

3D Puzzle development for Visual Thinking Laboratory

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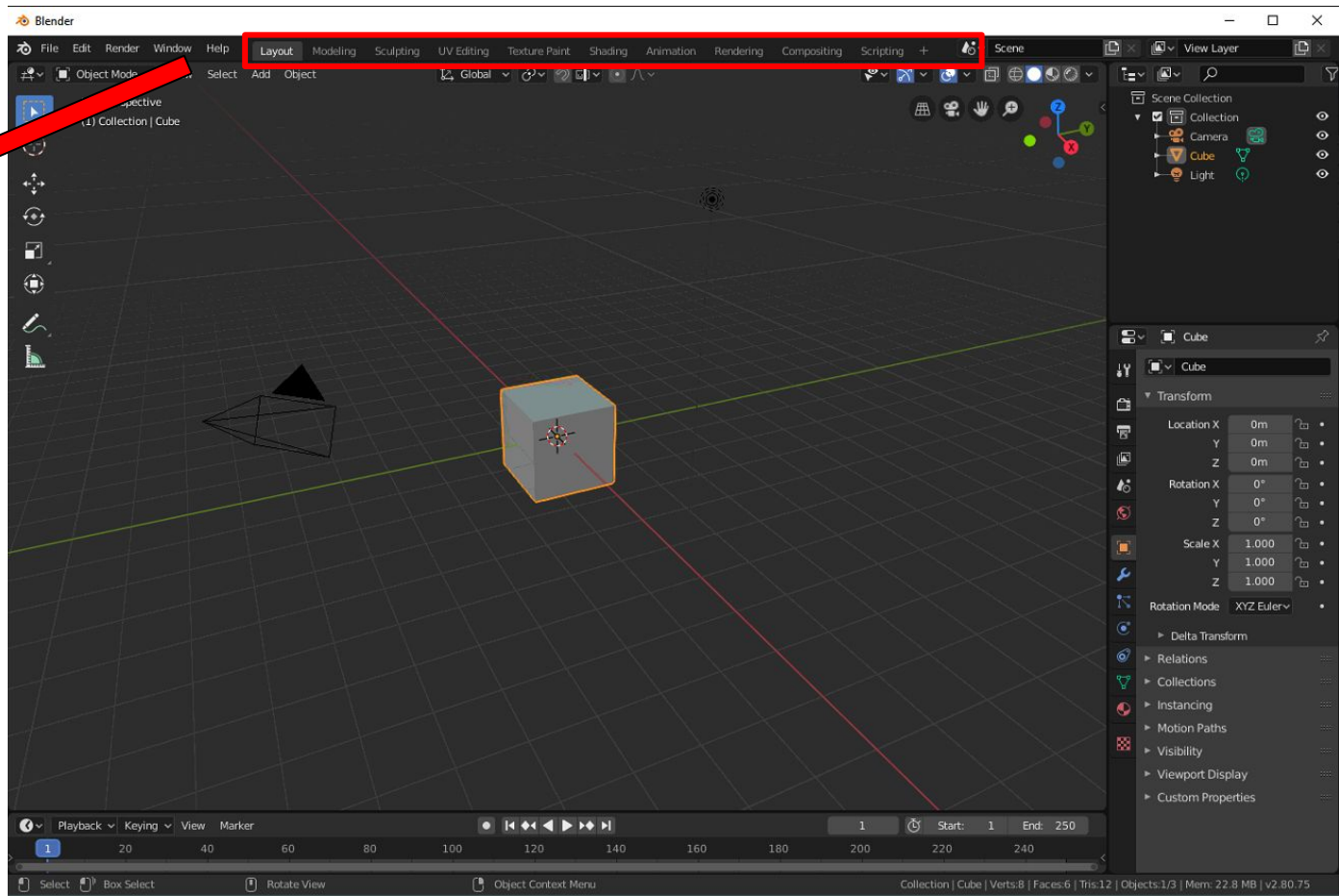
Create 3D model

- There are numbers of 3D modeling software.
- For simple objects such as box or sphere **Blender** can be used.



Blender: Shading mode

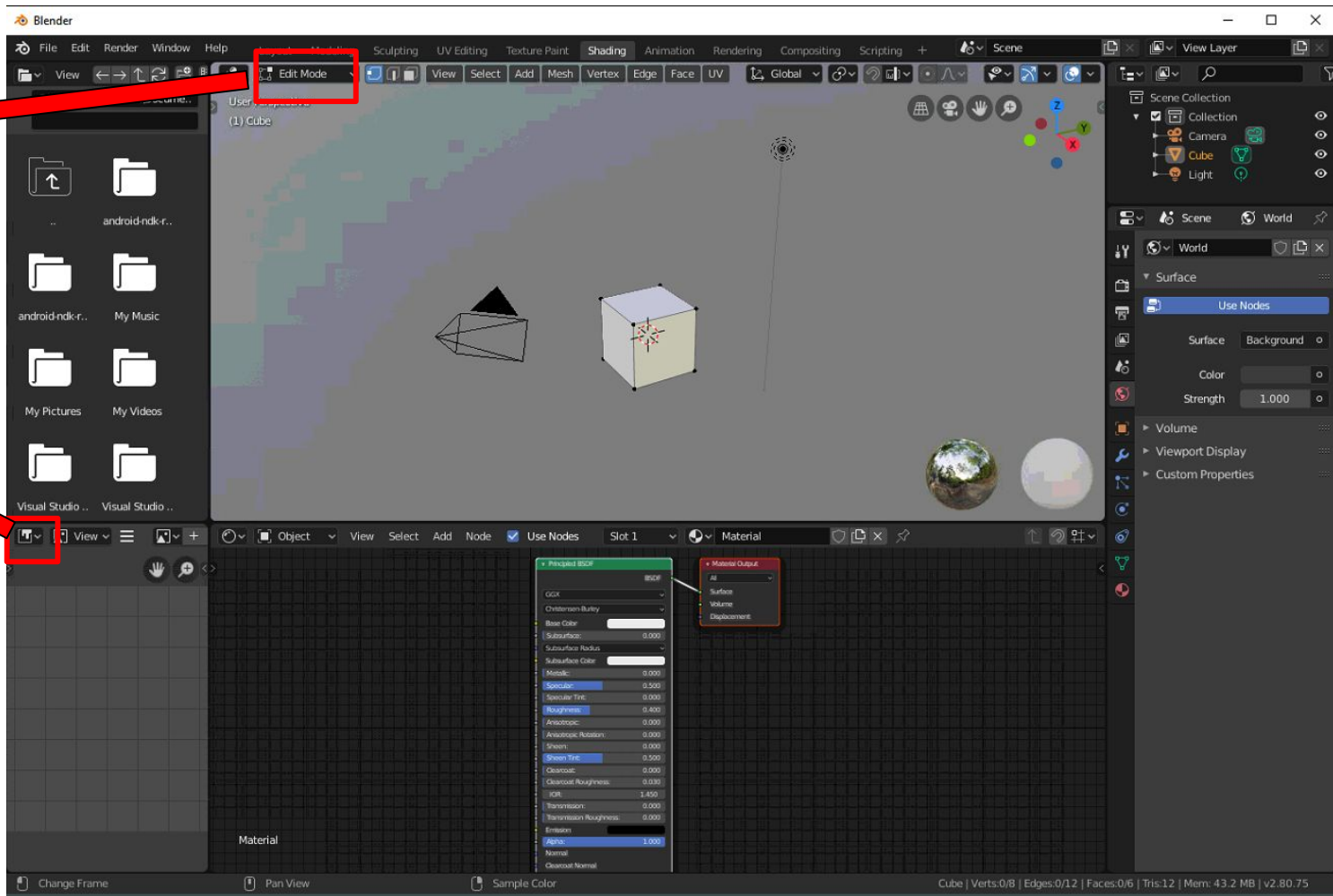
- Layout
- Modeling
- Sculpting
- UV Editing
- Texture Paint
- Shading
- Animation
- Rendering
- Compositing
- Scripting



