the arrows.



- Move the other leg to the right place too. Move it -350 mm along the green axis.
- The chair is ready. The final task is to save it in the Library. Name the chair and save it to the Dining room category and Chair subcategory. You can also give the name of the producer.
- Now you can place it on the floor plan.

In the future, the chair is available from the Design Center / Objects / Dining room / Chair subcategory, where you can find the original and your chair as well.



