# BLENDER MODELLING EXERCISE 01-01

Corso Realtà Virtuale 2022/2023

susanna.brambilla@unimi.it
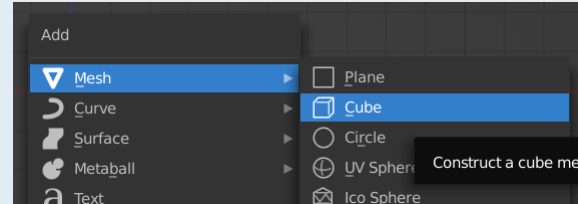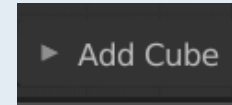
# WITH BLENDER V2.83

# ARCADE CABINET

1. Open the Ex01-01 folder available on Github and open the .blend file

2. Create a cube [shift]+A > Mesh > Cube:



3. Click on Add Cube (bottom left) and change values:

   • Size: 1 m

   • Align: World

   • Location X, Y, Z: 0 m

   • Rotation X, Y, Z: 0˚

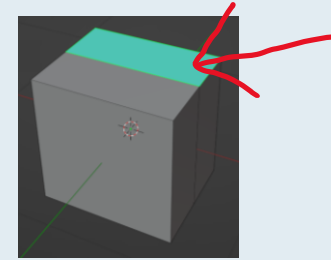4. On the right panel (if you can't see it [N]), change Dimensions in Item:

   • X: 1 m

   • Y: 0.8 m

   • Z: 1 m

5. Switch to Edit Mode and loop cut and slide along the z axis, confirm with left button of mouse

6. Select the face top-behind using Face select

   and then extrude it with [E], confirm with left button of the mouse

8. Select the face top-behind and move it with [G]+[Z] along the z-axis
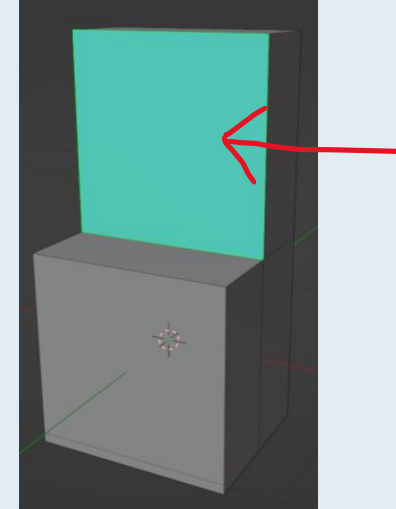
9. Click on Extrude Region and Move (bottom left) and change values:
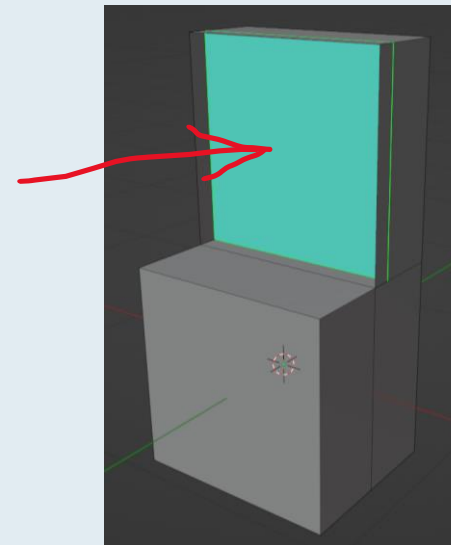   - X: 0
   - Y: 0
   - Z: 1 m

10. Select the front upper face and extrude with [E]



11. Scale the extruded face on all axes to reduce its dimensions

12. Extrude again with [E] and move the new face [G] + [Y]

We now want to create the buttons of the cabinet:

1. Change the mode into Object Mode

2. Select the Cabinet and hide it with [H]

3. In Object Mode, create a new cube with [Shift] + [A] > Add Mesh > [Cube] and change its Dimensions in:
   - X: 0.05 m
   - Y: 0.05 m
   - Z: 0.05 m