Blender 2.80

EDIT MODE

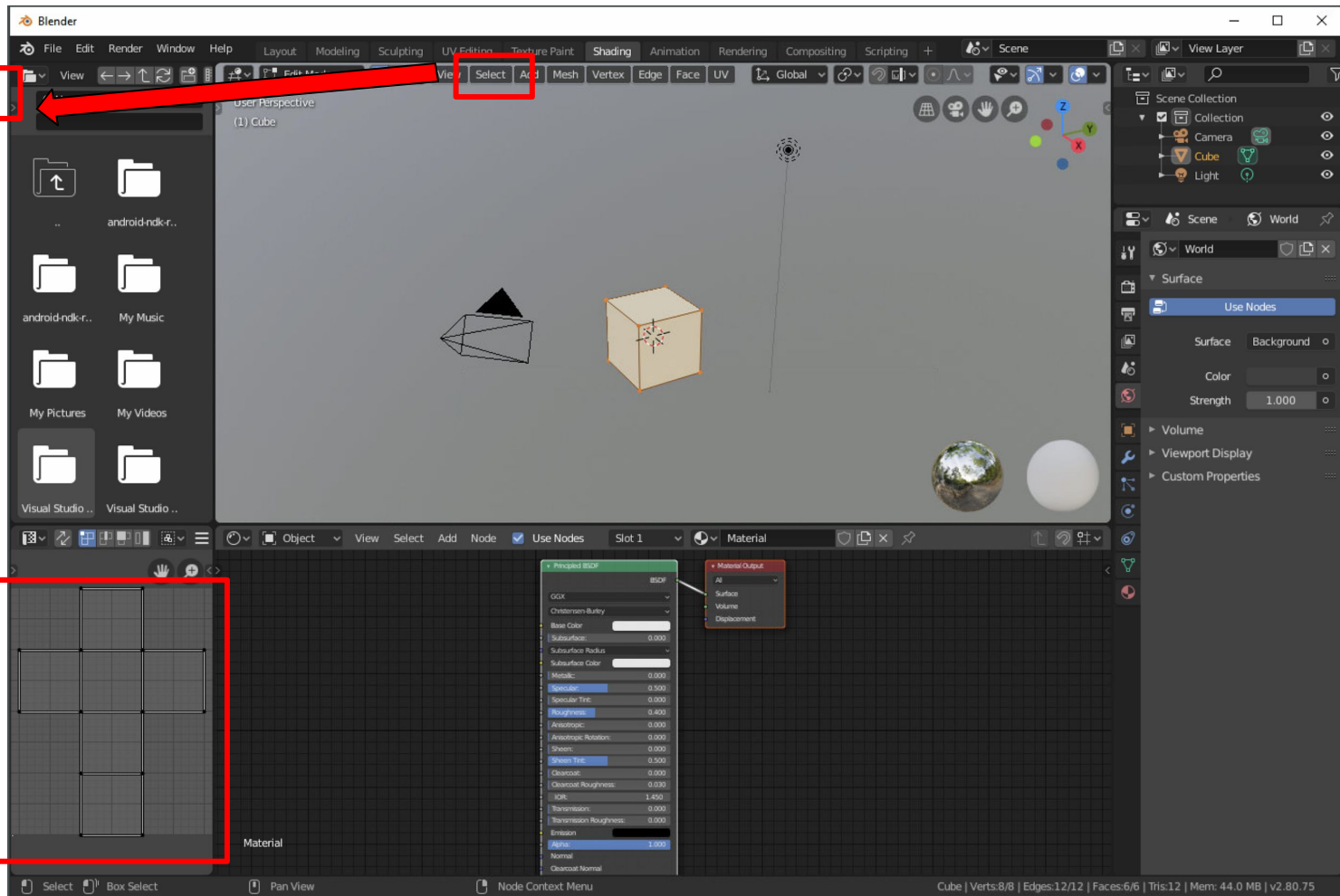
UV EDITING



Blender 2.80

Select All

Boundaries will
pop up



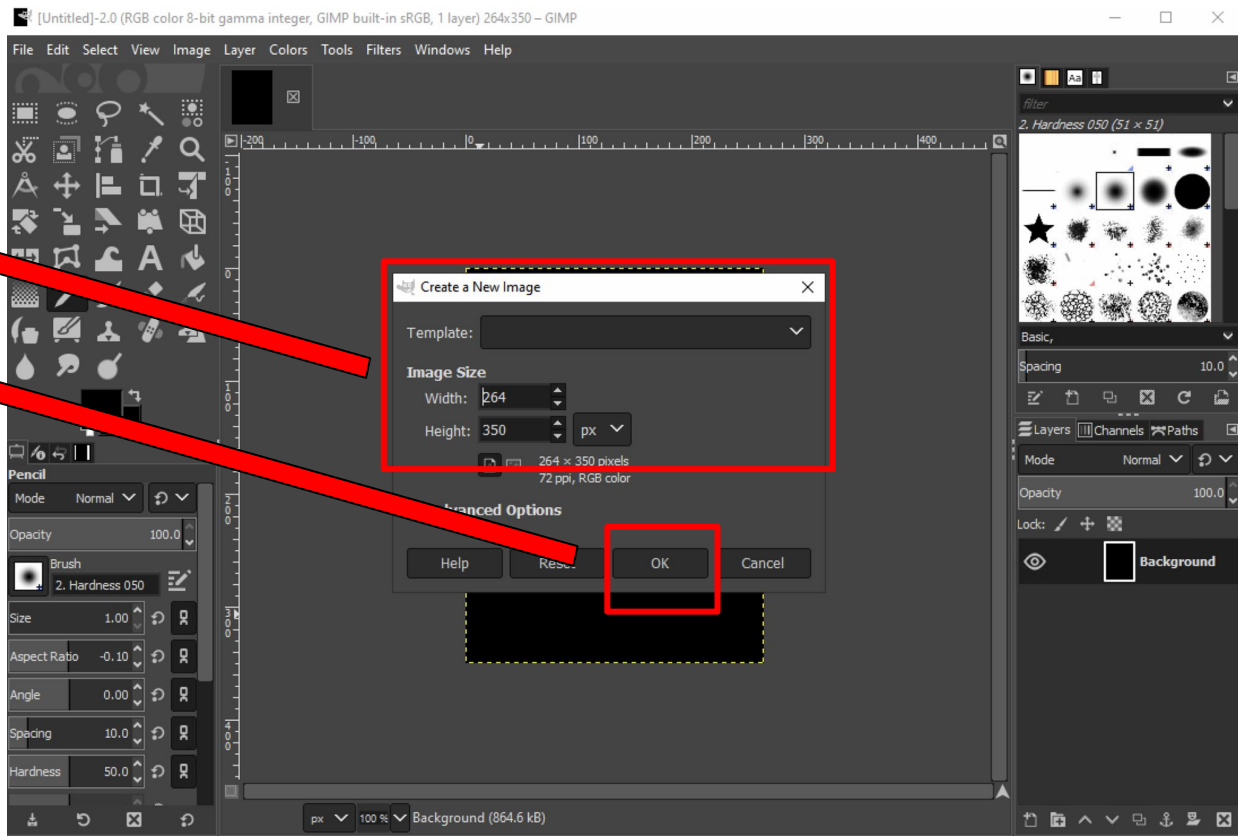
Create Texture

- To create texture we used GIMP.



