**University of Petroleum and Energy Studies**

School of Computer Science

Department of Cybernetics



**Graphics & Animation Tools**

**LAB FILE**

**(Session: 2020-2021)**

Course: B. Tech with Specialization in Open Source and Open Standards





**Experiment 8: Design of 3D Car using Blender.**

**Link to Drive Folder:**

[**Graphics and Animation Tools**](https://drive.google.com/drive/folders/1L1gqtxnW8xDUk-jw3Z8dTLz2_Yth1-OI?usp=sharing)

**STEPS:-**

**Step 1.**

Open your Blender and create a new file, now delete the default cube.

**Step 2.**

Press 3 on the numpad to get into a side view. Press Z to toggle on wireframe mode (if you are in solid shade mode.) Move the vertices to match with the reference as shown in the image. Right Click on a vertex to select it and press G on the keyboard to move. You may also use the arrow widget to move the points.

**Step 3.**

Select the front face by selecting the four vertices.

Press E to Extrude and the Esc key, so that the newly extruded face remains in the same position.

With the new face selected, press S and Scale it down.

Move the vertices to match the front part of the car. Right Click to select and G to move.

**Step 4.**

Select the newly created face by selecting its four vertices. Press and hold Shift to select multiples.

Press E to Extrude it once again. Press the Esc key or Right Click to confirm the position of the new extruded face.

Press S to Scale and move the mouse closer to scale them down.

Move the vertices one by one to match the reference. Right Click to select a vertex and then press G to move.

**Step 5.**

Now tweak the newly formed vertices and face in the Front view as well. Press 1 (numpad) to get into the Front view. Press Z to toggle between solid shade view and wireframe view to see the reference image behind.

**Step 6.**

Also be sure to check the top view as well. Press 7 (numpad) to get into the Top view.

**Step 7.**

With the mouse over the model, press Control-R to add an edge loop across the center as shown in the image. Left Click to confirm the position.

**Step 8.**

Now select the bottom vertices (one by one) and match them with the reference image. Right Click to select, and then press G on the keyboard to move. Press Z key to toggle wireframe mode.Check and match the shape from the side view as well. Press 3 (Numpad) to get into the side view.

**Step 9.**

In the side view: Select the four vertices as shown in the image. Hold down Shift and click to select more than one vertex.

Press E to Extrude and without moving the mouse, Left Click to confirm.

With the new face selected, press S and Scale it down a bit and again, Left Click to confirm.

Position the vertices to match the reference image. Right Click to select and G to move any vertex.

**Step 10.**

Press 1 (numpad) to get into the Front view and match the bottom part with the reference image. The front part of the car is now done.

**Step 11.**

As we added another loop in Step 6, we have an opportunity to smooth the curves out a bit. Tweak the vertices to match the reference and to give it a nice round shape and curve.

Check with the reference image also. Press Z to toggle between wireframe mode and solid mode.

**Step 12.**

Let’s smooth out the awkward dent at the back. Select the two vertices shown in the image. Hold Shift and then Right Click to select multiple vertices. Press W to bring up our specials menu and then select Subdivide.

**Step 13.**

Now select the two adjoining faces by selecting all 7 vertices, as shown in the image. Press Control-T to triangulate these faces.

**Step 14.**

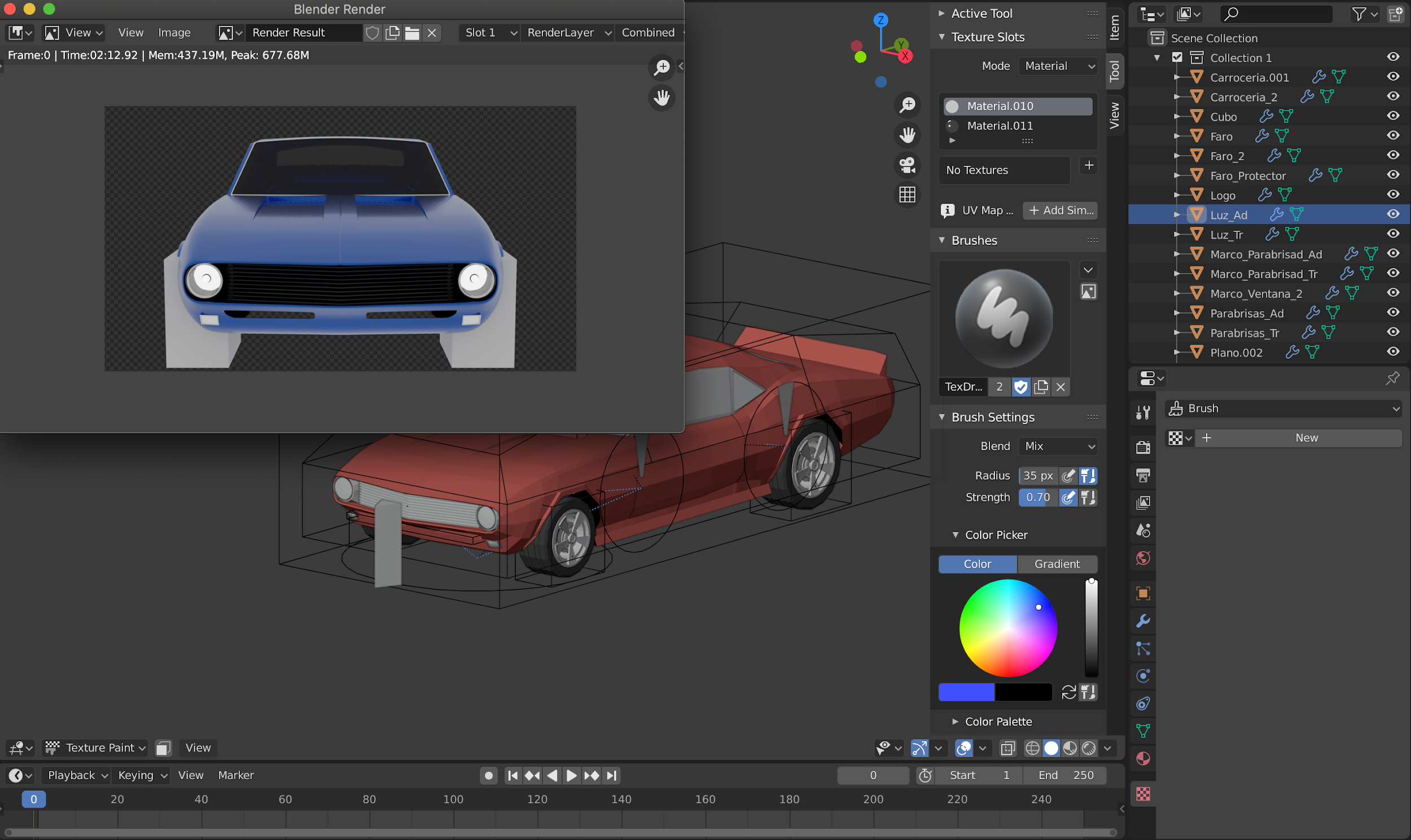
Right Click on the center point to select it, and press G to move it upwards. You can also use the arrow widget. Make sure the contour is smooth and be sure to check it from all angles.

**Step 15.**

Now click on Face select mode, so that we can directly select any face with a Right Click, instead of selecting the vertices to select one face.

**Step 16.**

Choose the Render image option from the Render option in the toolbar. Attach the rendered image in the below output section.

**Output:**