4. Switch to Edit Mode and select Modifier Properties (on the right) 🔧 and Add Modifier > Array
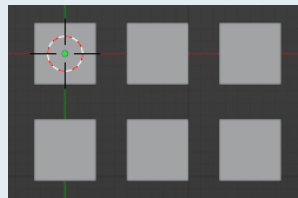
5. Change Array properties:
   - Count: 3
   - Relative Offset X: 1.5

6. In Object Mode, Apply the modifier:
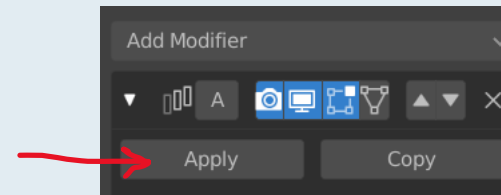


7. In Edit Mode, select the button with [A]

8. Duplicate the object with [shift] + [D], move the duplicated object along the y-Axis:



9. Select all with [A] and move along the x-Axis, on the right

We want to create the levers:

1. Switch to Object Mode and Add a Cube with [shift]+[A] > Add Mesh > Cube, change its Dimensions in:
   - X: 0.03
   - Y: 0.03
   - Z: 0.1

2. Add another cube and change its dimensions in:
   - X: 0.04
   - Y: 0.04
   - Z: 0.04

3. Select the second cube and then the first one with [shift] + left mouse button and press [ctrl] + [J] to join the obects

Now we should delete the parts of mesh that are overlapping...

1. Switch to Edit Mode and enable wireframe view with [Z] > Wireframe

2. With Vertex select selected  , select the object with [A]

3. Now push [ctrl] + [F] to open the Face Menu or click on Face (top), then select the voice > Intersect (Knife)

4. Click on the button in the lower left area, then change the values:
   • Source: Self Intersect
   • Separate Mode: Cut

▼ Intersect (Knife)

| | | |
|---|---|---|
| Source | Self Intersect | ∨ |
| Separate Mode | Cut | ∨ |
| Merge threshold | 0.000001 m | |
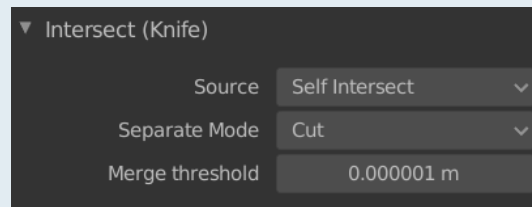
5.  Select vertices of the overlapping parts with left mouse button
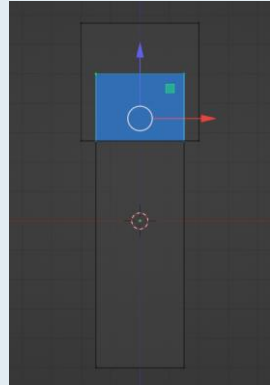


6.  Push [canc] to delete, from the menu select > Delete Faces
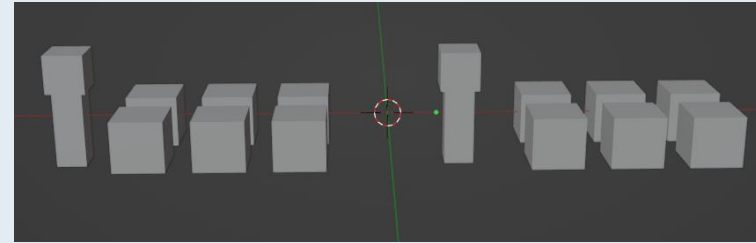
7.  Switch back to default view with [Z] > solid and to Object Mode