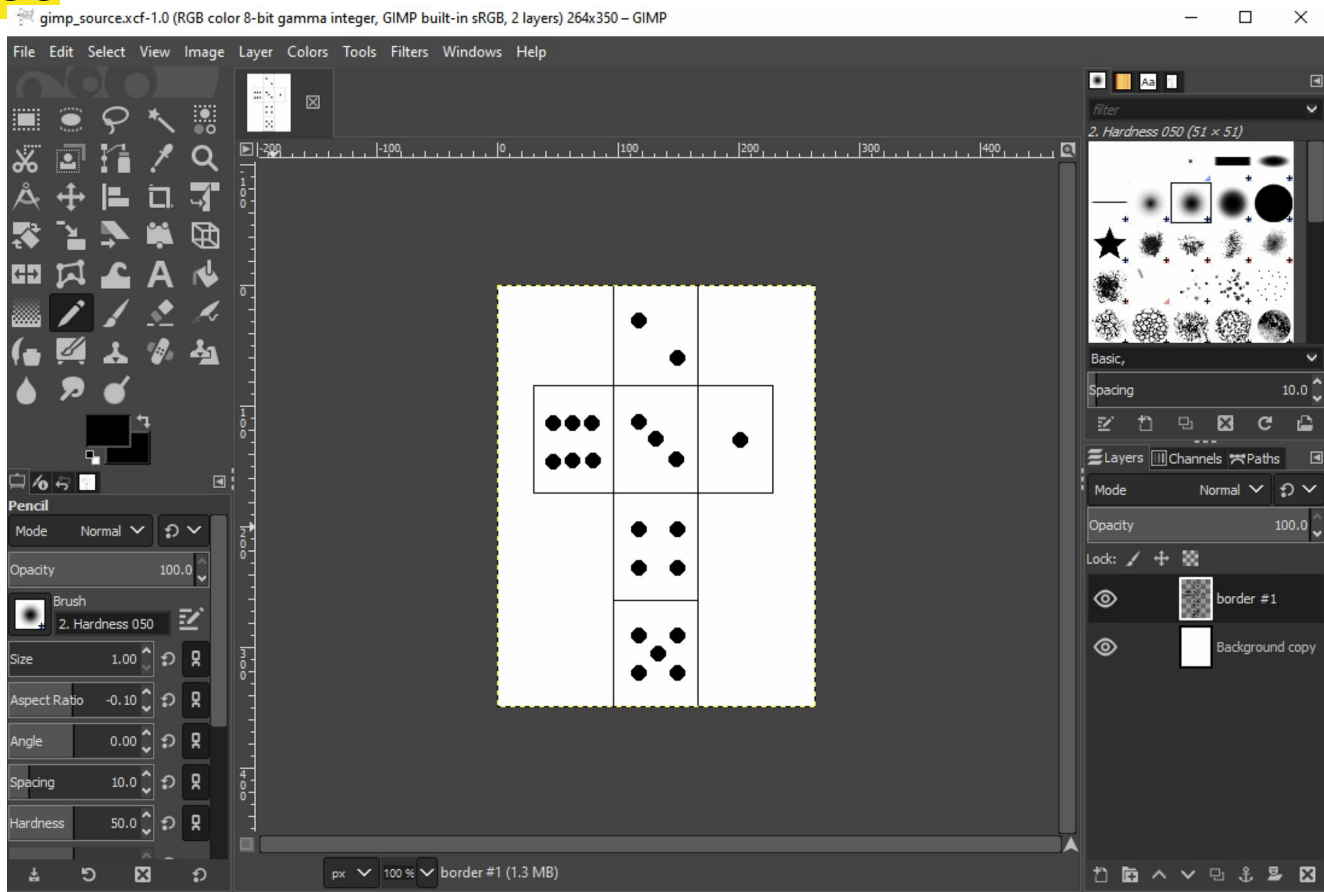
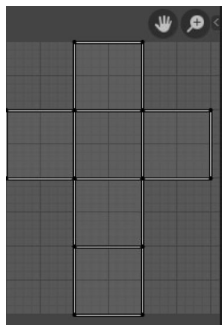
Gimp: New Texture

