



اُونِيُوْسِيْتِي تِيْكْنُوْلُوْجِي مَارَا  
UNIVERSITI  
TEKNOLOGI  
MARA

UNIVERSITI TEKNOLOGI MARA (UiTM)  
FACULTY OF COMPUTER AND MATHEMATICAL SCIENCES

CSC658  
COMPUTER GRAPHIC

**FINAL PROJECT REPORT  
3D VILLAGE**

**Group:**  
CS253 CSC658 3B

**Prepared for:**  
MISS KHAIRUNNISA ABDUL KADIR &  
DR FAKHRUL HAZMAN BIN YUSOFF

## Table of Contents

Introduction .....	3
Object Detail .....	3
Conclusion.....	7
References .....	7

## **Introduction**

For my project, I was given a task to create a 3D model scene of a village to be displayed on three.js using Blender software due on week 14<sup>th</sup>, 17<sup>th</sup> July 2022 with Miss Khairunnisa Abdul Kadir and Dr Fakhrul Hazman Bin Yusoff as my lecturer. I must create at least 20 different complete objects and allowed up to 4 objects to be an imported object, meaning I can download it from google straight away. The theme for my village is old styled medieval age like.

## **Object Detail**

### **1. Bucket**

For bucket, I use cylinder for the base and resize the top face to be bigger than the bottom. Then, duplicate the bucket but make it smaller than the original. Next, use the Boolean modifier to remove the inside of the cylinder to create a bucket. Lastly, add the rusty metallic image texture to make it looks real.

### **2. Bench**

For bench, using cube and resize to make it flat as the base of the seat. Then, uses multiple cube for its legs by resizing them on z-axis in order to make them tall. Lastly, add a wood image texture on all of the mesh to create and old bench.

### **3. Barn**

For barn, it has a cube base with multiple windows and a door. The cube base has an image texture of a red wood as your typical red coloured barn. For the door, I use a red wood textured cube and make it flat with a couple of white wood textured long cube for the additional to make it realistic. Next, the window is basically the same with the door but with a window image texture. Lastly, the roof. To make it a bit round shaped roof, I use a cube as a base and use a knife tool to create a multiple cut for the top. Then, move the edge of the cut I did earlier accordingly to make it kind of half circle.

### **4. Bridge**

For bridge, I use a cube base mesh and resize it to make a rectangle then add a stone pave image texture. Using the same technique on the barn's roof, I manage to make the bridge

rainbow shaped. Since my landscape have a river, I have to consider the waterflow of the river. Later I use Boolean modifier to create a hole under the bridge by adding 2 cylinder and uses the feature of “difference” in the Boolean modifier. Then, added 2 cubes with the same length of the original cube to make the railing and a bit different rock image texture.

## 5. Bush

For bush, this is a bit complicated in my opinion. With the guide of YouTube, firstly I added a cube and subdivision it at level 3. This way it makes it look like a sphere but not smooth yet. Then, I duplicated for the leaf to make it realistic. For the original cube, I apply a “Decimate” modifier at the ratio of 0.1 then shade smooth it so that it won’t look like a perfect sphere. Moving onto the duplicated cube, firstly I apply a “Edge split” modifier with 0.0 edge angle to separate all the faces. Next, I select all the faces, transform then randomize it. This way the faces will rotated to a different way. Then random select the faces and removes them to make it look less messy. Lastly, using shortcut ALT+G to move the mesh to the centre of the grid to combine with the original cube. Add 2 different grass image texture to differentiate the inner cube and the leaf.

## 6. Canoe

For canoe, I use a cube mesh as the base. Resize it on z-axis to make it long, shrink the bottom face and remove the top face. Then, I use a knife tool to make a loop cut at the upper mesh. Applying the “Solidify” modifier to increase the thickness of the mesh. Then proceed to apply another modifier called “Subdivision Surface” and enable “On Cage” option. You now have a bullet shaped mesh. Resize them to make it look like a normal canoe and add a little long cube to as the detail. I also added a canoe pad to complete its looks. Lastly, add the wood image texture for all the mesh created.

## 7. Carriage

For carriage, using a cube mesh as the base with applied Boolean modifier. For the tire, I flatten a cylinder and uses Boolean modifier to remove the inner circle and added multiple long cube in the middle. The base and long cube have the same wood image texture while the tire I use a metal image texture.

## 8. Hay

Hay have the concept as the bush, it has 2 same rectangles but the other one got some of its face deleted and the other half got randomized. Both have the same hay image texture.