8.  Select the lever and then the buttons with [shift] + left mouse button and join them with [J]
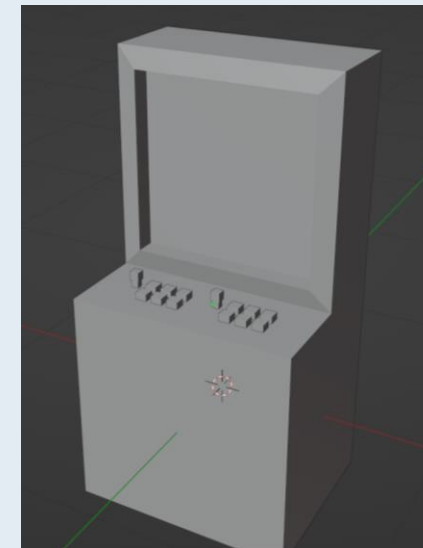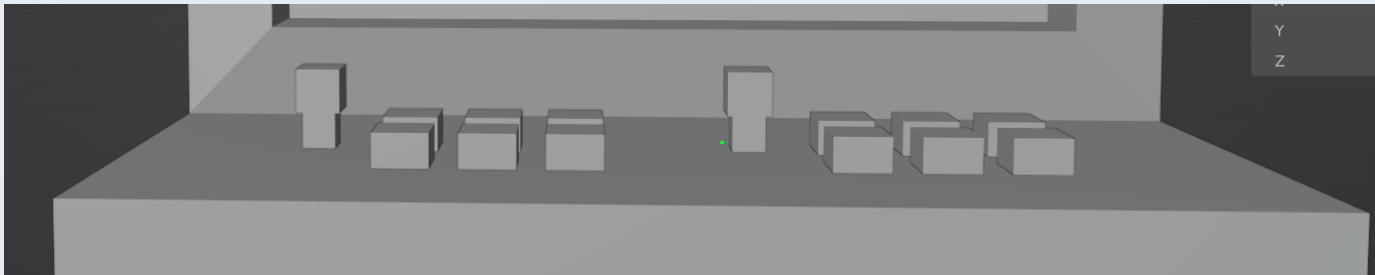
9.  Select the buttons object and select Modifier Properties and Add Modifier > Array

10. Change the Relative Offset of the Modifier:



12. Unhide the cabinet with [alt] + [H]

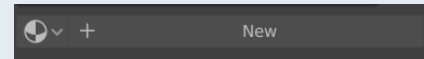13. Move the buttons object with [G] + [*axis*] to adjust them:
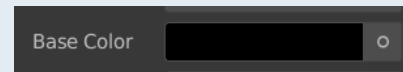
# MODELS AND TEXTURE
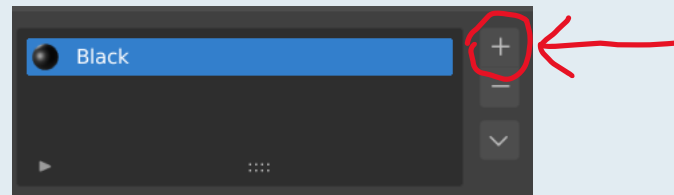
We now want to apply materials on our model:

1. Click on Material Properties on the right  and add a new material clicking on + New:
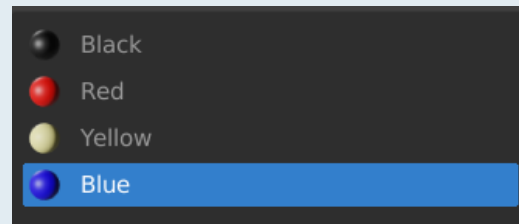