- Ctrl + n new image
- Specifying name,
- Width and Height
- Hit OK



Gimp: Drawing Dice

- Create your favorite texture
- To be matched with uv editing

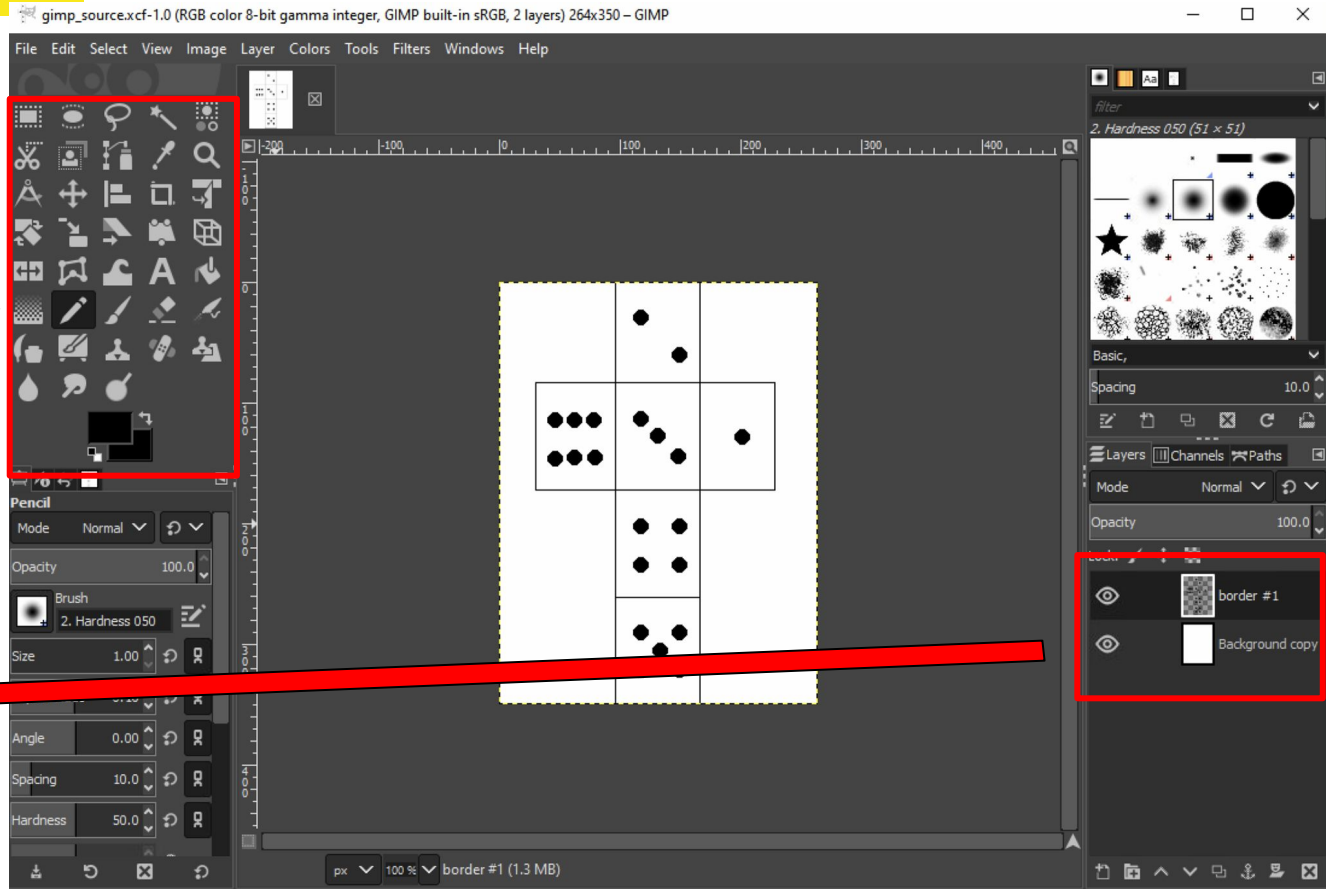


Gimp: Drawing Tools

- Useful tools
- And color choose



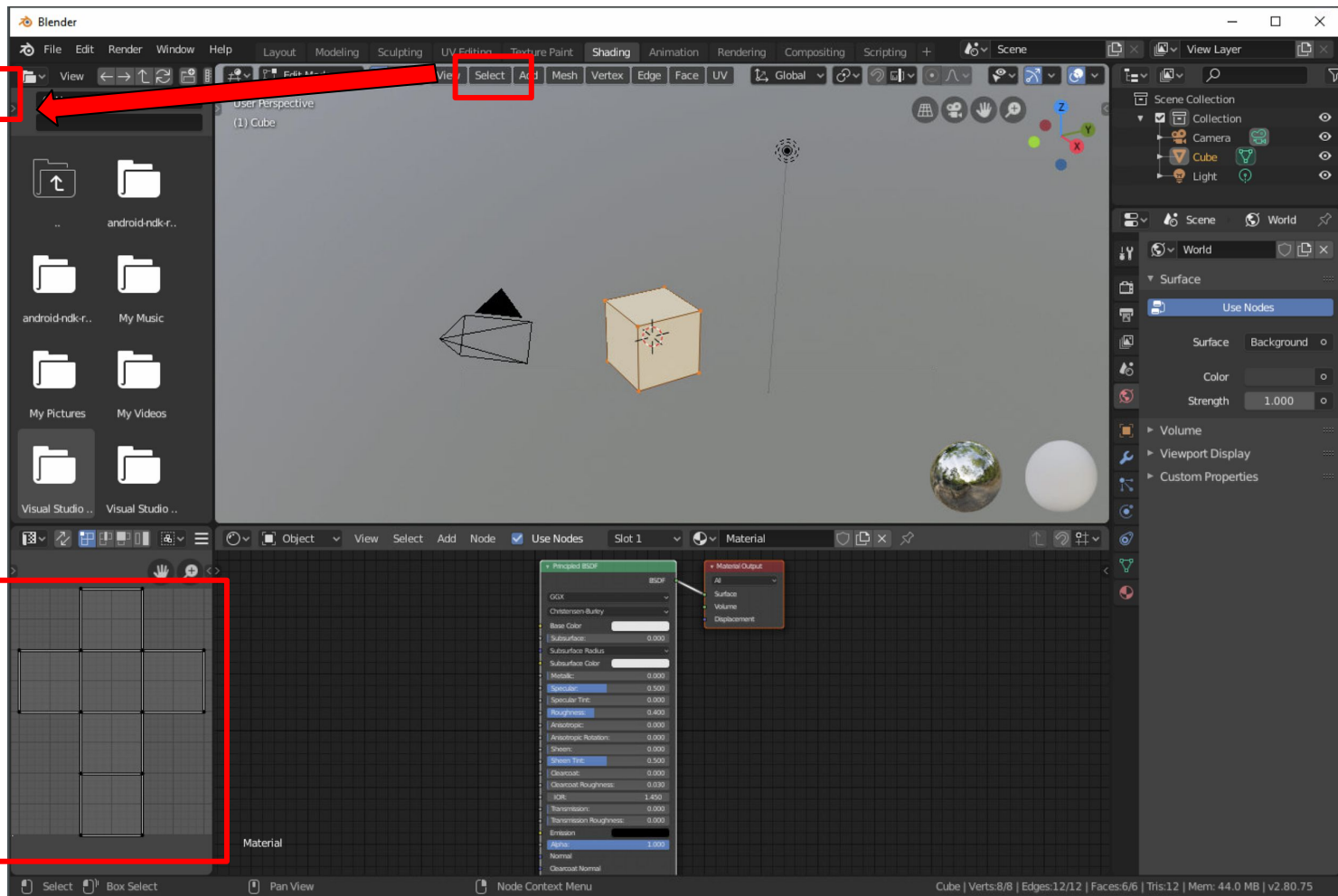
- Layers



Blender 2.80

Select All

Boundaries will
pop up

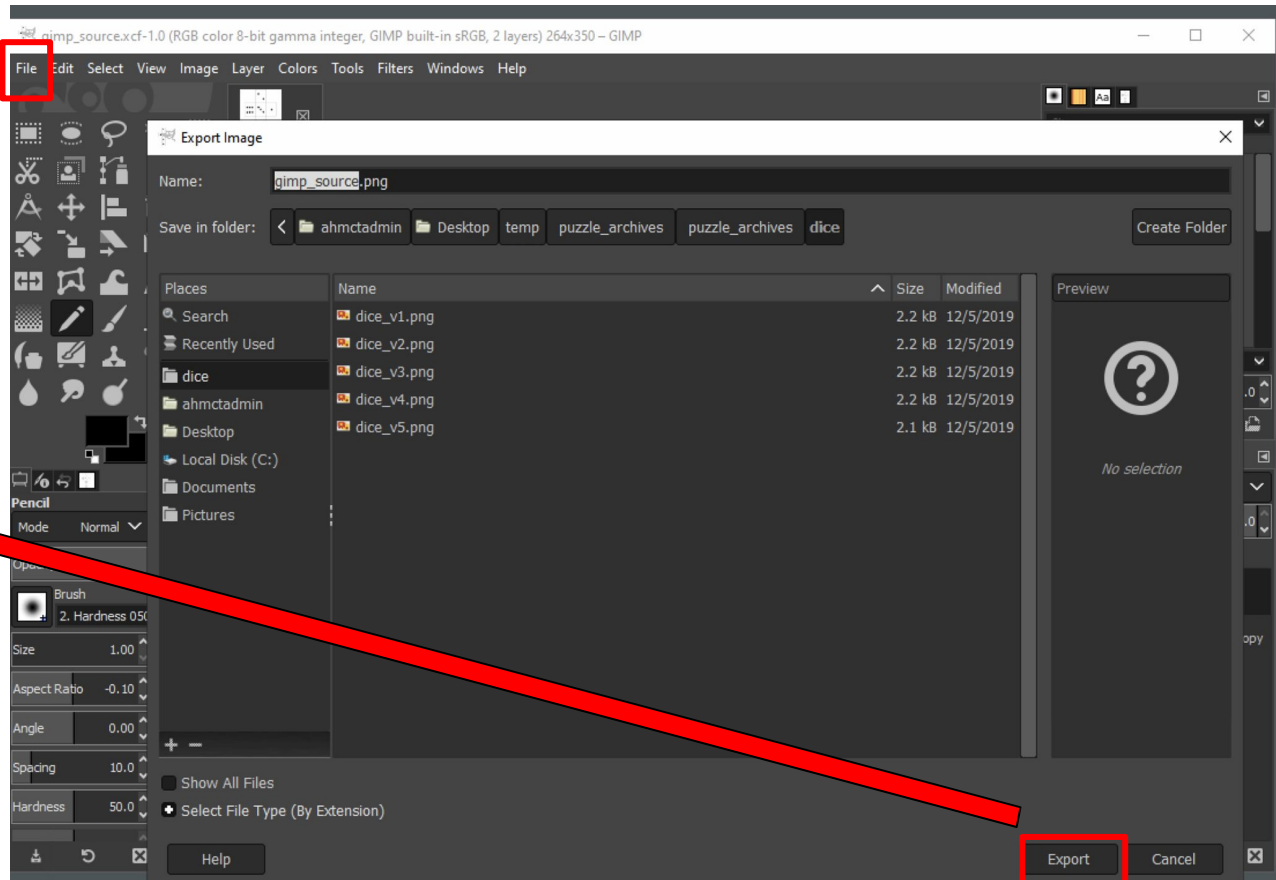


Gimp: Export

Select File

Then hit Export

Specify a name and hit export as png



Adding Texture

- To add Texture to the model, The png file created by gimp is loaded to blender.

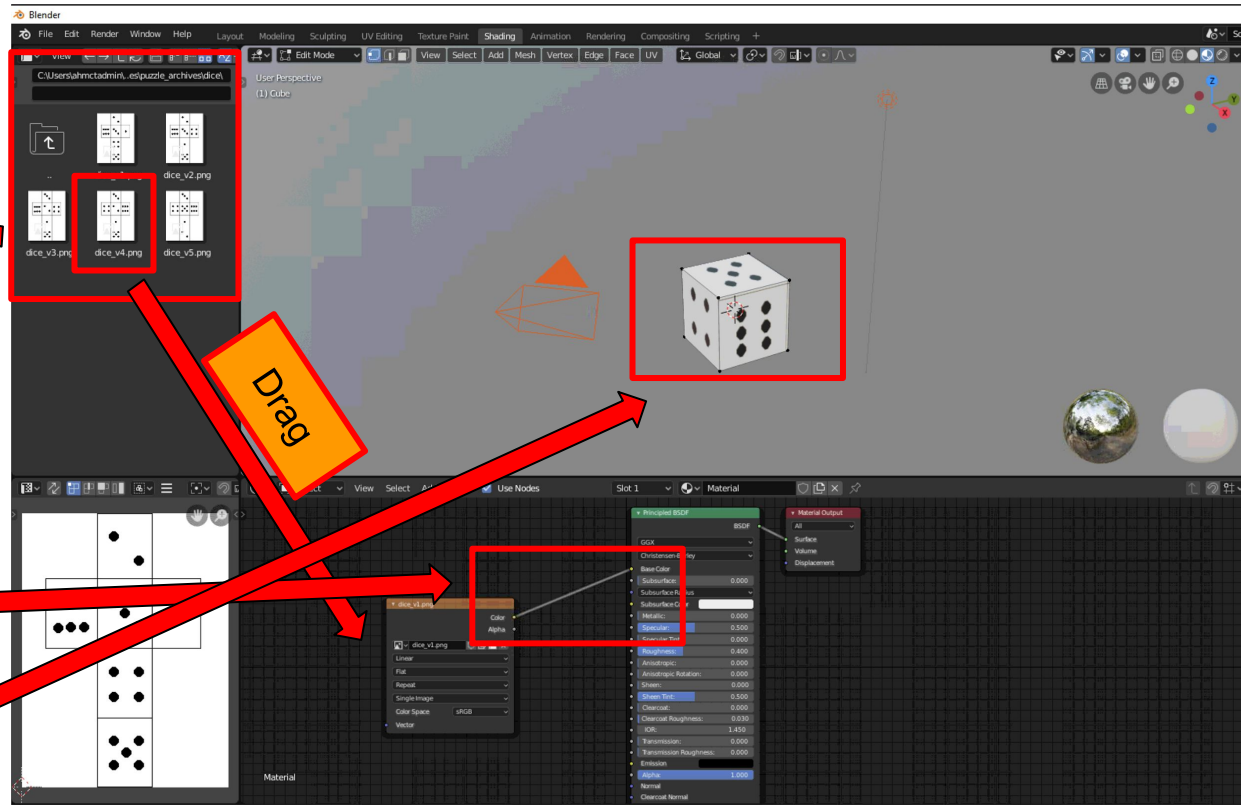


+



Adding Texture

- Browse to the archive of png textures
- Drag and drop a texture into an empty space
- Connect the link
- You should see the texture on the dice

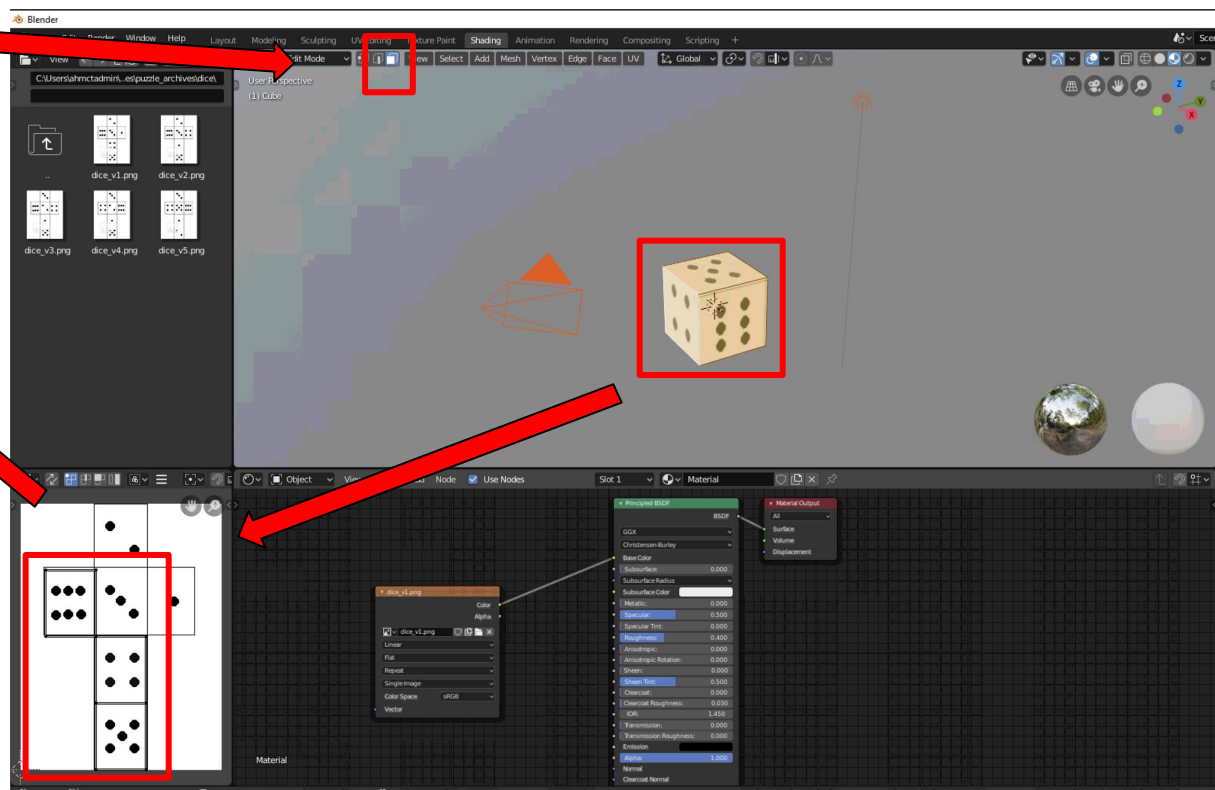


Adding Texture

Select surface

Now clicking on a surface
must highlight the
boundaries on the UV
Editing

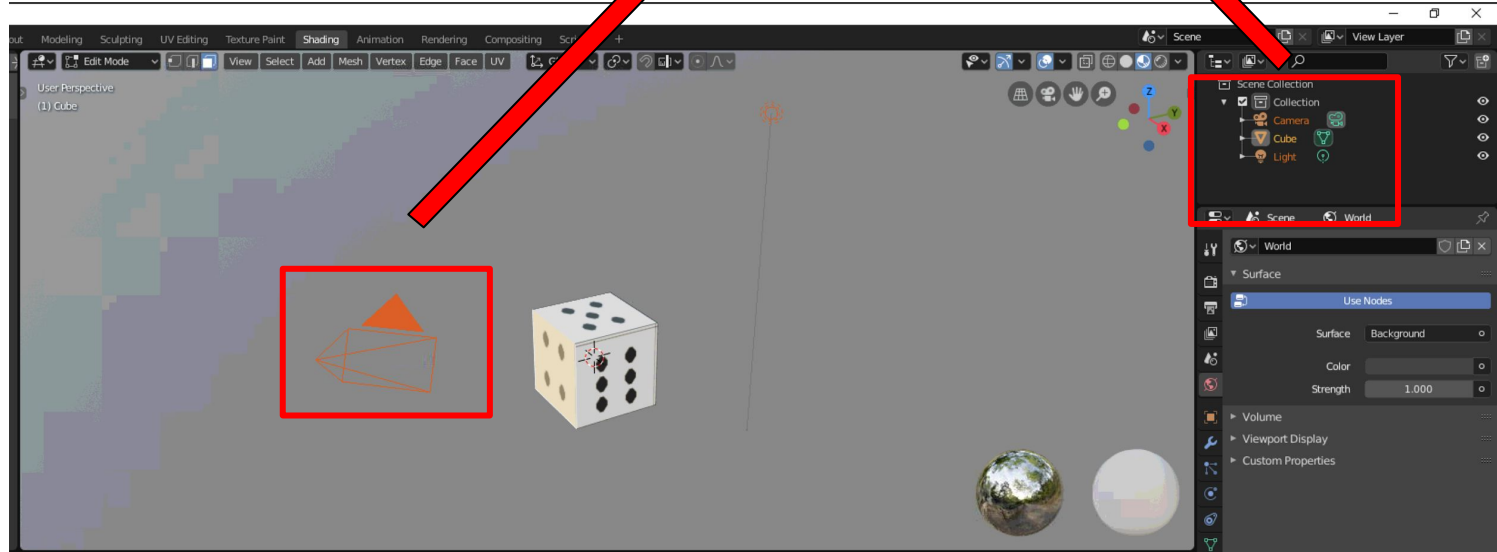
If the boundaries are not
fit the png file should be
tweaked



Blender: delete light and camera

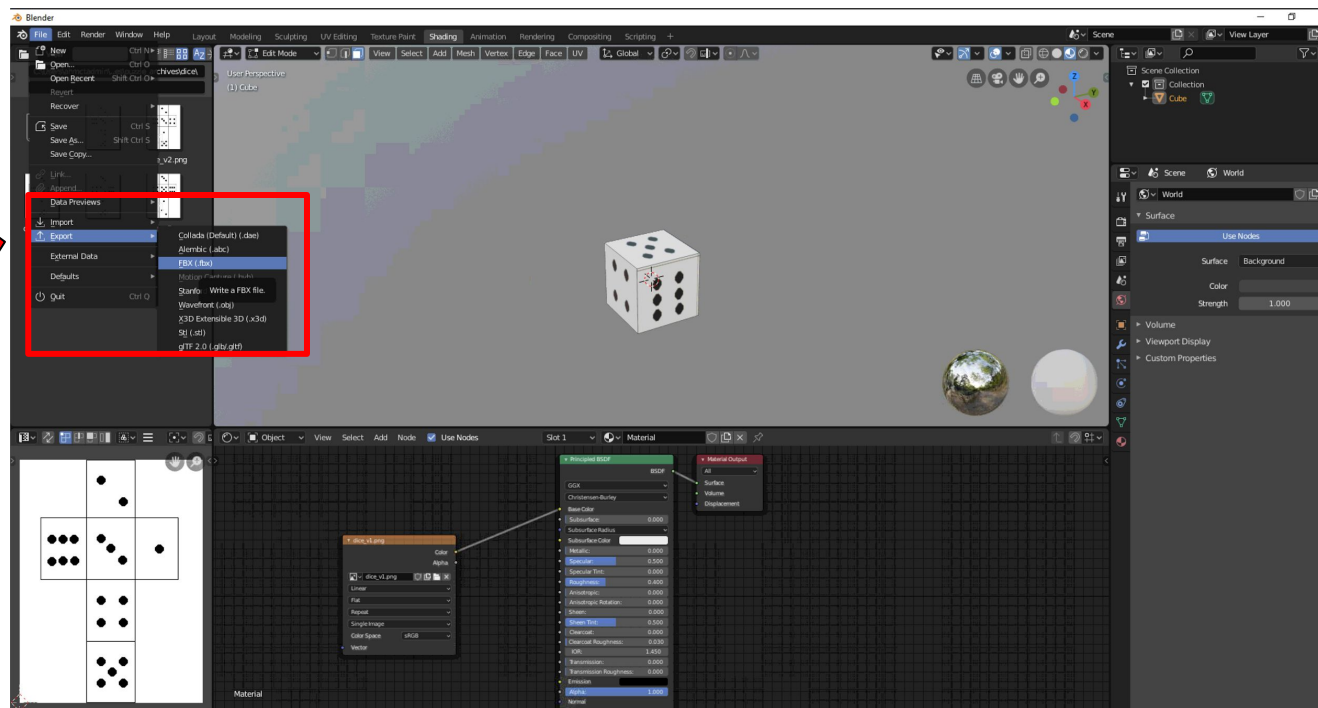
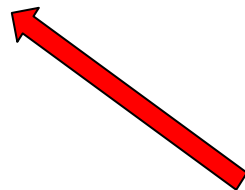
Before export the model make sure if you need the camera and light (comes default) if not delete it

Delete camera and light
(not the cube)



Blender: Export as .FBX

Hit file followed by
Export and FBX



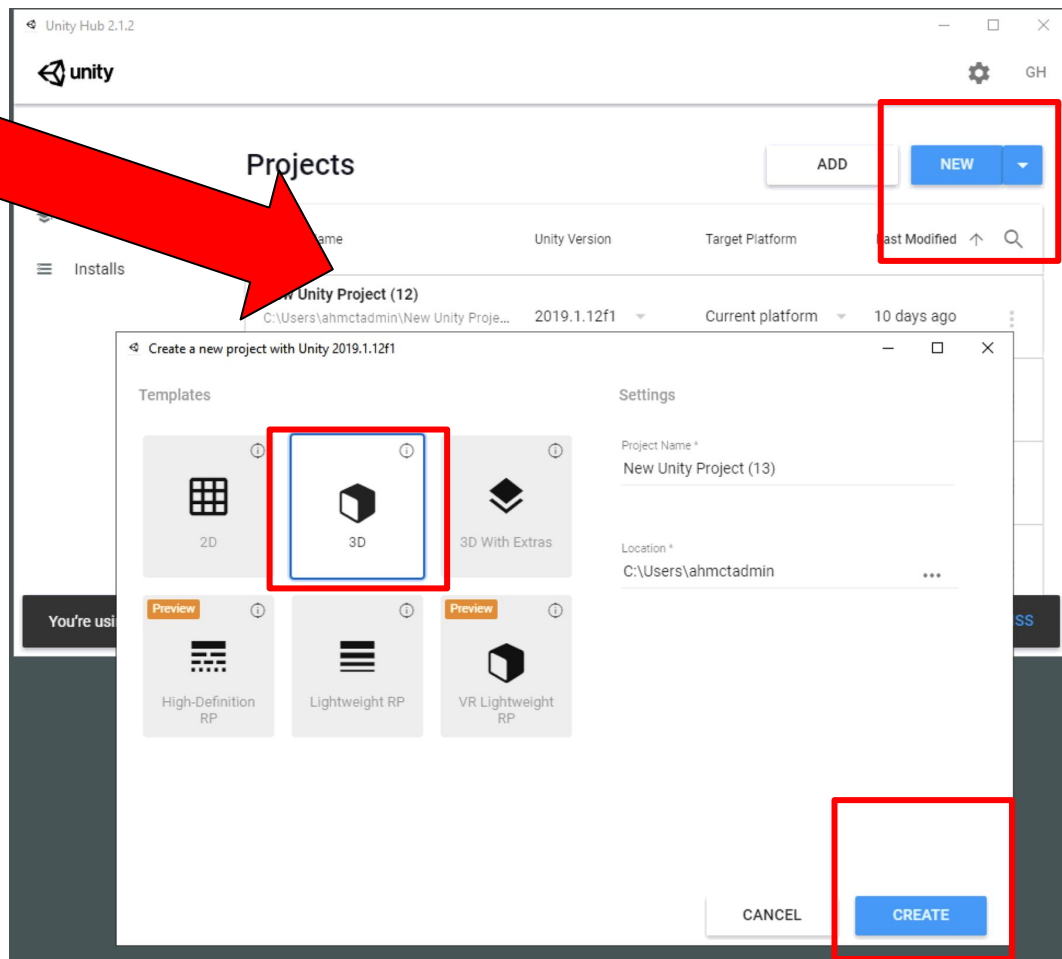
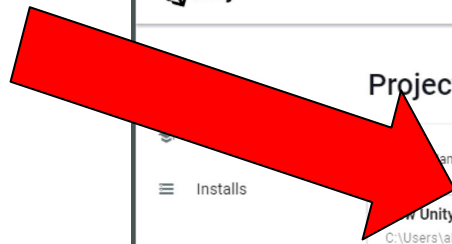
Unity

Import the model and texture into Unity for further physics engine applications.





Create an empty project

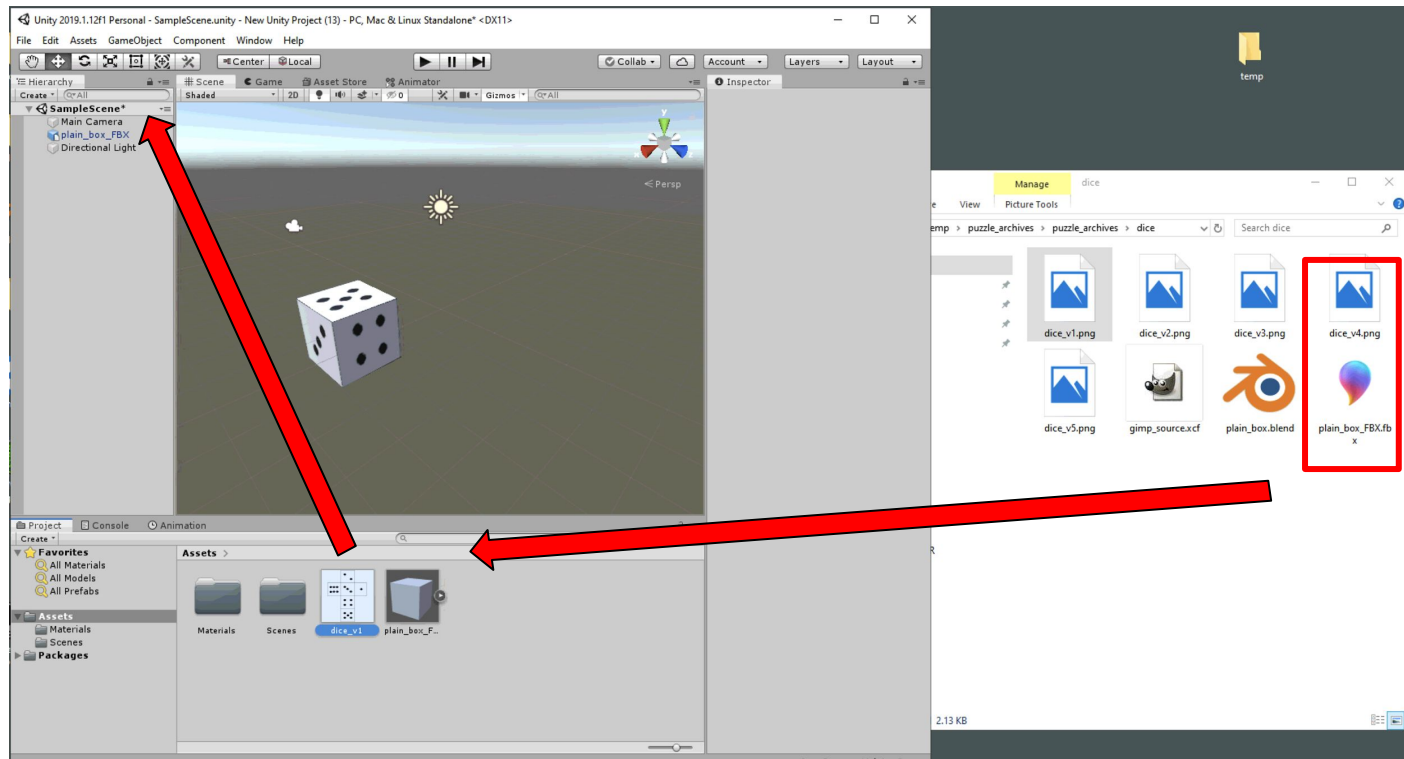


Unity

Drag and drop the fbx file and png file to Asset folder.

Once again drag and drop the from Asset folder the sample scene.

It is DONE!

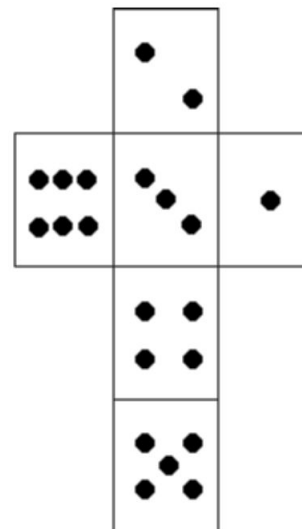
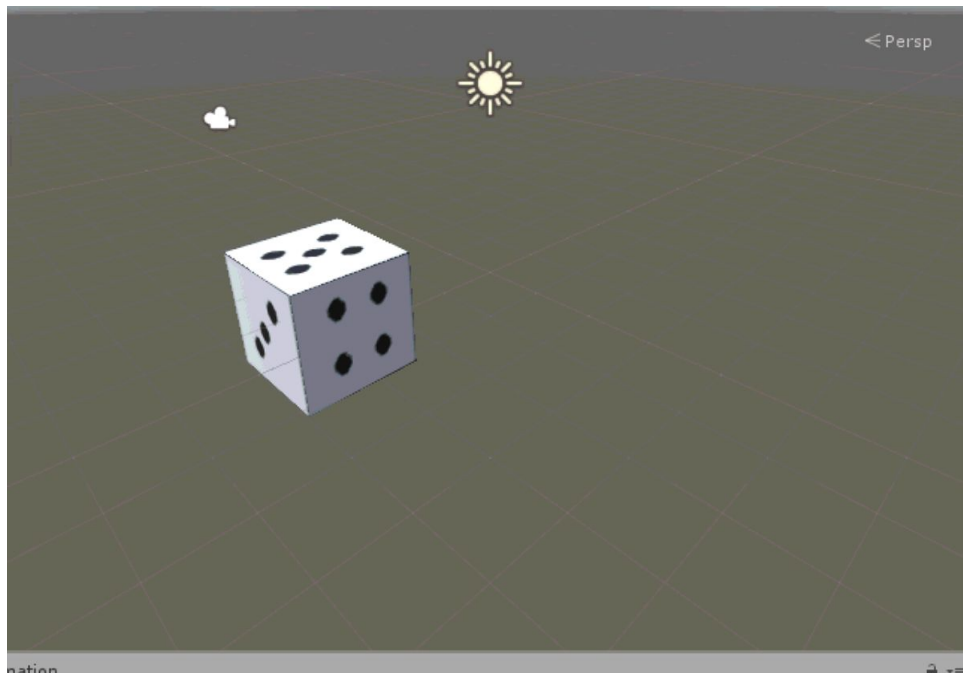


Puzzle Archive

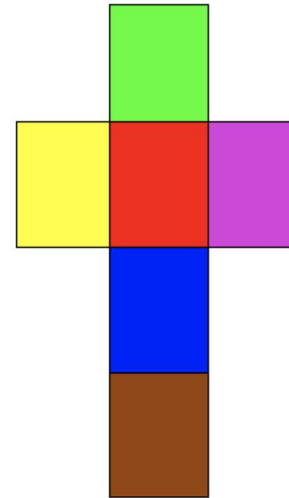
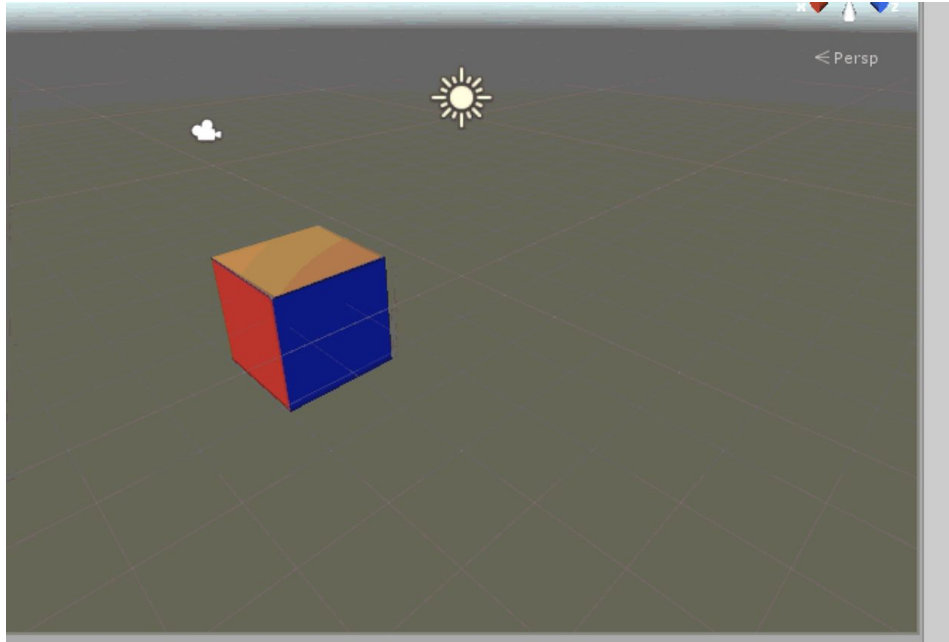
There are currently 5 different puzzles in the archive:

- Dice
- Color Box
- Foldable Box
- Folded Pattern
- Combine Color and Dice

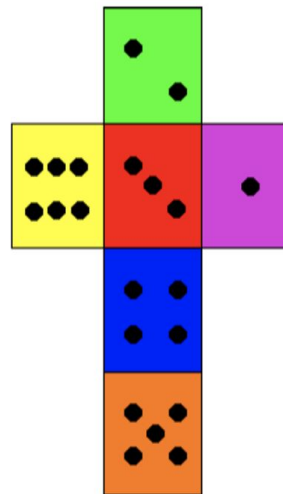
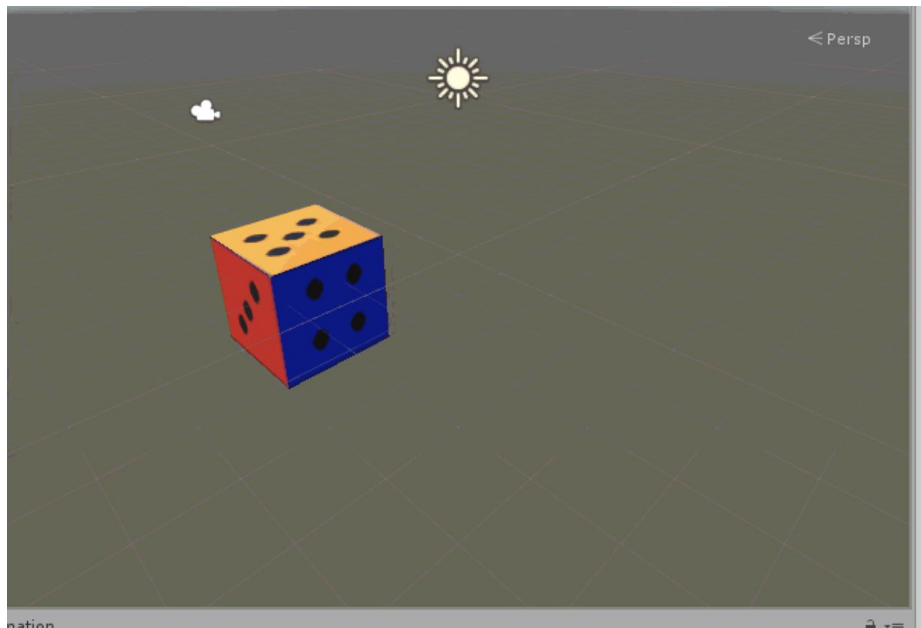
Dice



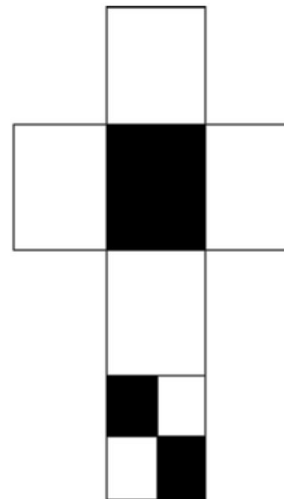
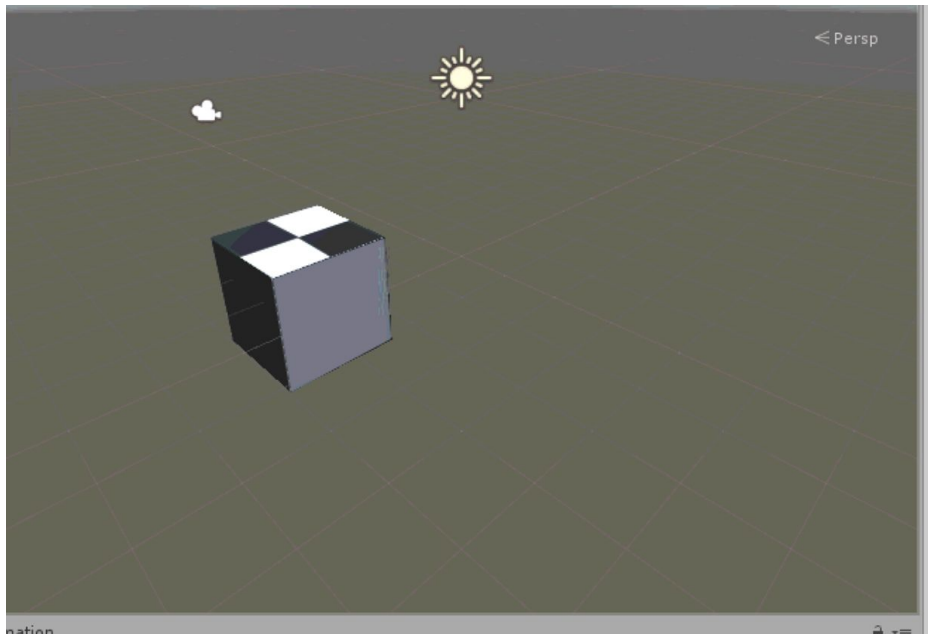
Puzzle Choice: Color Box



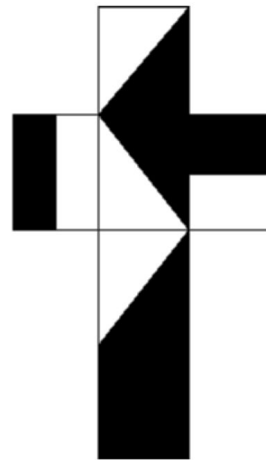
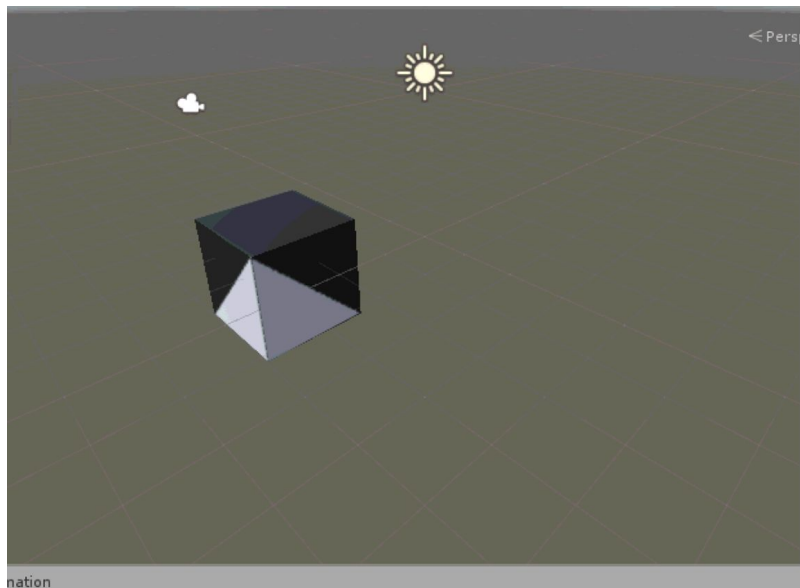
Puzzle Choice: Combine color-dice



Puzzle Choice: Foldable Box



Puzzle Choice: Folded Pattern



References

<https://www.gimp.org/>

<https://www.blender.org/>

<https://unity.com/>