## 9. Horse

For horse, this is one the imported object I have chosen. I downloaded the obj file of the horse on TurboSquid website recommended by Dr Fakhurul. Having the hard time to find image texture for it, I decided to use “Texture Paint” feature in Blender. First, I need to unwrap the horse into a plane view. Click the UV option in Edit mode and choose smart UV project. Then, in texture paint mode, find texture slots on the right area and choose single image. Click “New” and rename it as it is to create your own texture. Then you may begin colouring your object. After that, I added an armature for the horse. Join the horse and the armature by selecting both of them and right-click. Follow the path “Parent > Armature Deform > With Automatic Weights”. Lastly, change the pose of the horse in pose mode. Here is the link to the horse: - <https://www.turbosquid.com/3d-models/horse-materials-3d-model-1272028>

## 10. Lamp

Lamp is pretty simple, starting with a cube mesh, resize it on z-axis to make it tall. Then, a lot of loop cut and resize edge to create a side road lamp. I added a black metal image texture and selected faces on the top colour them in yellow to create the illusion of light.

## 11. Mailbox

For mailbox, I use a cube mesh for the base and a long, wood image textured cube. The top mesh has the same technique as the barn roof with a rusty metal image texture. I also use extrude feature in edit mode to add the flag beside the mail.

## 12. Wood Table and Chair

The idea of this is that chopped down tree used as table and chair. Both the table and chair are basically a cylinder with bark image texture. I also move the vertexes so that it won't look like a perfect cylinder. For the chair, I use Boolean modifier with a cube to make a lean able seat. The inside of the chopped tree has a different wood image texture.

### 13. Signboard

Signboard is a simple 2 mesh combine, one is flatten cube and another one lengthened cube. Both have the same wood image texture.

### 14. Well

Well started with a removed inner cylinder using Boolean modifier and a brick image texture. There's multiple long cube with wood image texture to support the roof the well. For the roof, it has a long triangle with removed bottom face with roof image texture.

### 15. Tree

The base of the tree is a 6 subdivided cylinder. Shrink the top face and enlarge the bottom face while resize it on z-axis to create a log. For the leaves, copy the log and flatten it a bit and insert face at the bottom. Then extrude the inserted face upward. Duplicate them and move up a bit until it reaches the top. For the top, I select the vertexes and merge them by distance to make a pointy pinnacle.

### 16. Rock

For rock, I added a cube mesh use a knife tool, bisect. You can find this tool by hold left-click on the knife tool and choose "bisect". I cut the cube to make a randomized rock and add the rock image texture.

### 17. House

For house, it started with a cube mesh as the base. It is typical house with a triangle roof, door and multiple windows with different image texture. For additional, I extruded the side of the roof to make extended roof for garage. The extended roof has 2 wood pillars to support them.

### 18. Toilet

The toilet is an outside toilet from old styled village. The roof is a zinc I created using plane and multiple loop cut. Select the edge interlace and move it on z-axis then shade smooth it. I also added the metal image texture. The base of it is a normal cube with brick image texture. The top of it have the little slope by moving only 1 side of the edge upwards. The door is basically the same door as the house.

## 19. Turtle

This is the 2<sup>nd</sup> imported object I chose, downloaded it on the same website TurboSquid. Coloured it using texture paint and add an armature to pose it a little bit as if it is walking. Here the link to the turtle: -<https://www.turbosquid.com/3d-models/turtle-basic-3d-1397922>

## 20. Windmill

The windmill I created with a lot of long cubes. To avoid duplicating too much long wood, I decided to use Boolean modifier to remove the inner of a flattened cube for the support of the long wood. For the fan, I use a mirror modifier and duplicate it to make a full circle. As for its tail, I use a plane with one time subdivided and move the middle edge forward. This creates an arrow shaped plane.

## Conclusion

In conclusion, I have created my 3D village using the knowledge handed down by Miss Khairunnisa Abdul Kadir and Dr Fakhru Hazman Bin Yusoff and a little guide from the internet. So far, the object I have created is 18 in total which include bucket, bench, barn, bridge, bush, canoe, carriage, hay, lamp, mailbox, tree table and chair, signboard, well, tree, rock, house, toilet and windmill. As for the other 2 is an imported obj file from TurboSquid which horse and turtle are.

**Notes:** - The order is to combine all the objects into one, but I can't join the horse and turtle as both of them have armature as their parent. Therefore, if I join them, it will only join the horse and turtle resulting in the armature separation and both of them revert back to the original pose.

## References

### YouTube

1. <https://www.youtube.com/watch?v=AnRQhH3fEDY&t>
2. <https://www.youtube.com/watch?v=2WmorGq5-Fc>
3. <https://www.youtube.com/watch?v=K7o3gt9D26g&t>
4. <https://www.youtube.com/watch?v=p-9pgZI3inI>
5. <https://www.youtube.com/watch?v=4EqLyGsu3AA>