2. Rename the material *Black* and change the base color into black:



3. Create 3 new material slots by clicking on +, on the left:



4. Repeat 1. for each material, rename the materials *Red, Yellow, Blue* and change Base Colors:
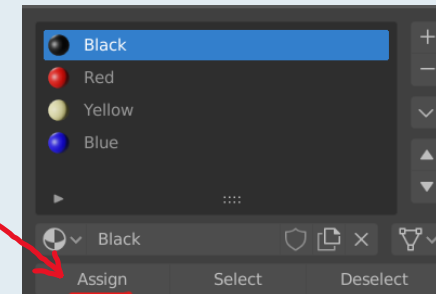
5. Select the buttons object, switch to Edit Mode and enable wireframe view with [Z] > Wireframe
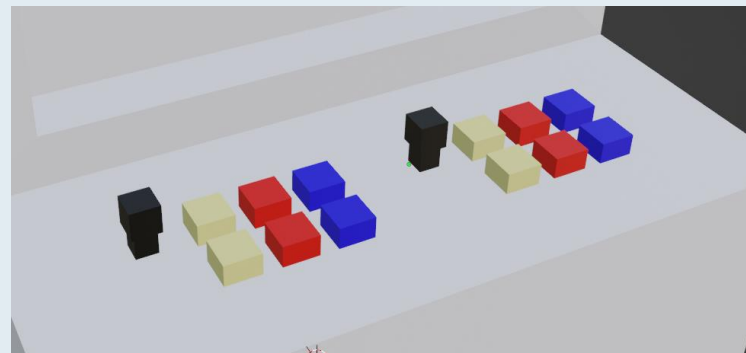
6. Select the lever and select the Black color

7. Assign the color to the lever by clicking on Assign:

9. In the same way, assign all the other colors to the buttons
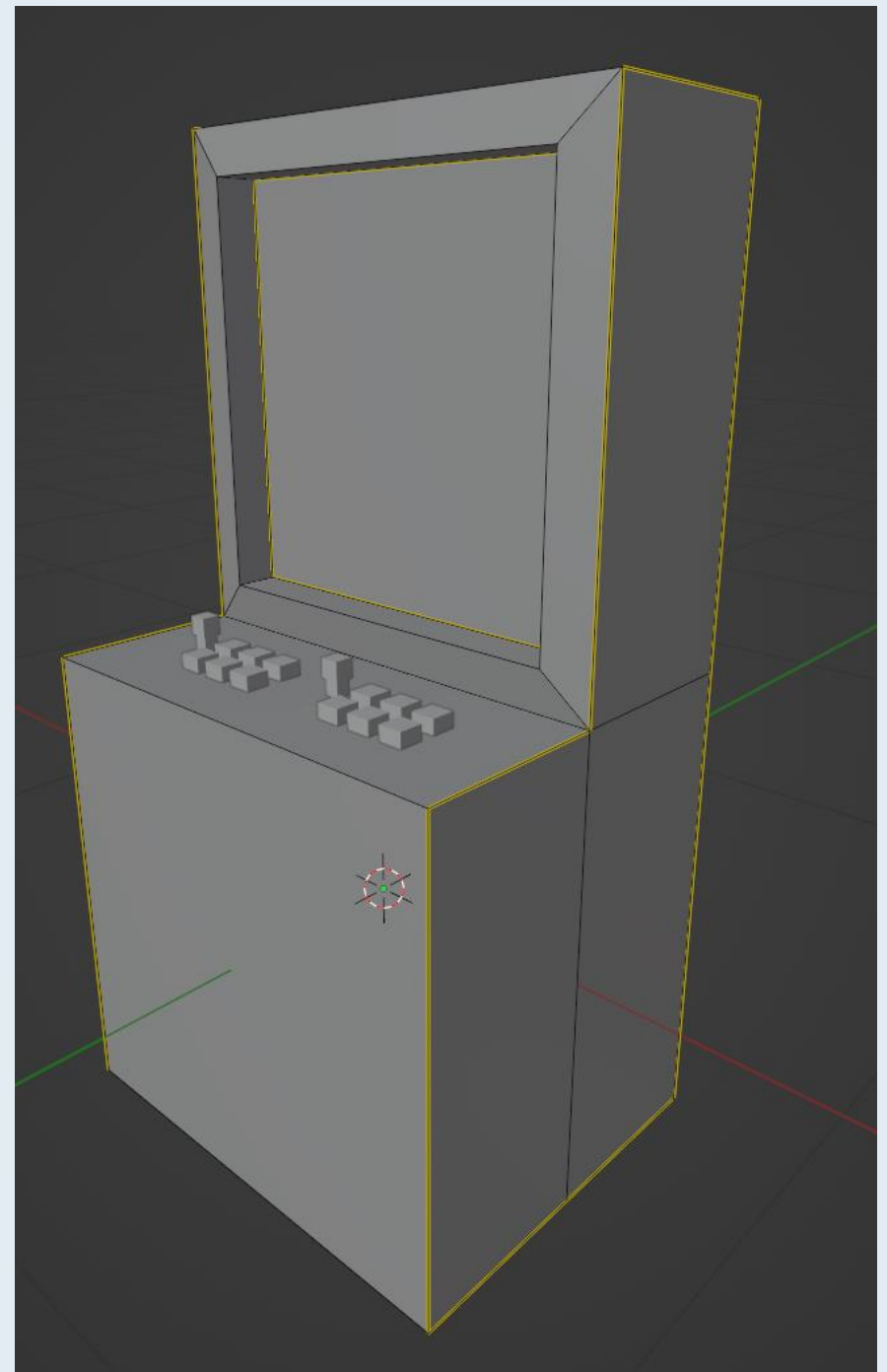
10. Switch to Object Mode and enable material view with [Z] > Material

Now we are going to add a texture:

1. Switch to Edit Mode

2. We want to mark the seams where our model will be unwrapped:
   - Select the screen of the cabinet and mark seam with [ctrl] + [E] > Mark Seam
   - Select the edges of the cabinet sides and mark seams with [ctrl] + [E] > Mark Seam
   - Do it for all the parts you want to divide

3. Select the cabinet case with [A] and unwrap with [U] > Smart UV Project, deselecting Stretch to UV Bounds

4. Create a new Material with + New and rename it *CabinetCase*

5. Select Texture Paint window (top):
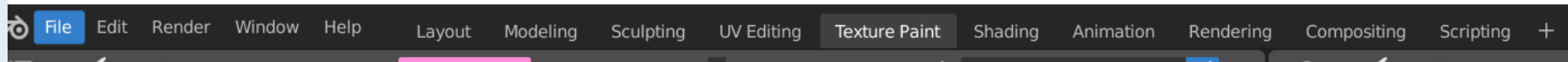


6. In the left window, the Image Editor, create a new image clicking Open and select the Ex01_texture.png in the Ex01 folder:
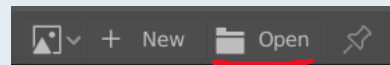


7. Change the Base Color of the *CabinetCase* material into Image Texture and select the Ex01_texture.png:
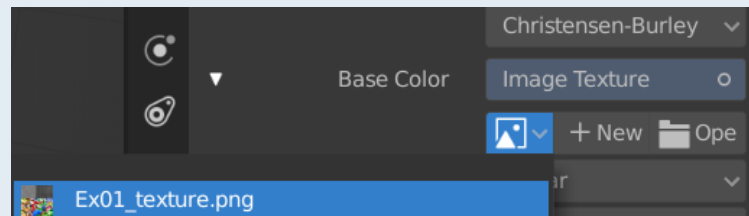
8. In the left window, switch to UV Editor OR click on UV Editing window (top); in the right window, switch to Edit Mode:
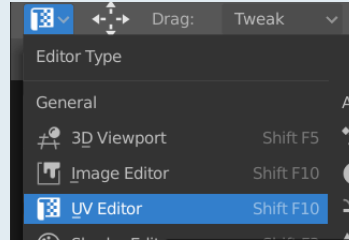


9. Select faces on the right window to make them visible on the left window, then select the faces you want to move, scale, or rotate on the left window

10. Apply the transformation using [G] to grab, [S] to scale, and [R] to rotate: