MULTIMEDIA AND ANIMATION LAB MANUAL

COURSE CODE:20CS21P

FOR 2ND Sem CS&E

(2020-21)

By

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COMPUTER SCIENCE&ENGINEERING

GOVERNMENT POLYTECHNIC MUDHOL

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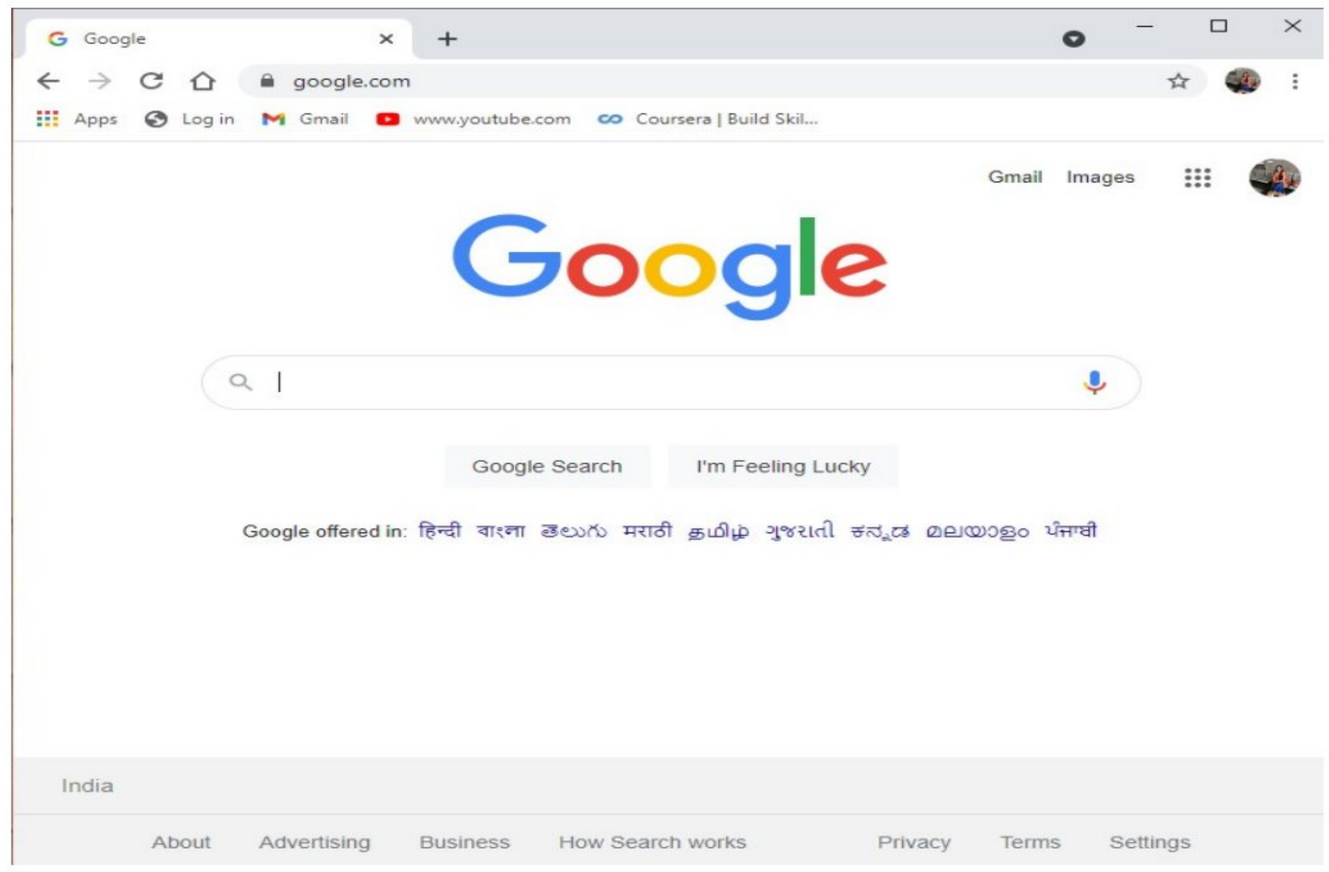
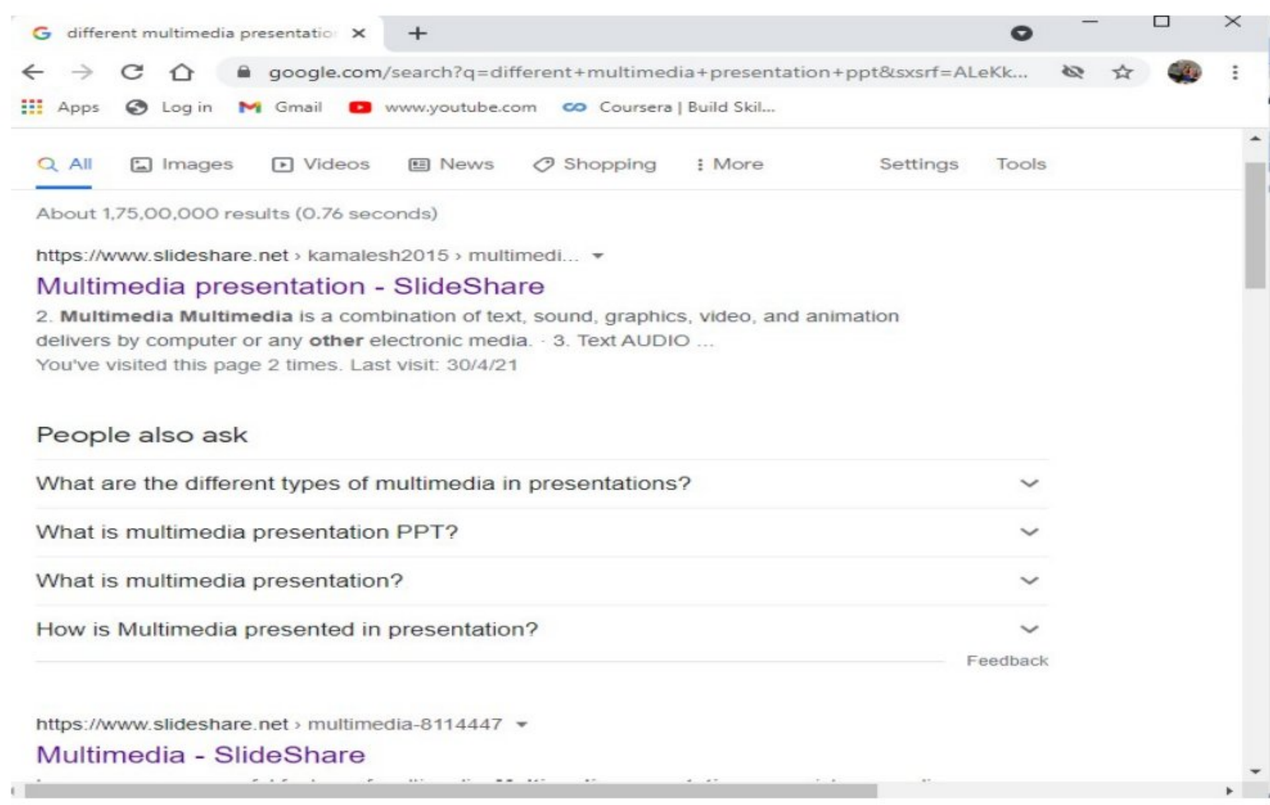
LAB EXPERIMENTS

1. Browse the Internet and find different multimedia presentations and identify the building blocks.

Step1: Open your favourite browser(Google Chrome) with full high-speed internet.



Step 2: Search different multimedia presentation's that are available in browser.



Step 3: Click on your searched multimedia ppt and start downloading it by clicking on "Download" option. Downloaded multimedia presentation is depicted below and Findout the Bulding block with respect to downloaded ppt.

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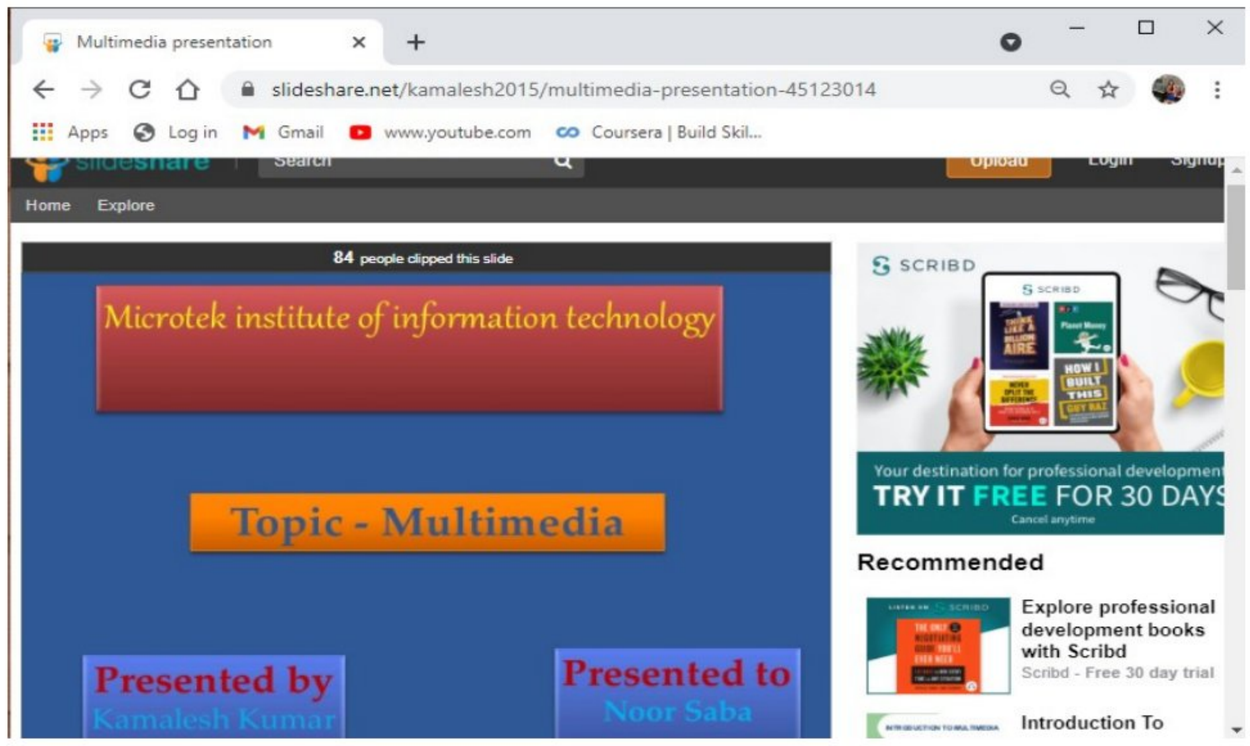
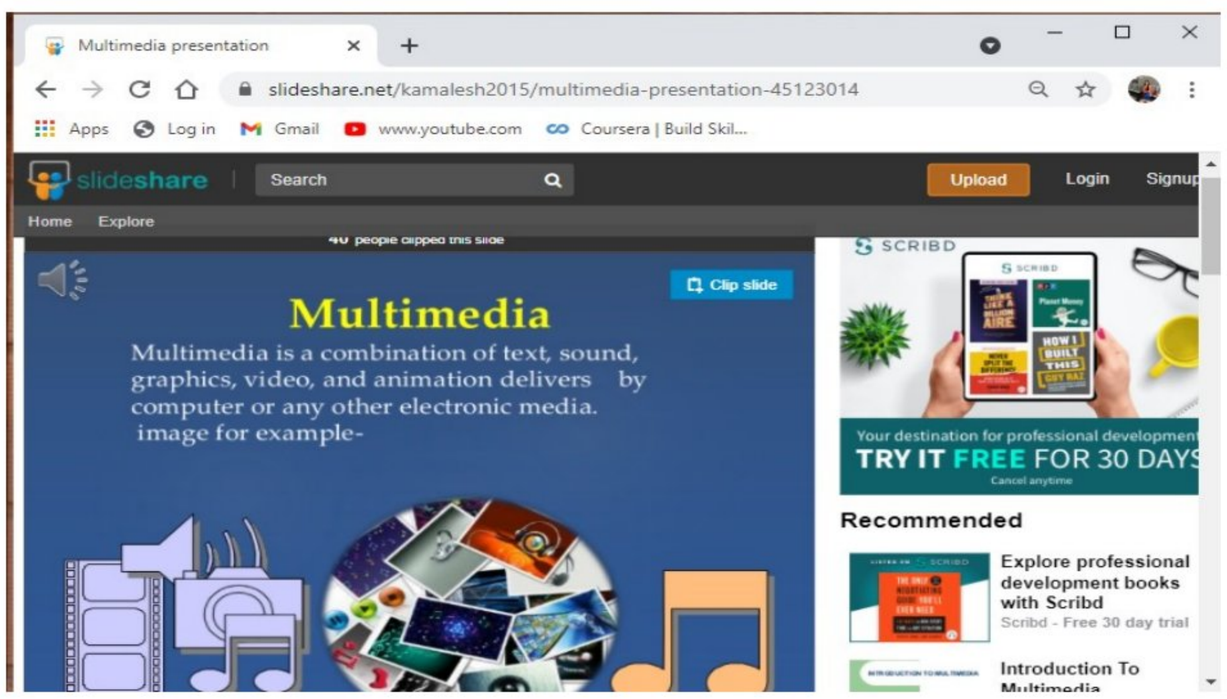
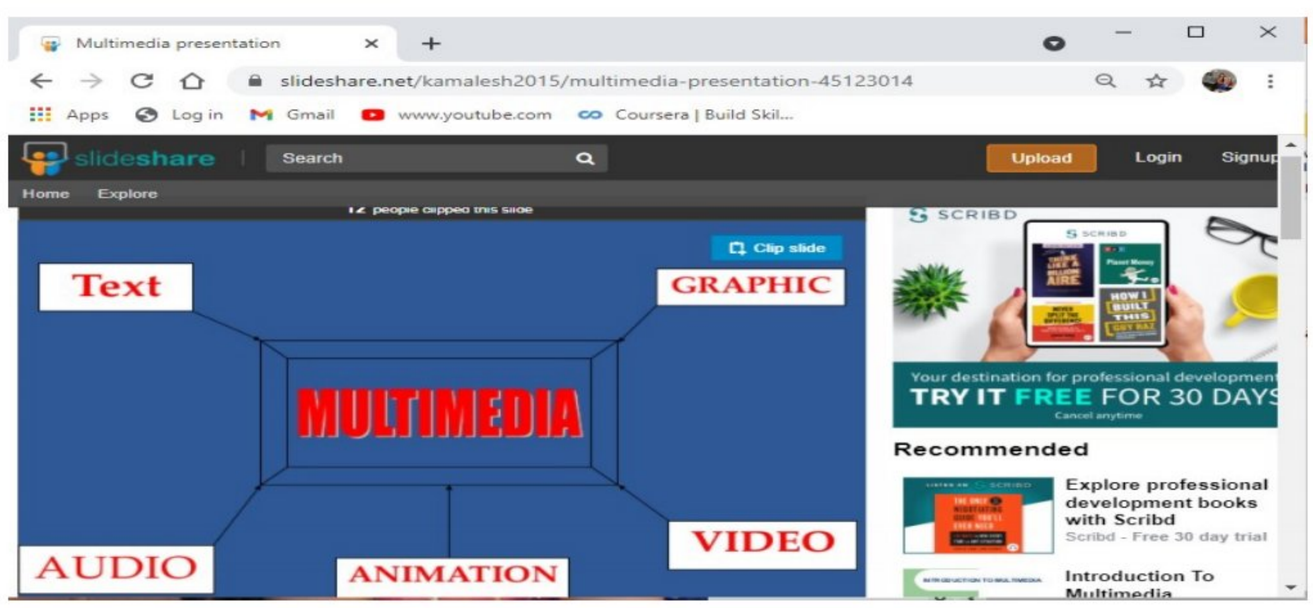


Step 4: Read each and every slide untill you find building blocks name in ppt. First slide of downloaded ppt is depicted below.



Step 5: Go through further slides and find building blocks of multimedia.

- I found multimedia building blocks in this ppt. Multimedia building blocks are: Text, Audio, Video, Animation and Graphic.



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2. i) Identify the importance of Resolution, Size and Compression of images.

ii) Classify file formats of various multimedia files.

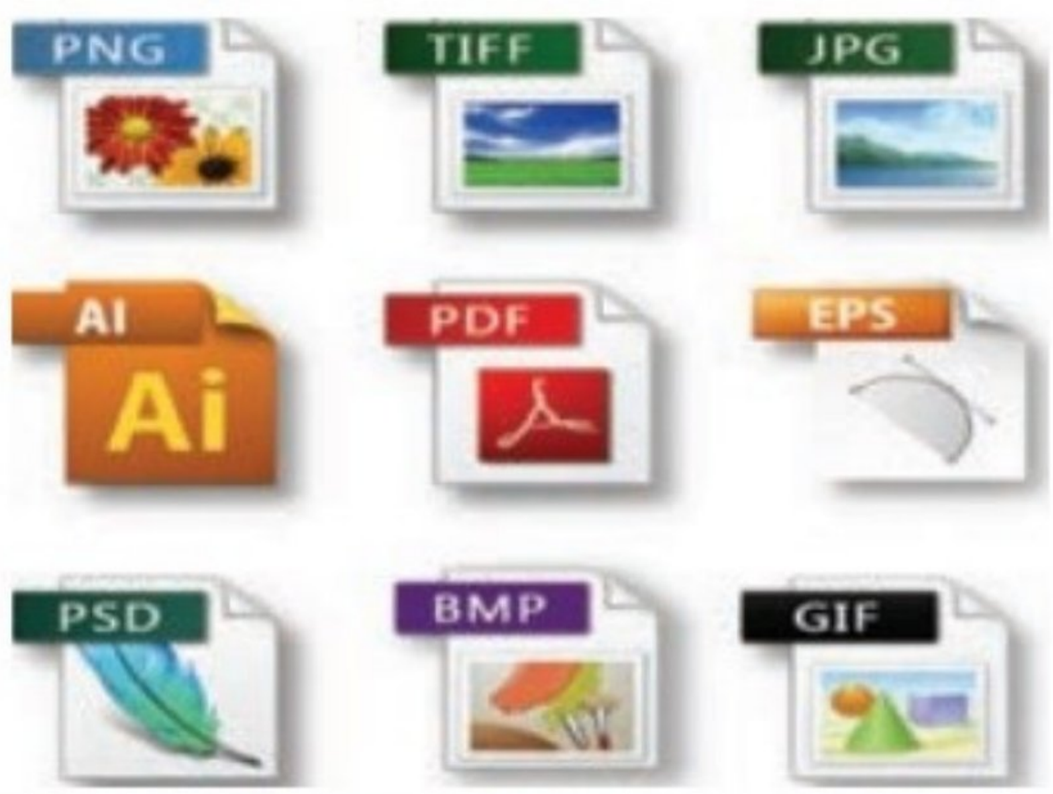
- **i.** Higher **resolution** means higher detail, and can be measured in dots per inch (DPI). When it comes to printing, resolution is super important, as a high-quality image looks beautiful and professional, whereas a low-resolution image looks fuzzy, indistinct and completely unprofessional.

- Image **Size** is the term given to describe the height and width of an image in pixels. Maximum Image Size is determined by the megapixels of a given camera - for example, a 10-megapixel camera will give a maximum image size of 2592 by 3872 pixels. image size designates how large your image will be viewed on monitors,

- Image **compression** is the process of encoding or converting an image file in such a way that it consumes less space than the original file. It is a type of compression technique that reduces the size of an image file without affecting or degrading its quality to a greater extent.

- **ii. 4 types**

- **Image file format**



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- ✓ **PNG (portable network graphics):** An extensible file format for the less loss, portable and well compressed storage of raster images.
- ✓ **TIFF (tagged image file format):** This format is common in desktop publishing world (high quality output), and is supported by almost all software packages.
- ✓ **JPG (joint photographic experts group):** JPEG was designed to attain maximum image compression. It works good with photographs, naturalistic artwork.
- ✓ **AI (adobe illustrator):** it is used in print media and digital graphics.
- ✓ **PDF (Portable Document Format**): PDF format is vector graphics with embedded pixel graphics with many compression options.
- ✓ **EPS (Encapsulated Postscript**): the EPS format is a vector based graphic. EPS is popular for saving image files because it can be imported into nearly any kind of application.
- ✓ **PSD (photoshop document):** it is used for containing high quality graphics data.
- ✓ **BMP (bitmap):** Initially this format is in use with Windows 3.1. It is quite large and uncompressed and hence BMP is used for the high-resolution or large images.
- ✓ **GIF (graphics interface format):** GIF is a compressed image format. Most of the computer color images and backgrounds are GIF files. This file format is best suitable for graphics that uses only limited colors, and it is the most popular format used for online color photos.

- **Audio file format**

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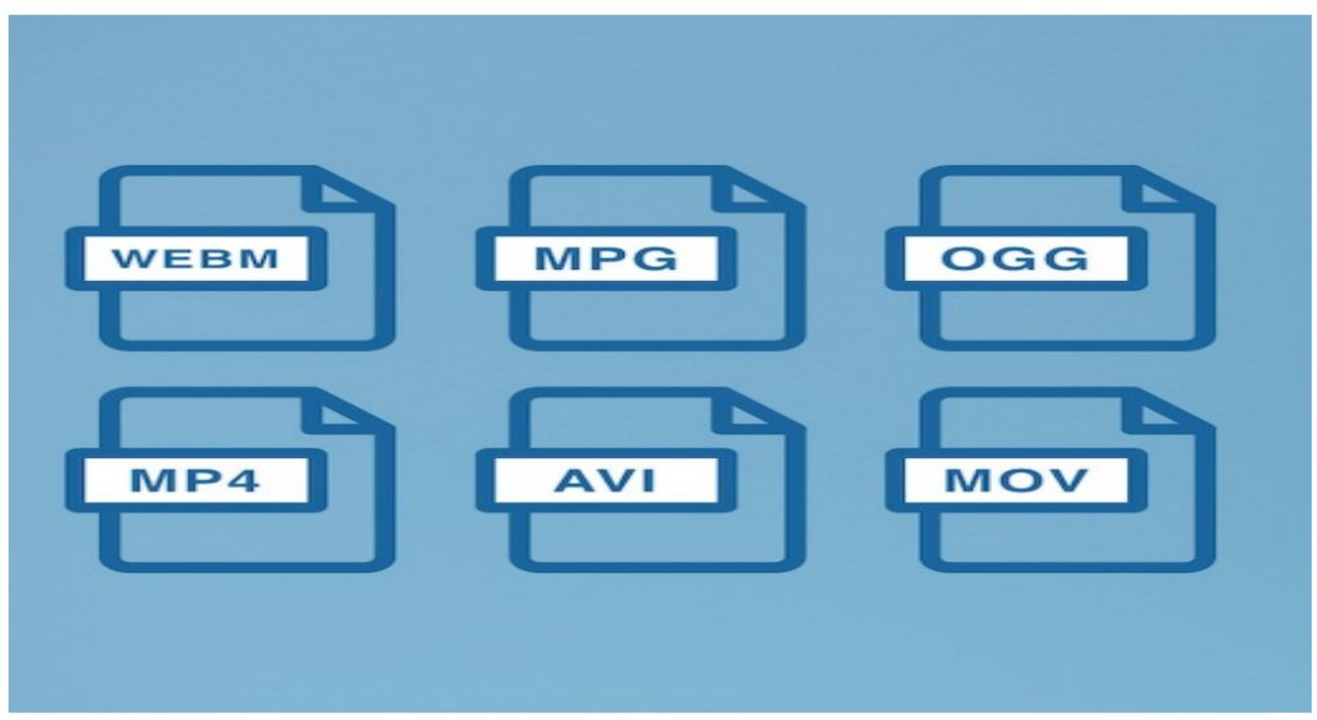
- ✓ **MP3 (MPEG Layer-3 Format):** MPEG Layer-3 format is the most popular format for storing and downloading music.
- ✓ **OGG:** A free, open source container format that is designed for obtaining better streaming and evolving at high end quality digital multimedia.
- ✓ **WMA (Windows Media Audio):** It is a popular windows media audio format owned by Microsoft and designed with Digital Right Management (DRM) abilities for copyright protection.
- ✓ **WAV: (Waveform Audio File Format):** It is the most popular audio file format in windows for storing uncompressed sound files.
- ✓ **AIFF (Audio Interchange File Format):** A standard audio file format used by Apple which is like a WAV file for the Mac.

- **Video file format**



- ✓ **WEBM (web methods Inc):** it provides excellent quality for video files.
- ✓ **MPG (Moving Picture Experts Group):** MPEG is a standard for generating digital video and audio compression under the International Standards Organization (ISO) by the group of people.
- ✓ **OGG:** it contains music, video, text and optimized for streaming content.
- ✓ **MP4:** it produces smaller file size with outstanding quality.

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- ✓ **AVI (Audio/Video Interleave):** AVI is the video file format for Windows. Here sound and picture elements are stored in alternate interleaved chunks in the file.
- ✓ **MOV:** popular video file format designed by apple and contain videos, audio, subtitles etc.

- **Text file format**

Text files	Graphical icon	Full name
*.doc		Microsoft Word Document
*.txt		Plain Text File
*.rtf		Rich Text Format File
*.odt		OpenDocument Text Document

- ✓ **RTF:** Rich Text Format is the primary file format introduced in 1987 by Microsoft with the specification of their published products and for cross-platform documents interchange.
- ✓ **Plain text:** Plain text files can be opened, read, and edited with most text editors. Commonly used are Notepad (Windows), Gedit or nano (Unix, Linux), TextEdit (Mac OS) and so on.
- ✓ **DOC:** word processing document created by Microsoft word and it may contain formatted text, images, table and graphs.

3. i) Practice setting the canvas on workspace for different requirements.

ii) Import an image from the browser/Picture folder and place it on workspace.

iii) Click &drag the image on workspace.

iv) Scale the image up &down.

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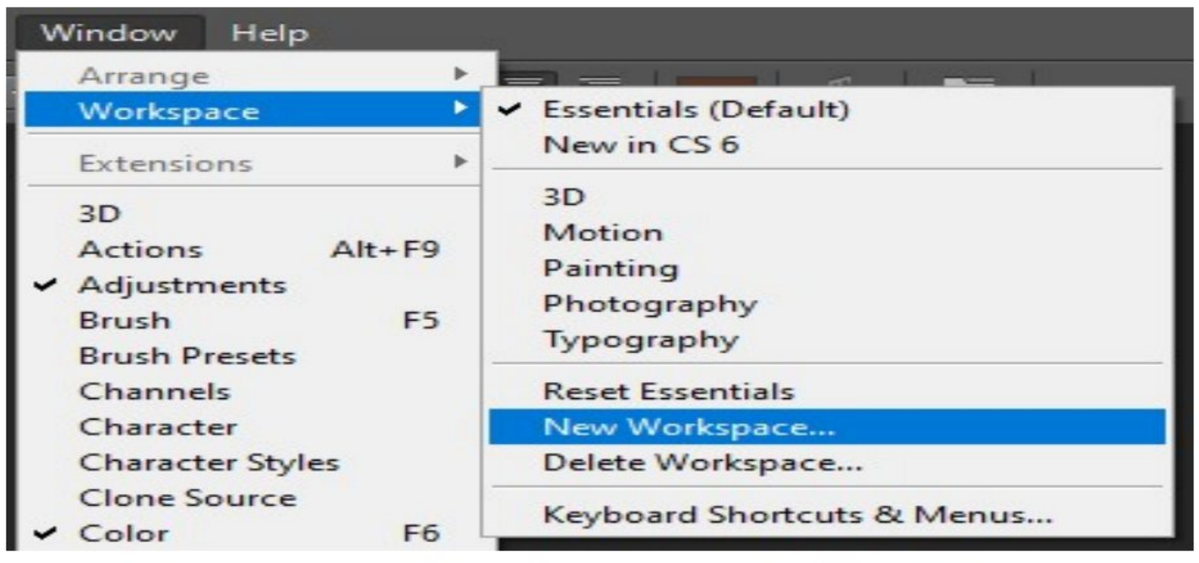
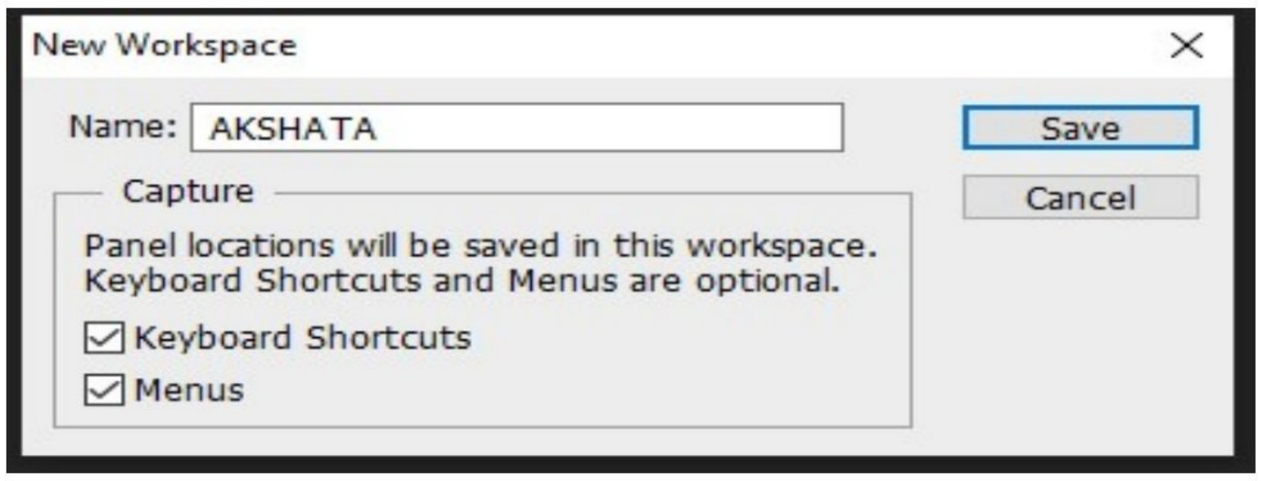
❖ **Practice setting the canvas on workspace for different requirements.**

➢ **Create workspace**

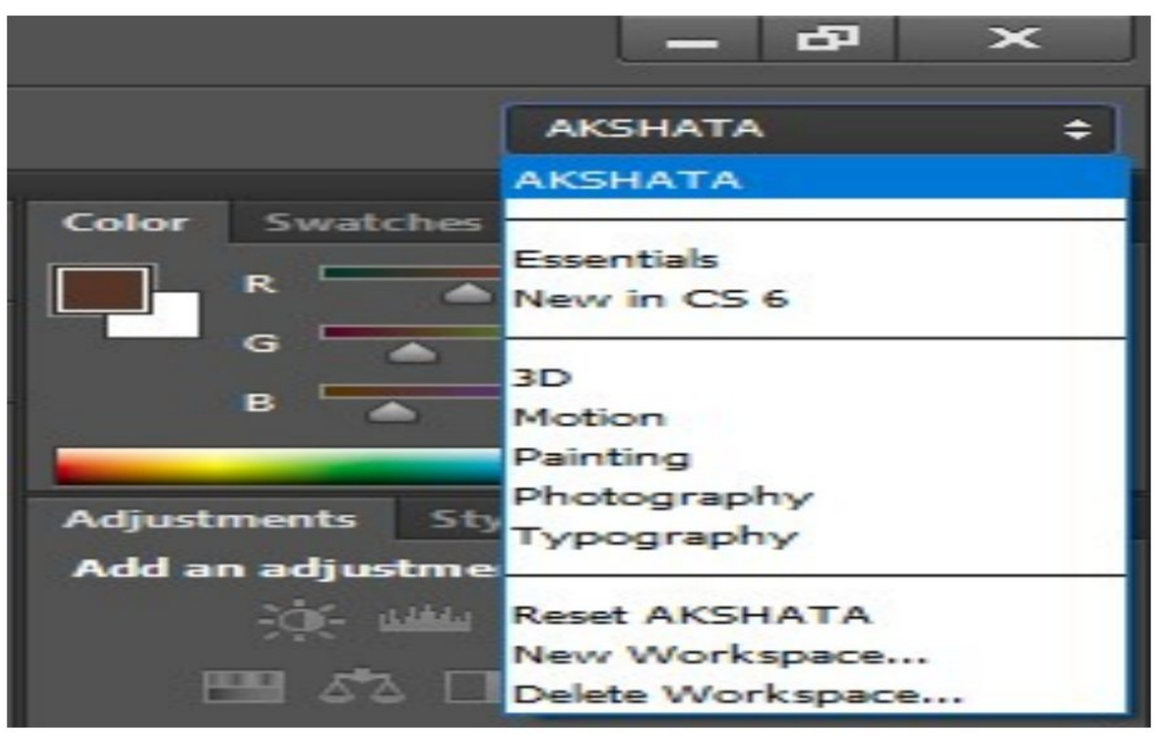
Step 1: Choose Window>Workspace>New Workspace.



Step 2: Type a name for the workspace.



Step 3: Under capture, select one/more options: Keyboard shortcuts (Saves current set of keyboard shortcut) Menus or Menu Customization(Saves the current set of menus).Now New Workspace has been created.



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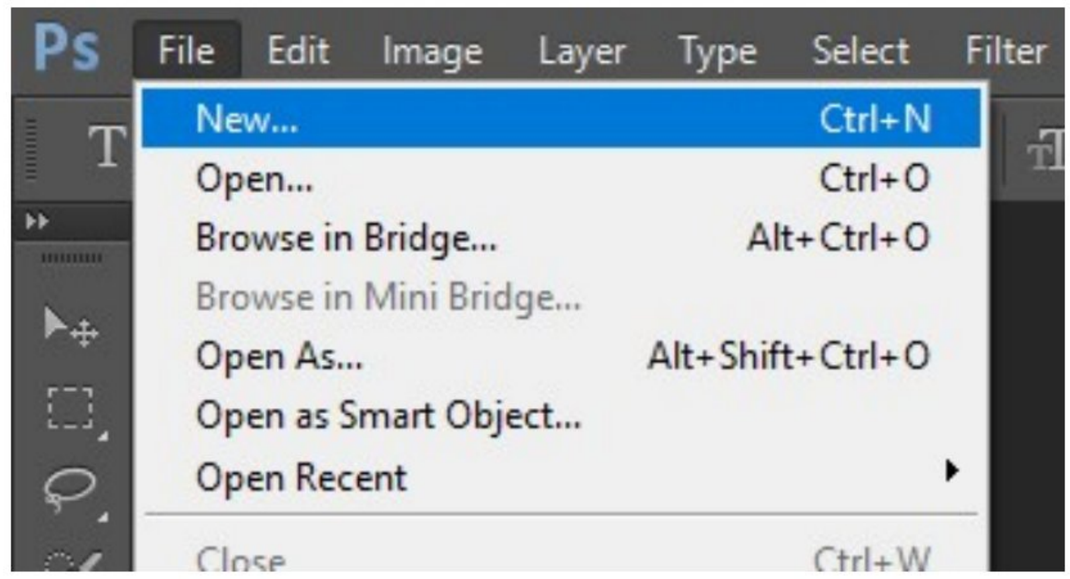
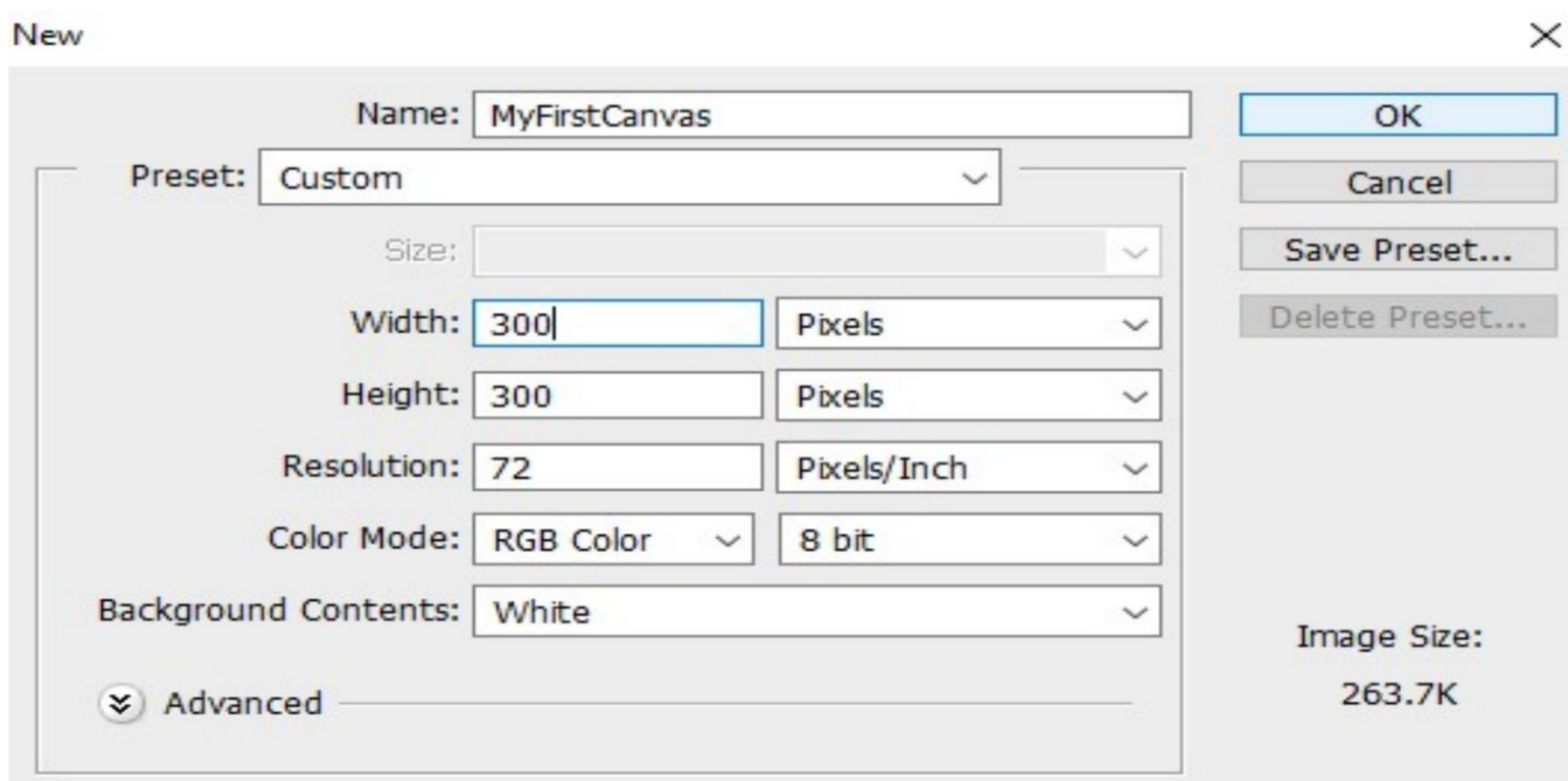
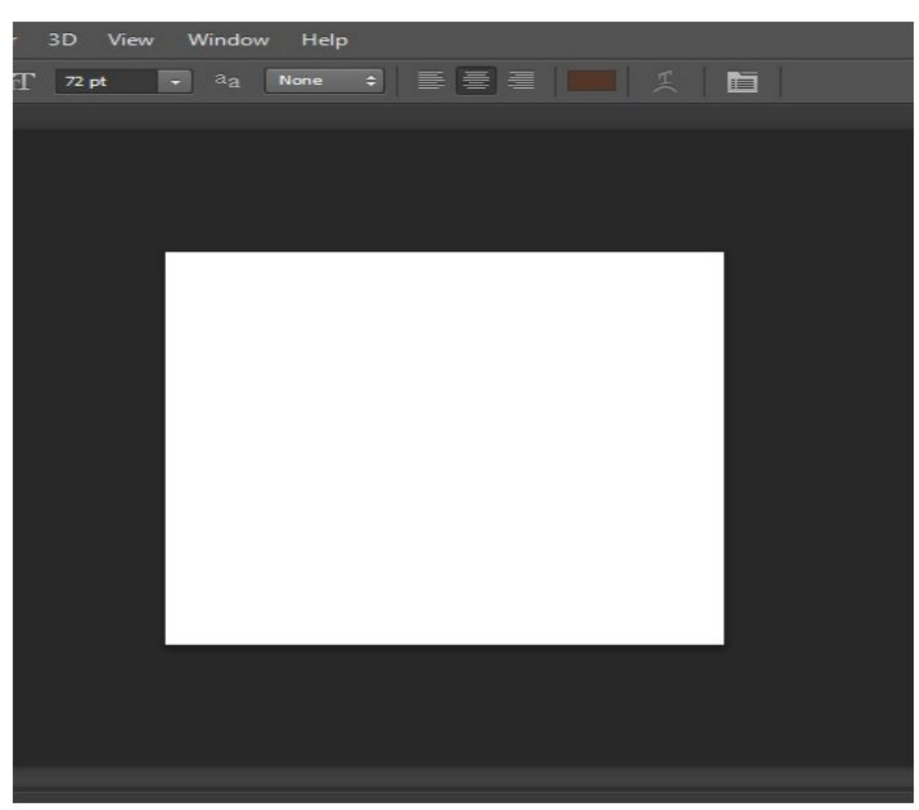
- **Create Canvas**

Step 1: Choose File>New .



Step 2: A New Canvas Dialog box will appear and select the dimensions for new canvas. Title your canvas MyFirstCanvas, Set height to 300pixel and width to 300 pixel and hit OK button.





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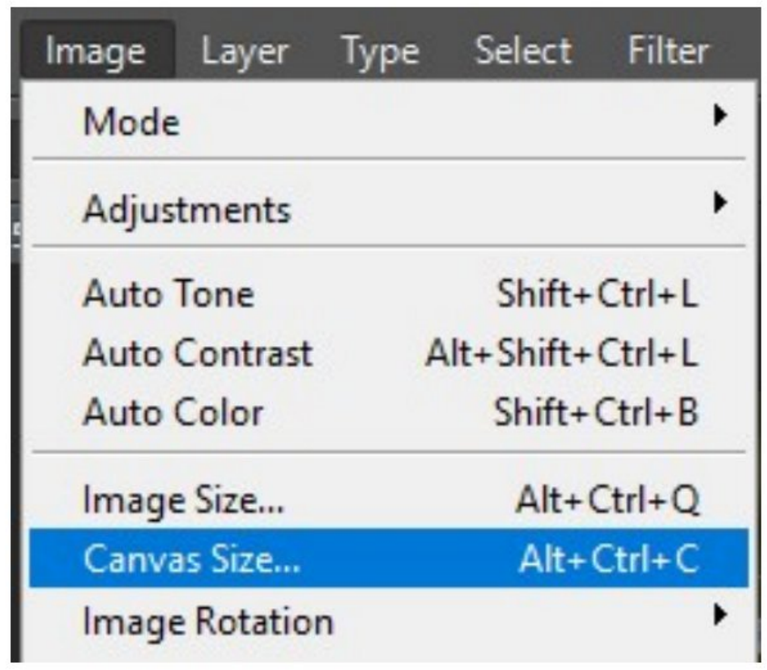
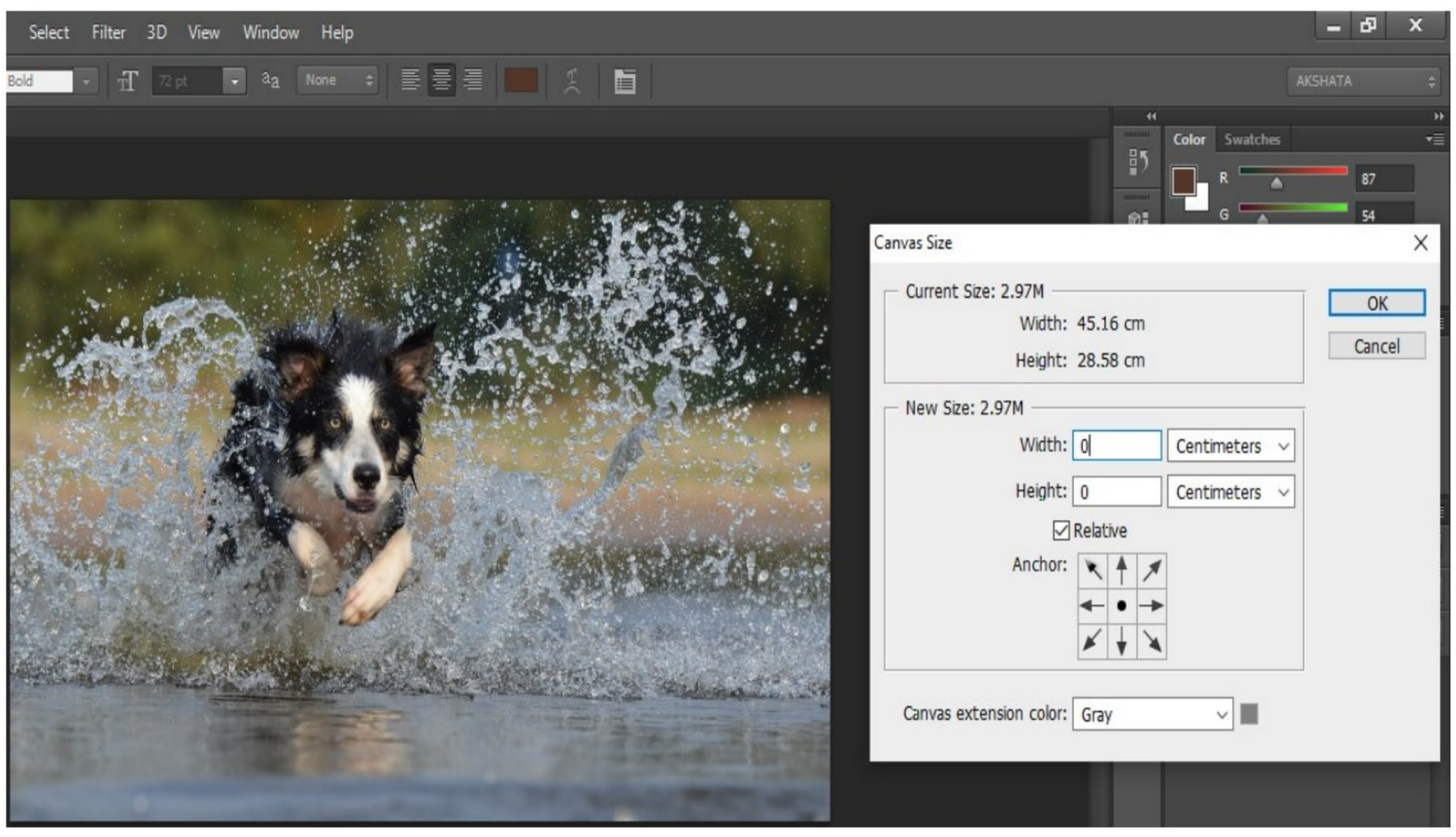
- **Change Canvas Size**

Step 1: Choose Image>Canvas Size



Step 2: Do one of the following:

- Enter the dimensions for the canvas in the Width and Height boxes. Choose the units of measurement you want from the pop-up menus next to the Width and Height boxes.
- Select Relative, and enter the amount you want to add or subtract from the image's current canvas size. Enter a positive number to add to the canvas, and enter a negative number to subtract from the canvas.



Step 3: For Anchor, click a square to indicate where to position the existi ng image on the new canvas.

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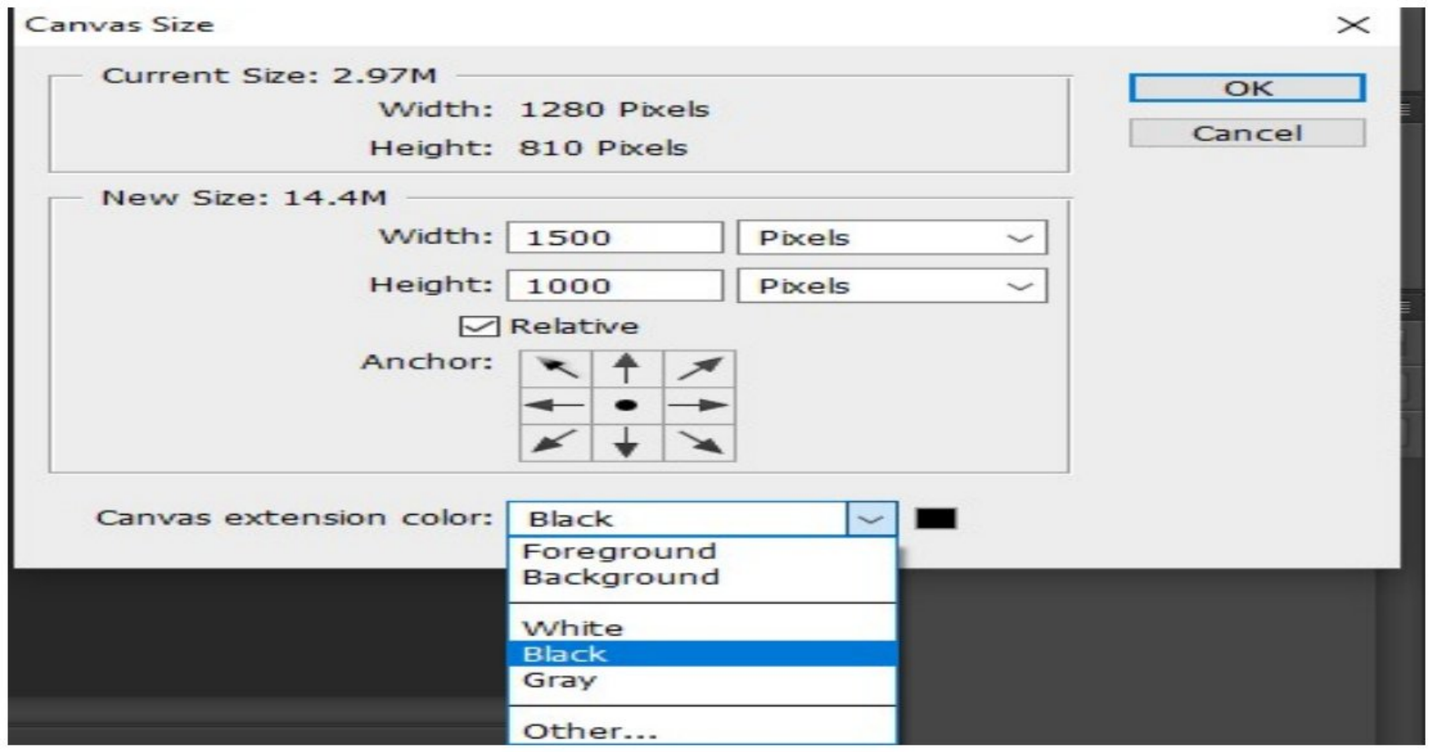
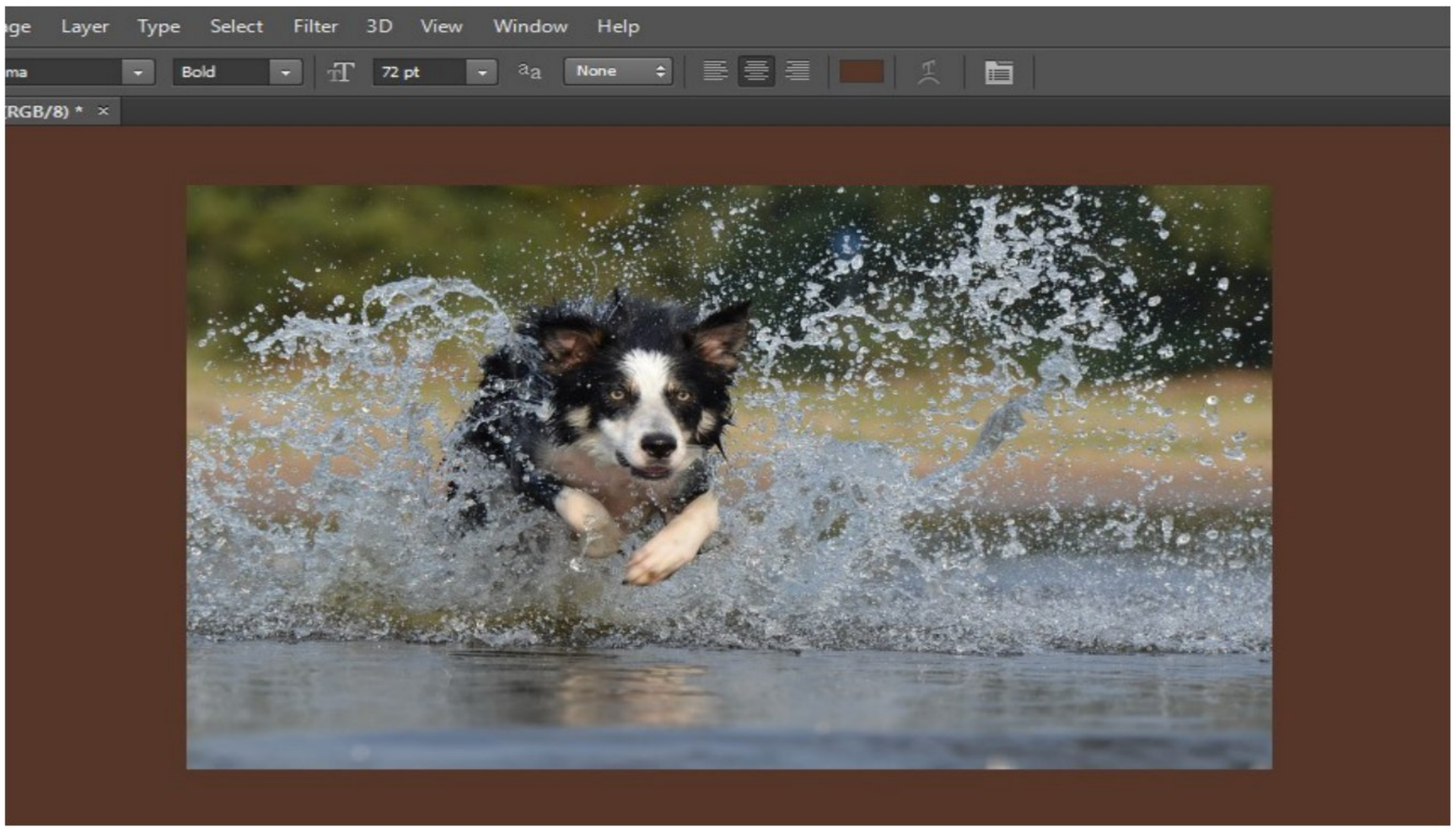
Step 4: Choose an option from the Canvas Extension Color menu:

- Foreground to fill the new canvas with the current foreground color
- Background to fill the new canvas with the current background color
- White, Black, or Gray to fill the new canvas with that color.
- Other to select a new canvas color using the Color Picker



Step 5: Click OK.



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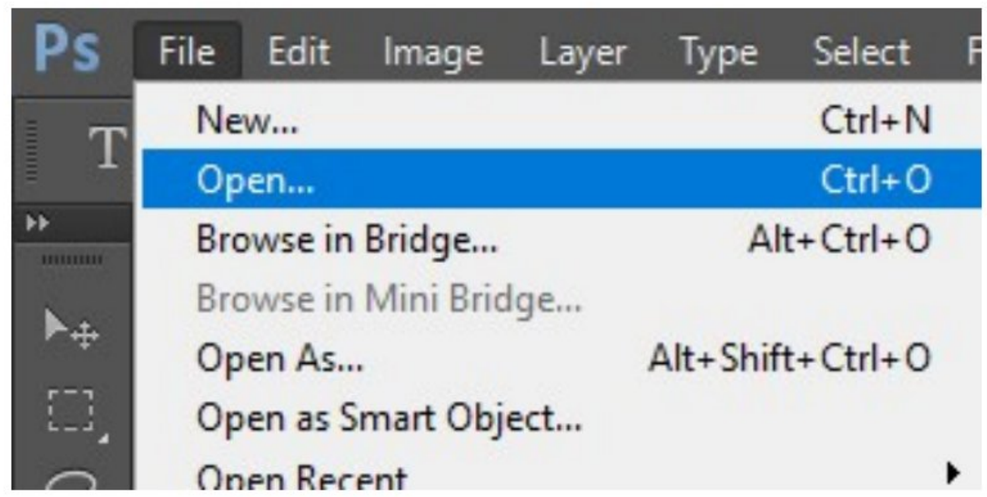
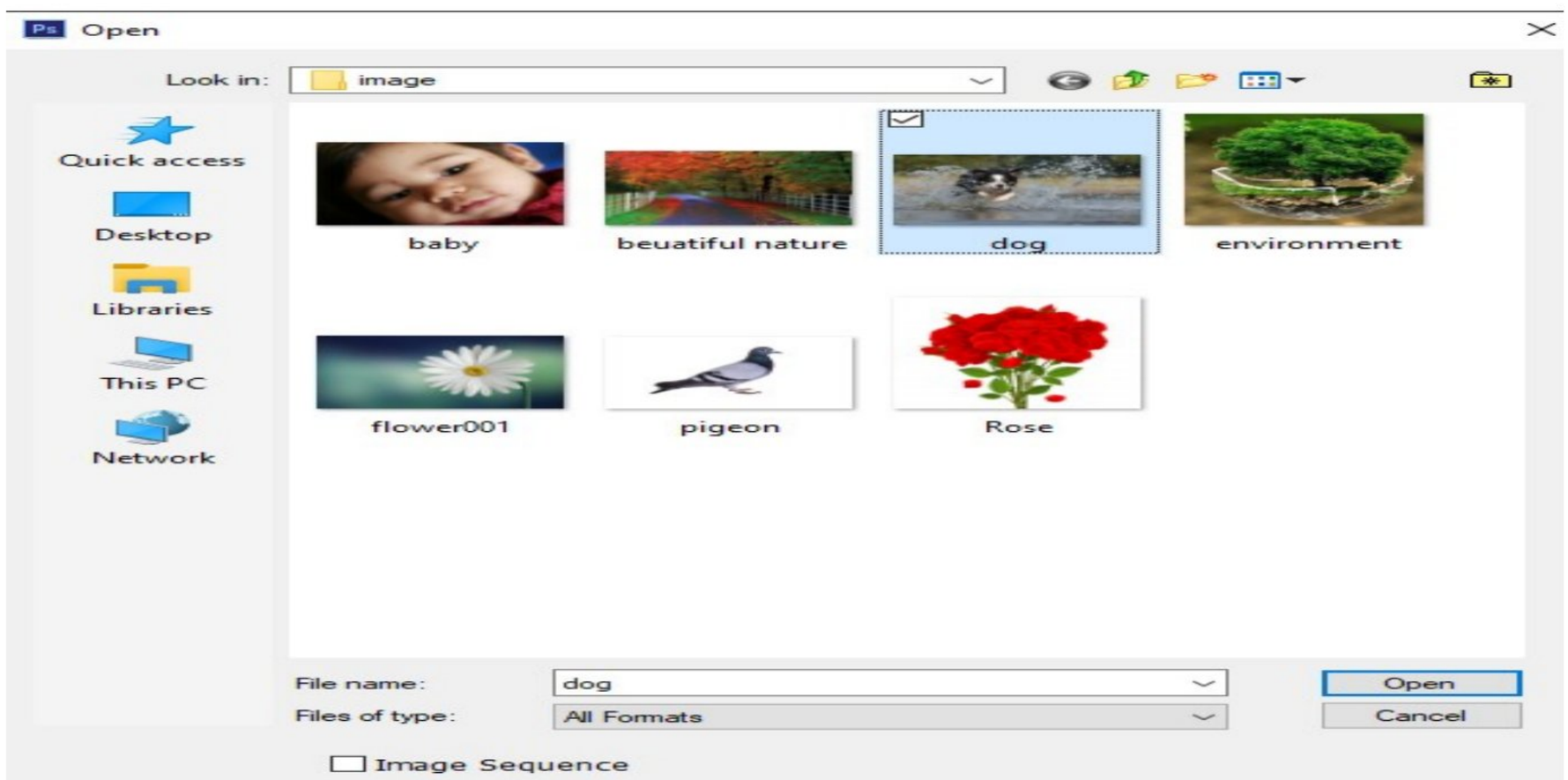
❖ **<u>Import an image from the browser/Picture folder and place it on workspace.</u>**

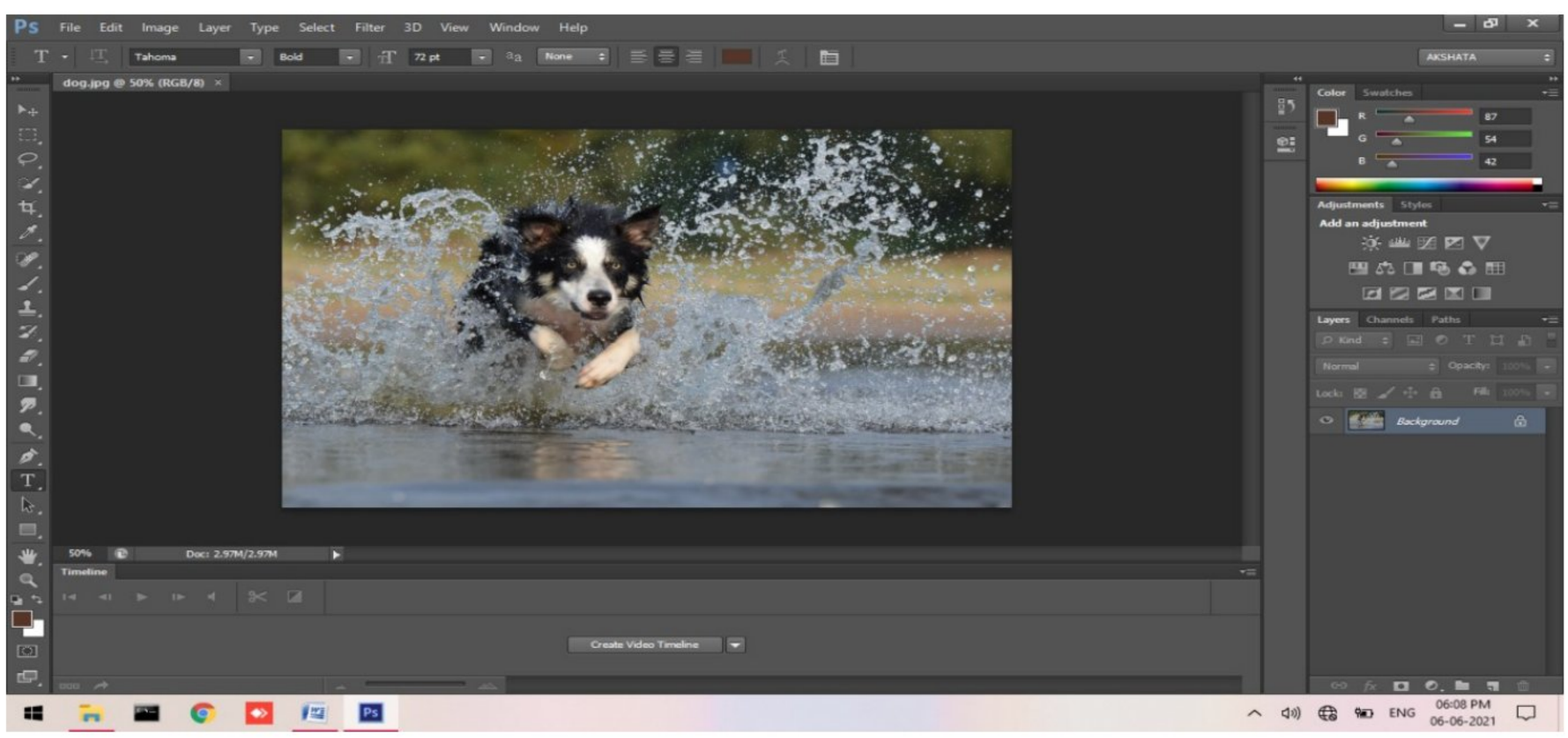
Step 1: Select File>Open



Step 2: A dialog box will appear. Locate and select the file on your computer, then click Open.



Step 3: The file will appear in Photoshop.



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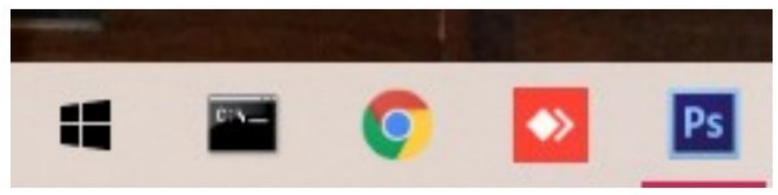
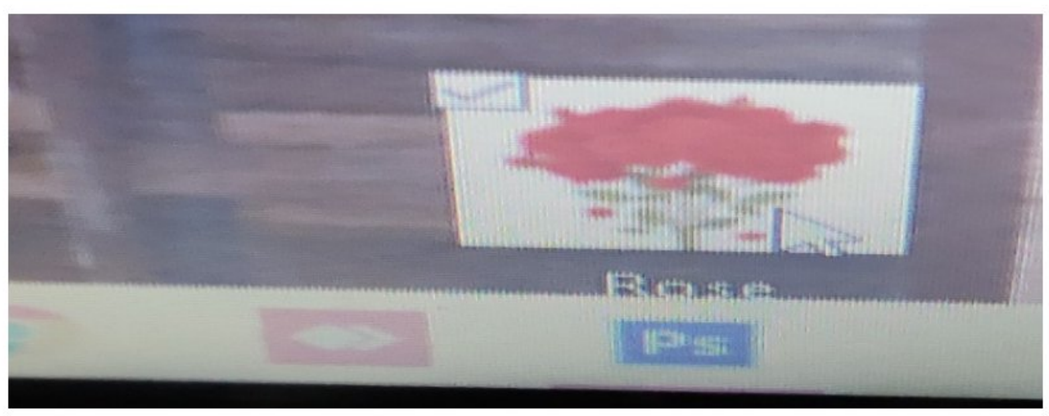
❖ **Click &drag the image on workspace.**

Step 1: Rose image is available on my desktop.

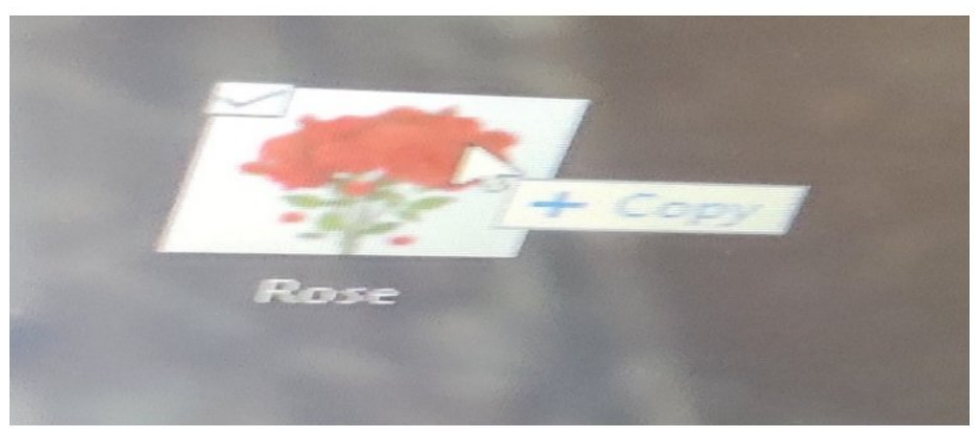
Step 2: Open Adobe Photoshop CS6 software and minimize it on task bar.



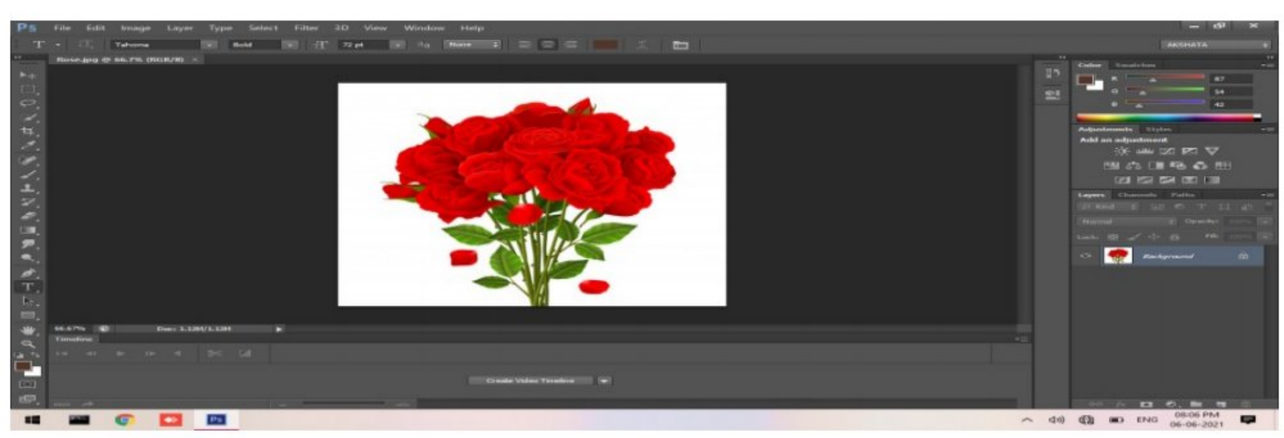
Step 3: Drag Rose image from desktop into adobe Photoshop cs6 software.



Step 4: Once you dragged into Adobe automatically it will open and Rose image will appears on screen.



Step 5: Click on + option then it automatically displayed on adobe screen.



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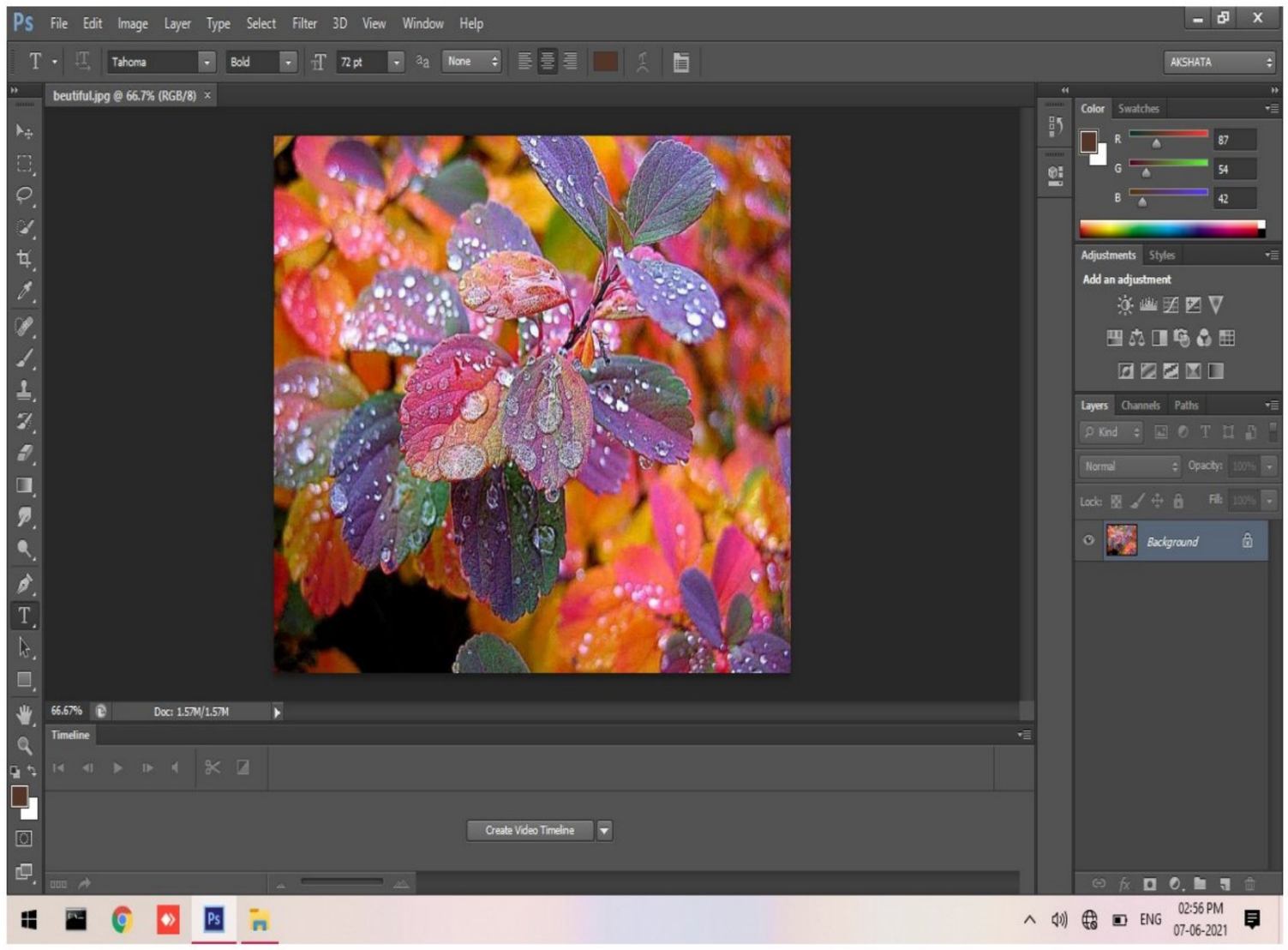
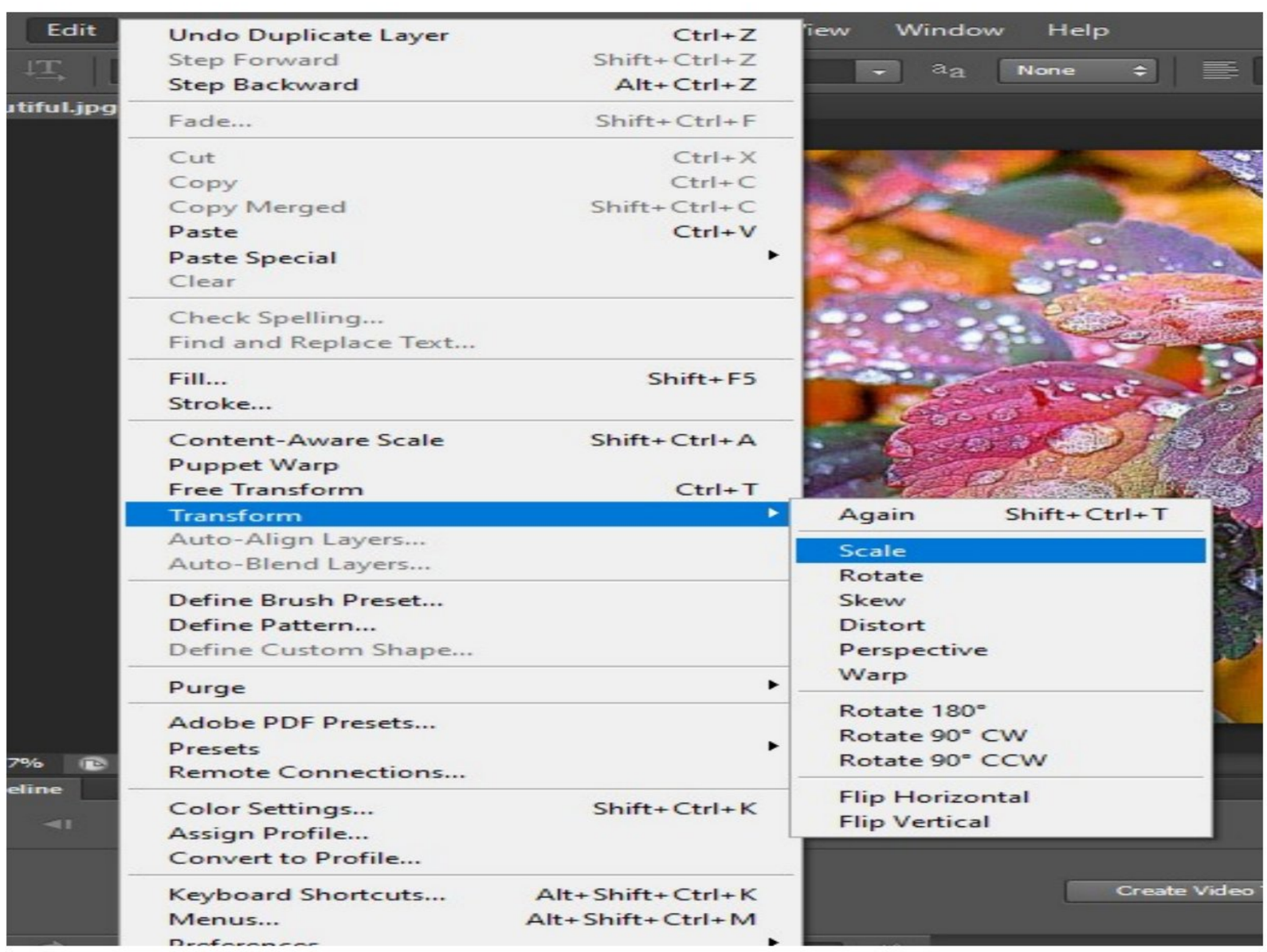
❖ Scale the image up &down.

Step 1: Open Image in Photoshop.



Step 2: Choose Edit>Transform>Scale.



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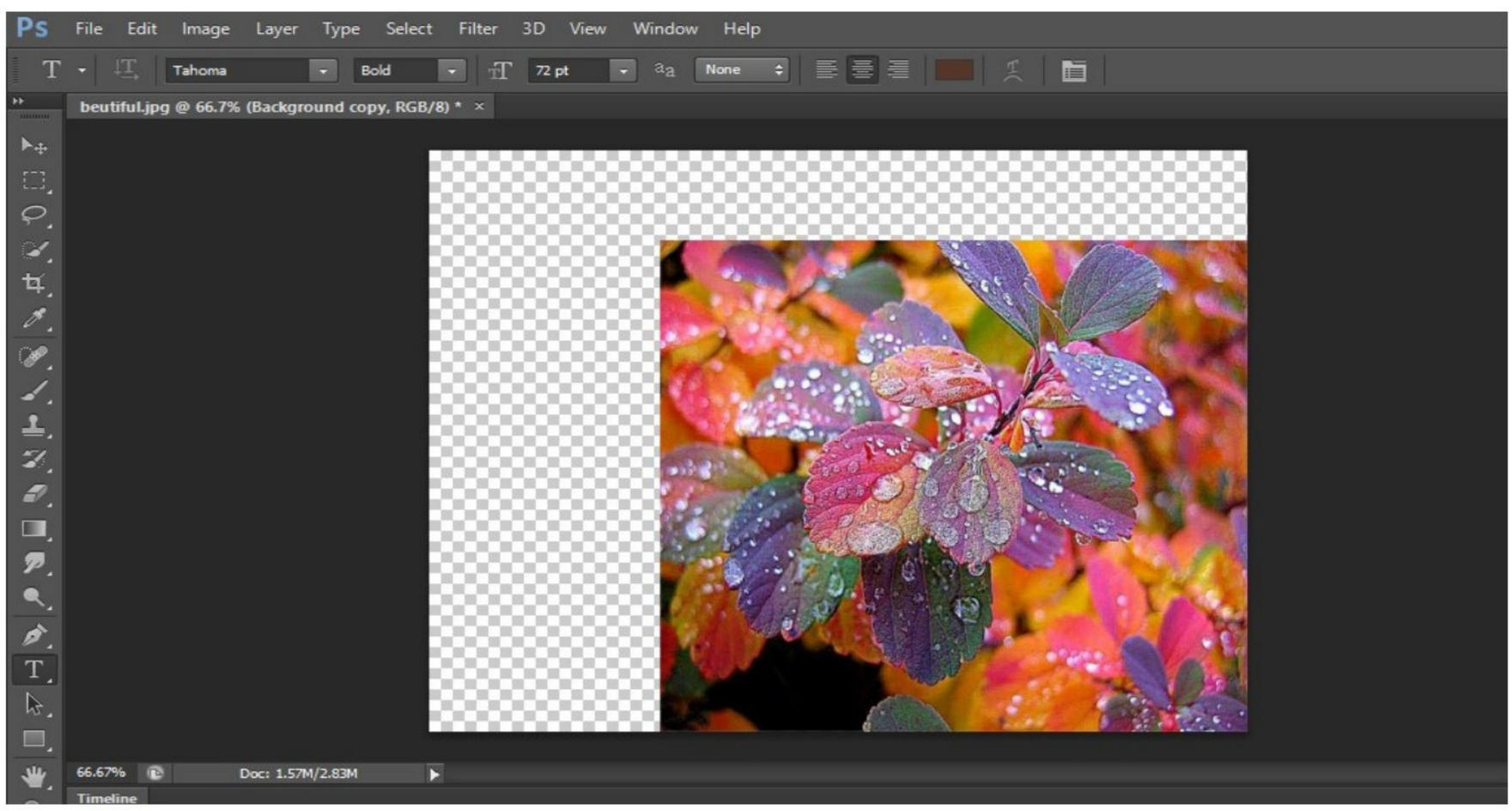
Step 3: As soon as you select scale, you will see transform box and handles around the image. There's a handle on the top, bottom, left and right, plus one in each corner:

Step 4: To scale down the image, click and drag any of handles. Here I am dragging the top left corner handle inward:



Step 5: To scale up the image, click and drag any of handles. Here I am dragging the top left corner handle inward:

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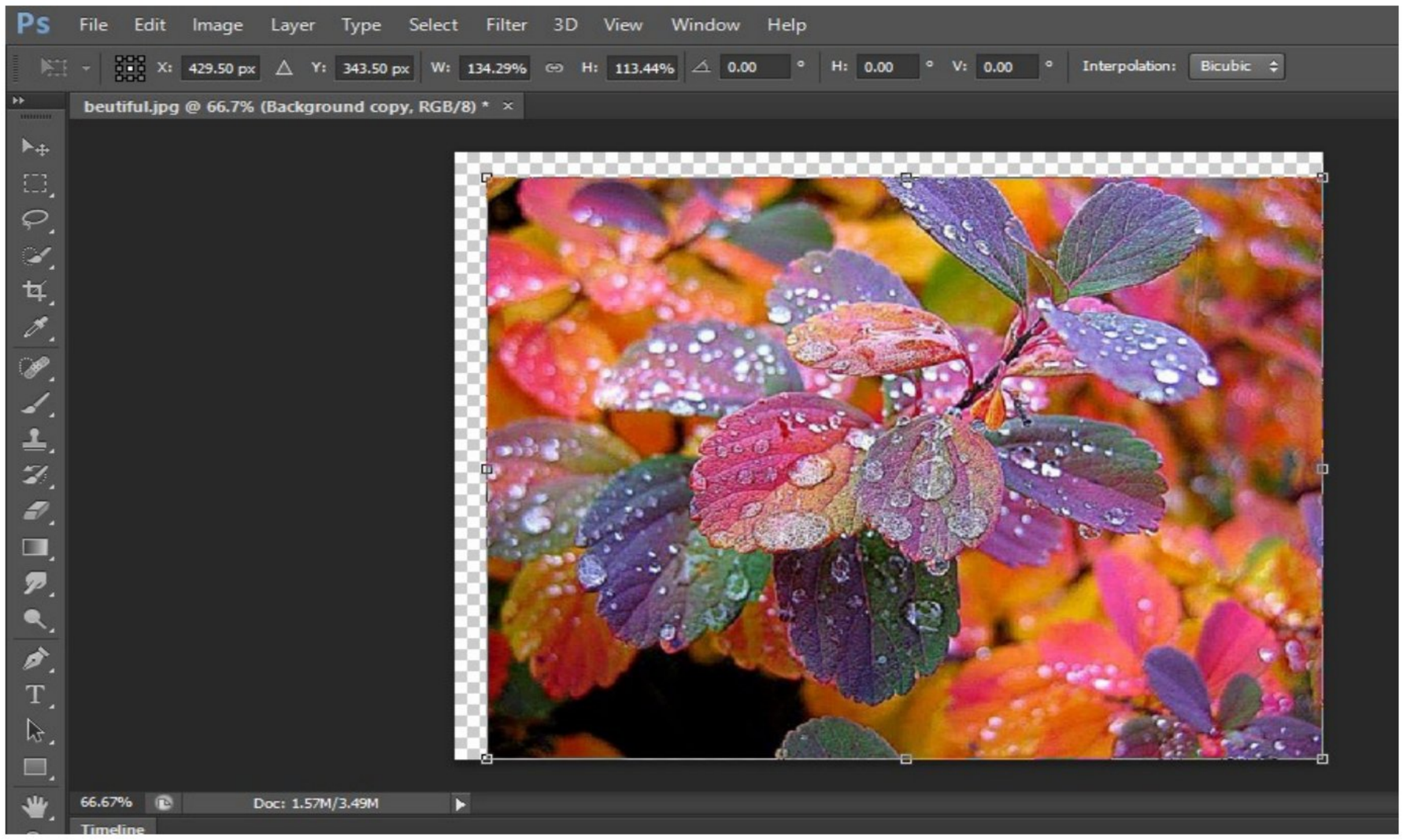
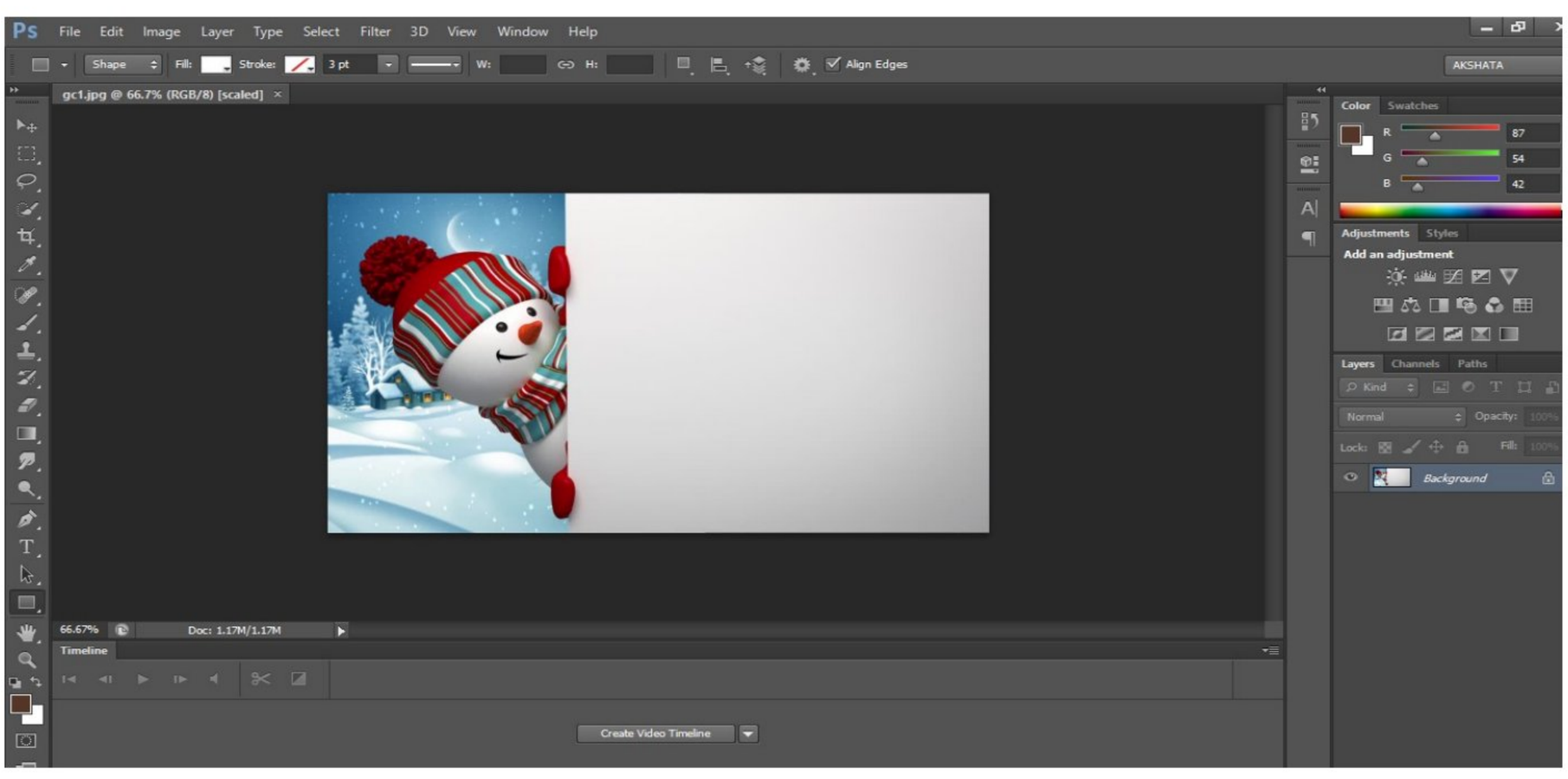


Step 6: If you are happy with size of image and you can accept your changes and close transform by clicking checkmark in Options bar.

4. Design a Greeting card. Use different layers for image and text.

Step 1: Choose File>Open and Open your image in Adobe Photoshop software.



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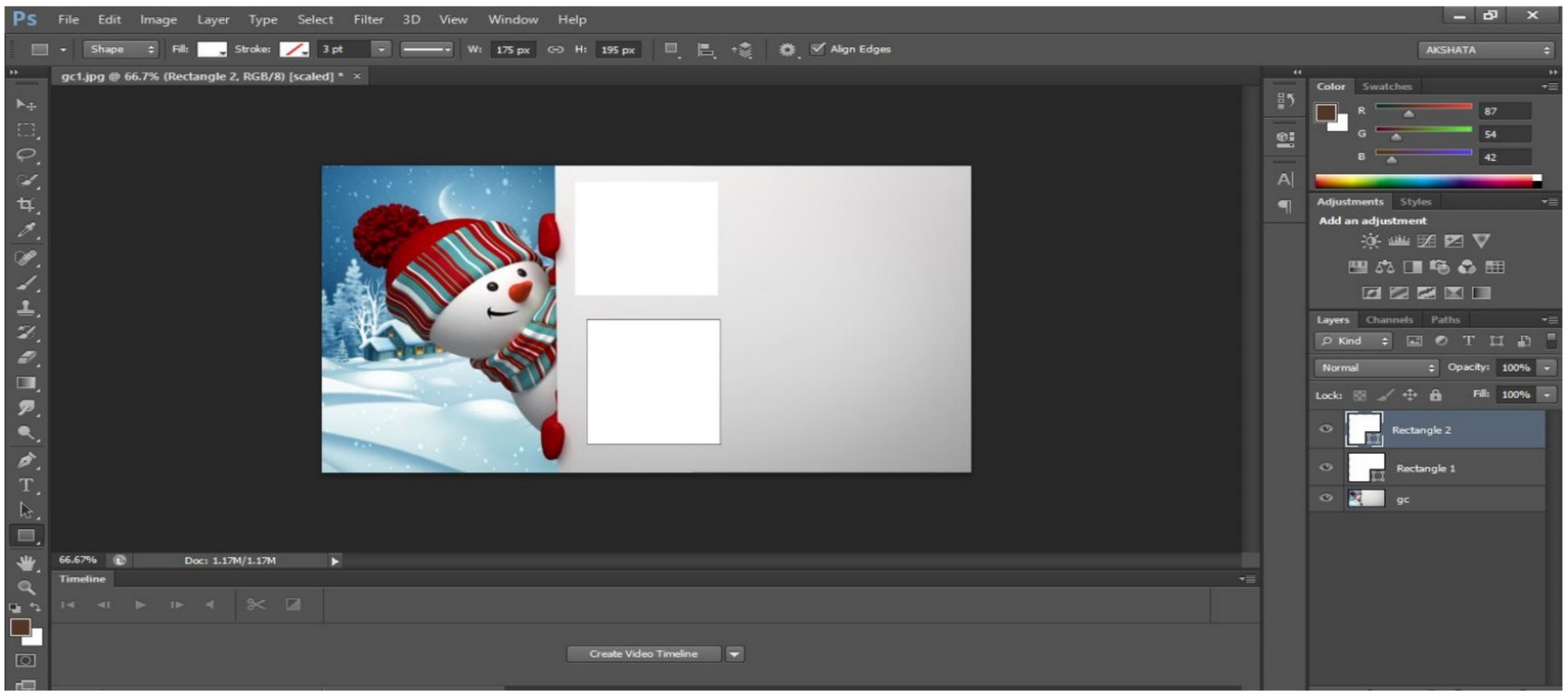
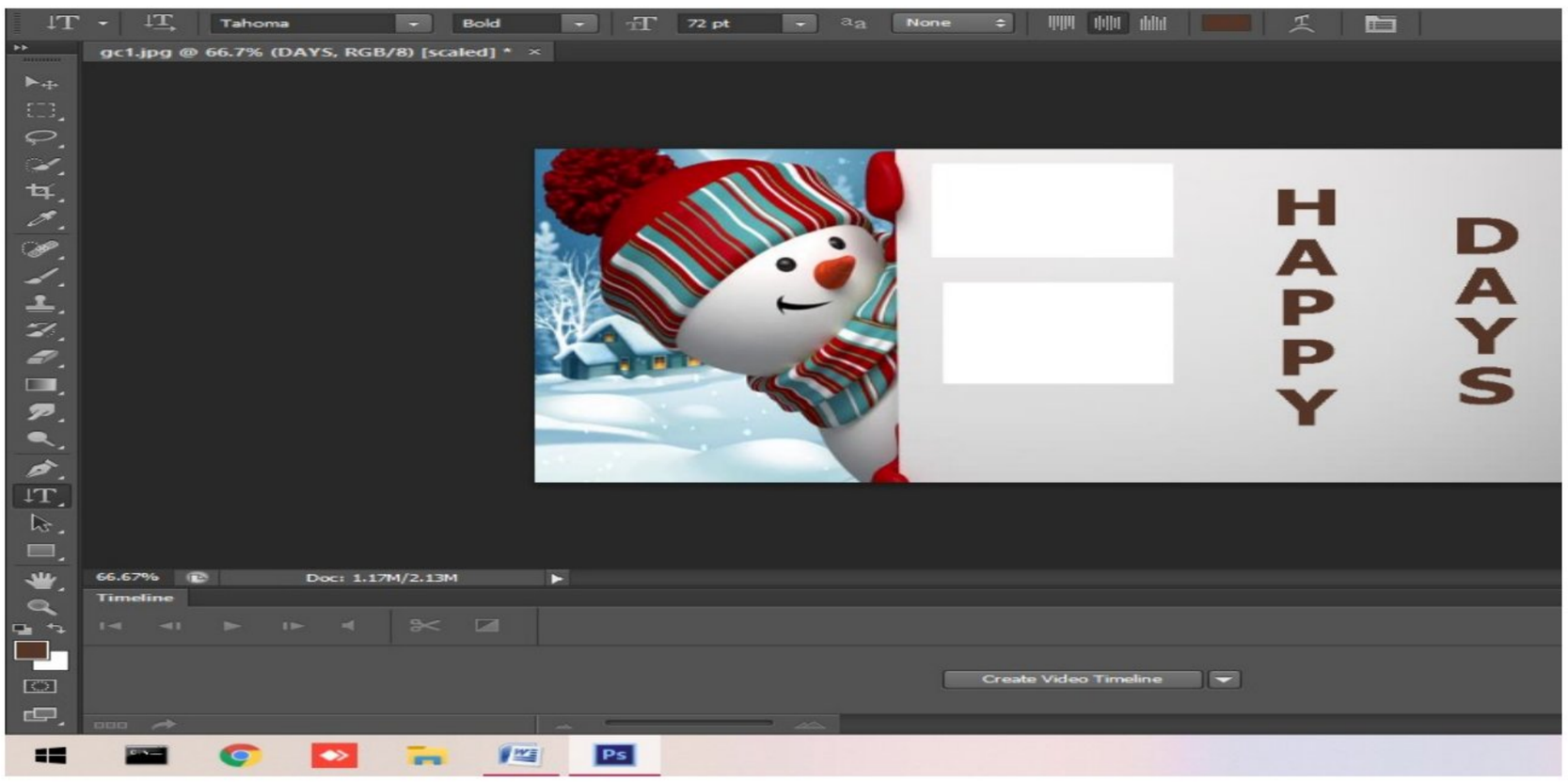
Step 2: Consider the Layout. Here In this graphic below I used the Rectangle Tool to draw two blocks into which I will place colors when the card is complete. Two layers are created Along with Background layer (gc).



Step 3: Choose Vertical Type Tool from Tool panel and place it over greeting card. Write HAPPY DAYS vertically on card.



Step 4: Style your Texts. Make right click on color box layer and select blending options. You choose Pin Light blending mode for both text. Apply Stroke to both Text.

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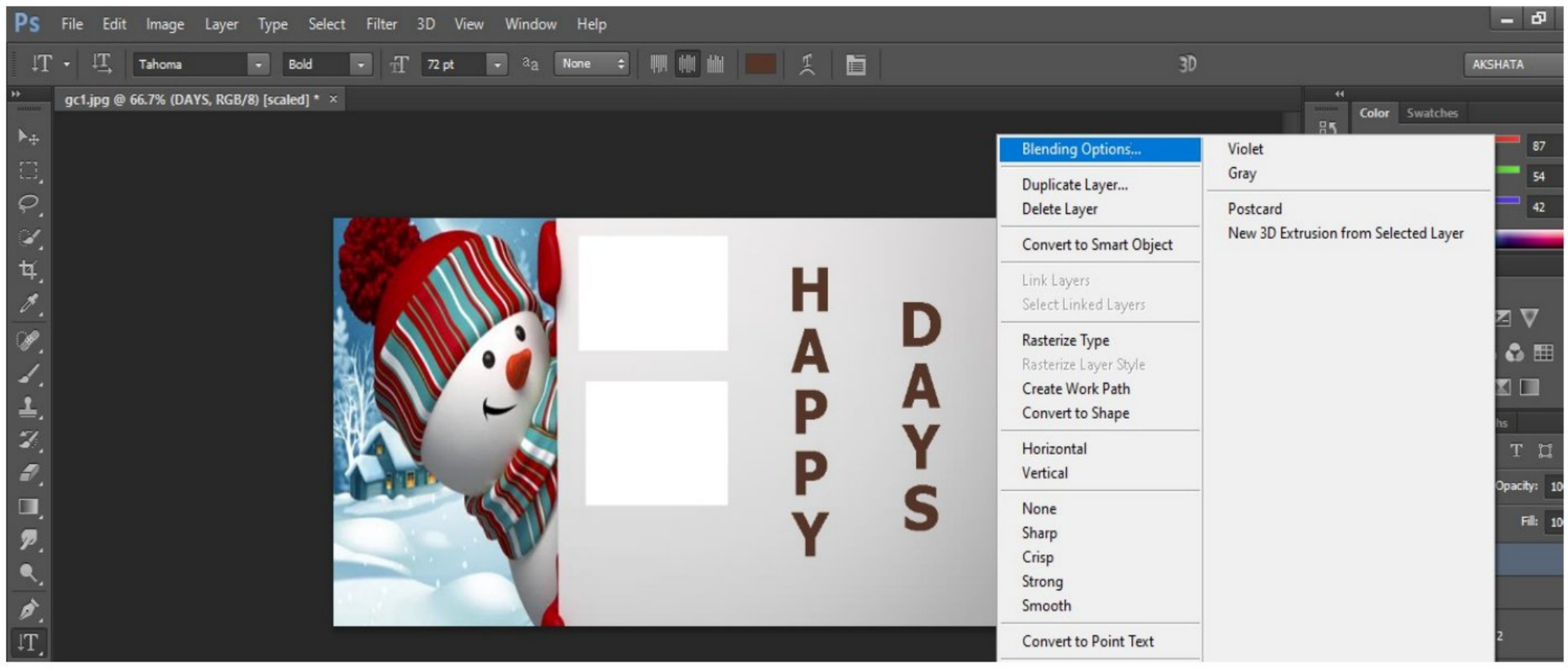

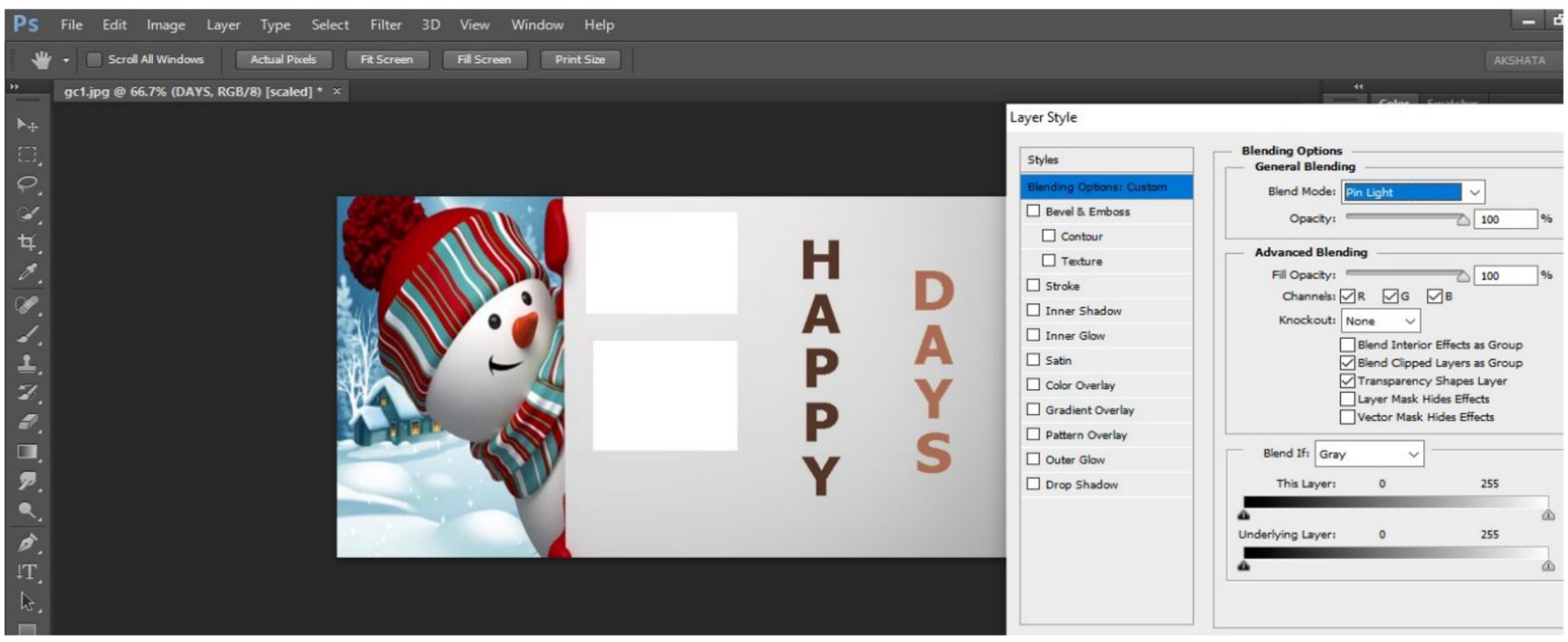

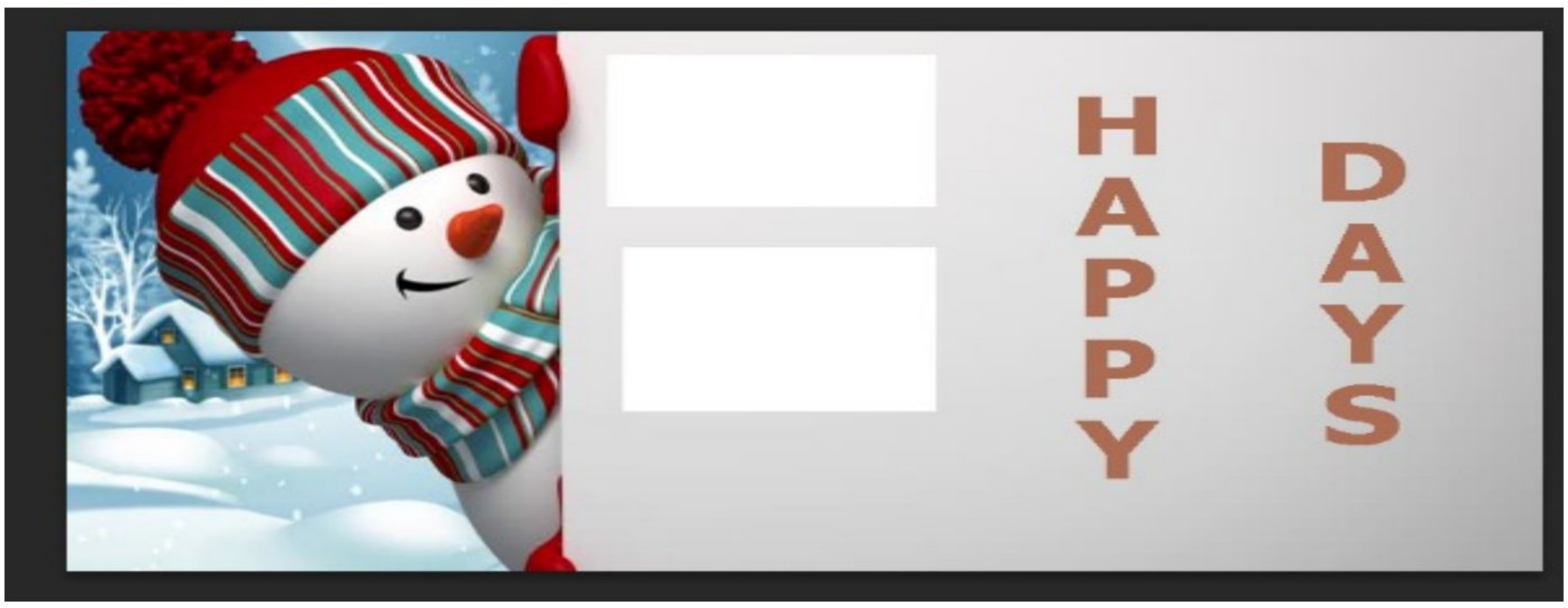

Step 5: Once there, you will see different options on left, you can choose any options. I have chosen Stroke for both text.

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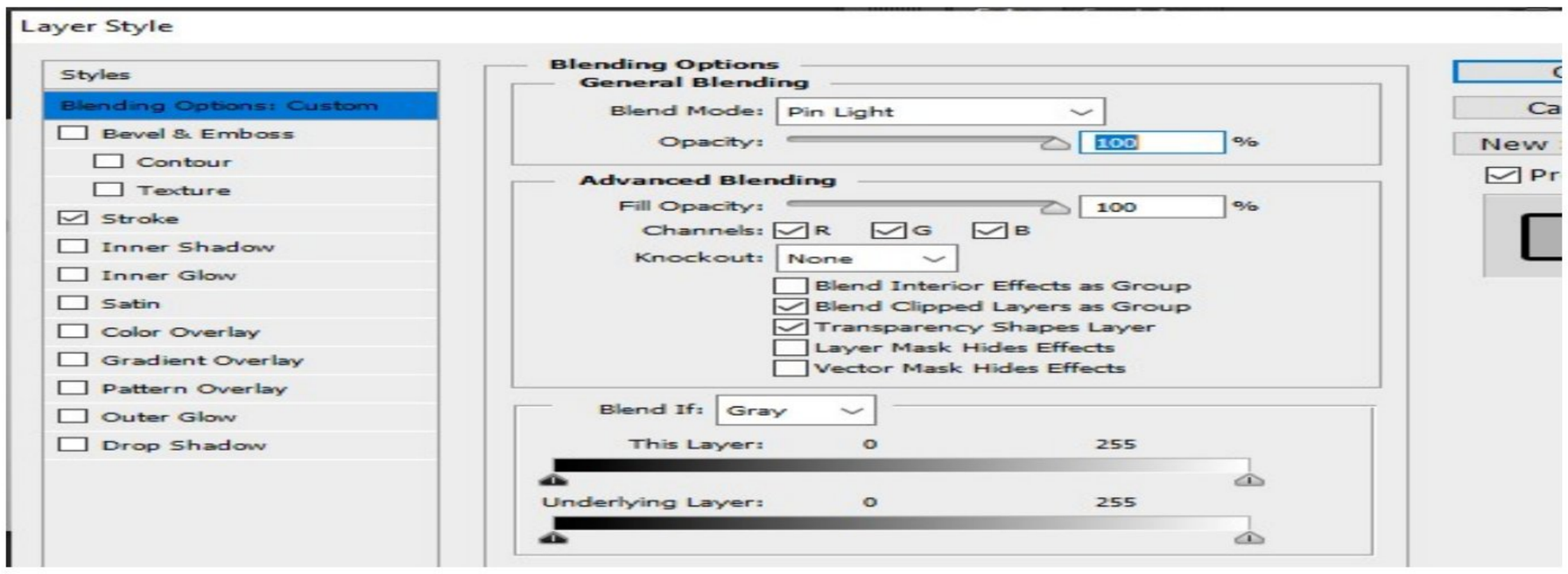
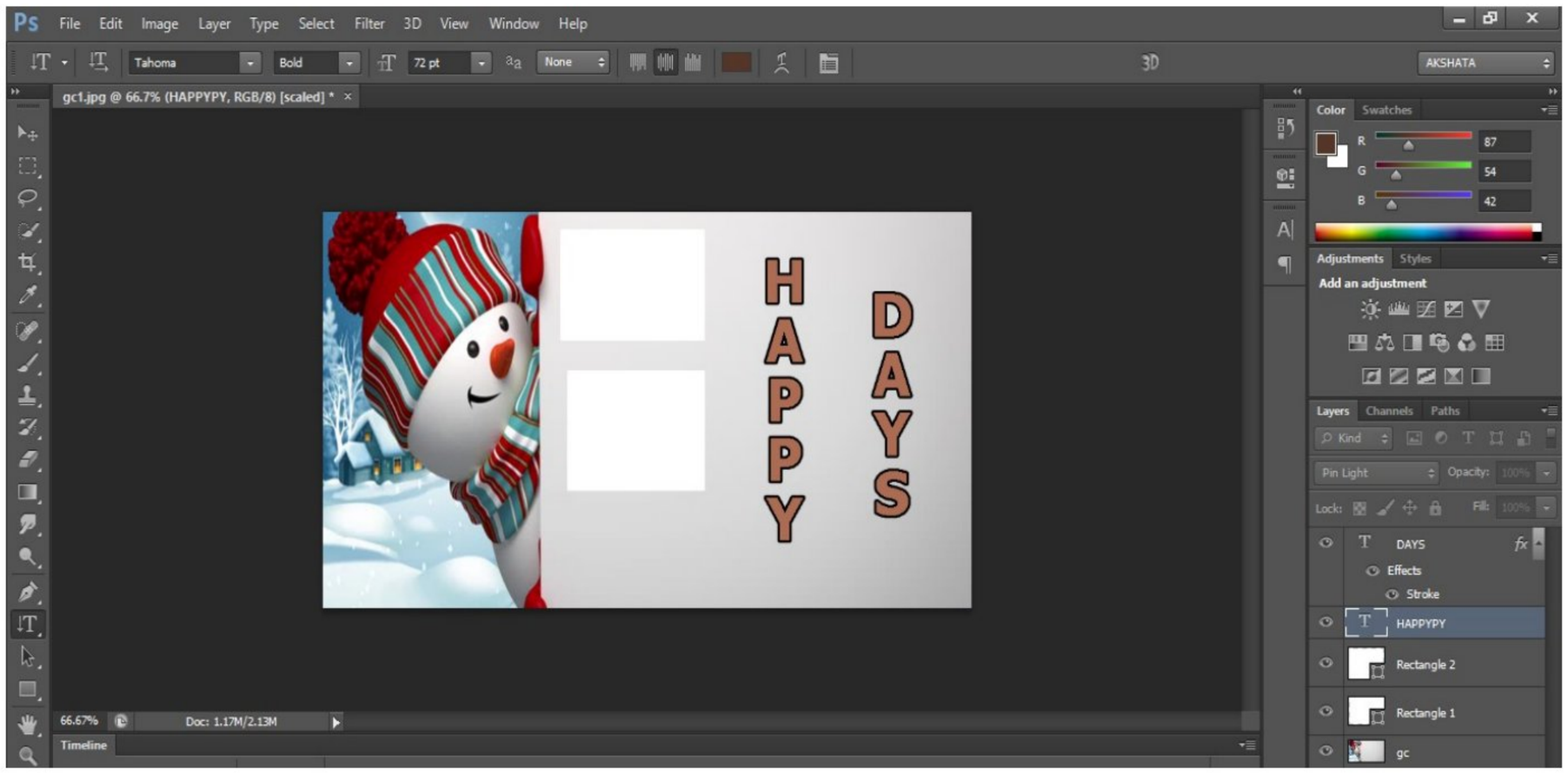
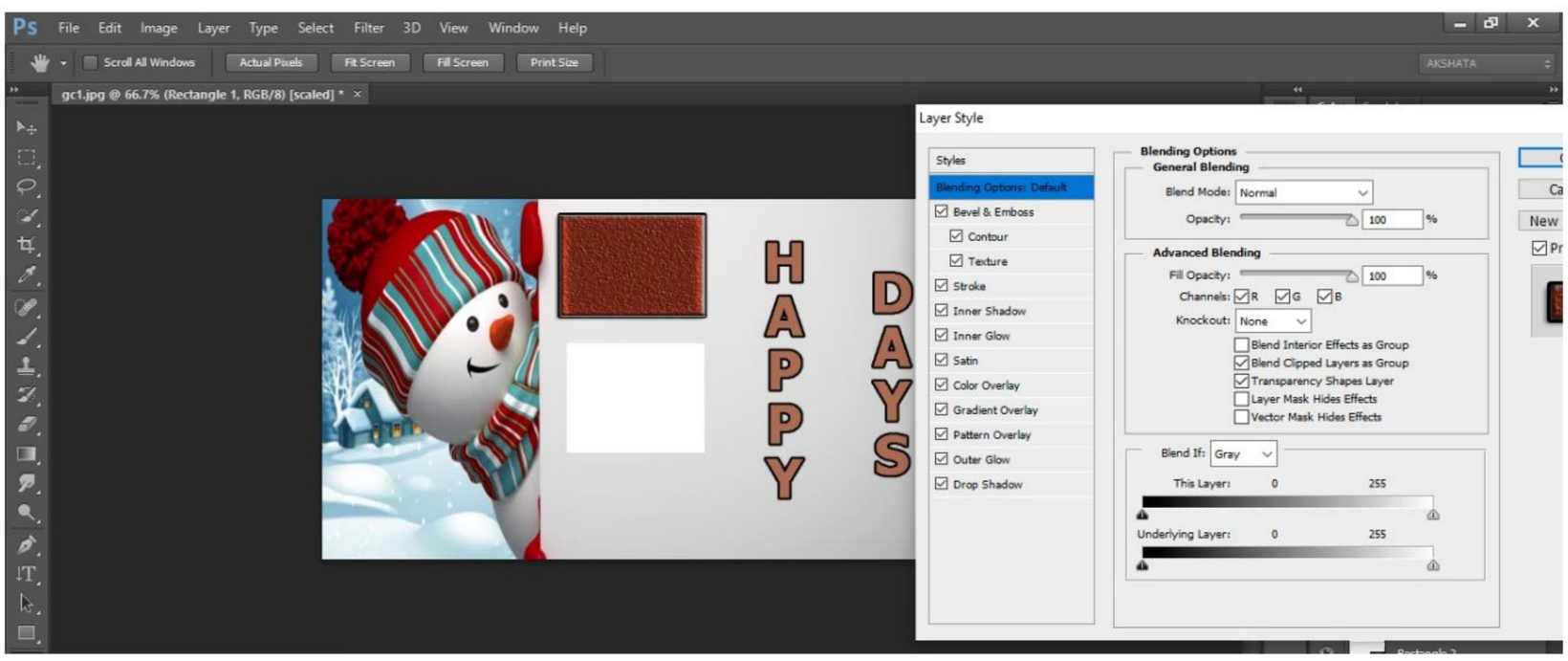




Step 6: Style your Color Boxes. Make right click on color box layer and select blending options. Once there, you will see different options on left, you can choose any options.



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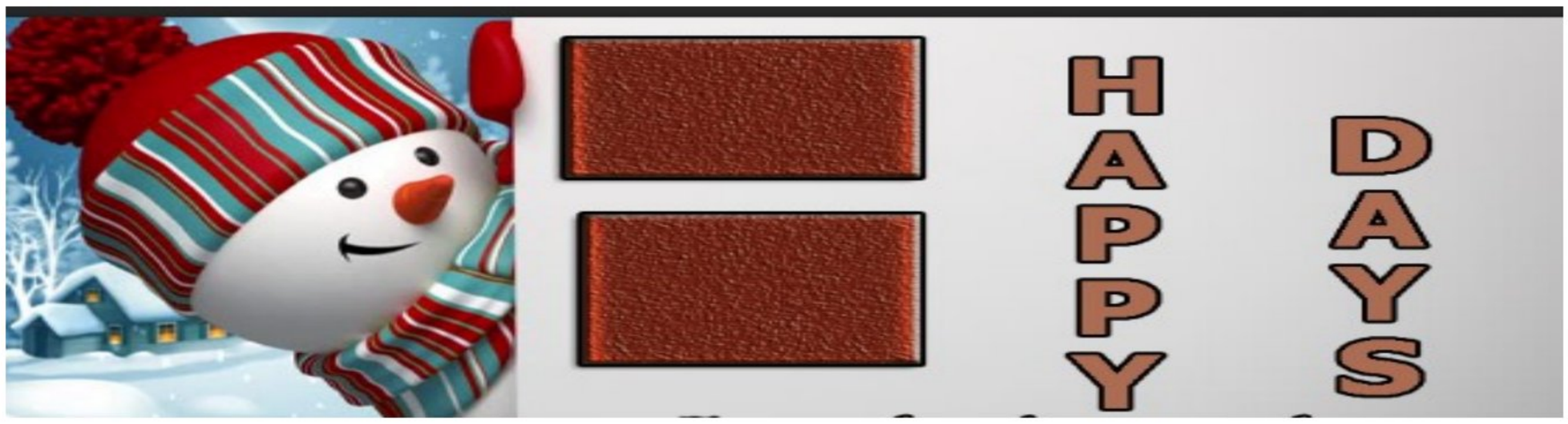
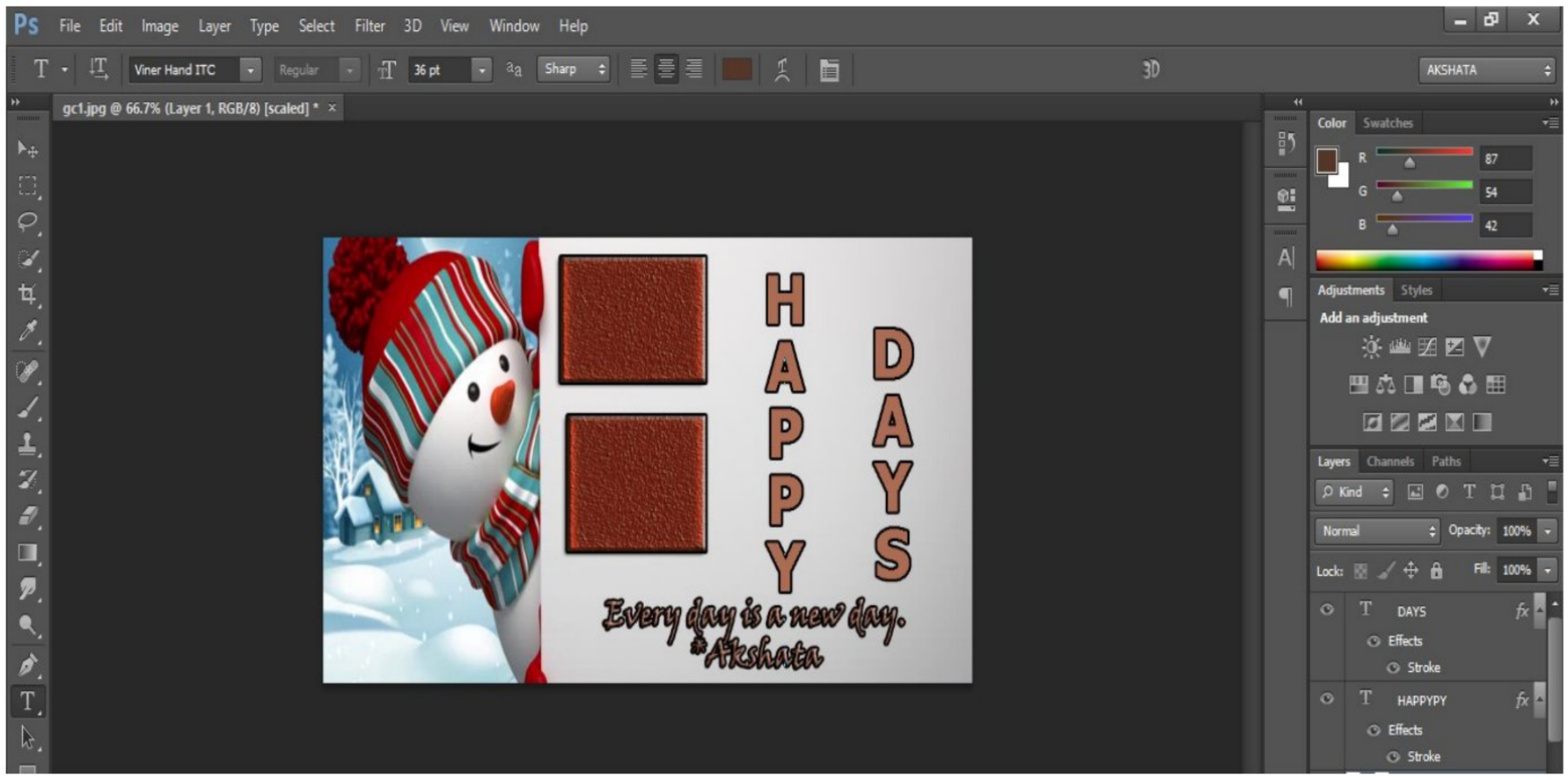


Step 7: Write wishes at down side of card. Choose Text Horizontal Type tool from tool panel and place it on card. Apply Modes to your Text.



5. Practice using different Selection tools.

1) <u>Rectangular Marquee Tool:</u>

Step 1: In the Tools panel, select the Rectangular Marquee tool. Drag a rectangular selection onto the image. The area inside the animated border represents your selection.

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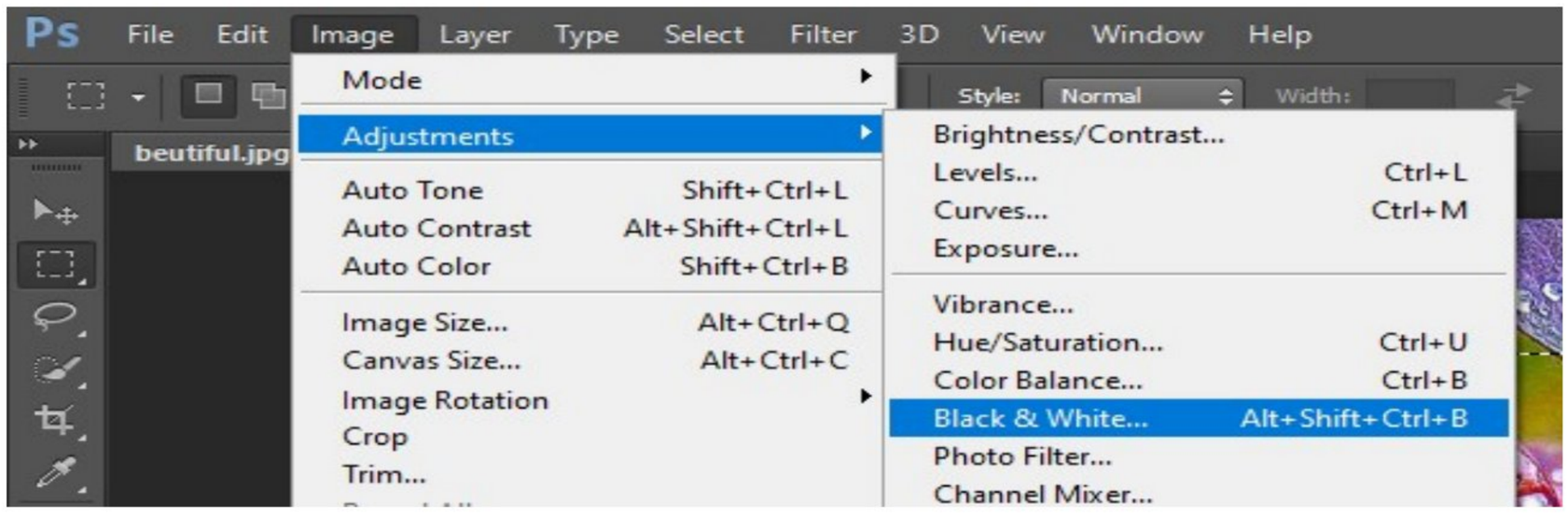
Step 2: Select layer you want to adjust. Choose Image>Adjustment>Black and white.

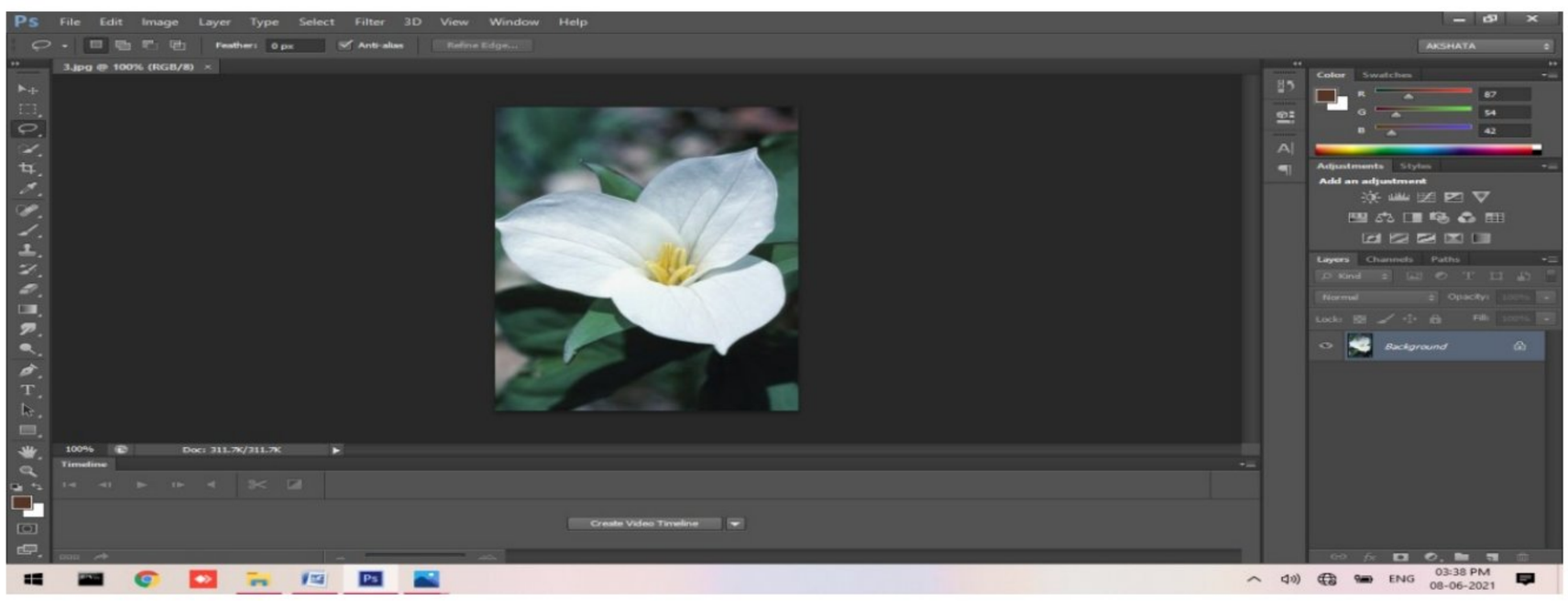


Step 3: With the selection active, adjustments affect only the selected area of that layer.

2) <u>Lasso Tool</u>:

Step 1: In the Tools panel, select the Lasso tool. This tool is useful for cleaning up a selection that you started with another tool.

Step 2: Drag a Lasso tool onto the image.



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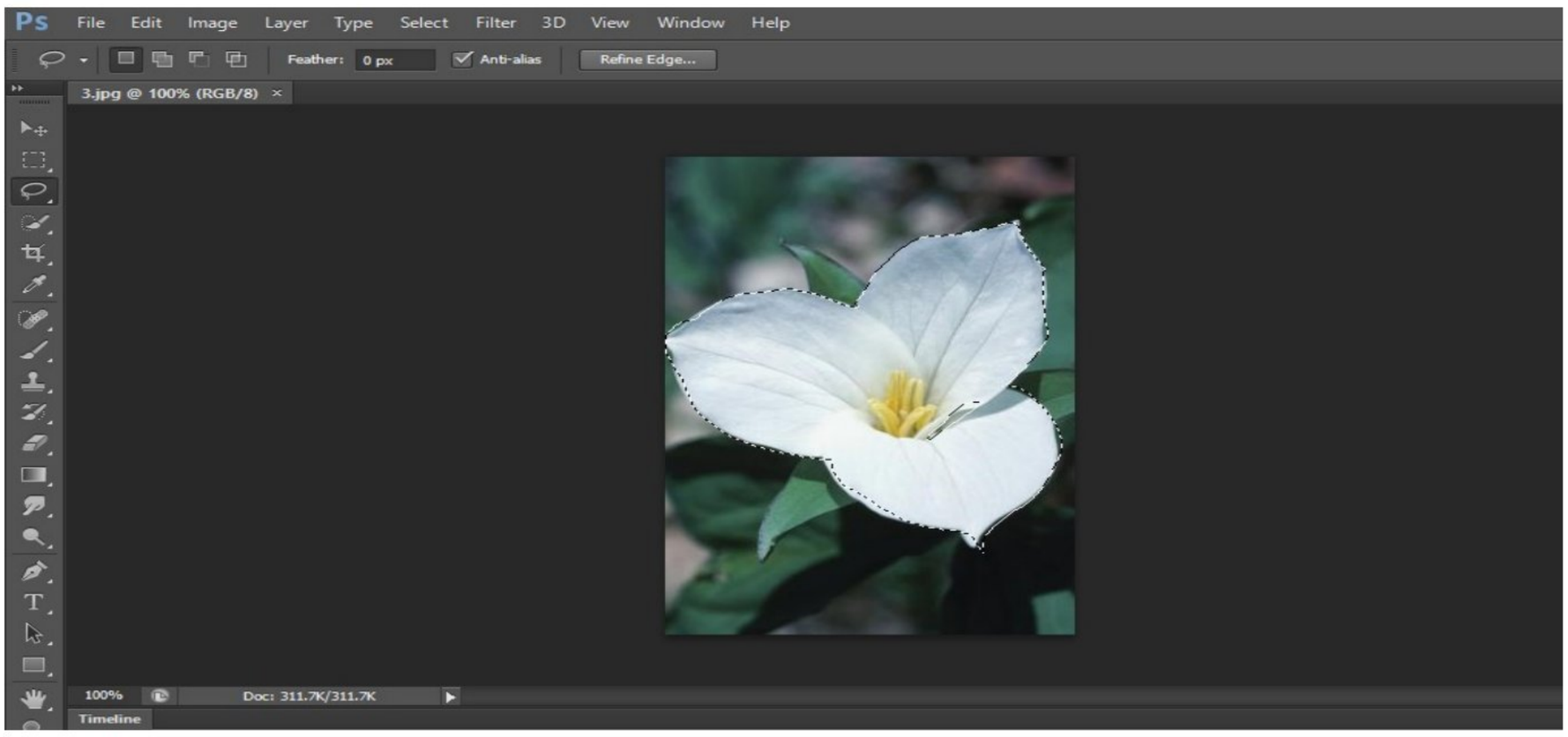
Step 3: Drag to draw a freehand selection border

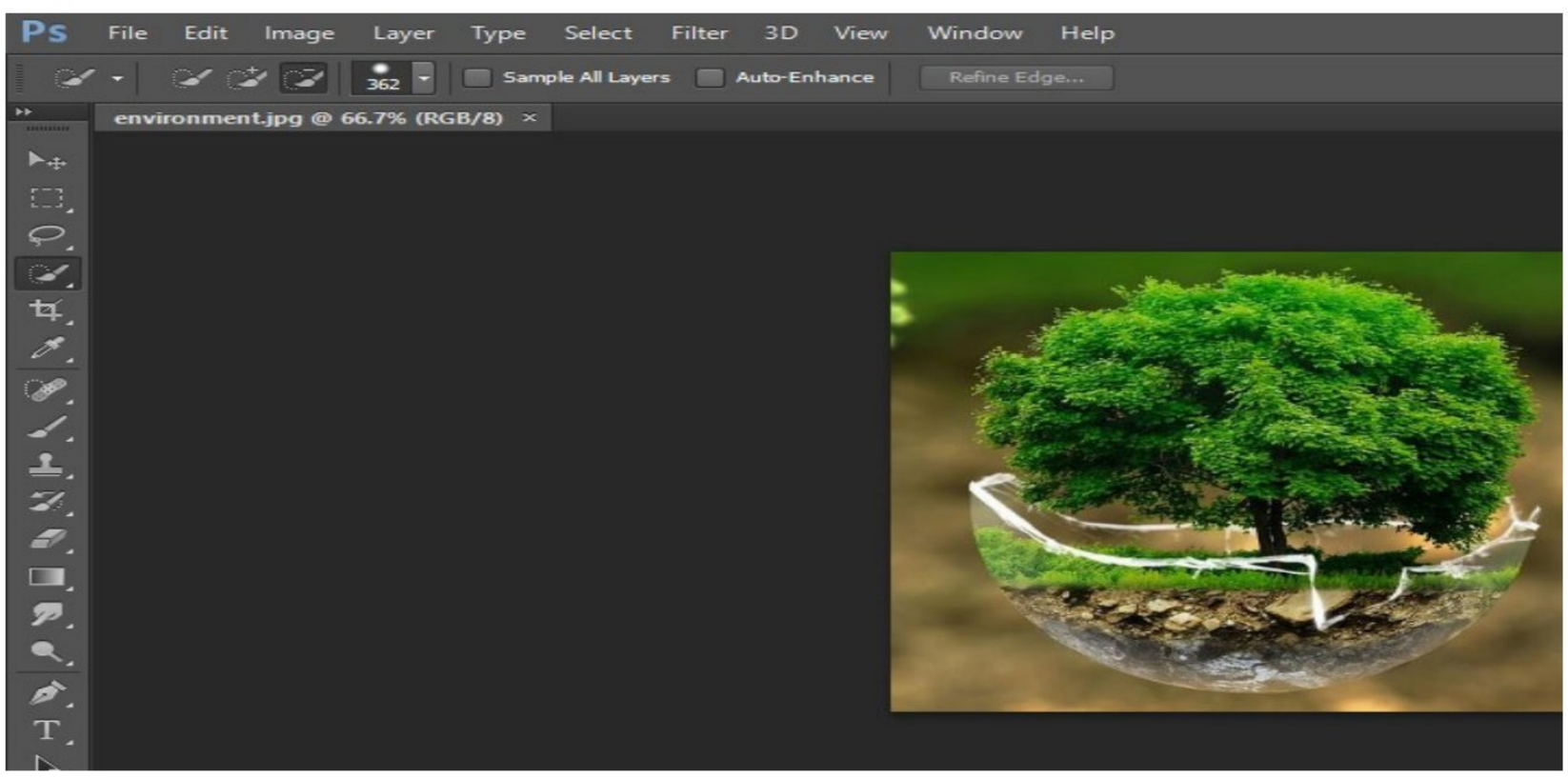


Step 4: To close selection border, release the mouse button.

3) <u>Quick Selection Tool:</u>

Step 1: In the Tools panel, select Quick selection tool.

Step 2: Drag over an area you want to tool.



Step 3: In the Tool option bar, choose one of the following:

- New selection: it is selected by default.
- Add to selection: you can add to existing selection
- Subtract from selection: you can subtract from an existing selection

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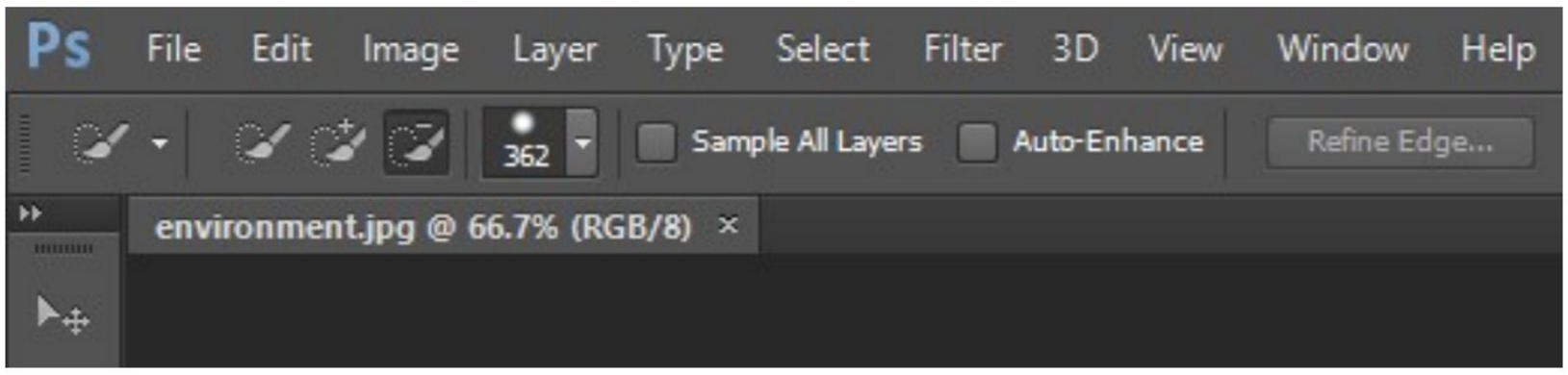

Step 4: Do any one of following to refine the selection:

- To start new selection, click New Selection button in option bar, and click or draw to specify the new selection area.

- To add selection, click Add to Selection button in option bar, and click or click-drag across the area you want to add.

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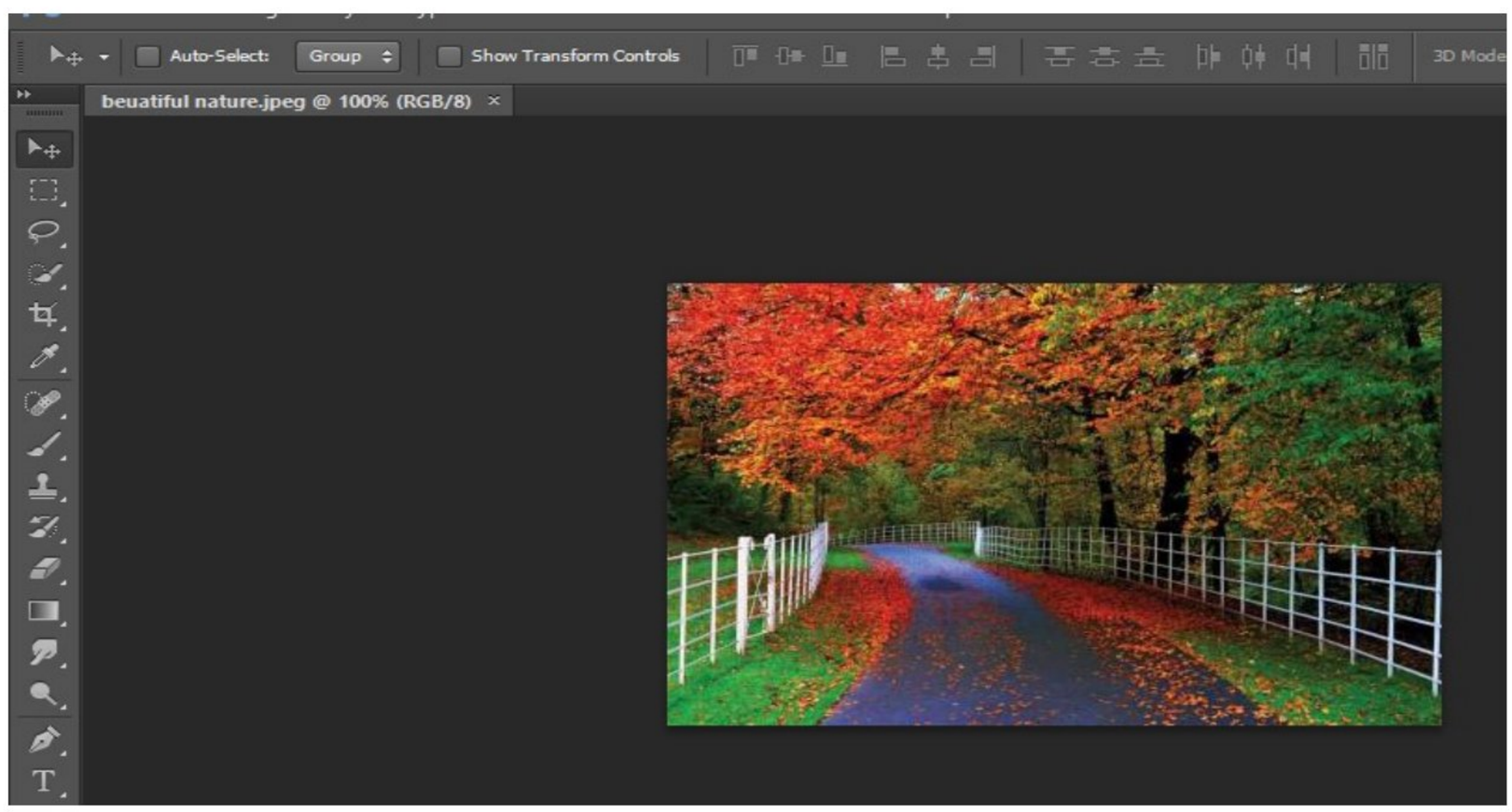
- To remove an area from selection, click Subtract from Selection button in option bar, and click or click-drag across the area you want to subtract from the selection.

4) Crop Tool:

Step 1: From the toolbar, Select Crop tool .Crop borders display on edges of photo.



Step 2: Draw new cropping area or drag the corner and edges handles to specify the crop boundaries in your photo.

Step 3: Specify the Crop options using Control bar.

A. Custom menu: you can choose Unconstrained, original ratio etc.

B. Swap width and height values: you can also choose present, enter your own values.

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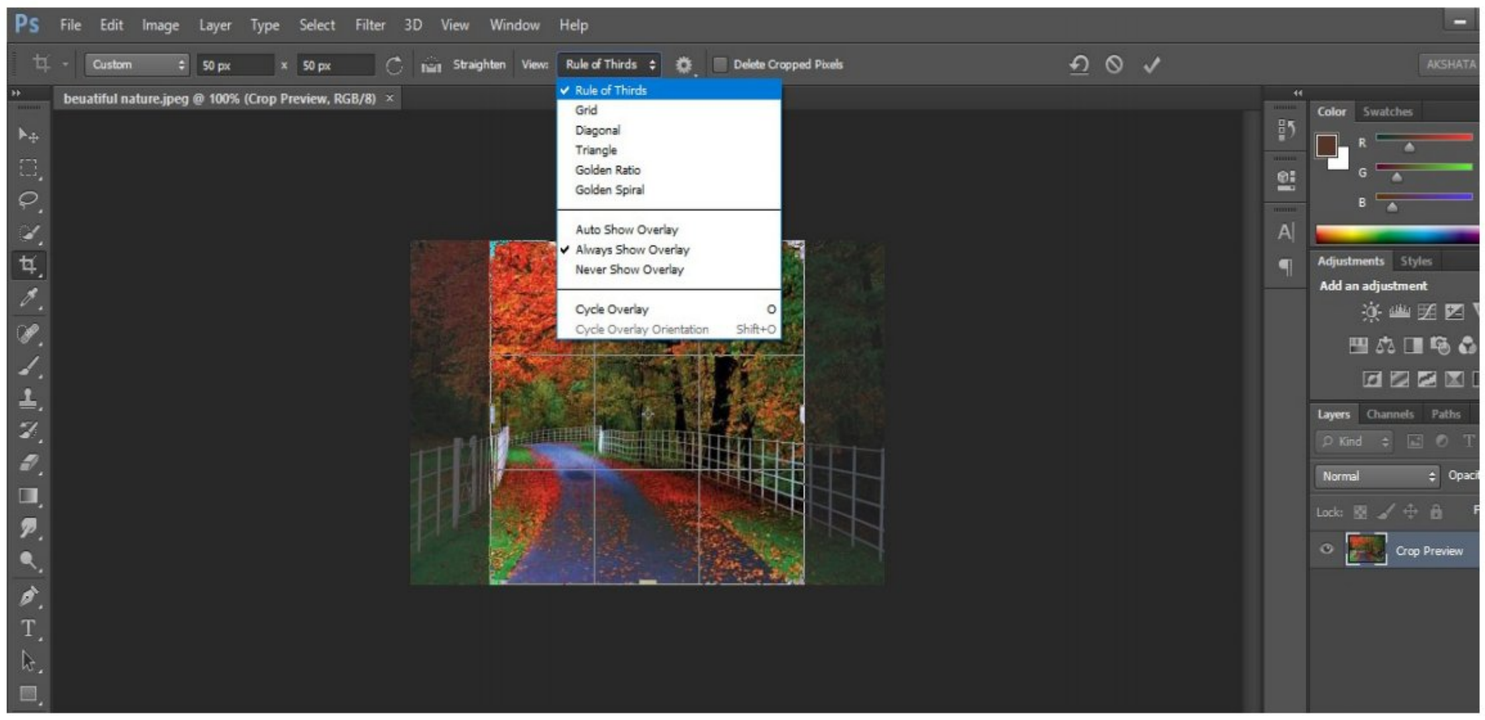
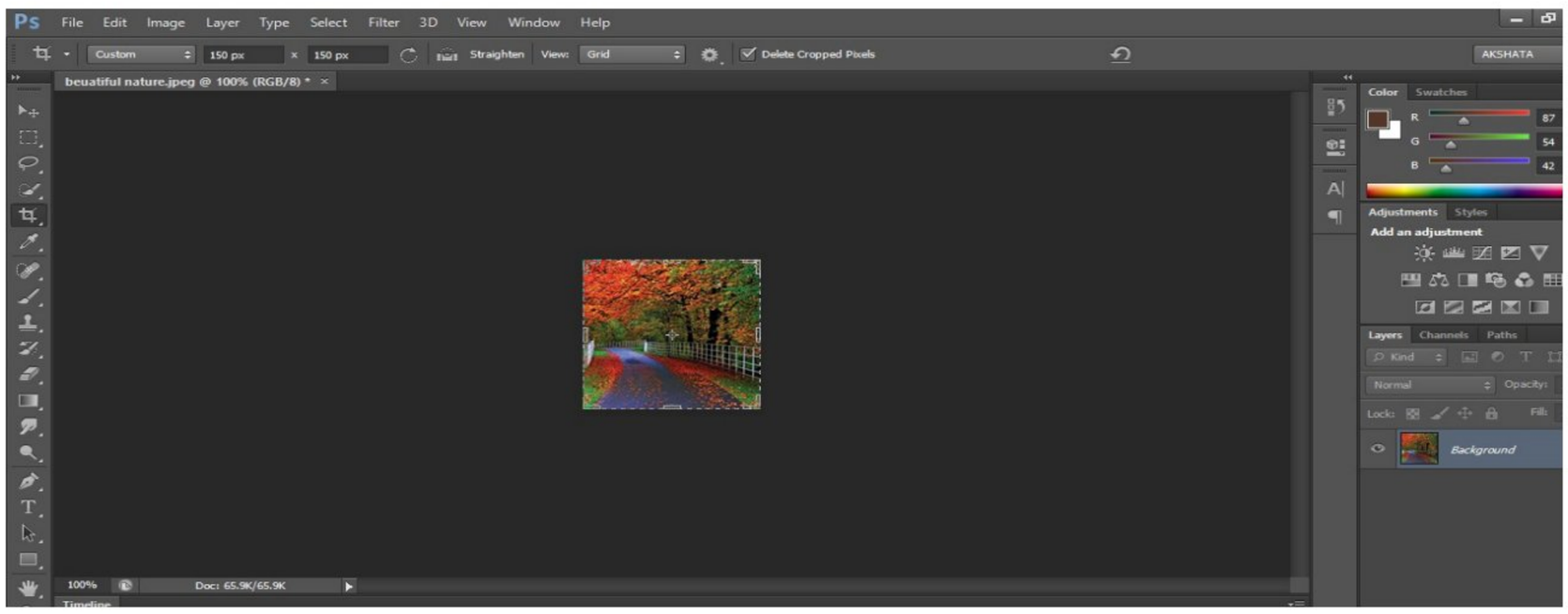
C. Overlay options: Choose a view to display overlay guides while cropping. Guides such as Rule of Thirds, grid, diagonal, triangle, golden spiral and Golden ratio are available.

D. Delete cropped pixel: Disable this option to apply non-destructive crop& retain pixels outside the crop boundaries. Enable this option to delete pixels that are outside the crop area.



Step 4: After specifying crop options, then Press enter to crop the photo.



5) Eyedropper Tool:

- **Ruler tool**

Step 1: Choose Ruler tool from tool panel.

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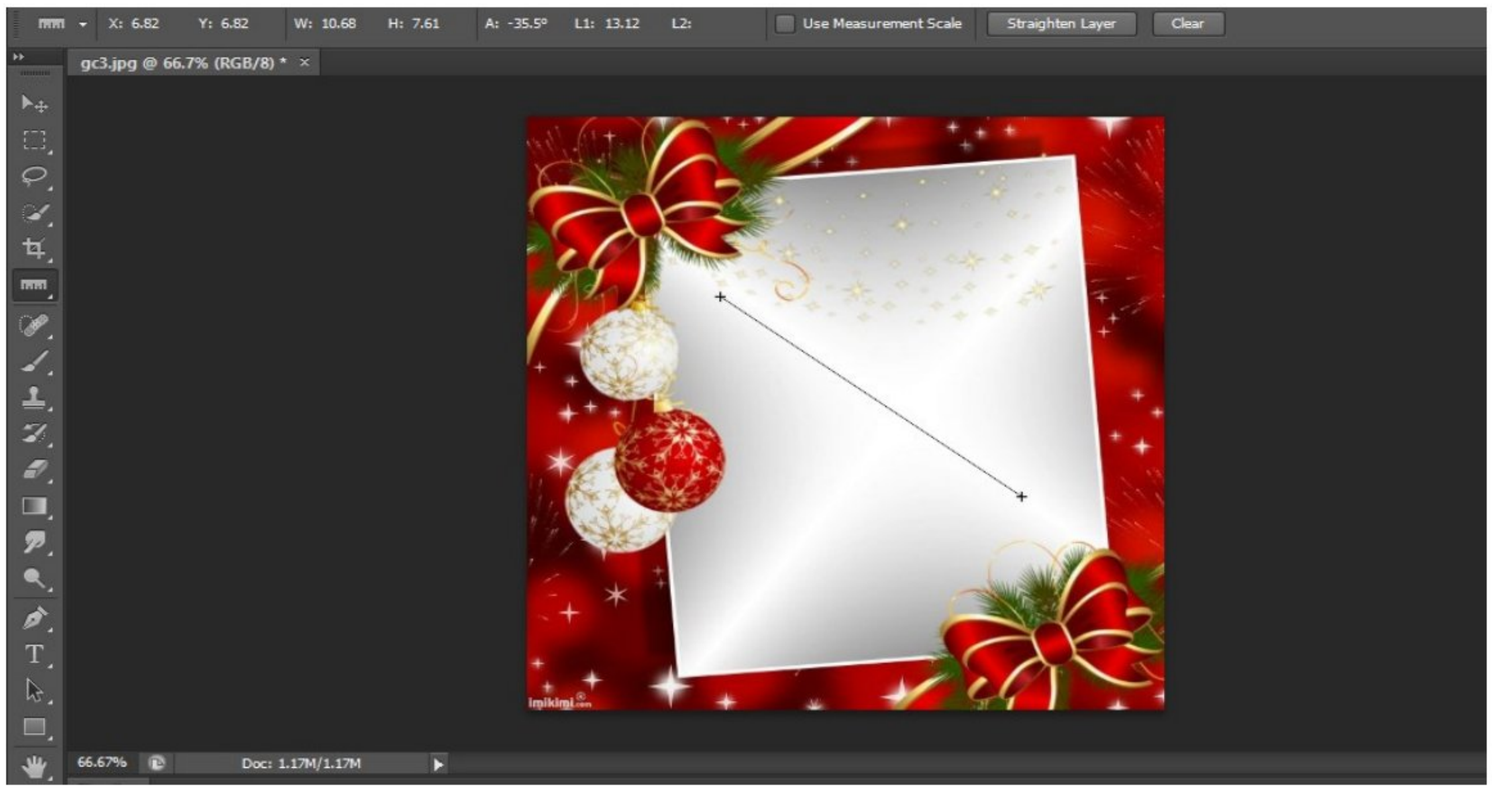
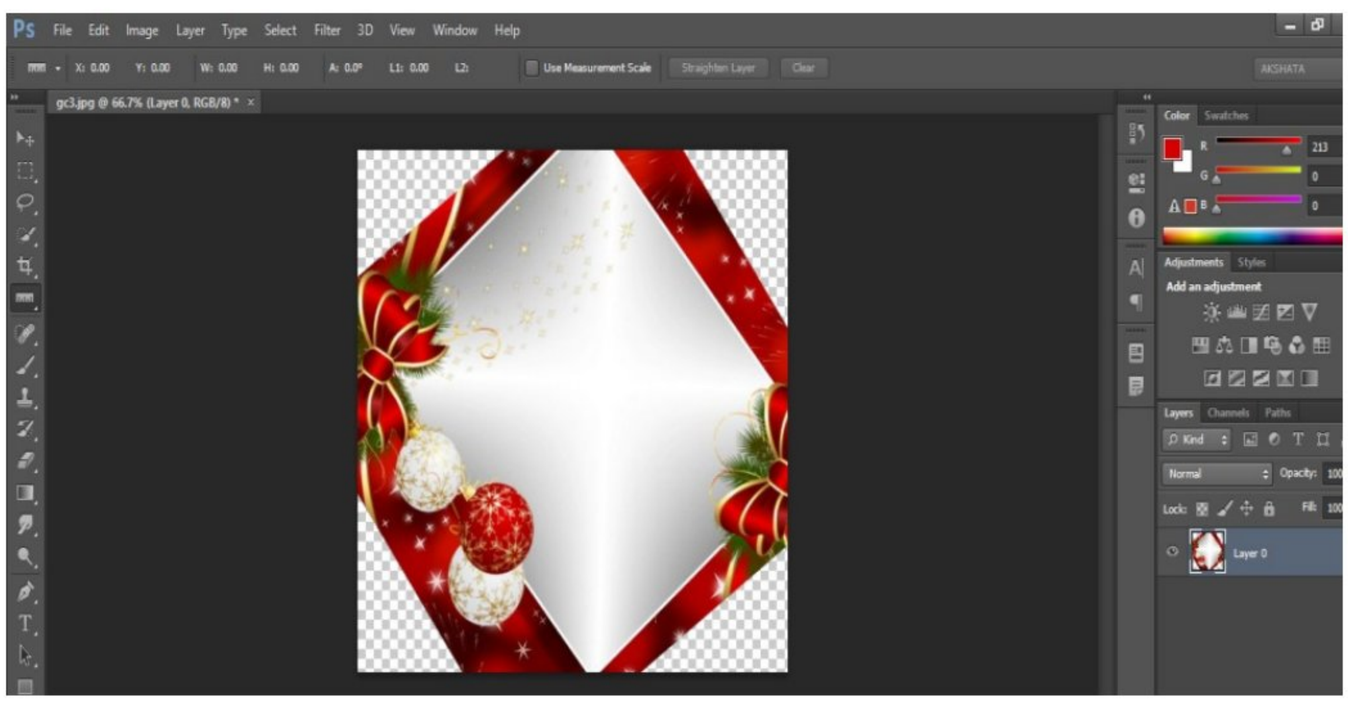
Step 2: Draw ruler on image.



Step 3: Click on Straighten layer which is available on option panel. After this you will get result.



- **Note Tool**

Step 1: Choose Note tool from tool panel.

Step 2: Drag tool over image. Property window will appear. You can write note.

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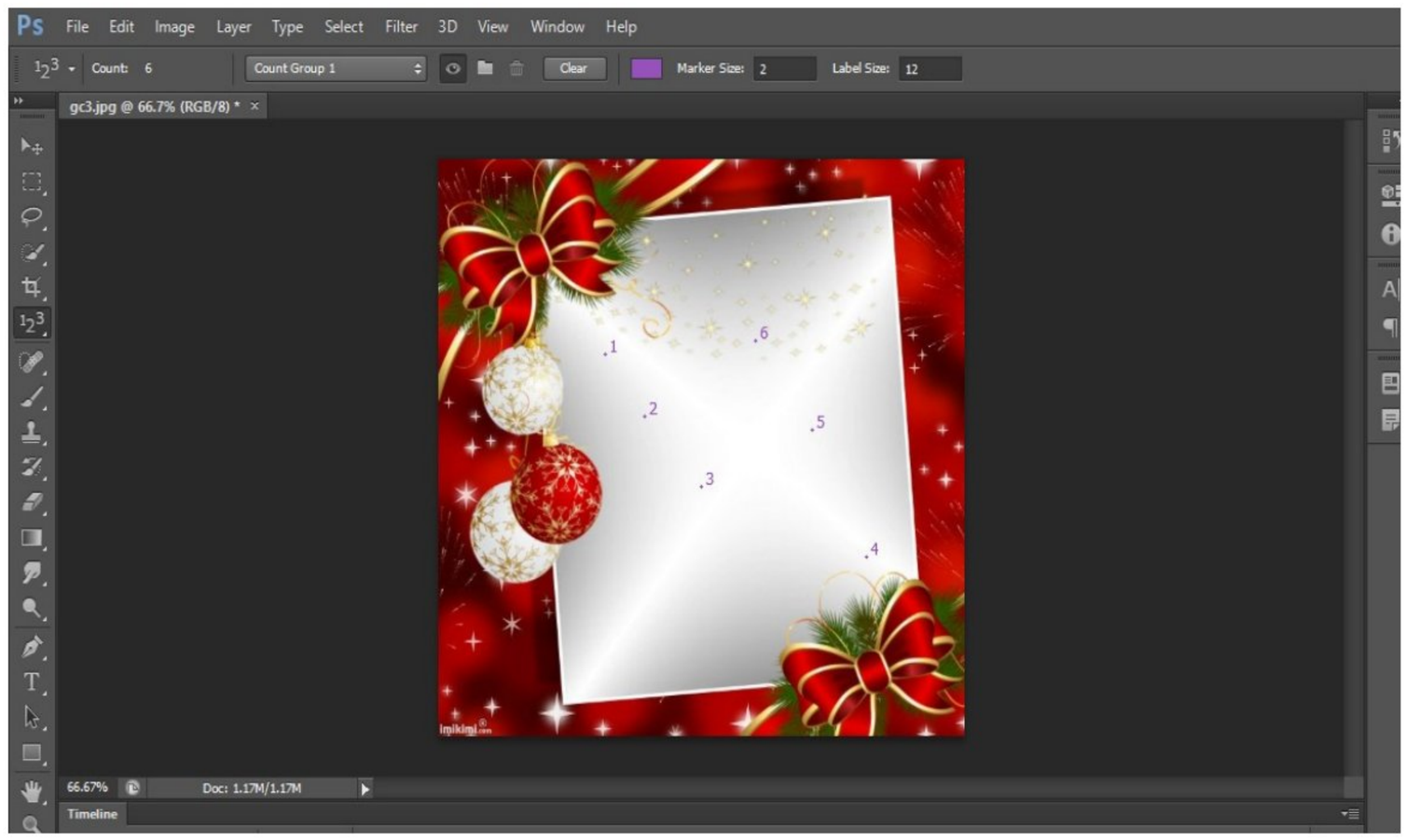
- **Count Tool**

Step 1: Choose count tool from tool panel.

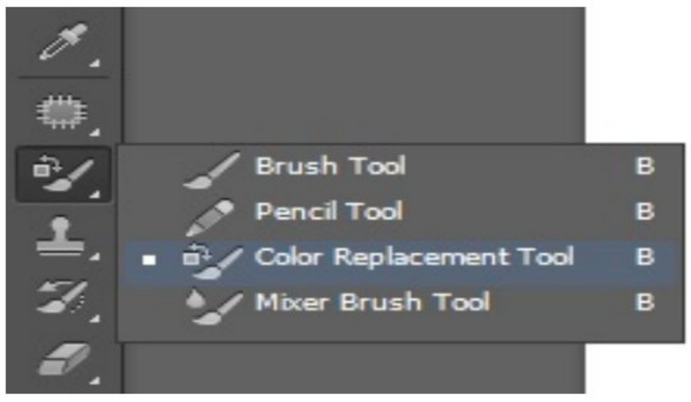
Step 2: Place it on image and drag one location to other location.



6. Practice using different Painting tools.

- The painting tools are divided into the three parts, Brush Tool, History Brush Tool and Gradient Tool.

- **Brush Tool:** It allows the user to paint on picture with selected color.
  - **Pencil tool:** It is used to draw free hand lines with hard edge.
  - **Color Replacement tool:** It replaces original color of an image with the foreground color.
  - **Mixer brush tool:** It allows you to paint more realistically in Photoshop.



- **History Brush Tool:** It allows you to restore parts of an image to an earlier state by painting over them.

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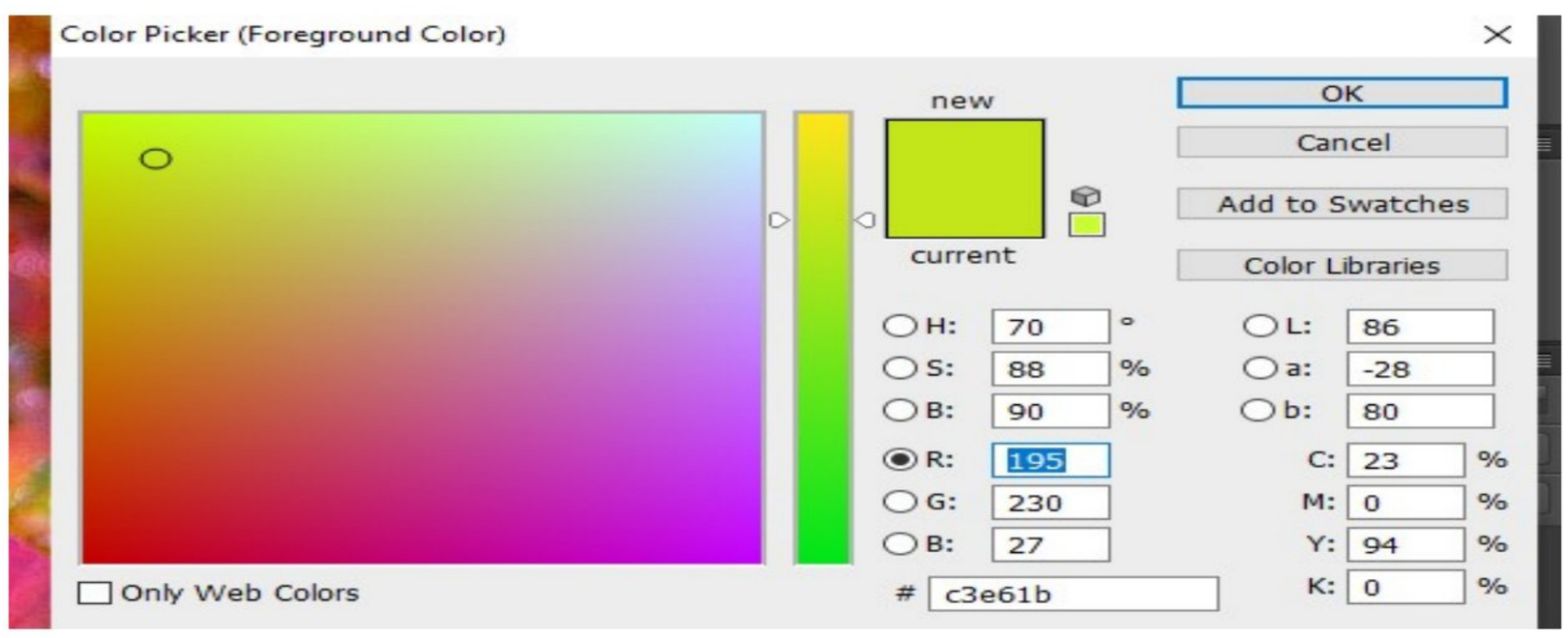
- **Art History brush tool:** It allows users to apply styles to your image using history state or snapshot as the source.

- **Gradient Tool:** It creates a gradual blend between multiple colors.
  - **Paint bucket tool:** It fills an area of image based on color similarity.
  - **3D material drop tool:** Lets you sample material from one area and then drop it into another area of your model, mesh or 3D layer.

❖ Brush Tool:

Step 1: Choose foreground color.



Step 2: Select the brush tool.

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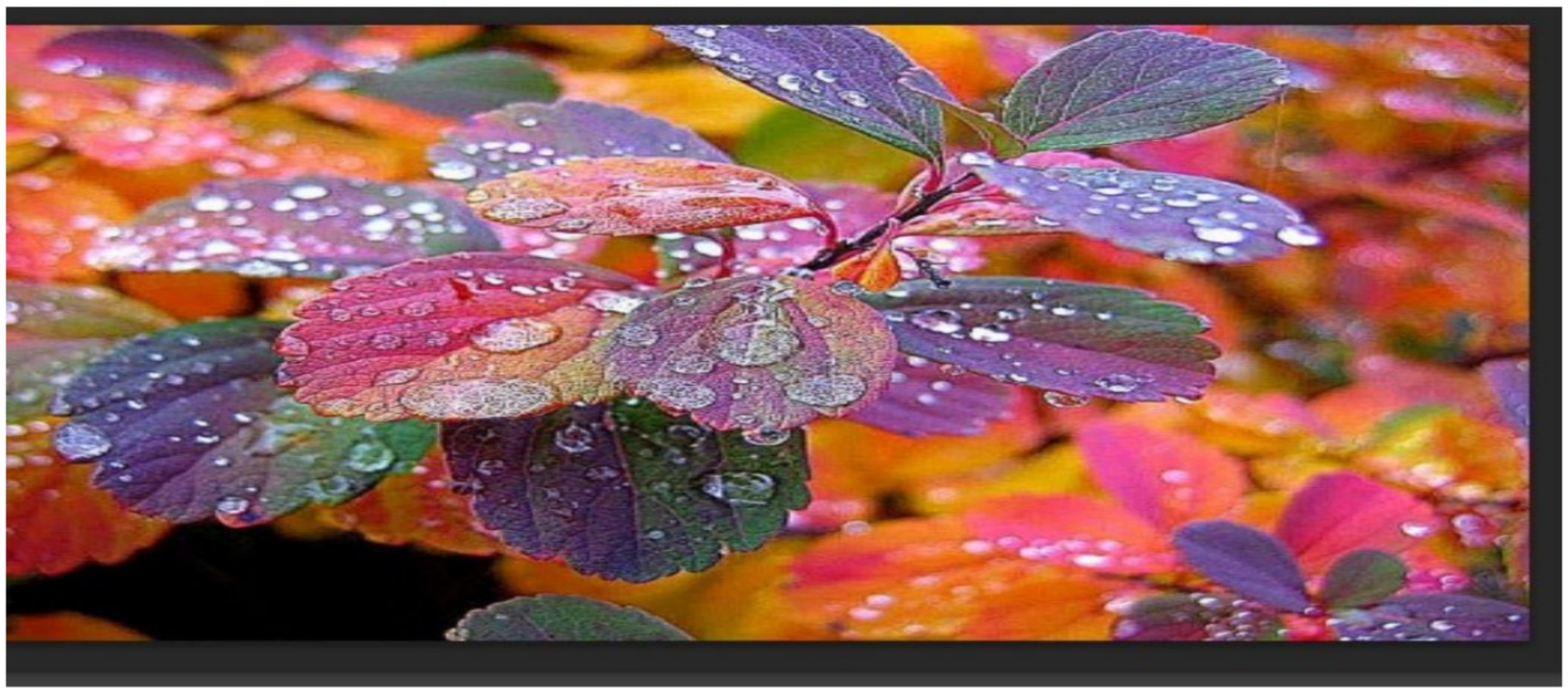
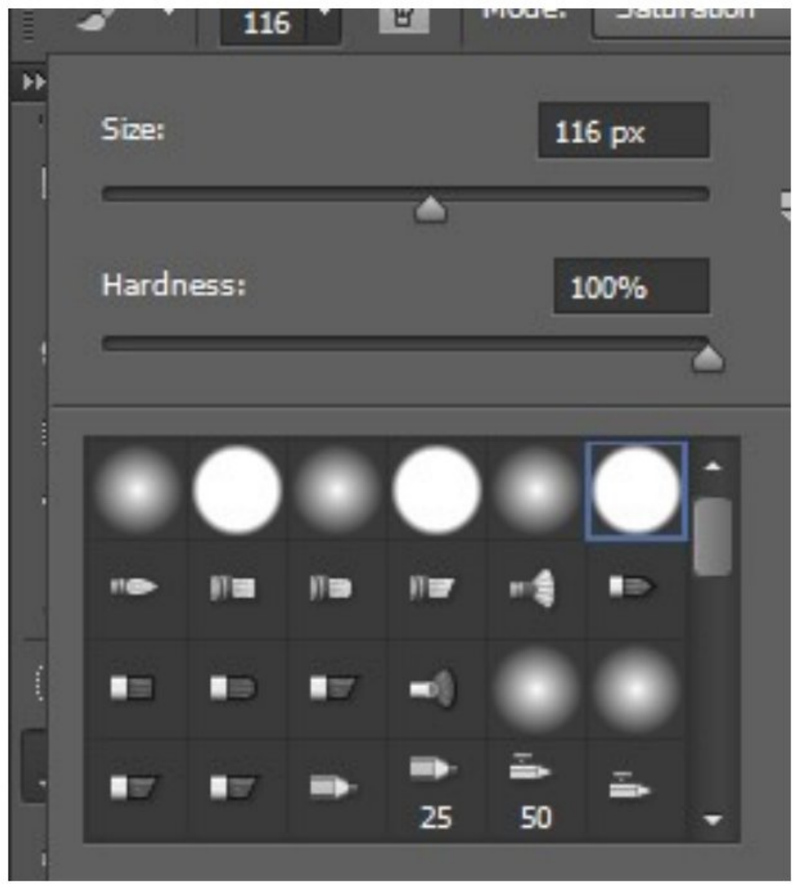
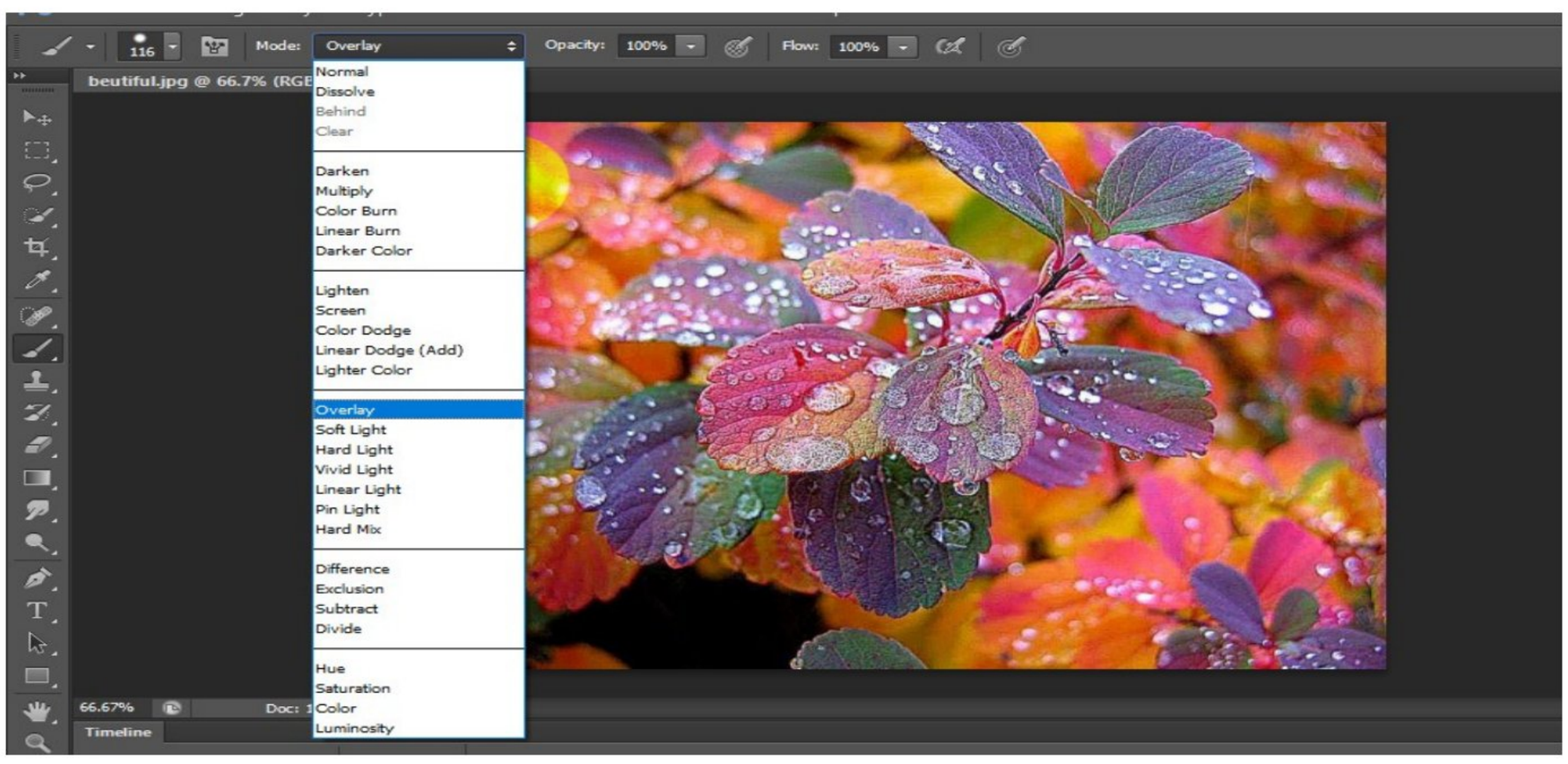


Step 3: Set tool options for mode, opacity, flow in option bar.





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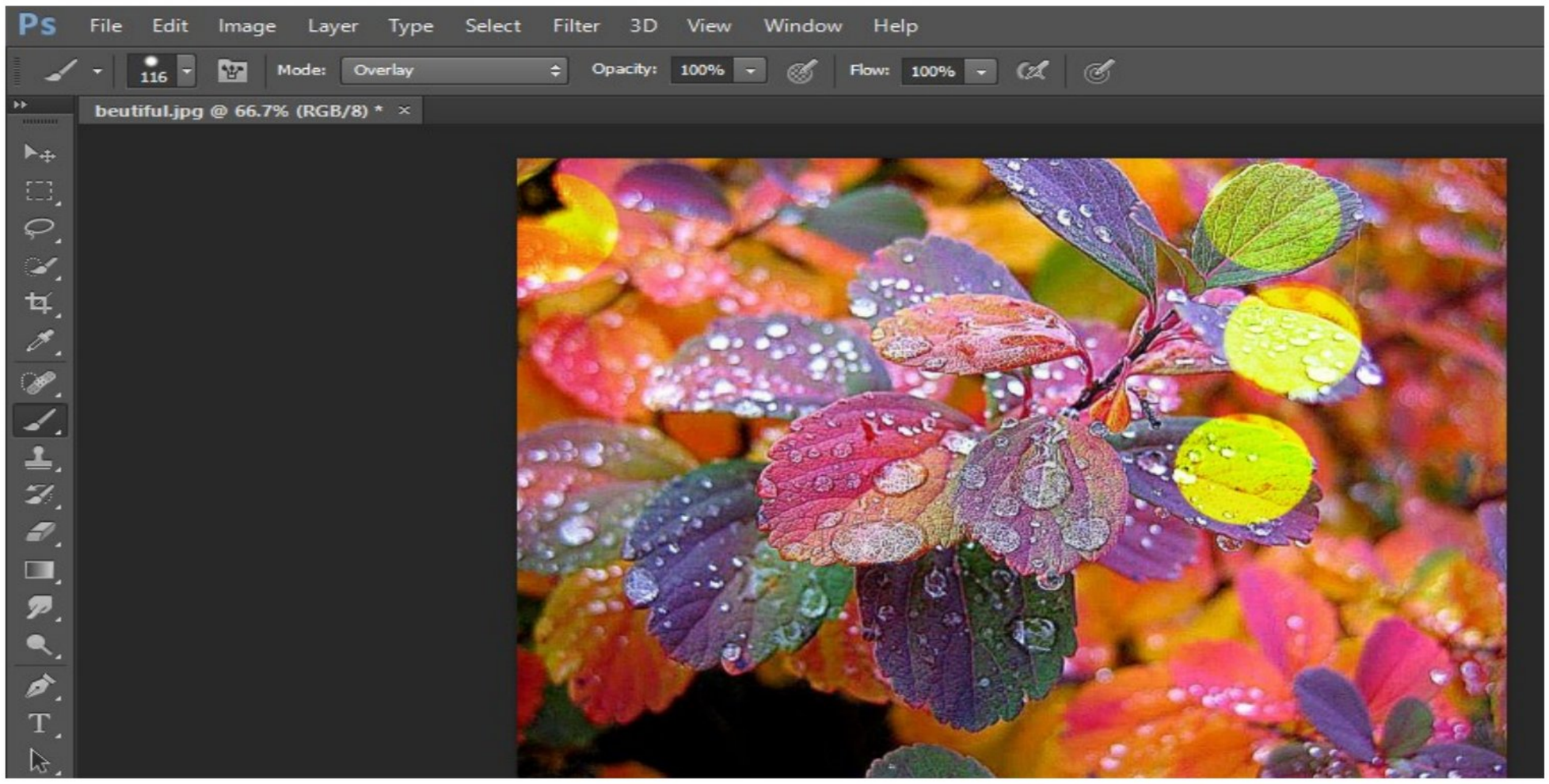
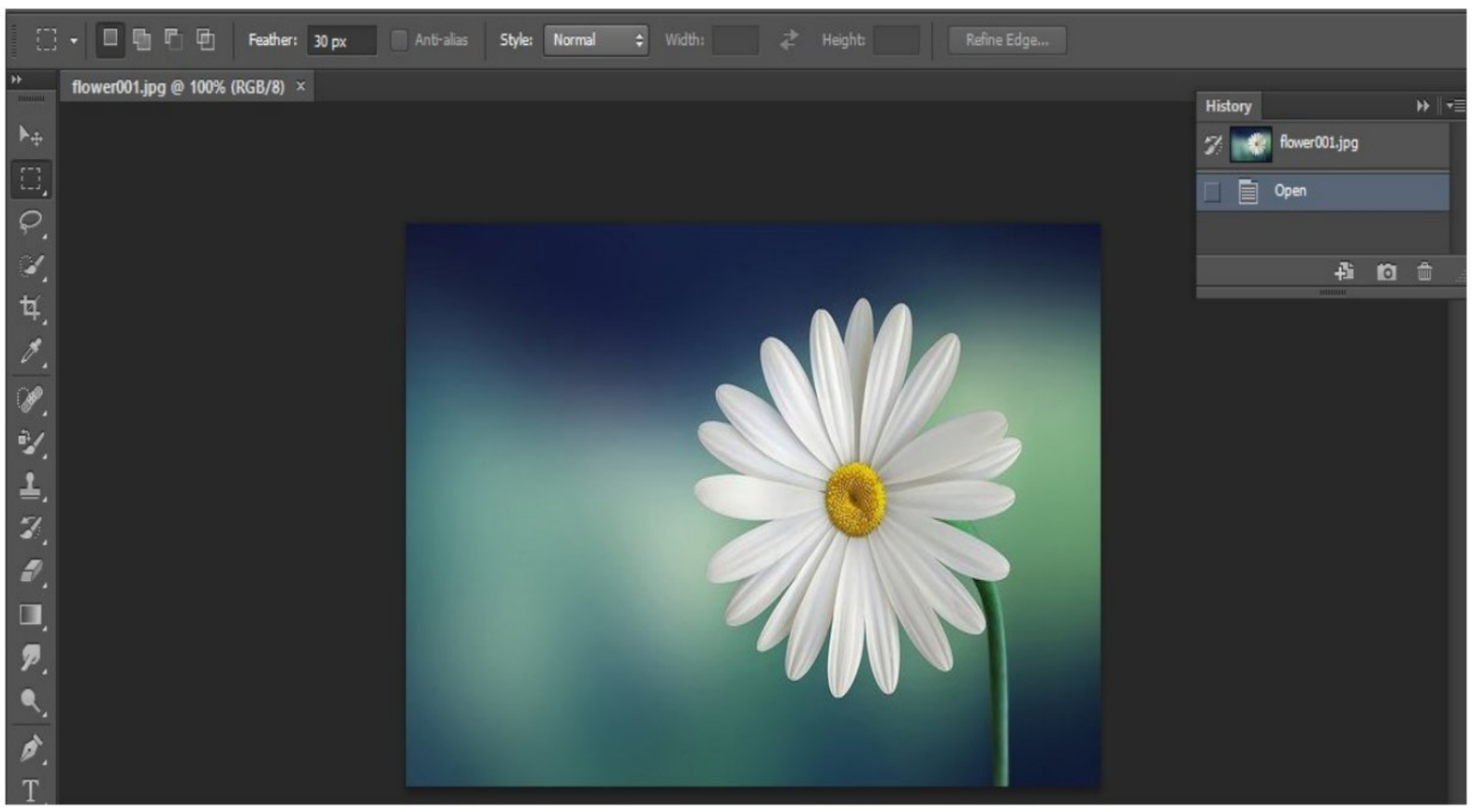
Step 4: Set the brush size as 116 px and hardness as 100%. You can set overlay as mode and opacity, flow is 100%.



❖ **<u>History Brush Tool and Art history Brush Tool:</u>**

Step 1: Add an Image to Photoshop. Choose Window>History. History panel will appears. Click the left column of the state/snapshot to use as source for Art history brush tool. A brush icon appears next to source history state.



Step 2: Select Art history brush tool from tool panel.

Step 3: Adjust the Brush size, opacity and style.

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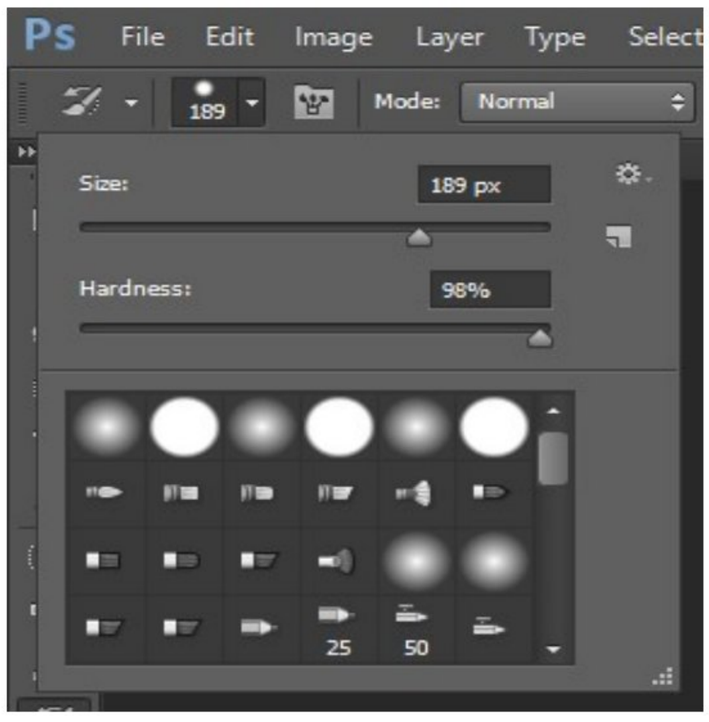
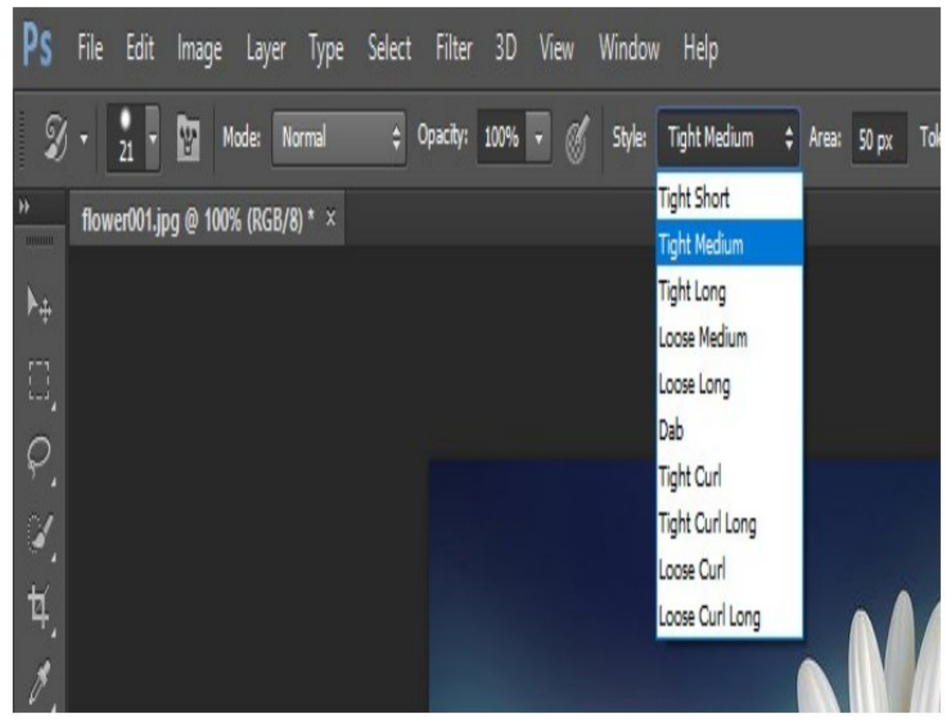
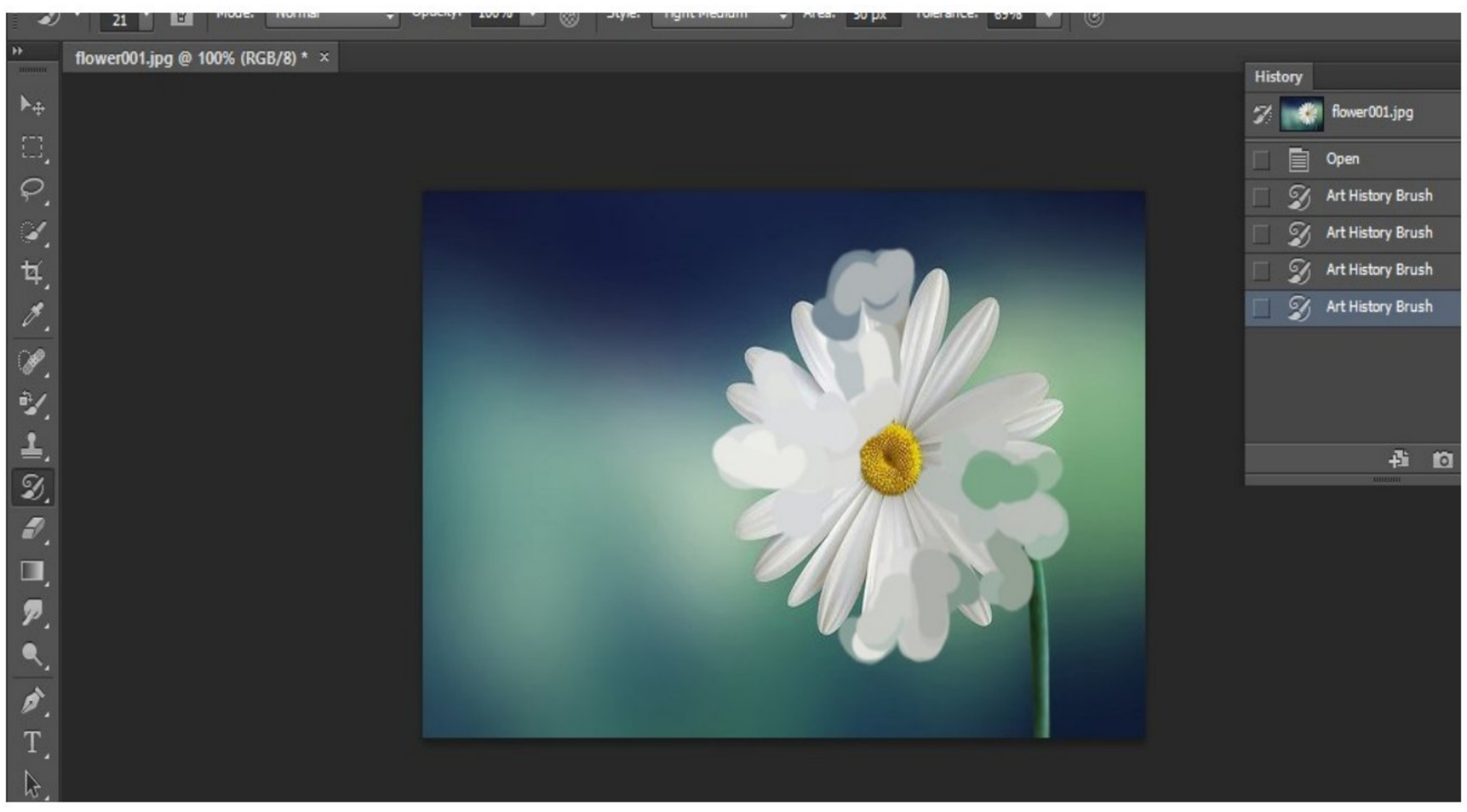
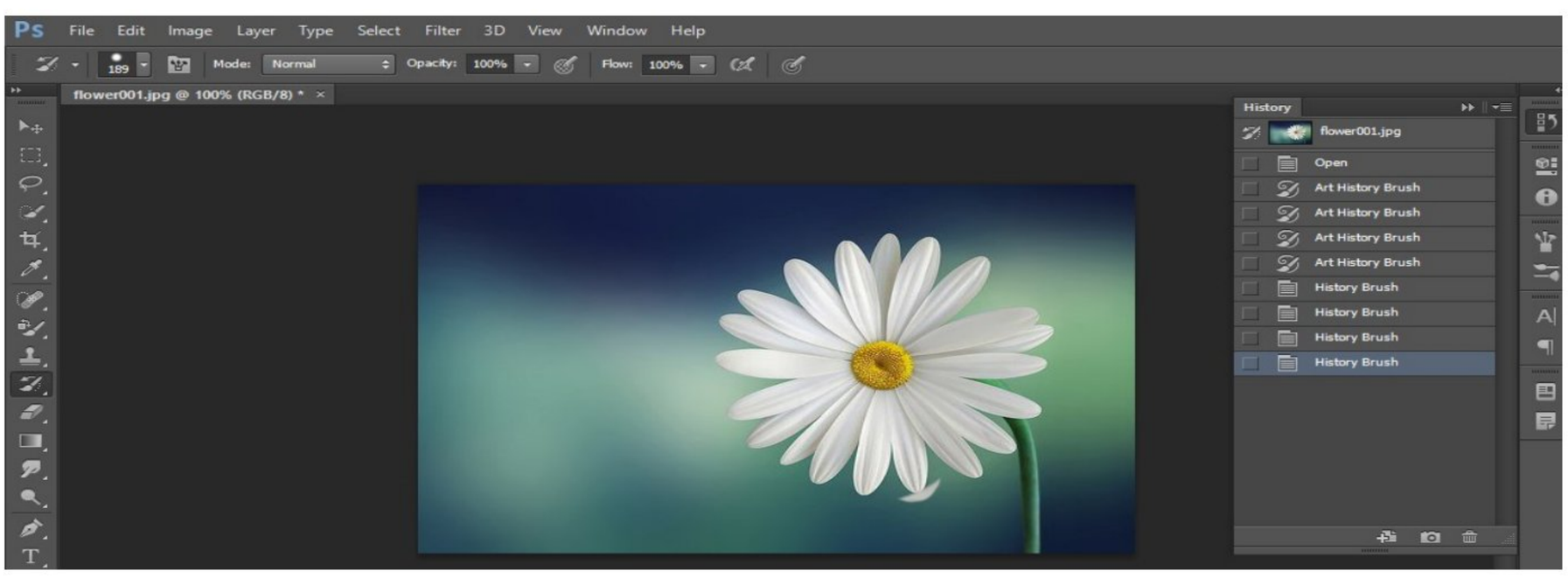




Step 4: Dragging brush over the image and make it blur.



Step 5: Restore the area using history brush tool. Select history brush tool from menu. After selecting the tool, drag the brush over the selective area of the image and restore it.



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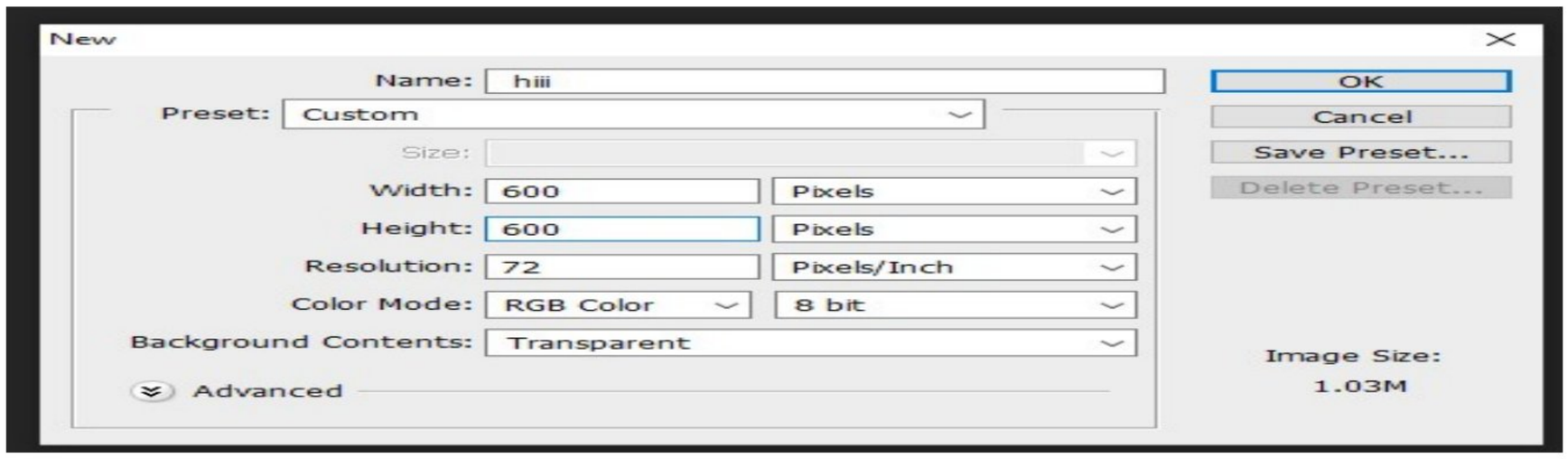
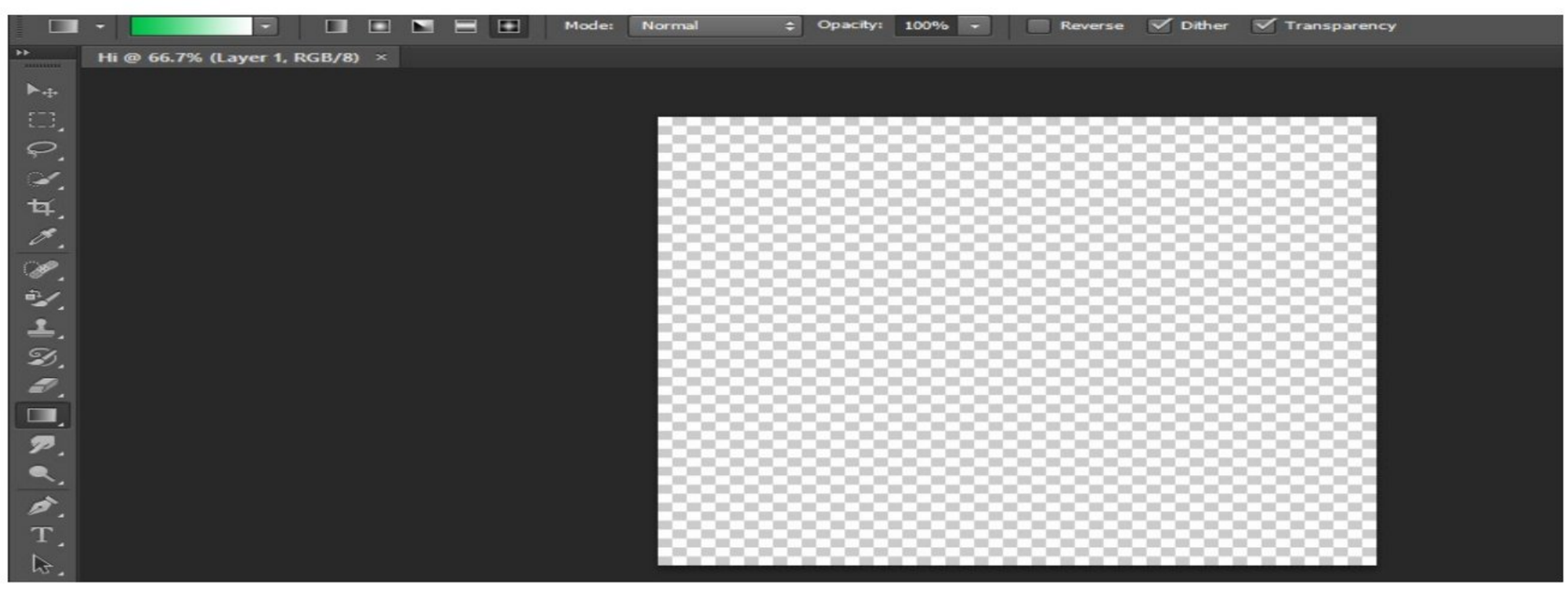
❖ Gradient Tool:

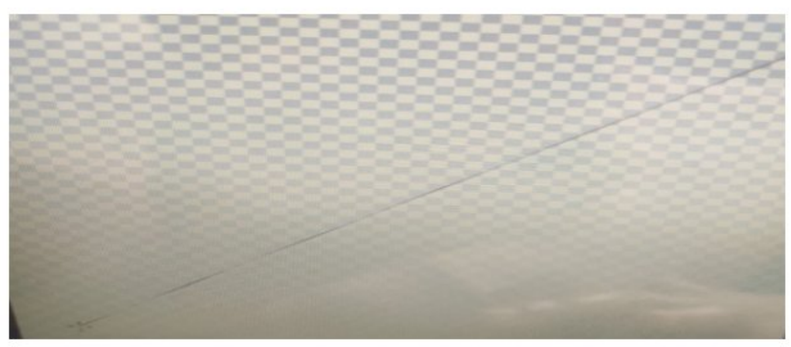
Step 1: Choose File>New.

Step 2: This opens new dialog box. I will set width to 600pixel and height to 600pixel then Click OK.





Step 3: Select Gradient tool from Tools panel. Click in document to set starting point for gradient, then keep your mouse button held down and drag away from the starting point to where you want the gradient to end.



Step 4: When I release my mouse button, Photoshop draws the gradient. Since my Foreground color was set to green and Background color was set to white, I end up with green to white gradient:

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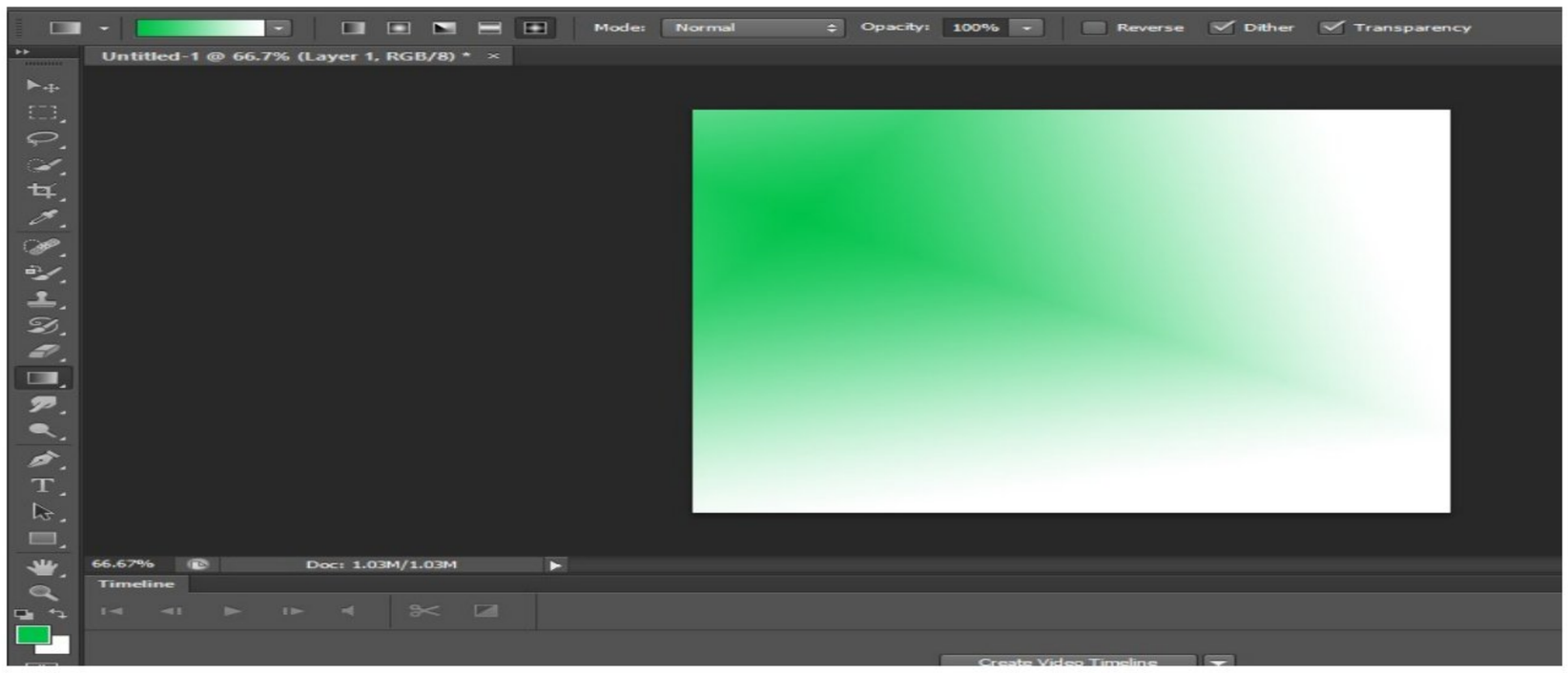
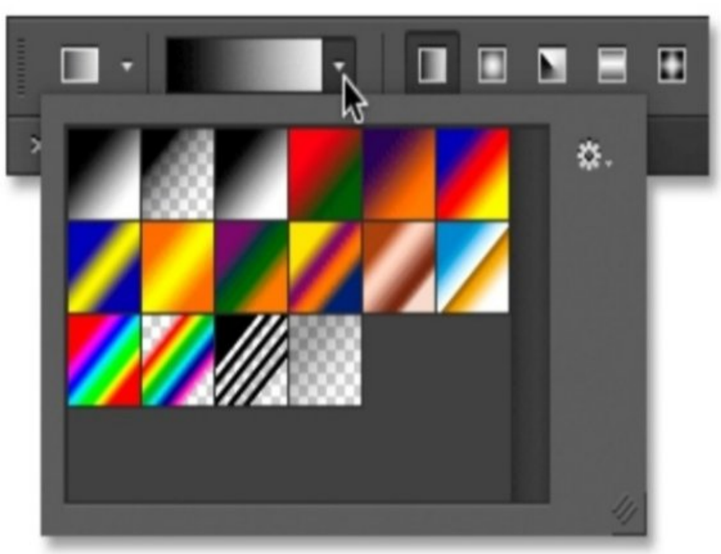
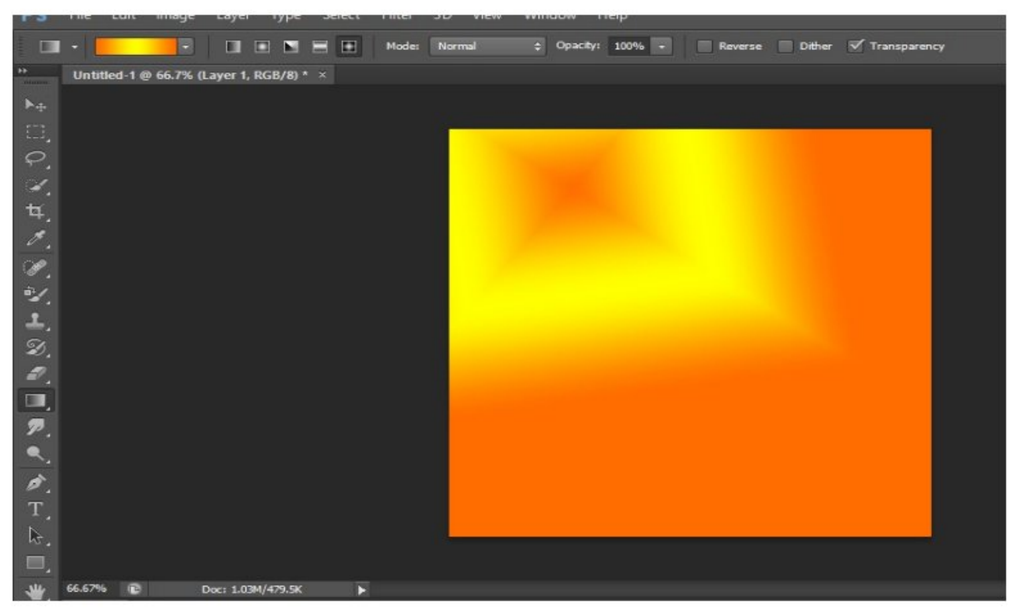


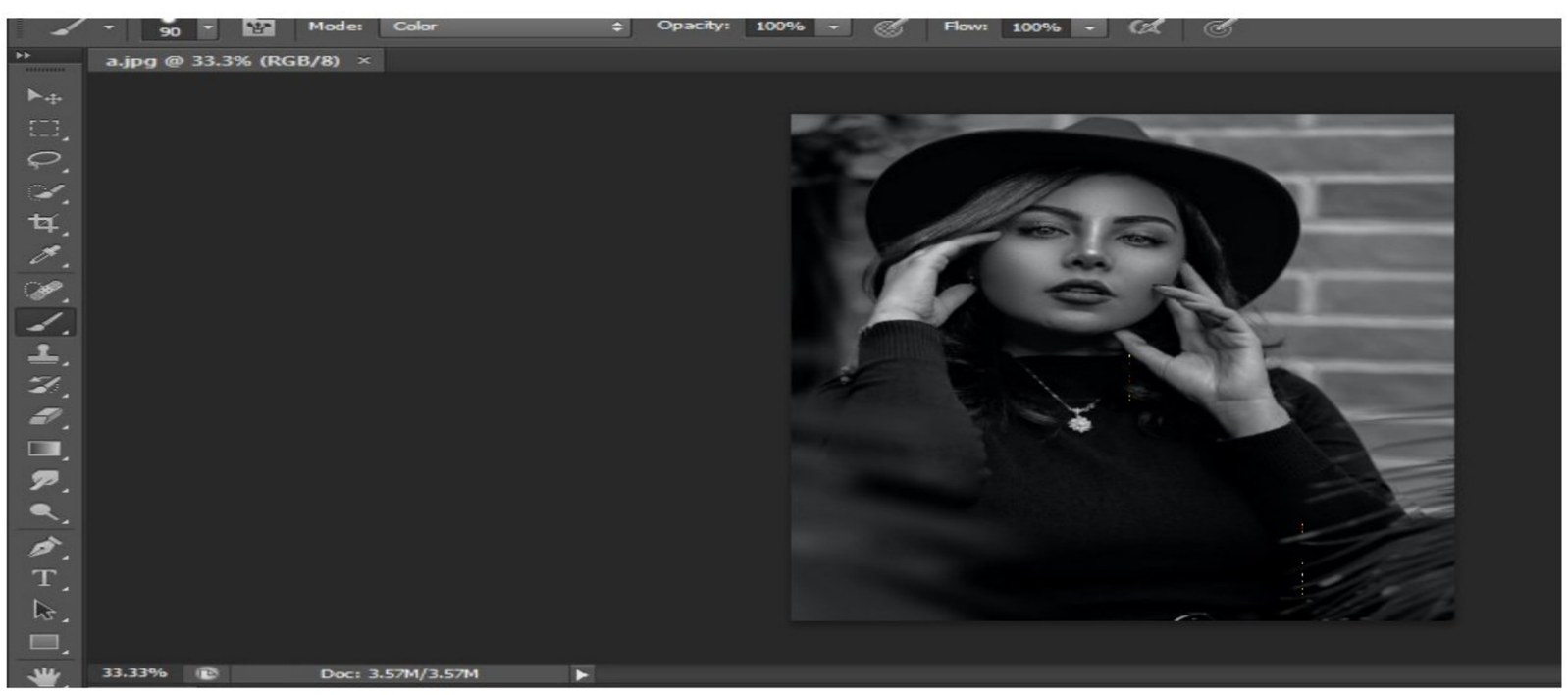
Step 5: Clicking the arrow to open gradient picker. It opens gradient picker with thumbnails (first one on left, top row) of all the preset gradients we can choose from. Here I have chosen orange, yellow, orange color again repeat step 3 and you will get result.





7. Restore old monochrome photos to new one. Apply suitable colors.

Step 1: Open the image in Photoshop.



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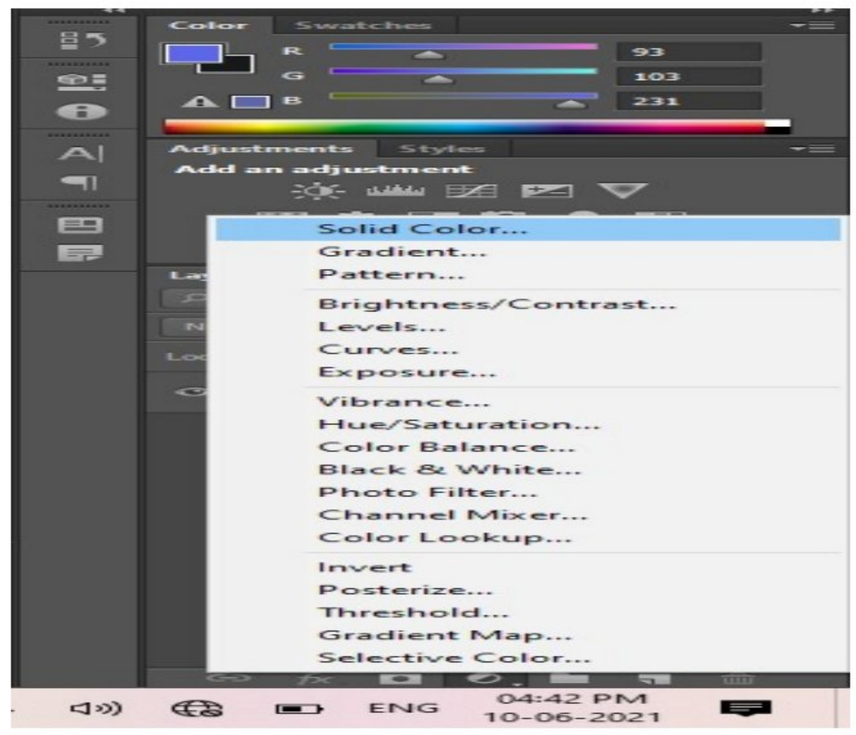
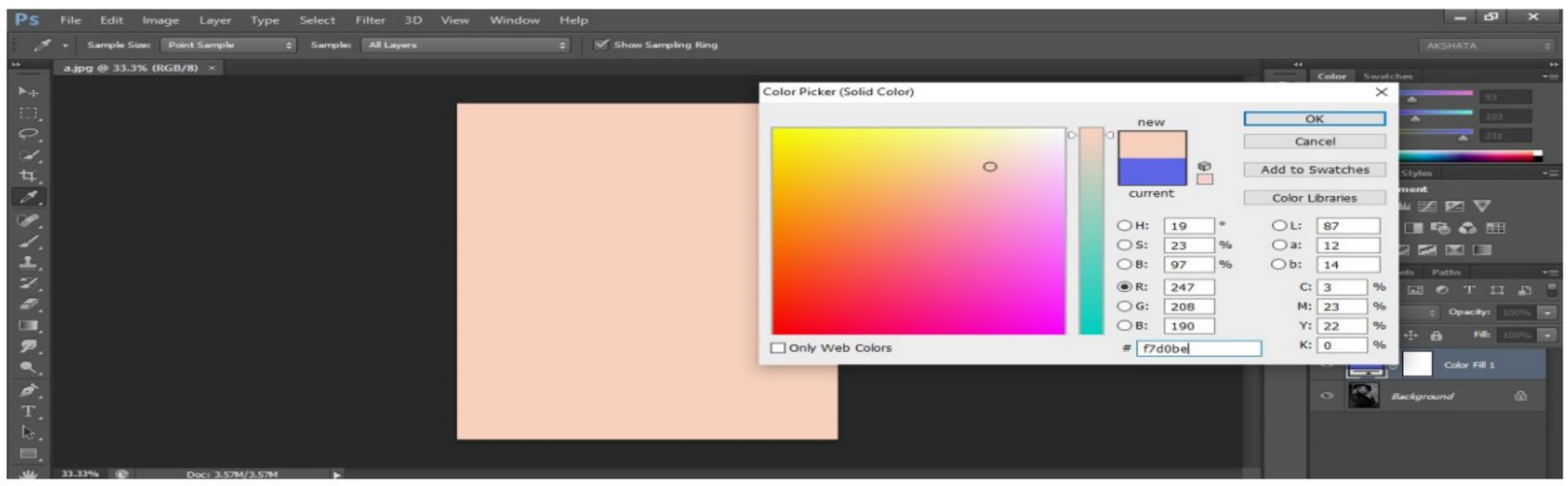
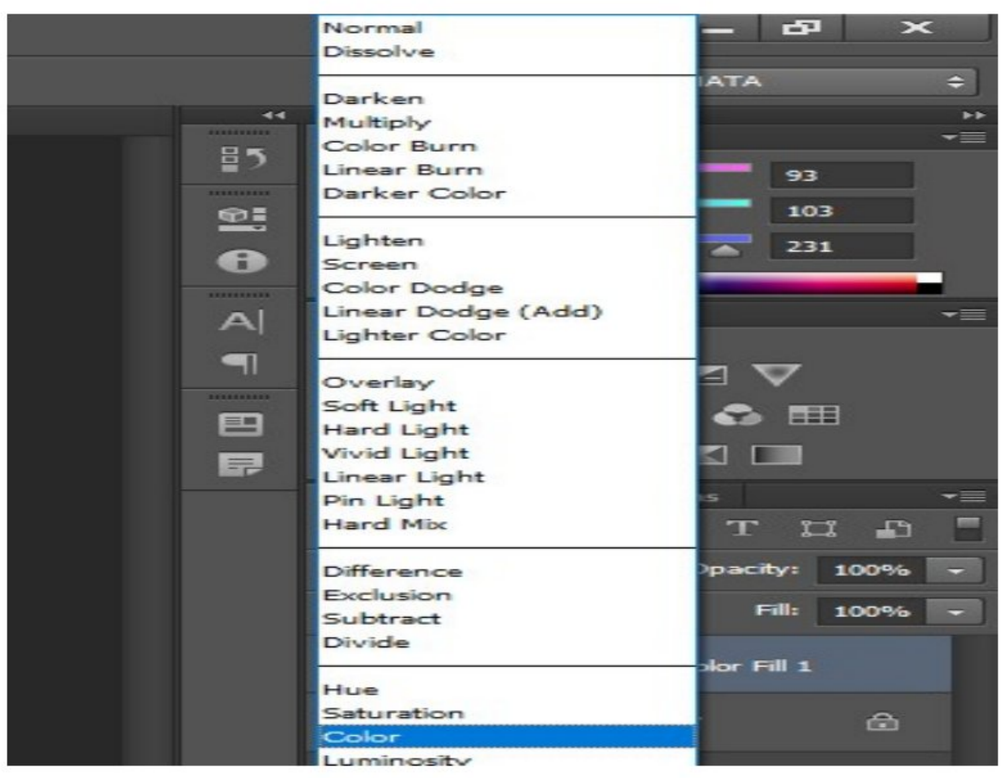
Step 2: Click the Create New Fill/Adjustment layer button in the layers panel and select Solid Color.



Step 3: Select new color that you want to apply to the object and Click OK. **(For Skin color).** Here I choose "#f7d0be"color.



Step 4: Change the blending mode to color.



Step 5: Select the mask and press ctrl+i (for invert the mask).Select the Brush tool from the tool bar and drag over image(skin) and make sure foreground color is white and

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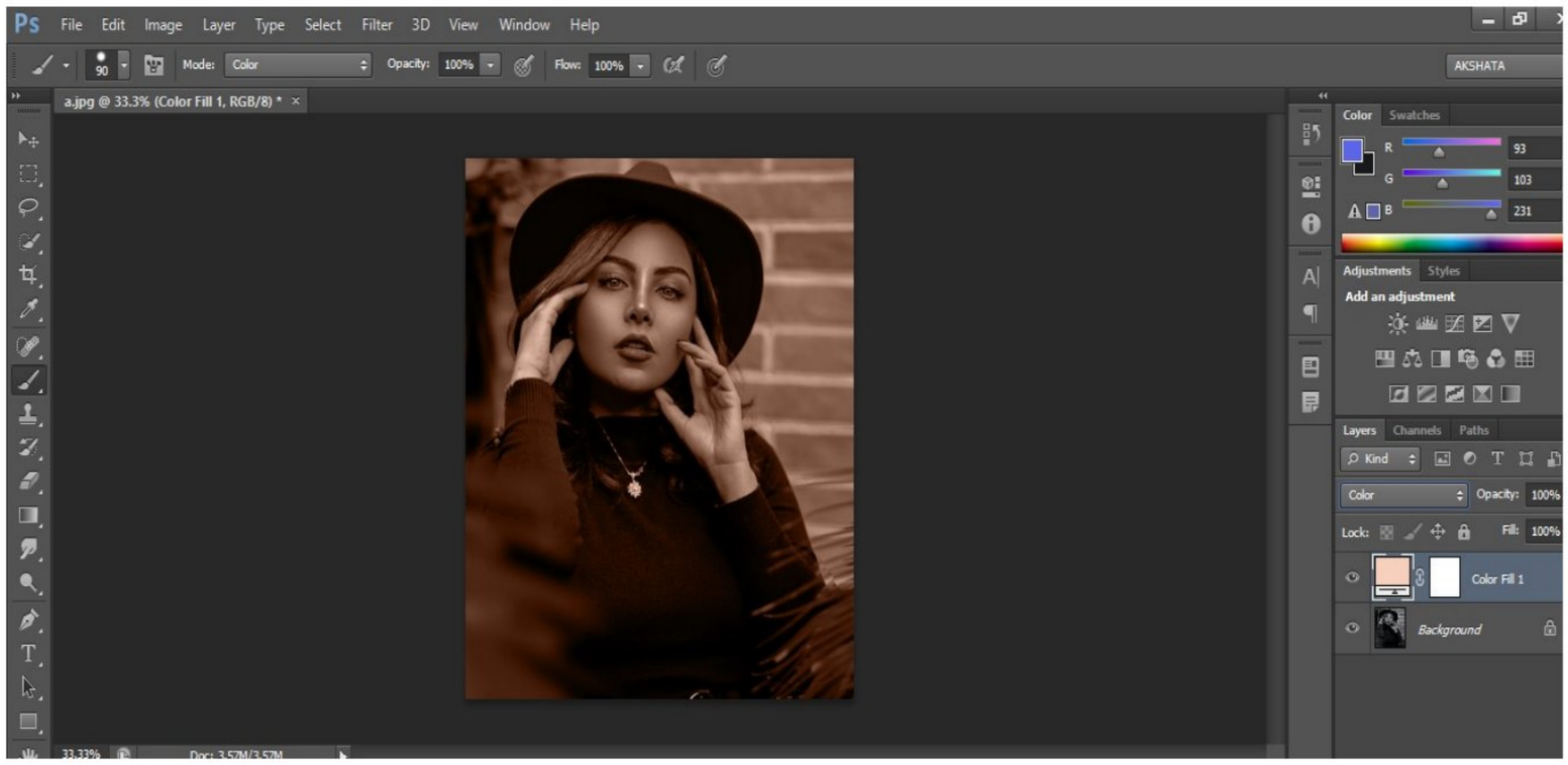
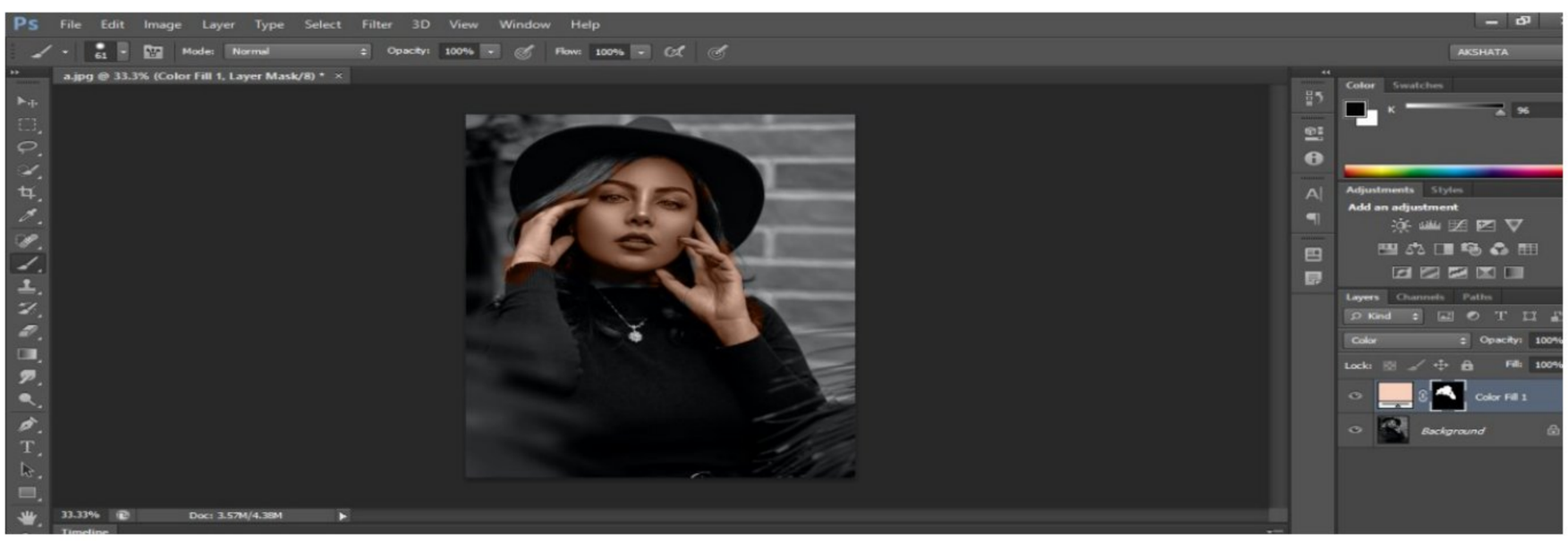
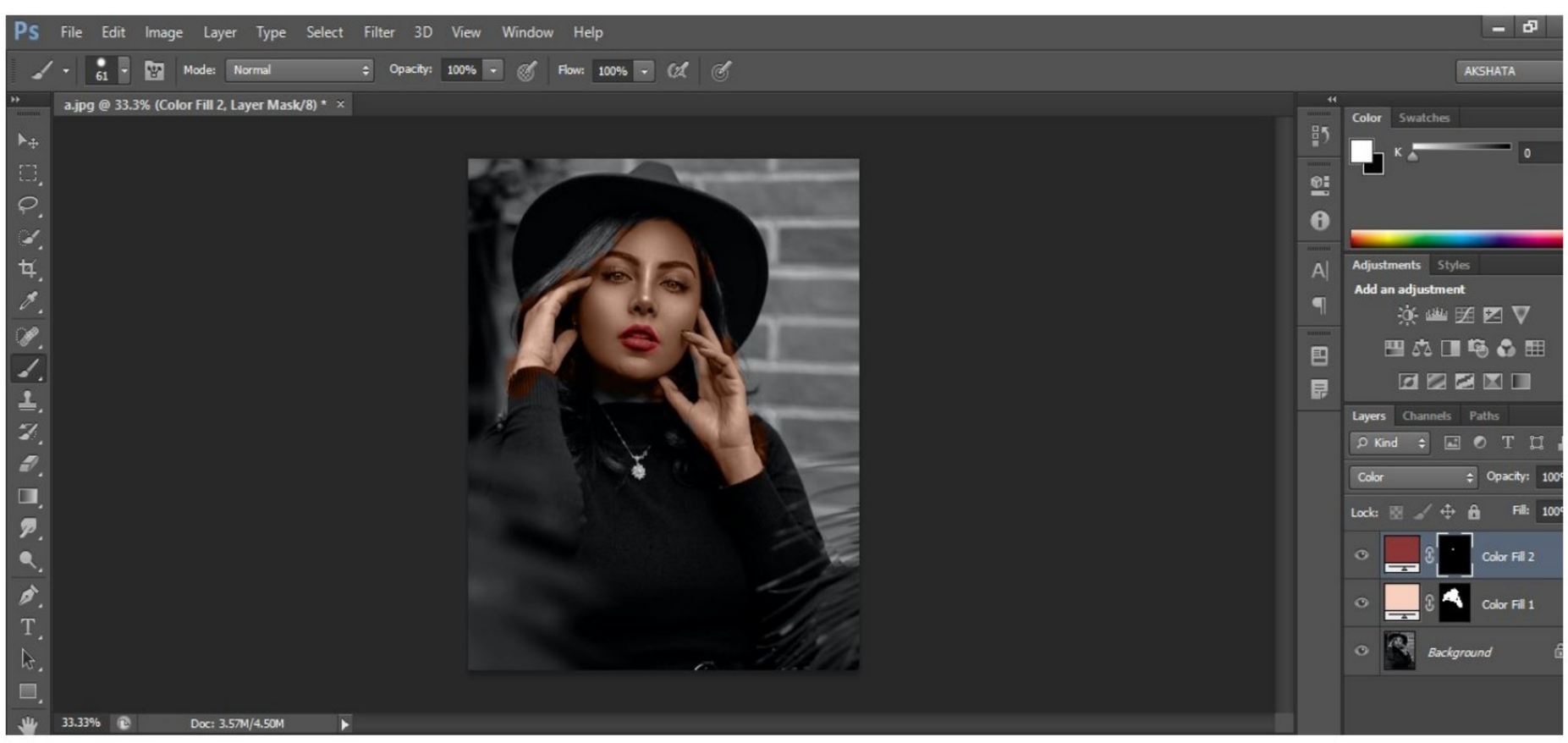
background color is black. Set brush size, opacity and flow. Start painting on skin. For remove the paint from area select Black color.





Step 6: Repeat step 3 **(For lip color)** and 4.With the help of brush tool, you can paint on lips wrt chosen color. Here I choose “#8b3737” color.



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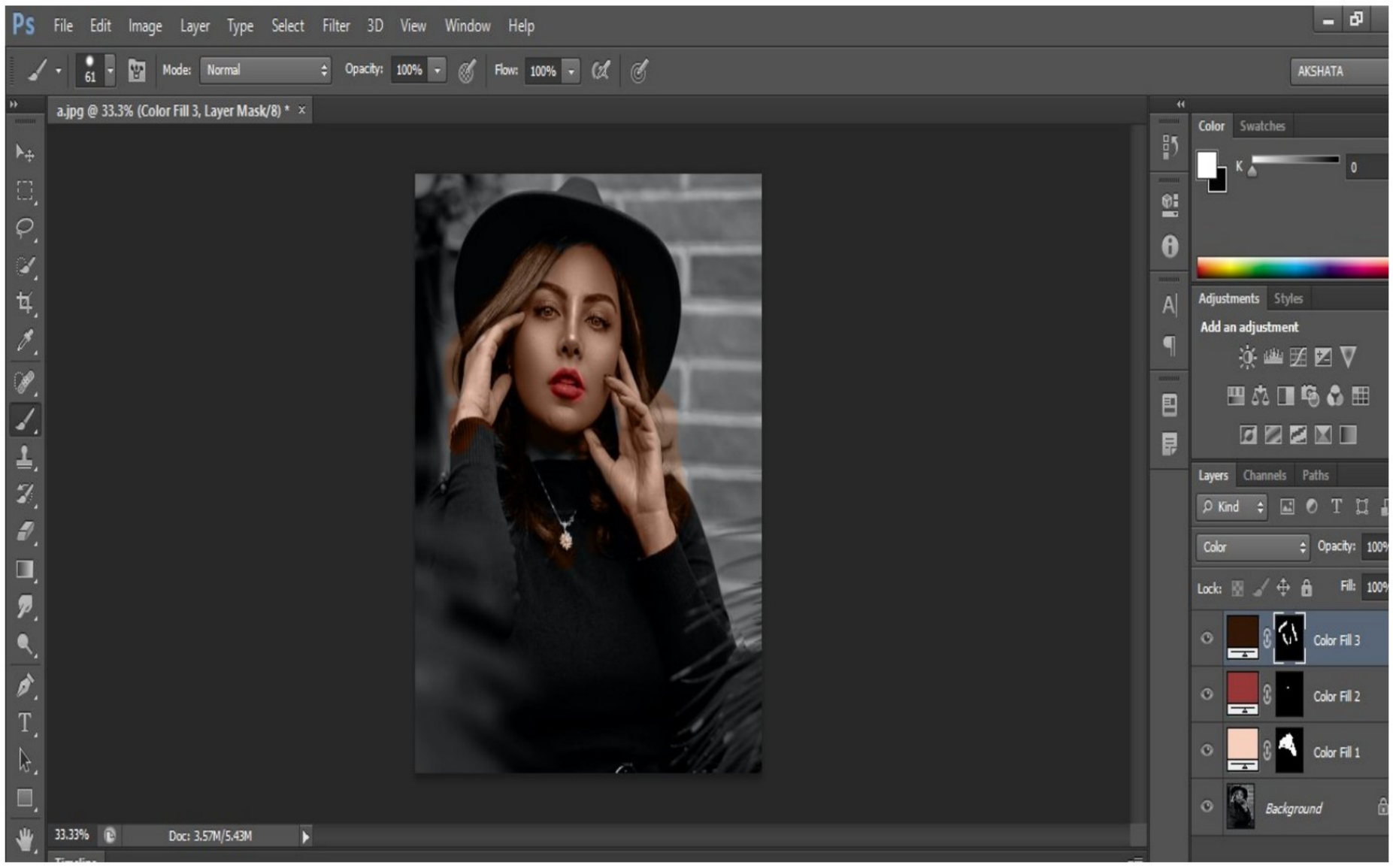
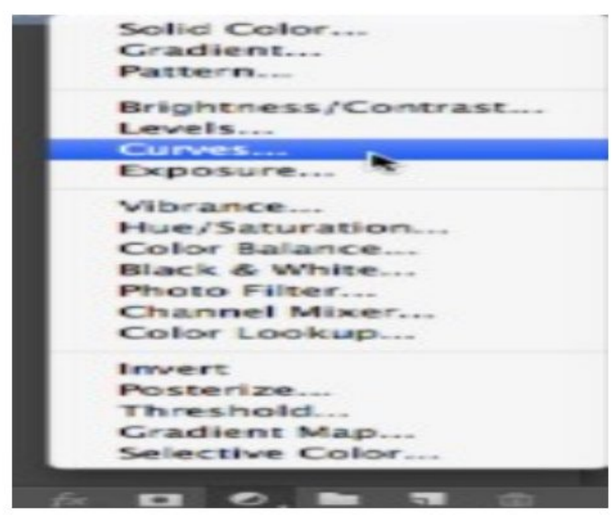
Step 7: Repeat step 3 **(For hair color)** and 4.With the help of brush tool, you can paint on hairs wrt chosen color. Here I choose "#341807" color.



Step 8: Repeat step 3 and 4. Now brighten the "Eyes" using curves. Click the Create New Fill/Adjustment layer button in the layers panel and Add curves adjustment layer.



Step 9: Click anywhere on the line in the properties panel to create new point, then click and drag the point to adjust the curve. Continue to adjust the points until you are satisfied with the result.

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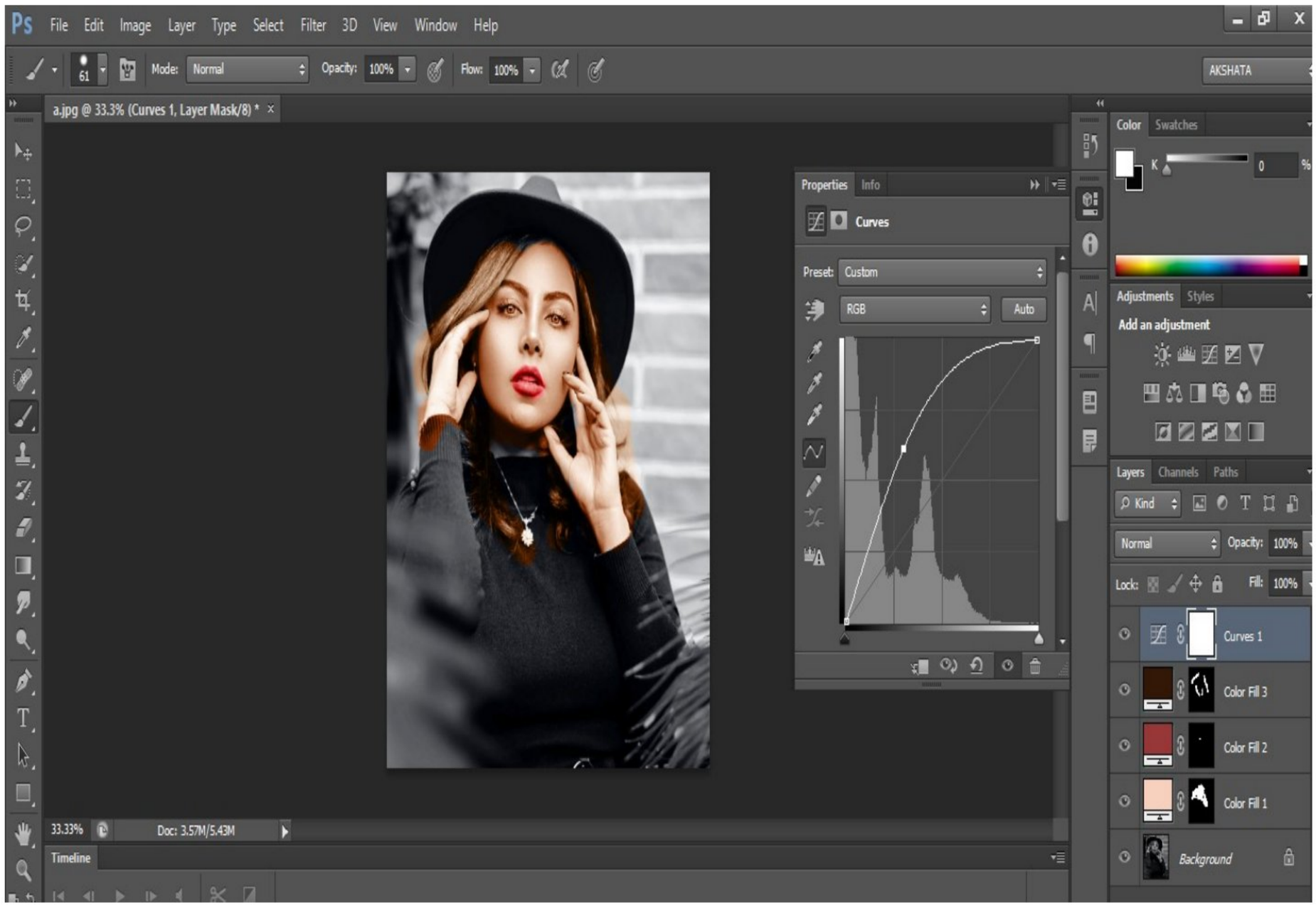
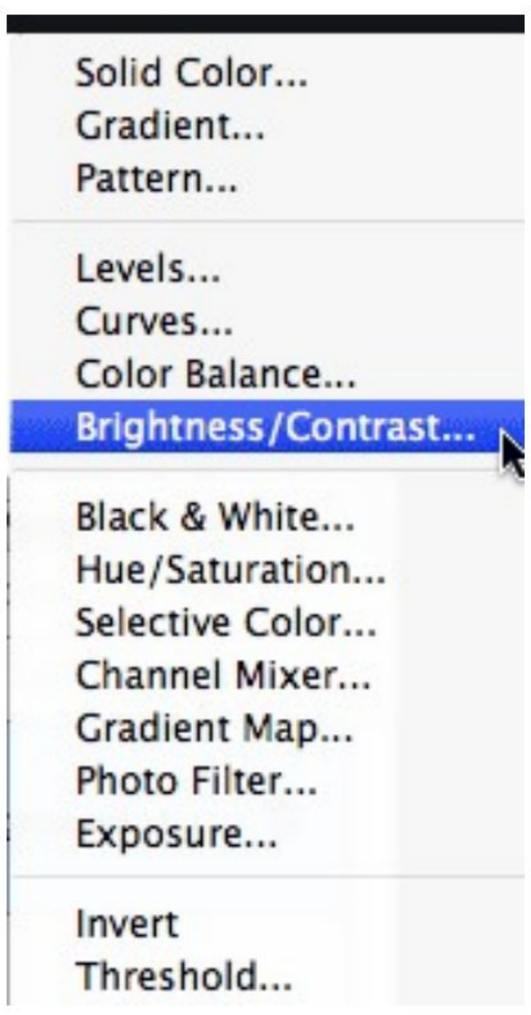
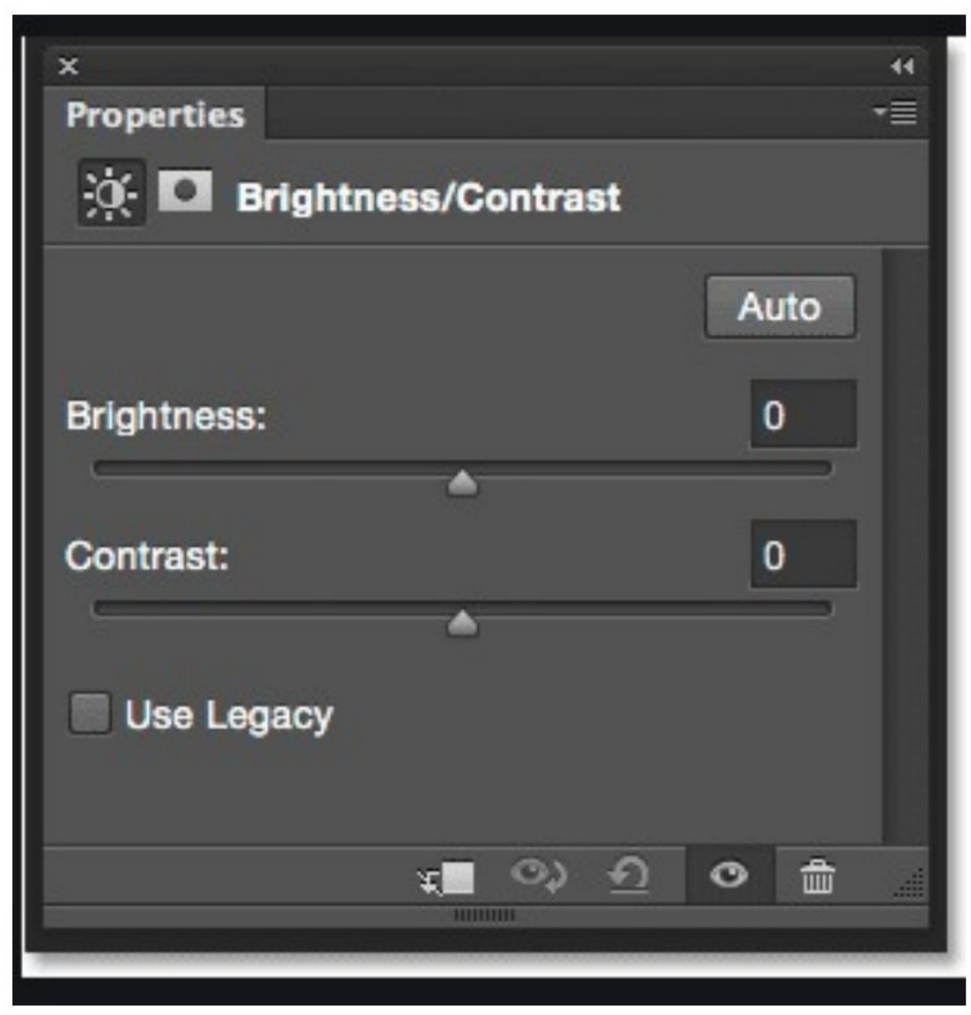


Step 10: Click the Create New Fill/Adjustment layer button in the layers panel and choose Brightness/contrast option. Now add "contrast" to image. I set Contrast as "50" and closed properties panel.





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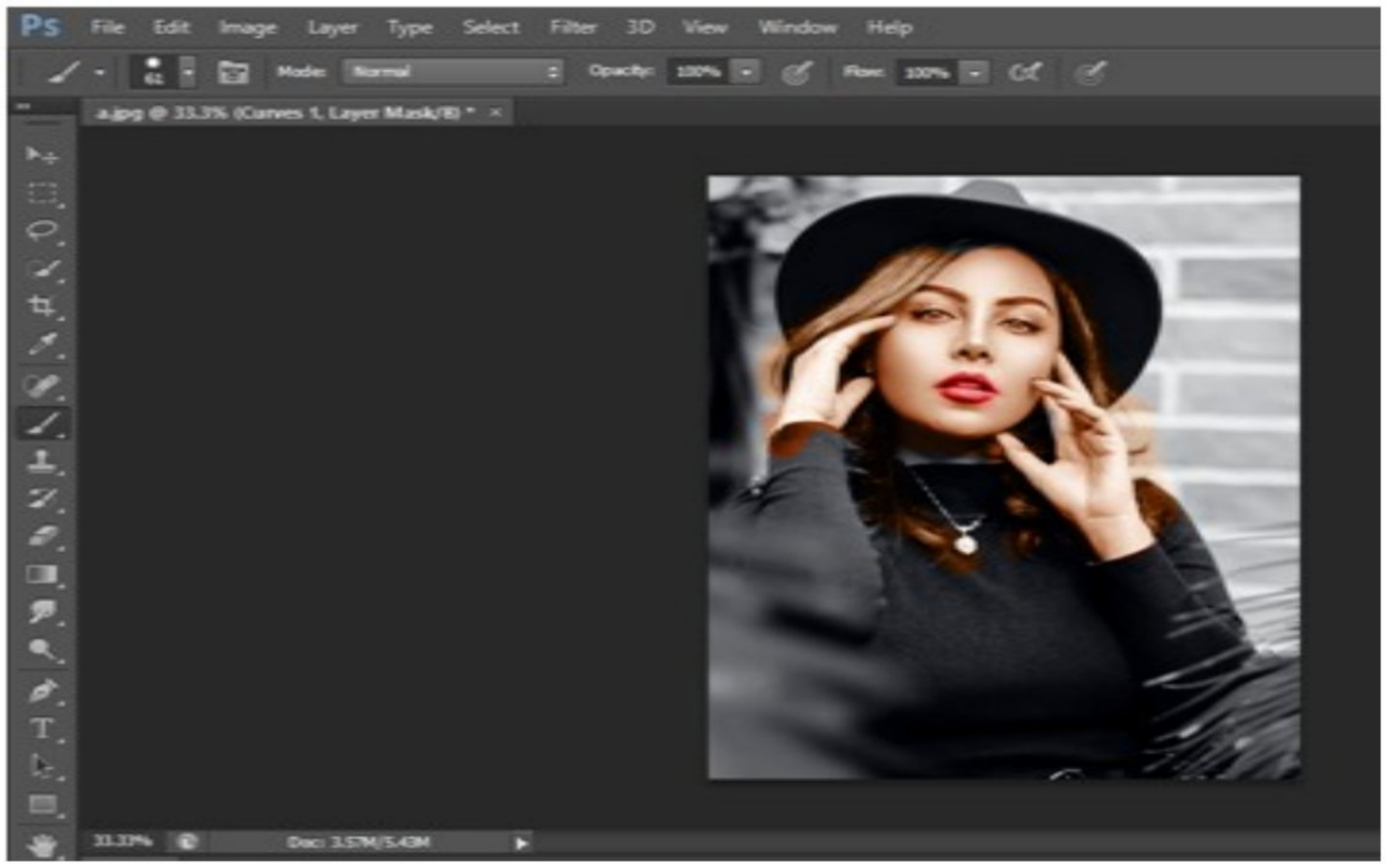
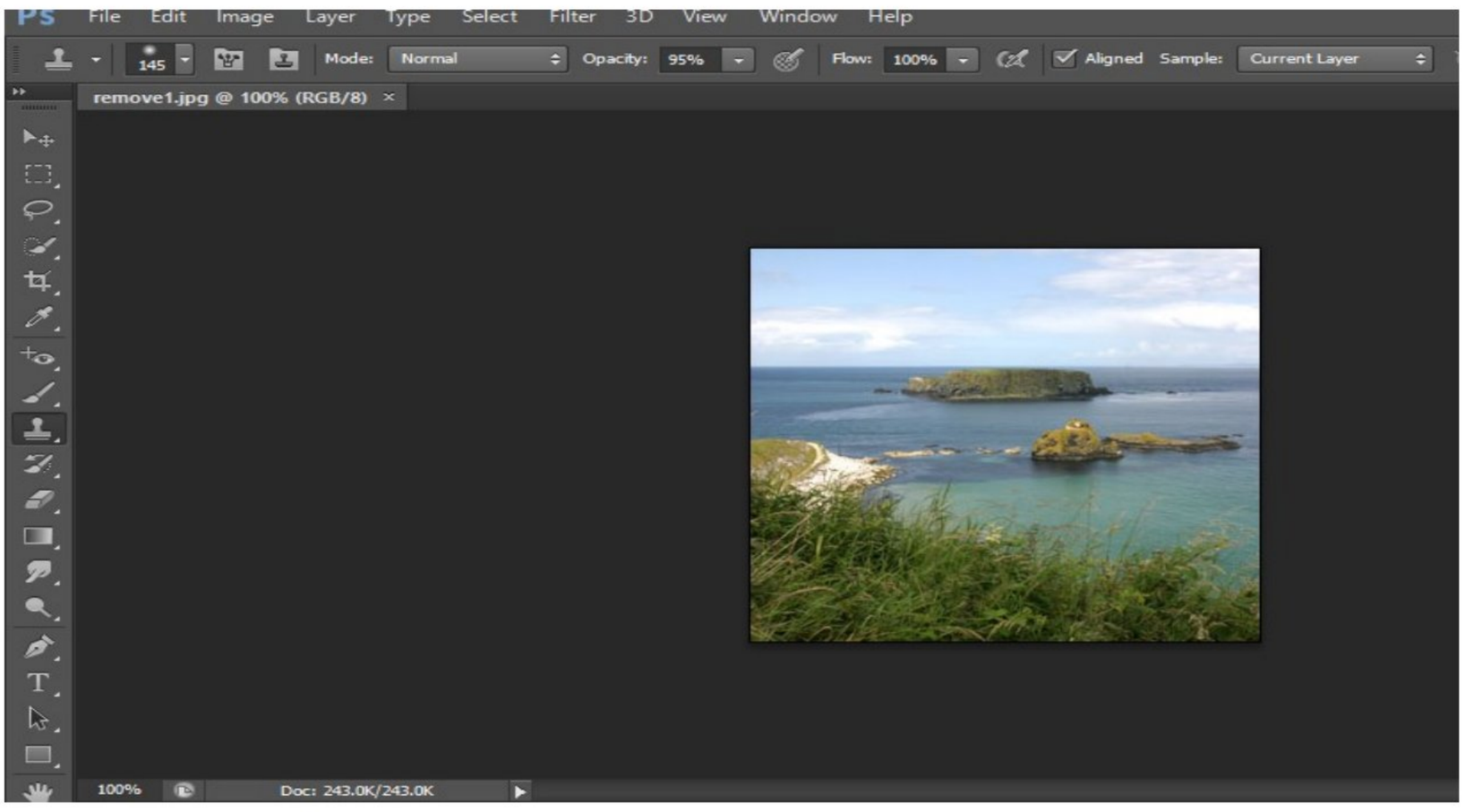
Step 11: You will get Result. You successfully restored monochromatic images into new one and applied different colors.



8. Import a similar picture from the internet. Erase unwanted parts in the image, retouch old photos into new. Color partially.

<u>Erase unwanted parts in the image</u>

Step 1: Open the image in Photoshop.



Step 2: In Photoshop, select Lasso tool from left menu bar.

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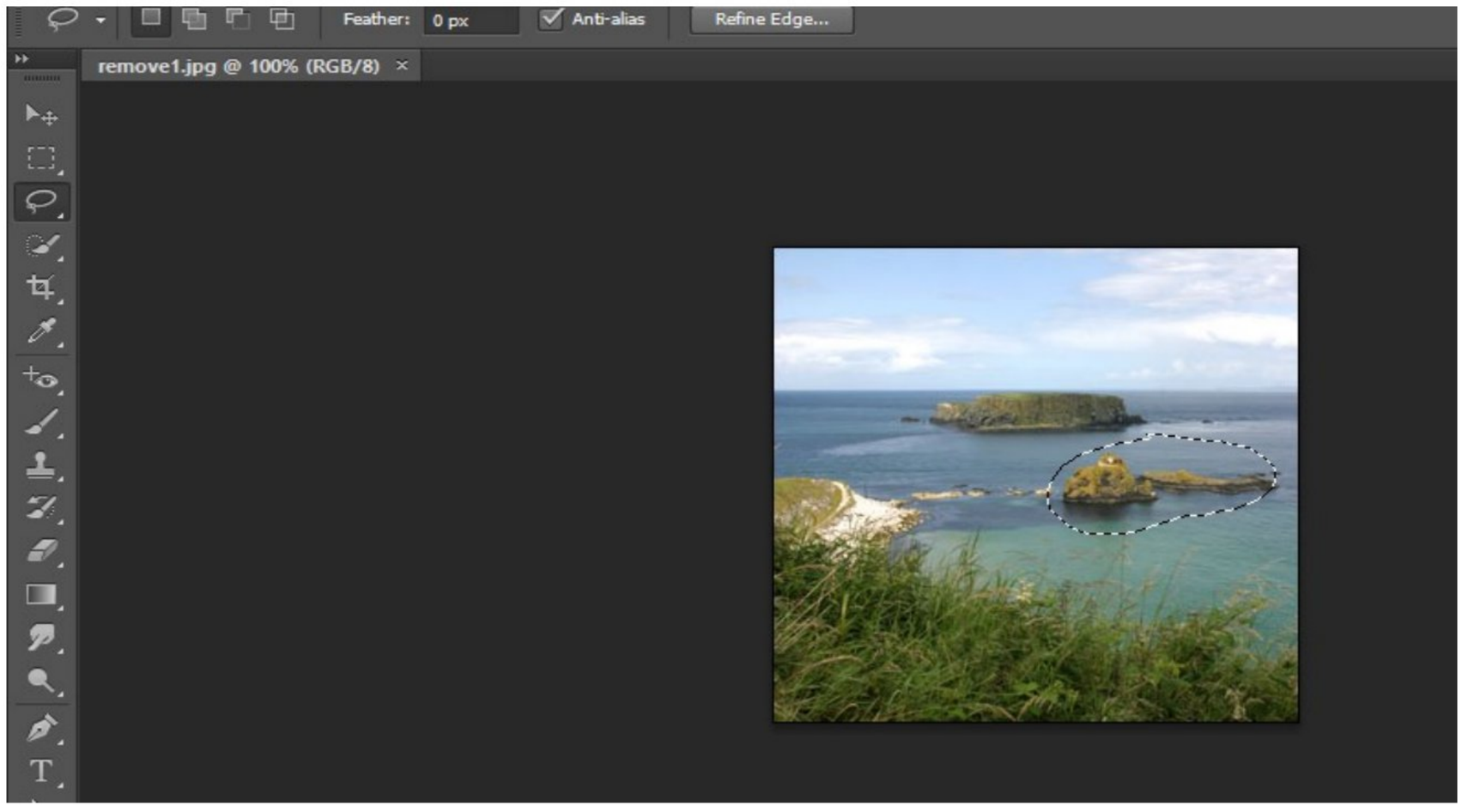
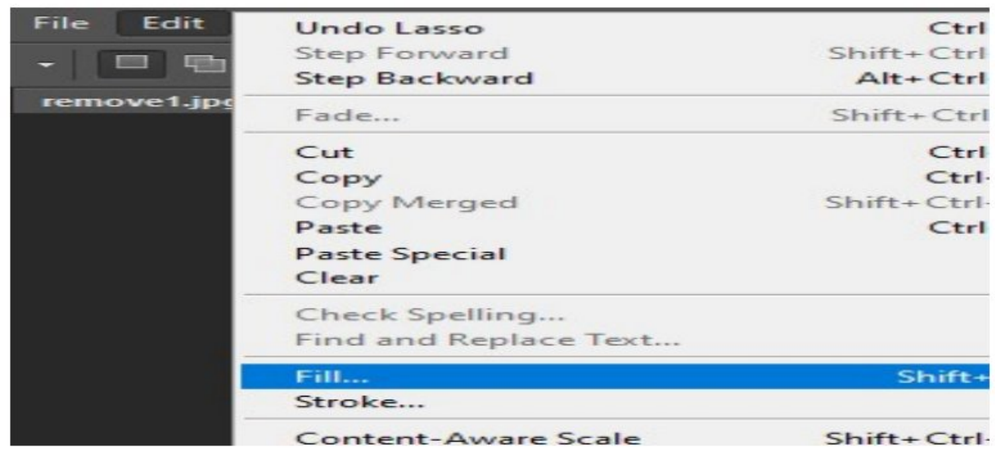
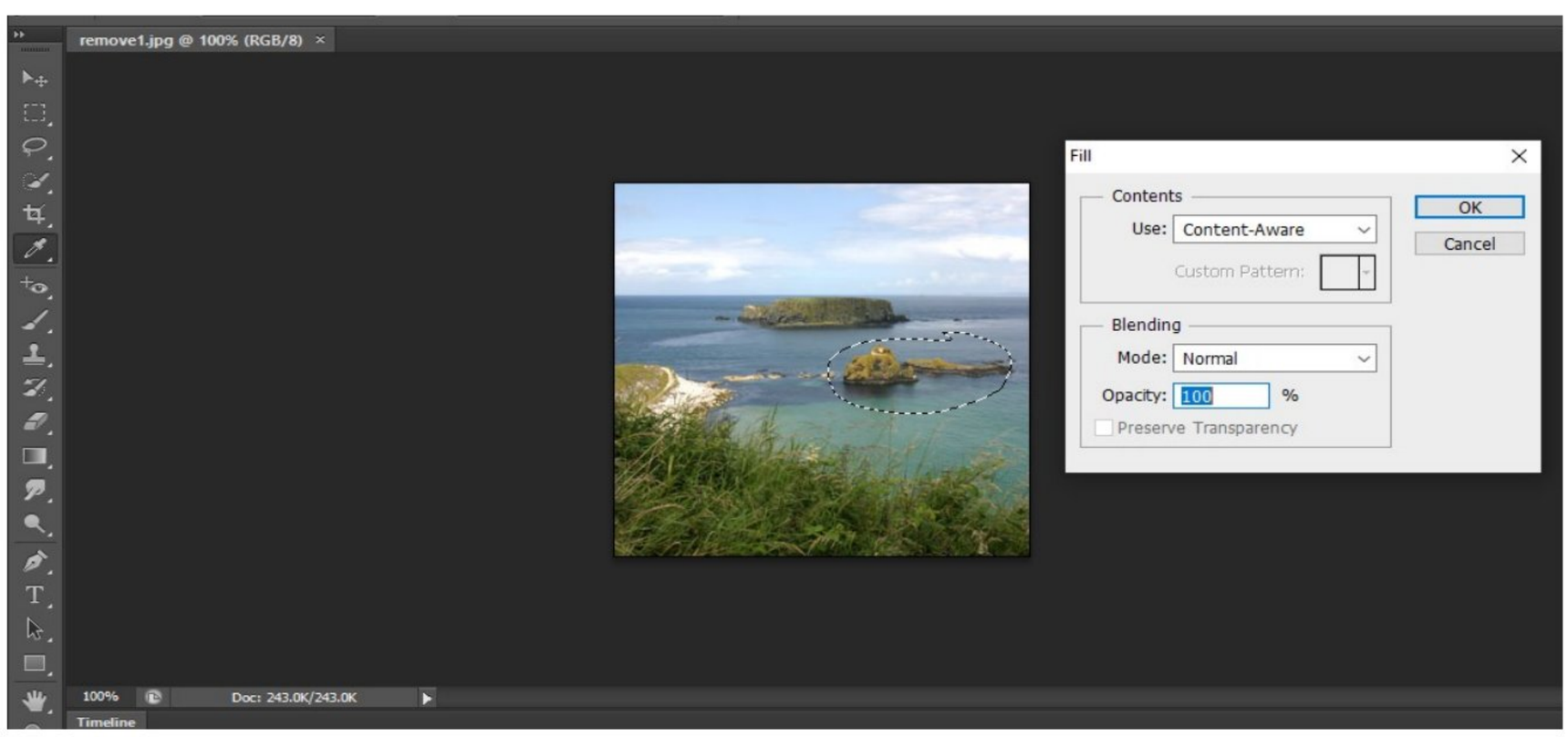
Step 3: Use the Lasso tool to click and drag around the object, just to select unwanted area to be removed.



Step 4: Go to edit>select Fill then choose Content-aware, and press OK. Photoshop fills the selection with surrounding pixels and blends them together.





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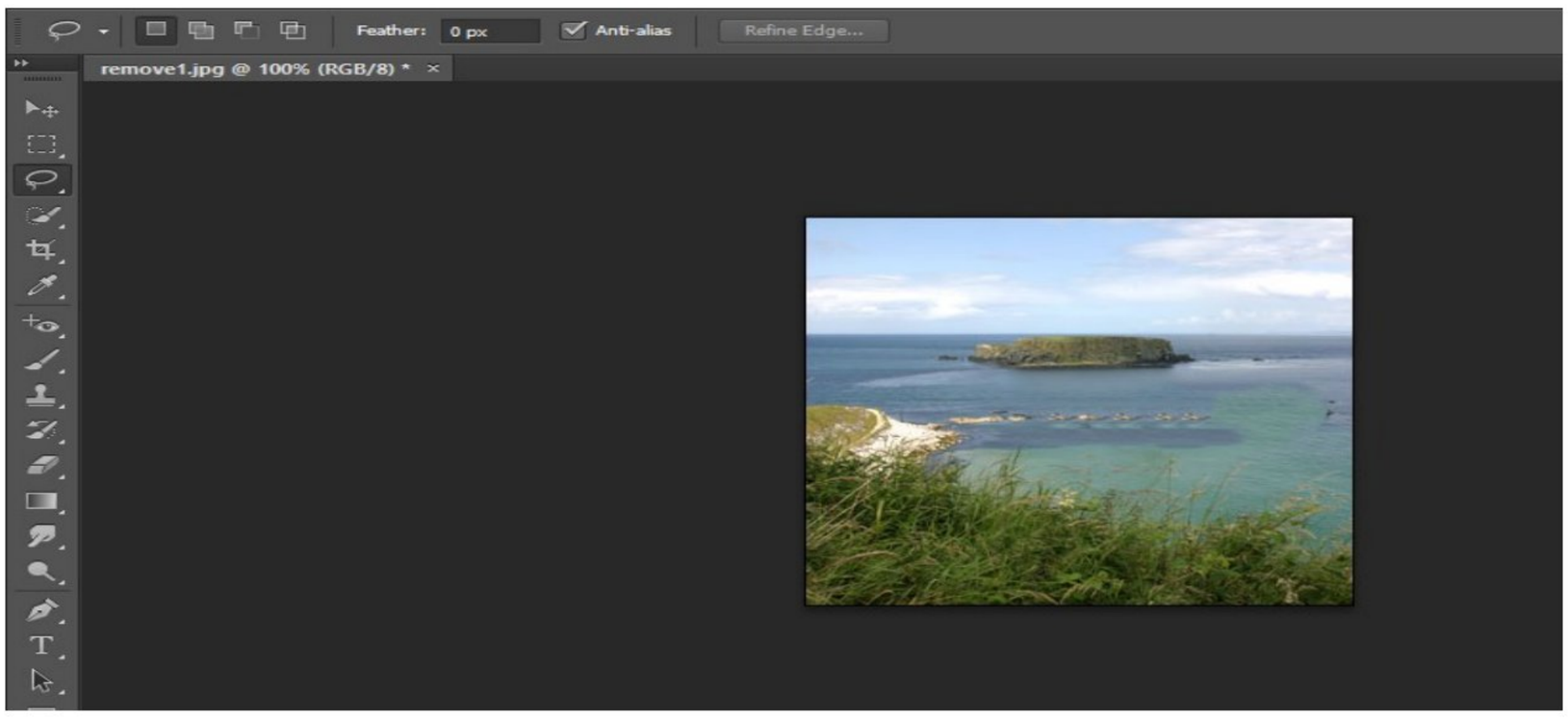
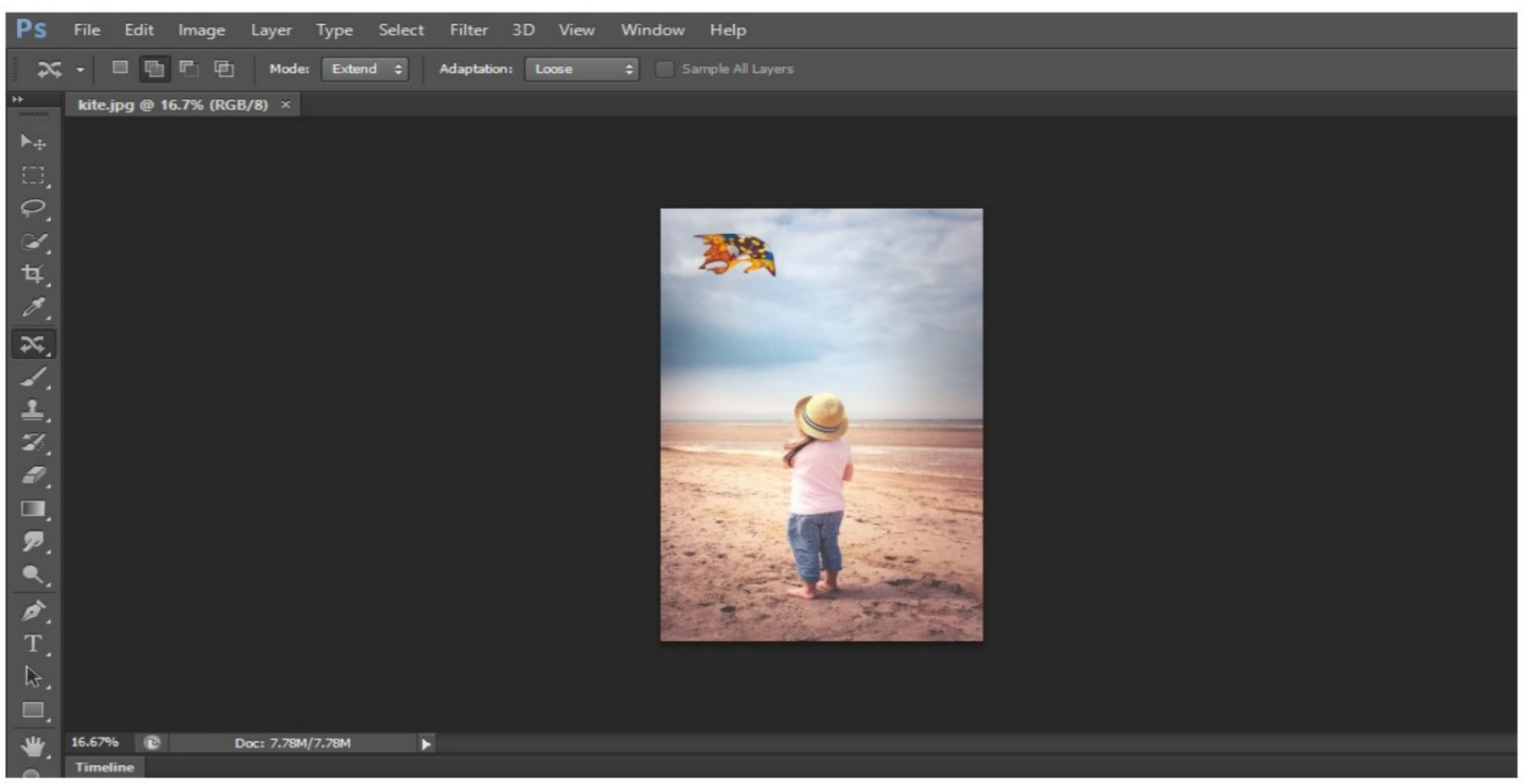
Step 5: You will view the final result.



Retouch old photos into new

Step 1: Open the image in Photoshop.

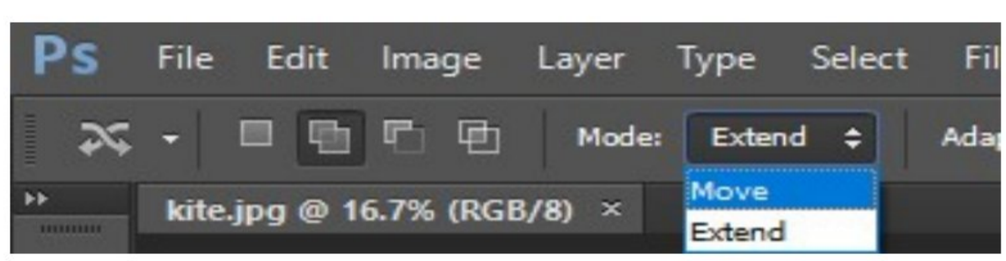


Step 2: Select the Content-Aware Move tool from tool bar.

Step 3: Choose a mode to specify whether you want to move an object/create a copy of object.

Move: Enables you to move objects to a different location in the image.

Extend: Enables you to replicate the object multiple times.



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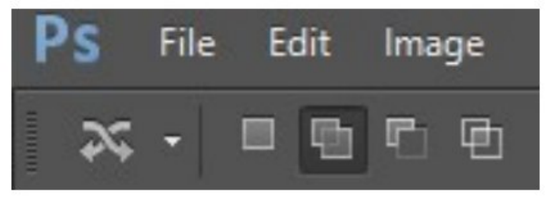
Step 4: Choose the type of selection you want to make:

New: Drag your mouse around the object you want to move/extend to create a new selection.

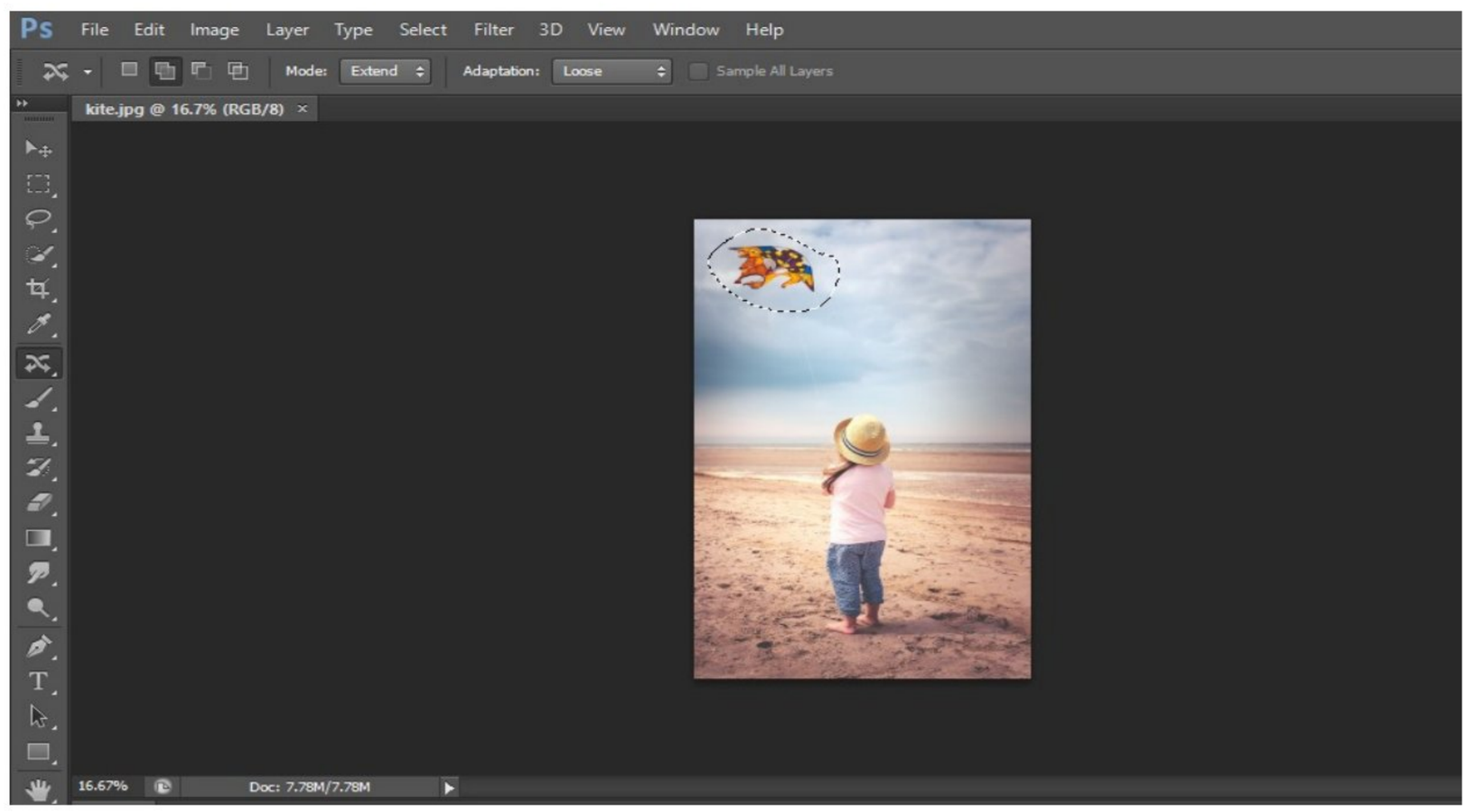
Add: Any selection you make adds to the previous selection.

Subtract: When you make a new selection over an existing selection, the overlapping portion is removed from the resulting selection.

Intersect: When you make a new selection over an existing selection, only the common area overlapping the new and old selection continues to be selected.



Step 5: Drag the mouse pointer over the image, select the object you want to move/extend.



Step 6: When you made a selection, move the object to new location. To do this, click and drag the object to new location.

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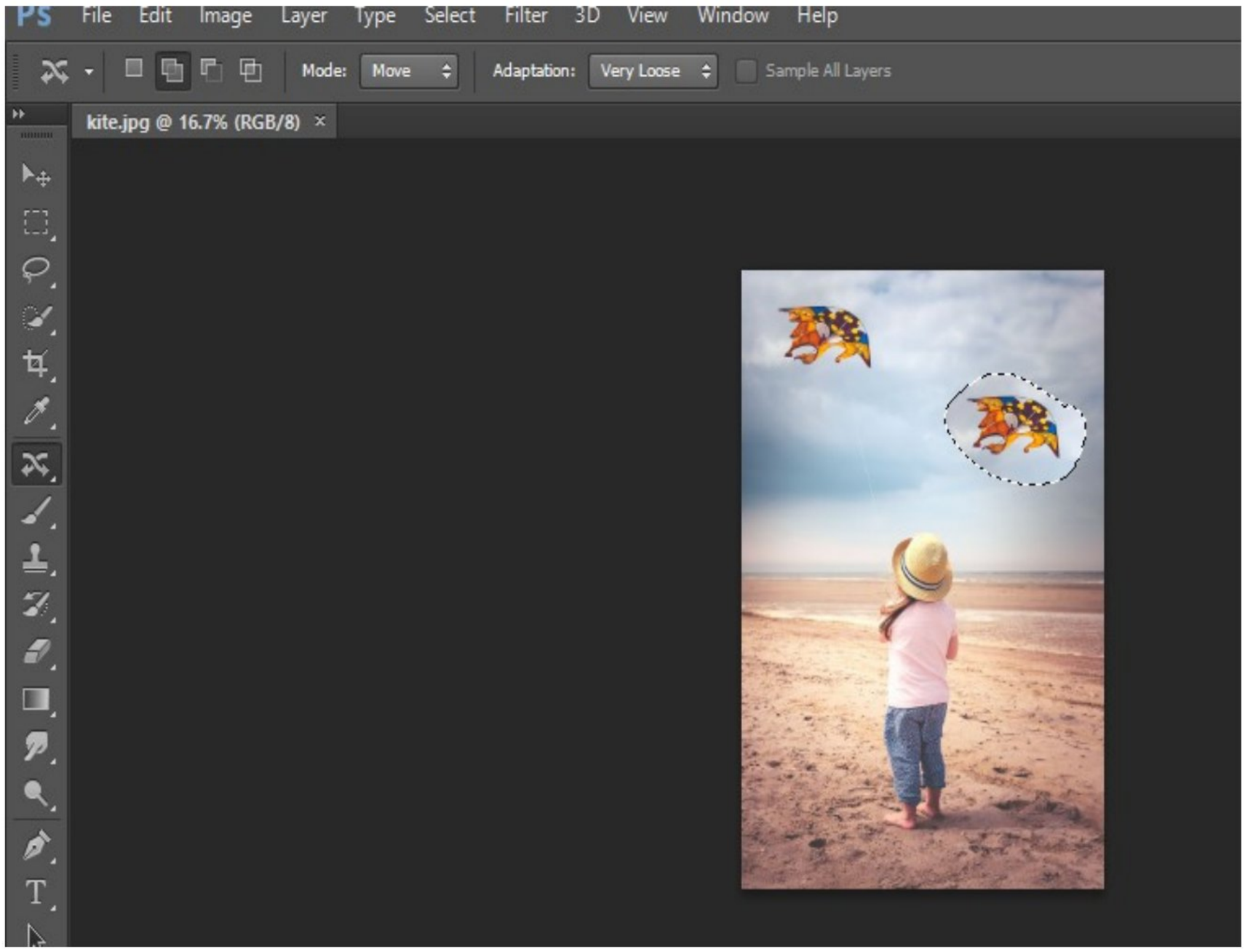

Step 7: You will get original picture.

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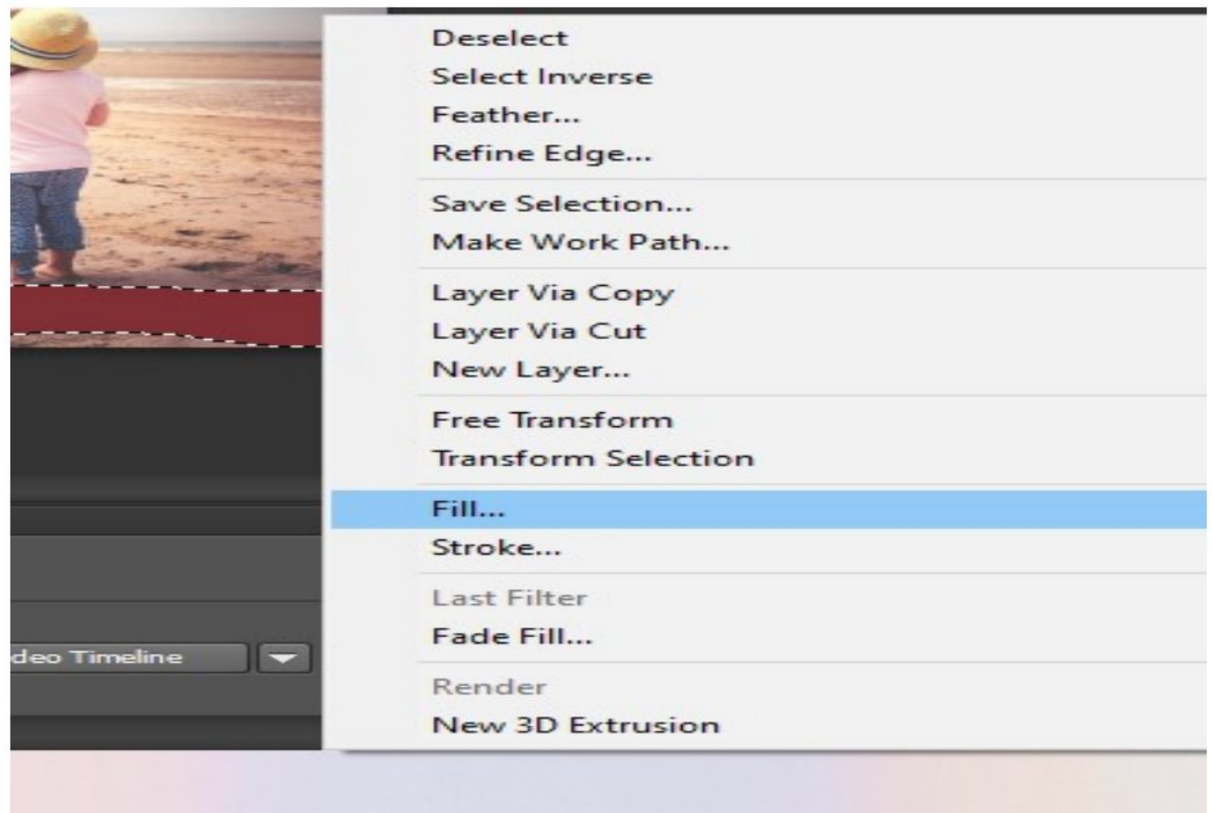
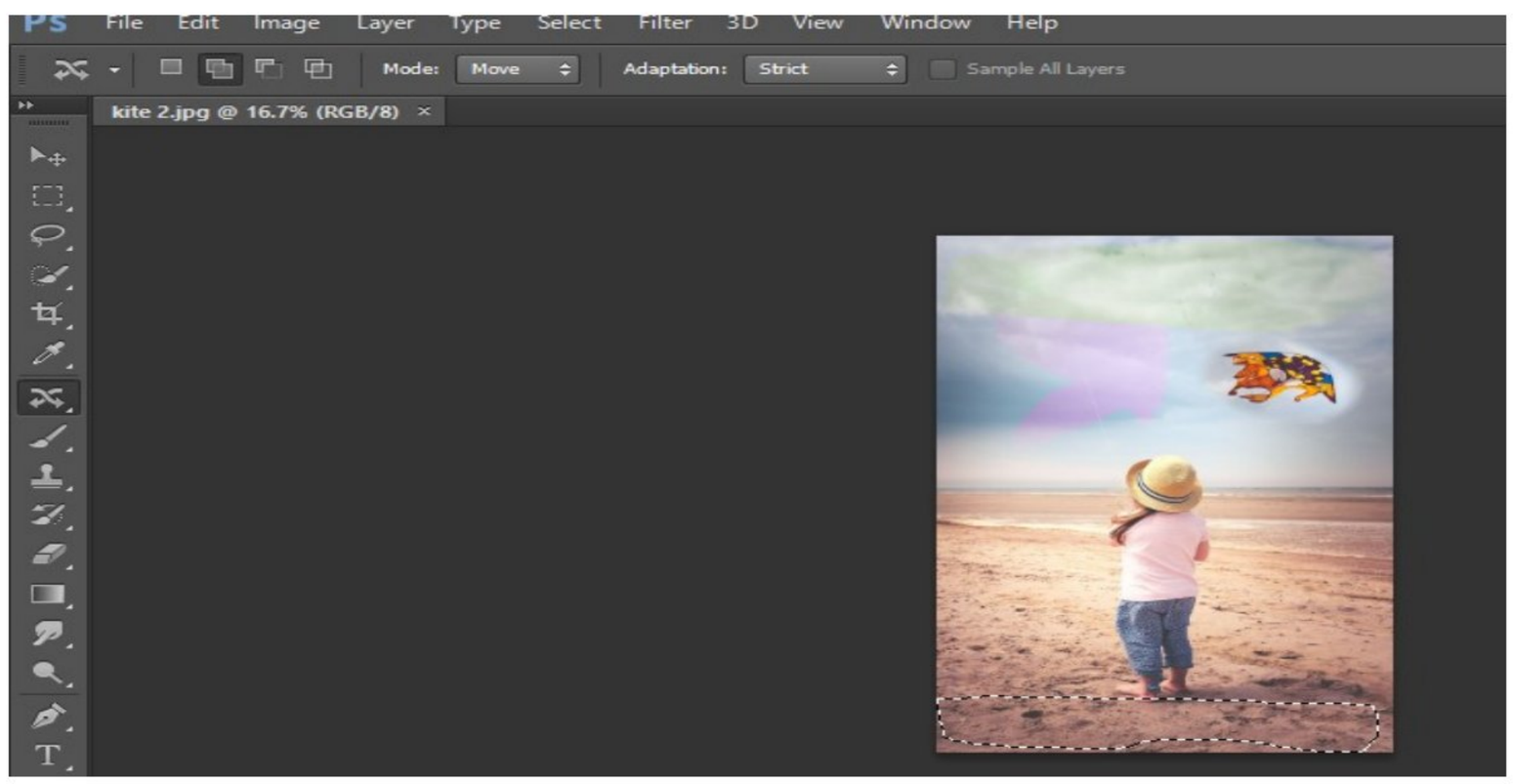
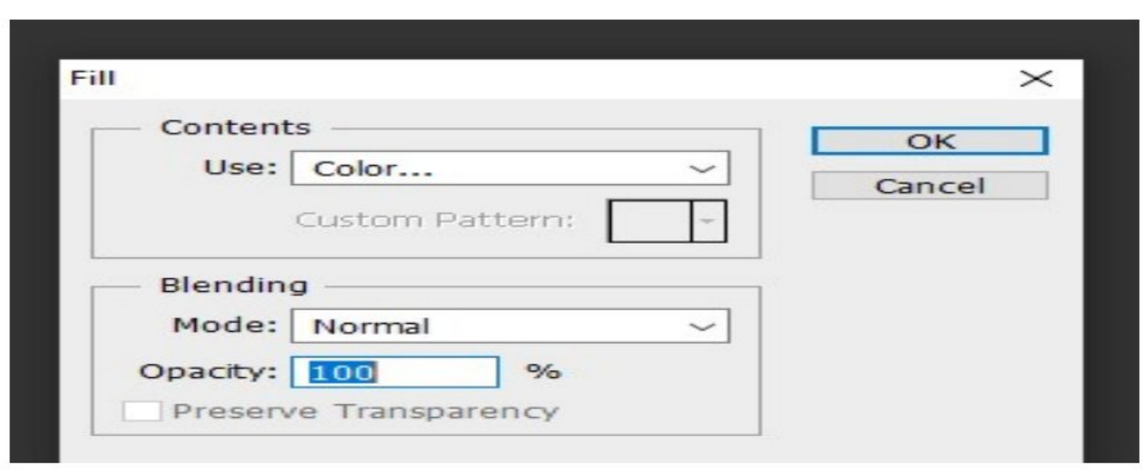
Step 8: Right click on image, and then choose Fill option.



Step 9: Select the area you want to fill different color. Fill dialog box will appear. Choose one of the following options for use: Foreground color, background color, black, color. I have chosen color option for use and specified Normal blending mode, opacity for image. After the setting process, click OK button to apply the fill.





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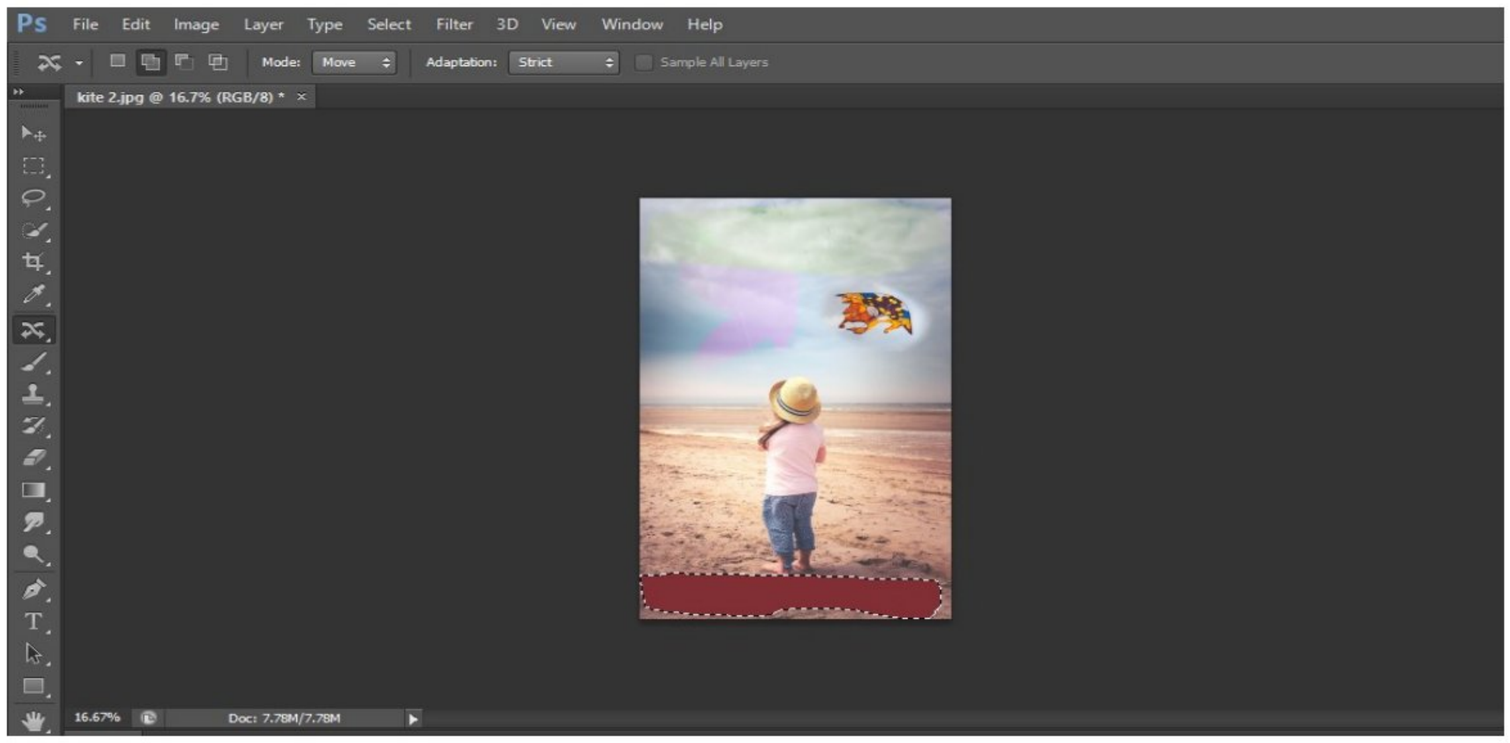
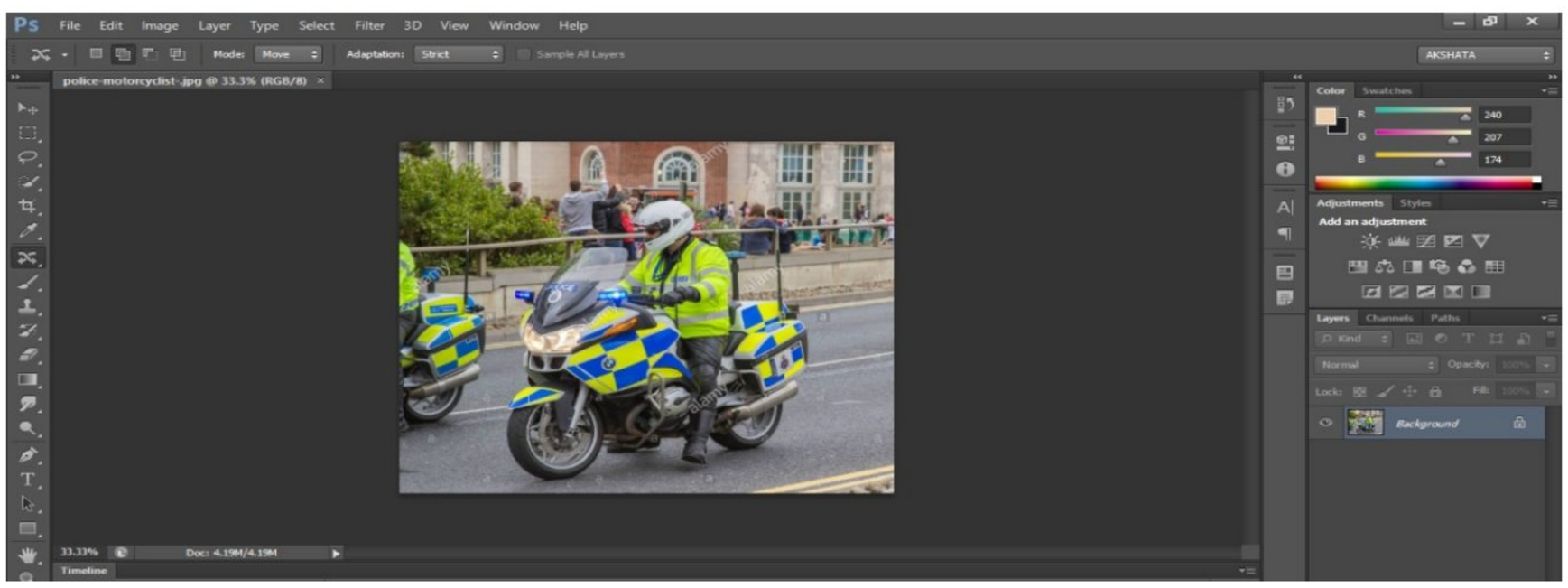
Step 10: Selected Area filled with chosen color.

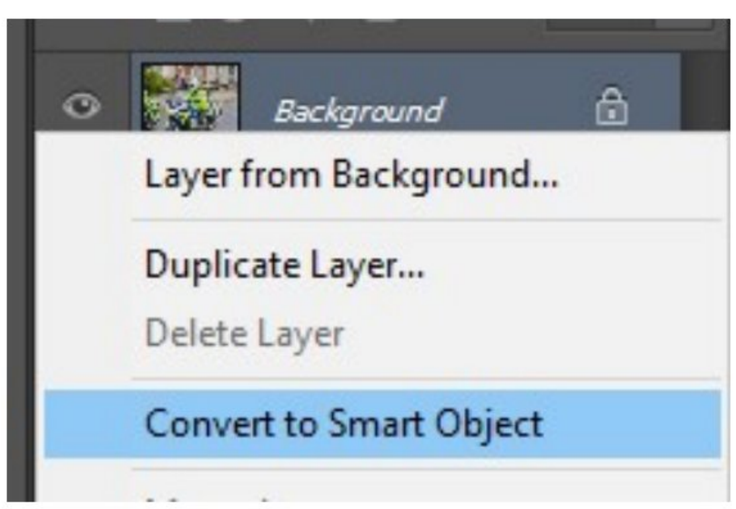


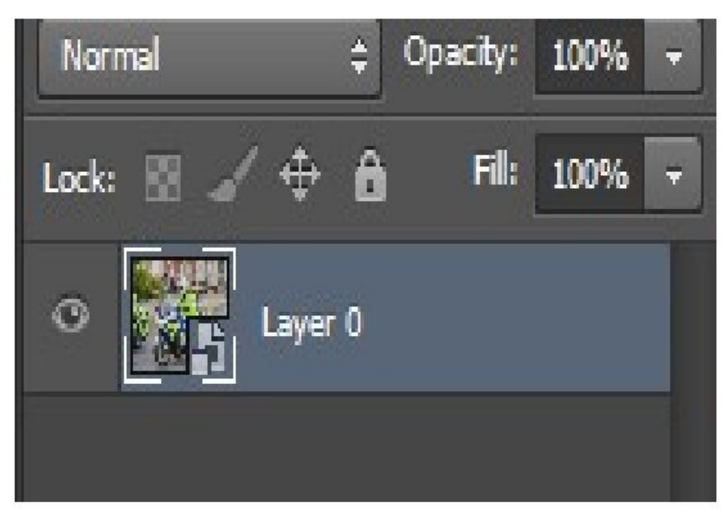
9. Import a picture of a stationary motorcyclist. Apply suitable masking filters and background. The image should appear as though the motorcyclist is speeding fast.

Step 1: Open the stationary motorcyclist image in Photoshop.



Step 2: Right click on Background image and then convert into smart object.





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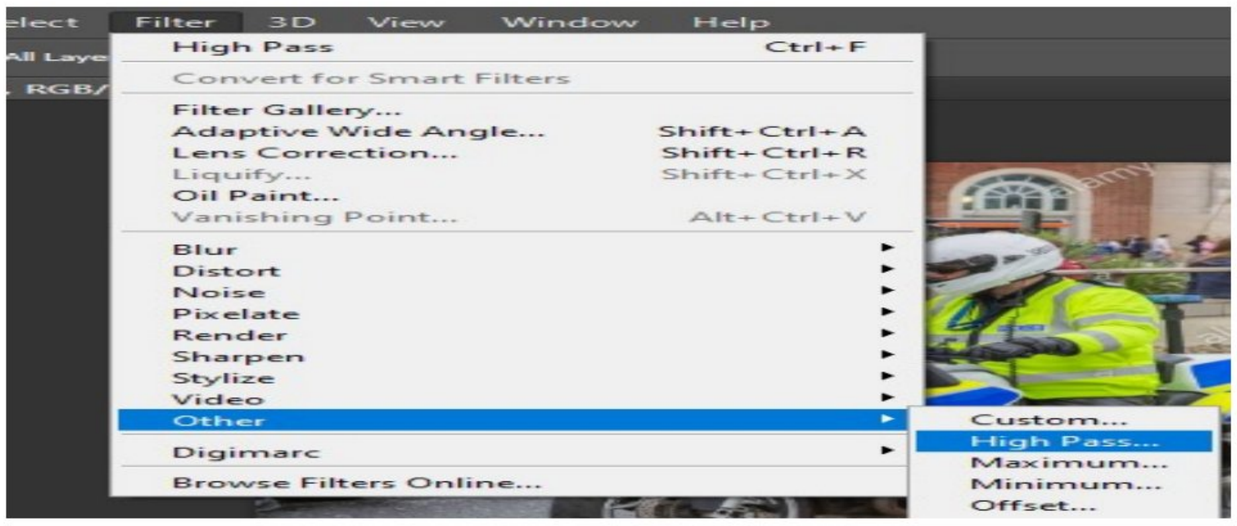
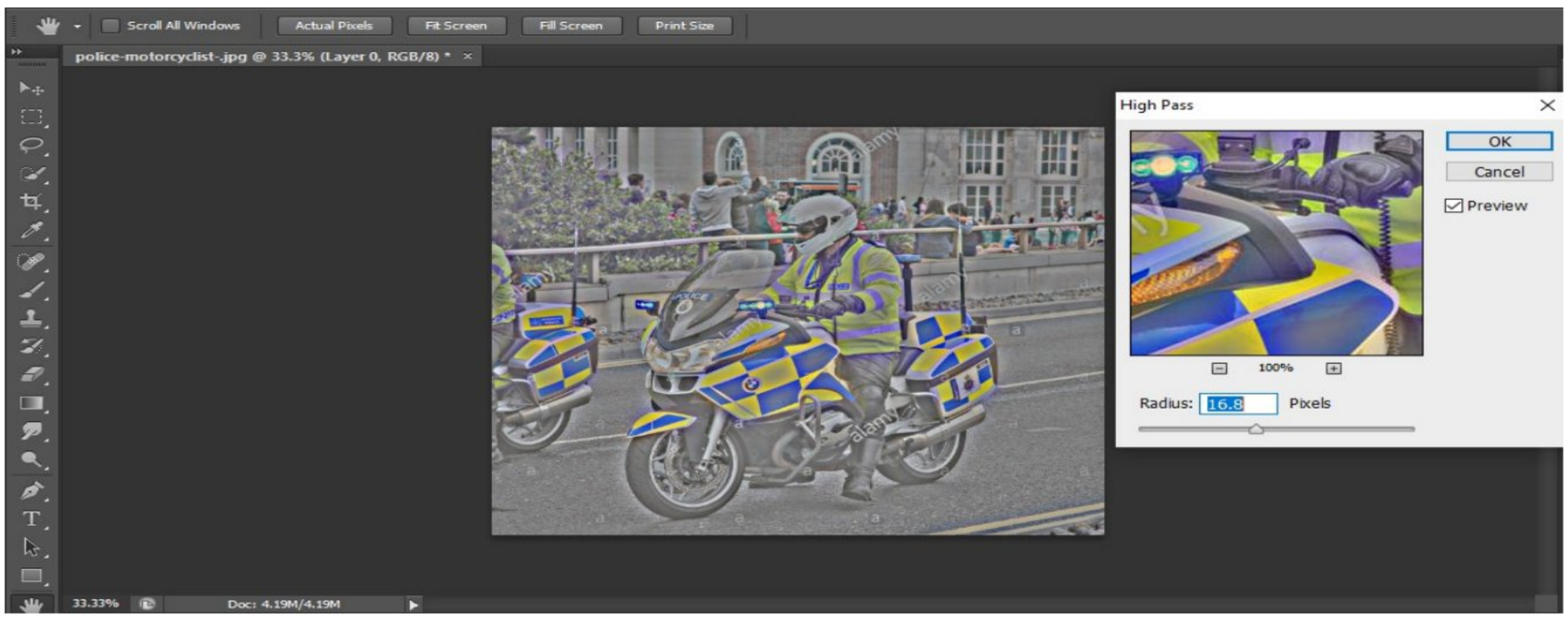
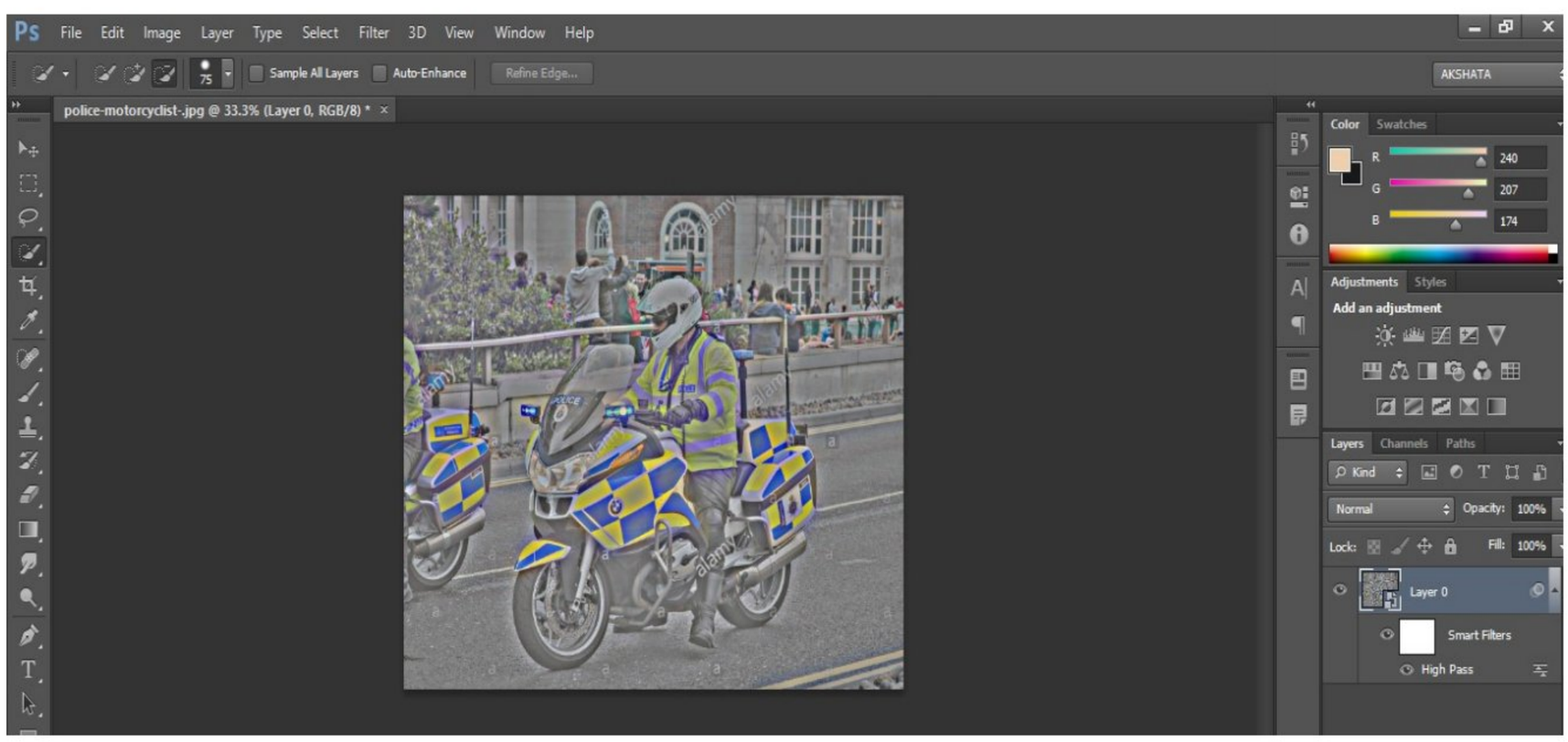
Step 3: Choose Filter>other>High pass.



Step 4: High-pass filter dialog box will appear. Set the Radius as per your choice then click OK.



Step 5: You will view the output. In the Right panel, You will see the smart filter along with applied filter name.



Step 6: Double click on High filter option, you can set overlay as a mode.

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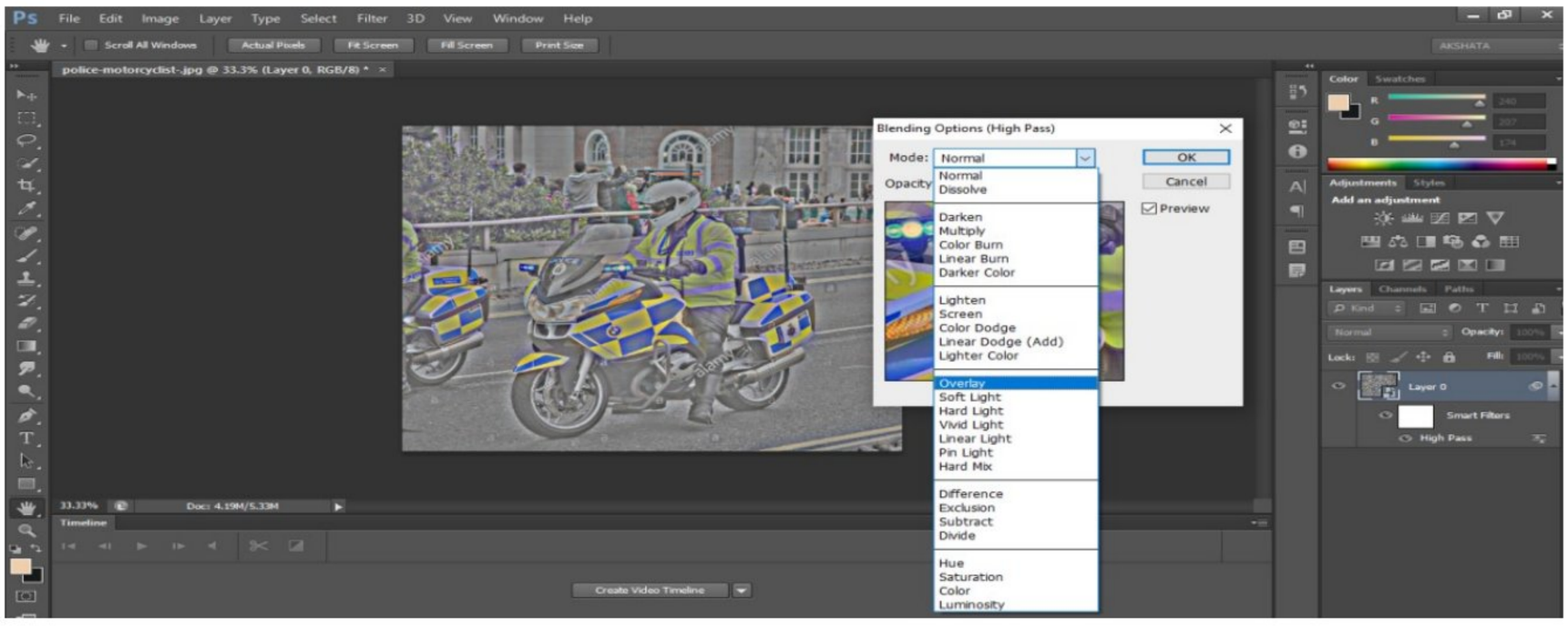
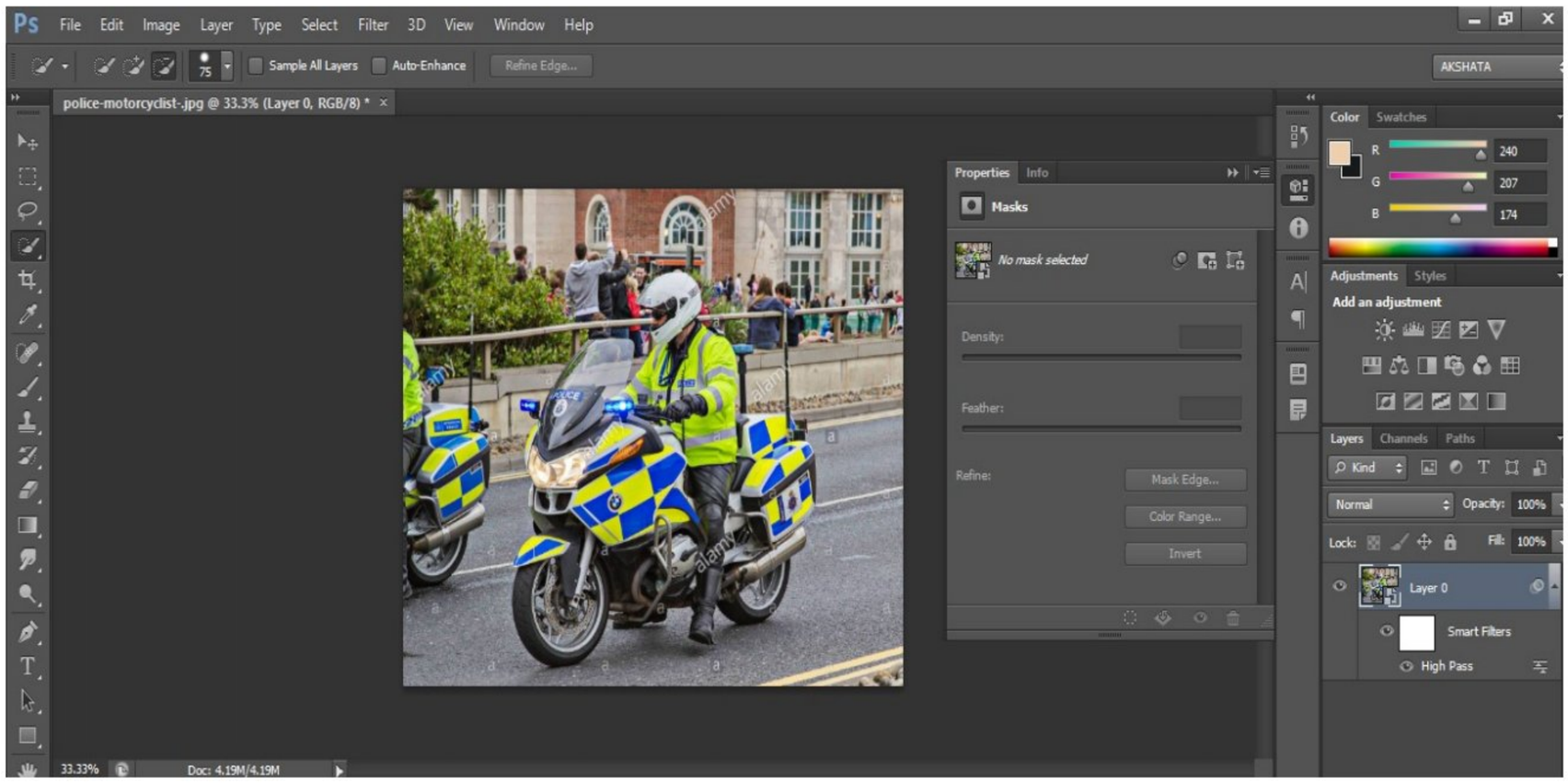
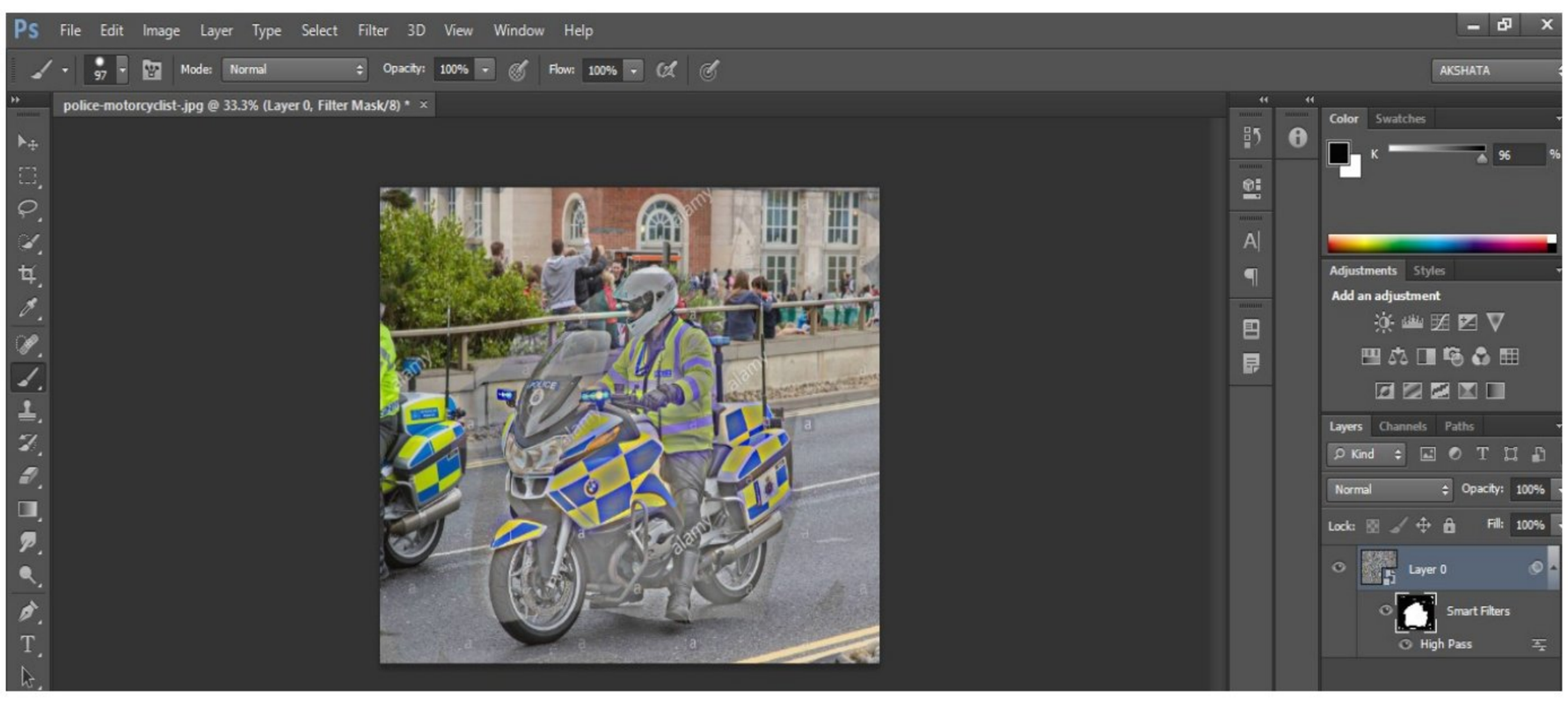




Step 7: Click on Layer mask thumbnail and Choose Brush tool from tool panel and paint over around the motorcyclist. Choose Image>mode>8 bit/channel.



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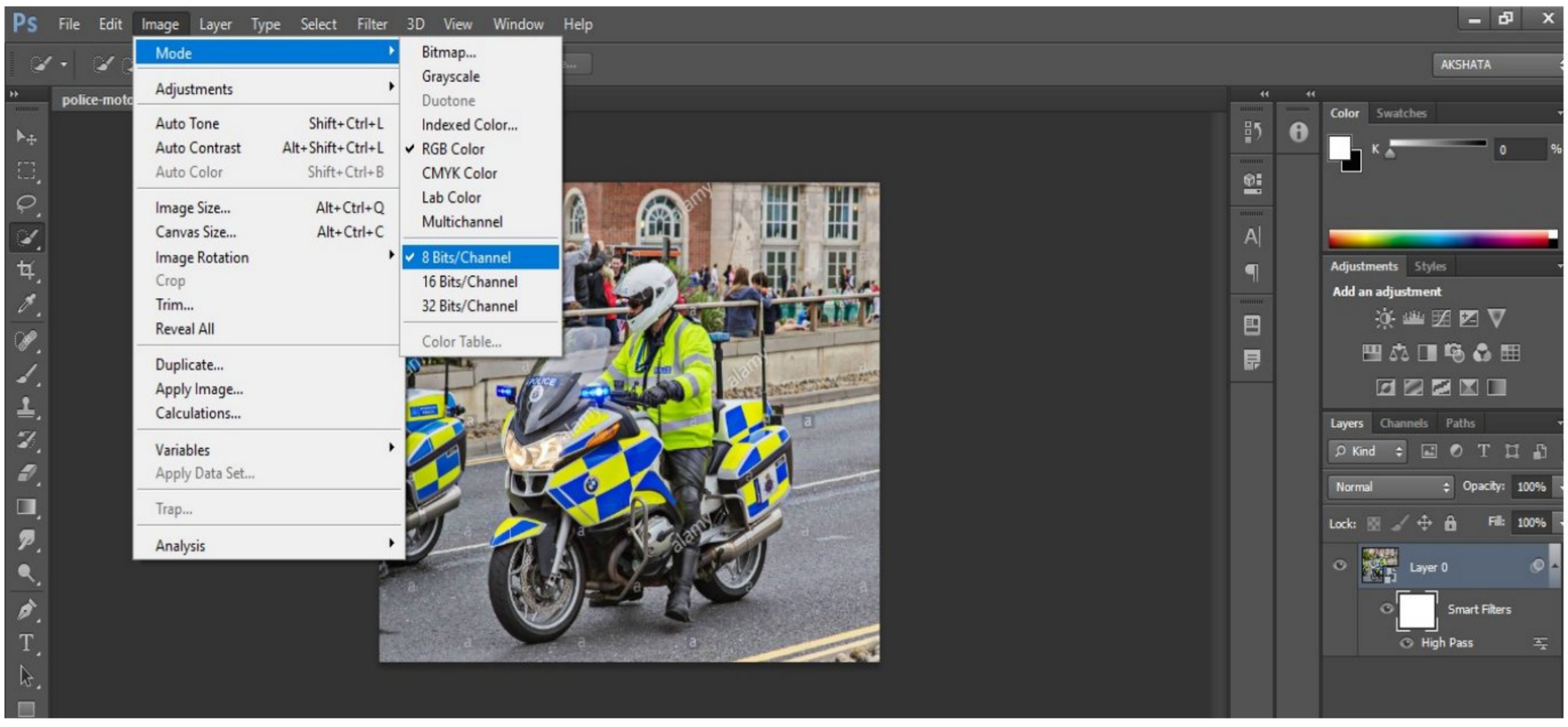
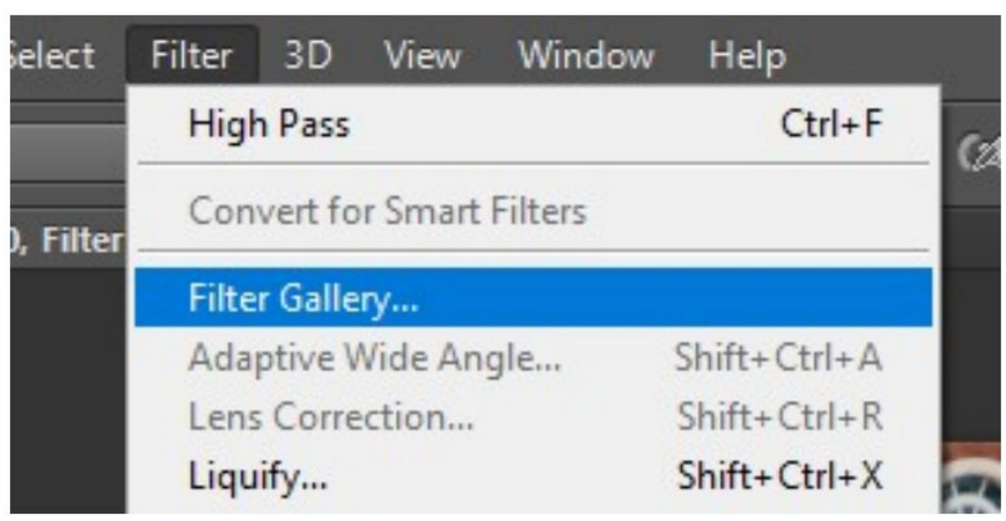
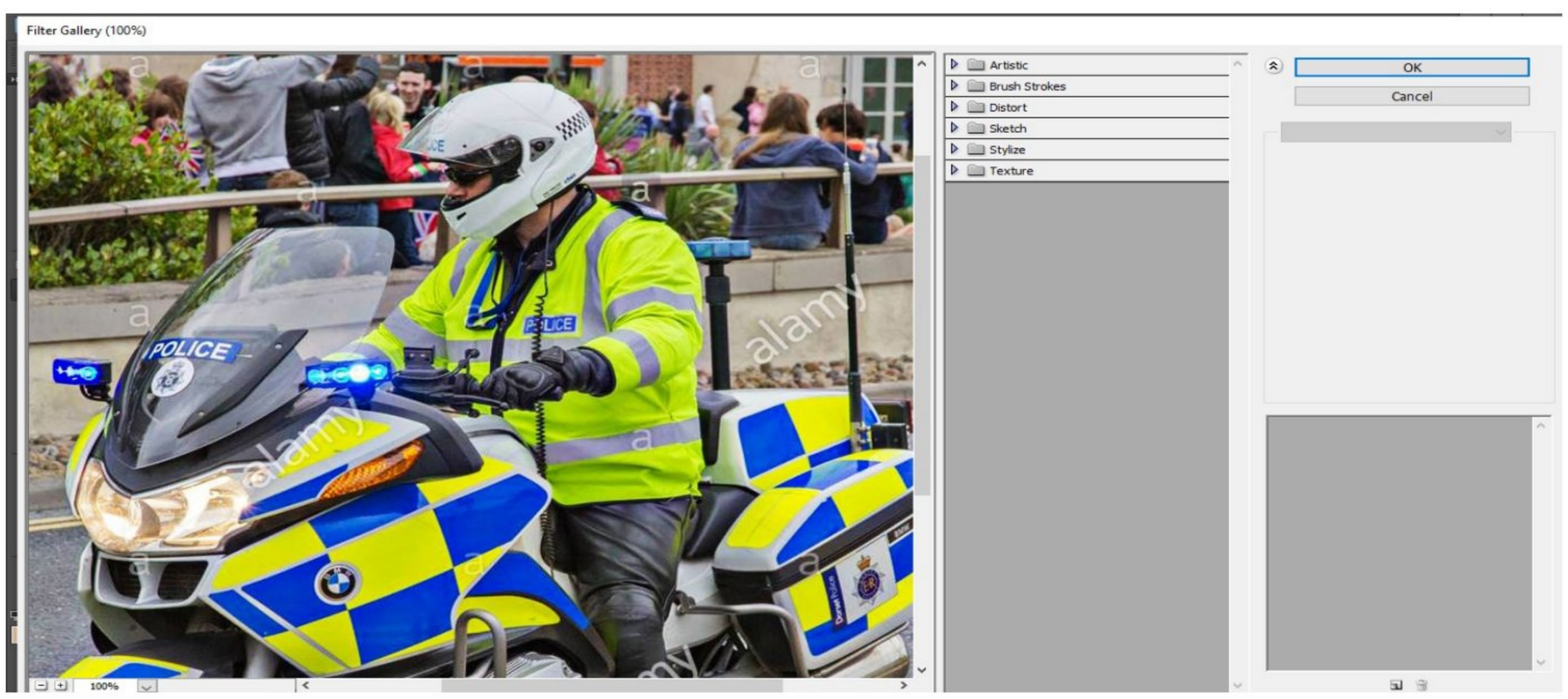


Step 8: Choose Filter>Filter Gallery. Filter Gallery dialog box will appear.Choose diffuse glow option and set Graininess, Glow Amount and clear amount then click OK. You will see the output.





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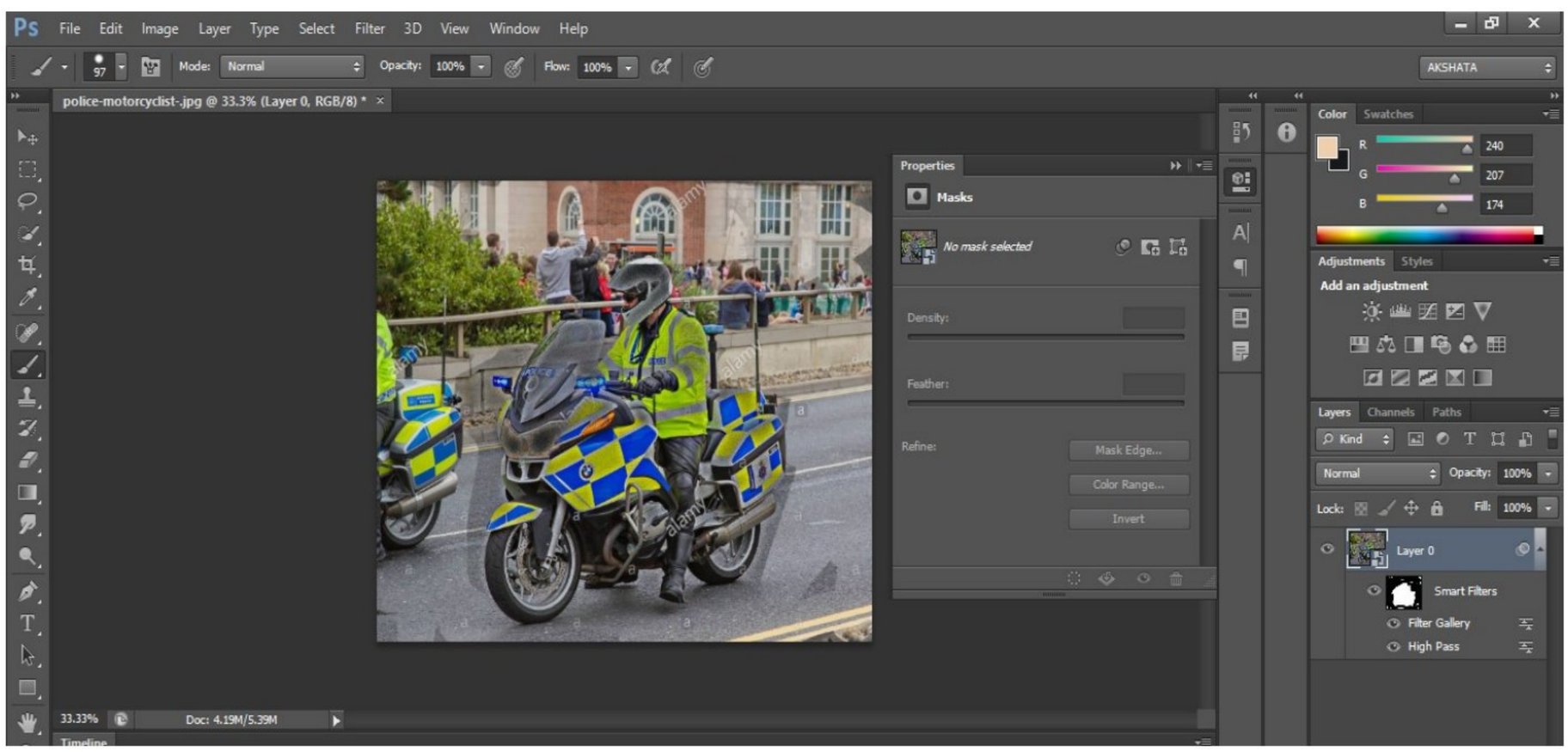
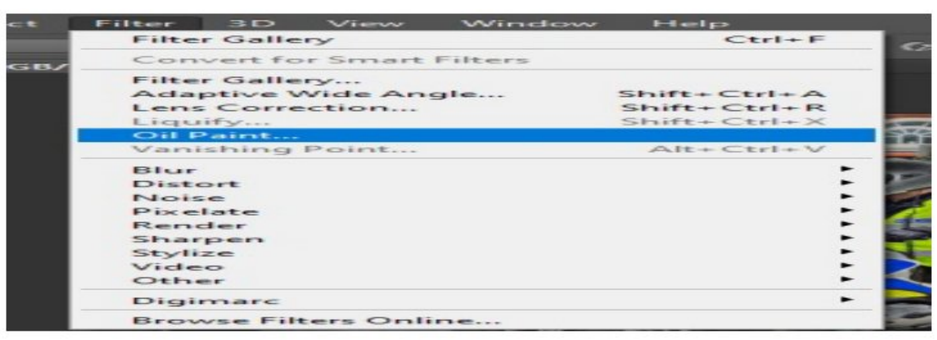


Step 9: Choose Filter>Oil paint. Oil paint dialog box will appears. Set Brush and lightning values then click OK.



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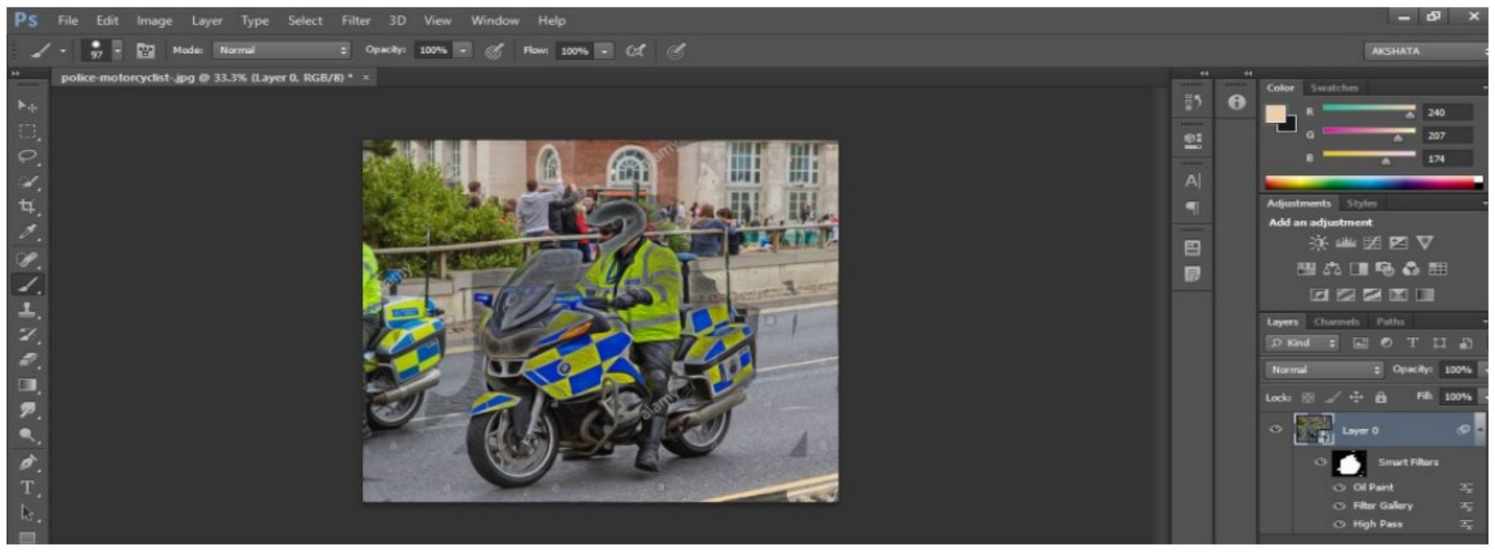
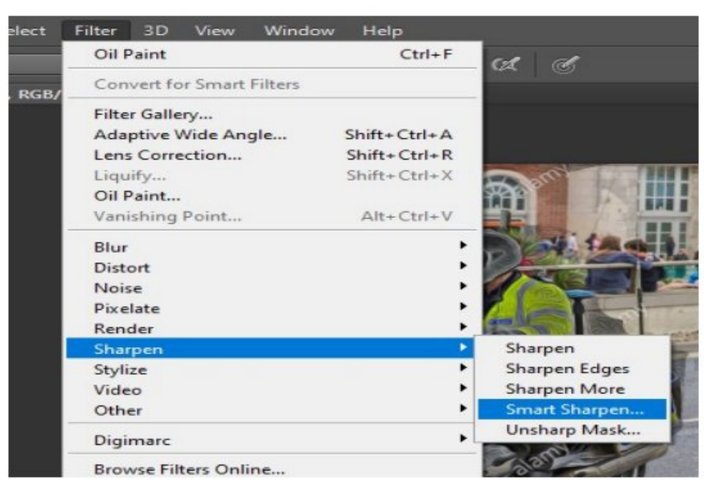
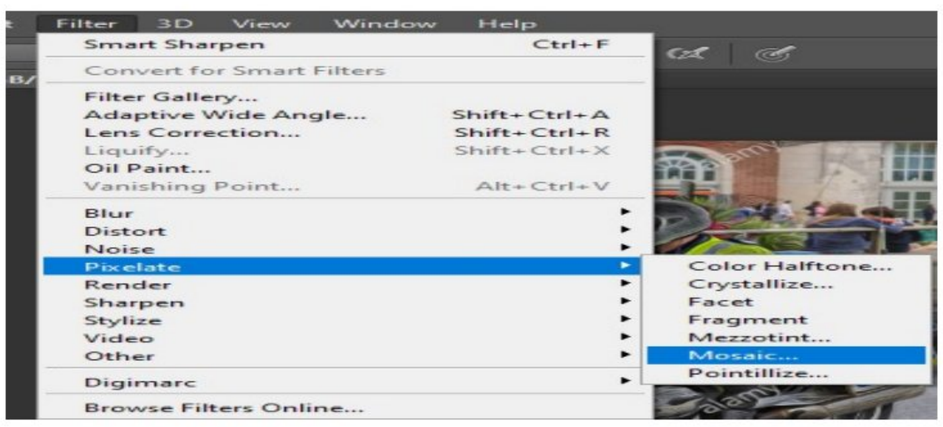


Step 10: Choose Filter>Sharpen>Smart sharpen.



Step 11: Choose Filter>Pixelate>Mosaic. It opens dialog box and set the values then click OK.



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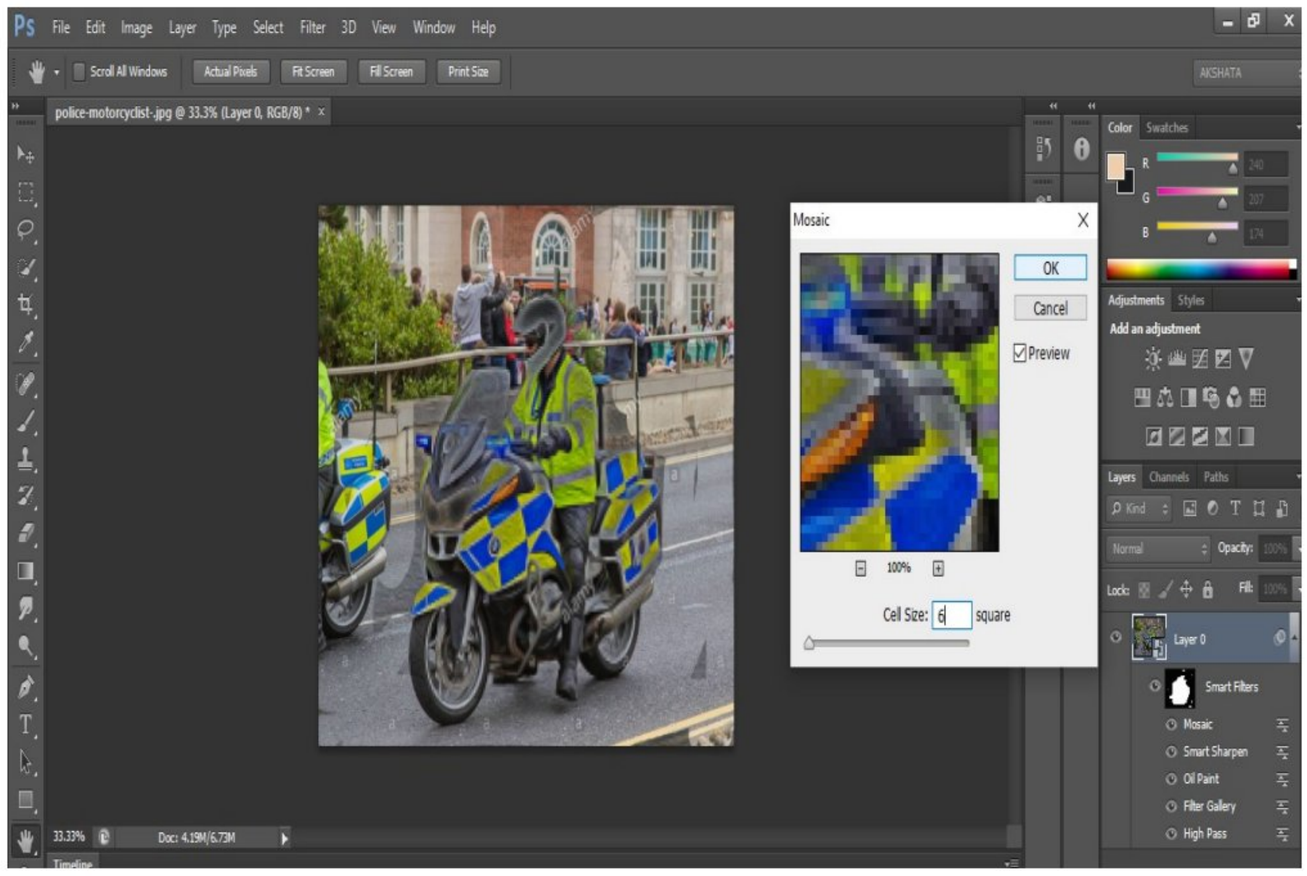
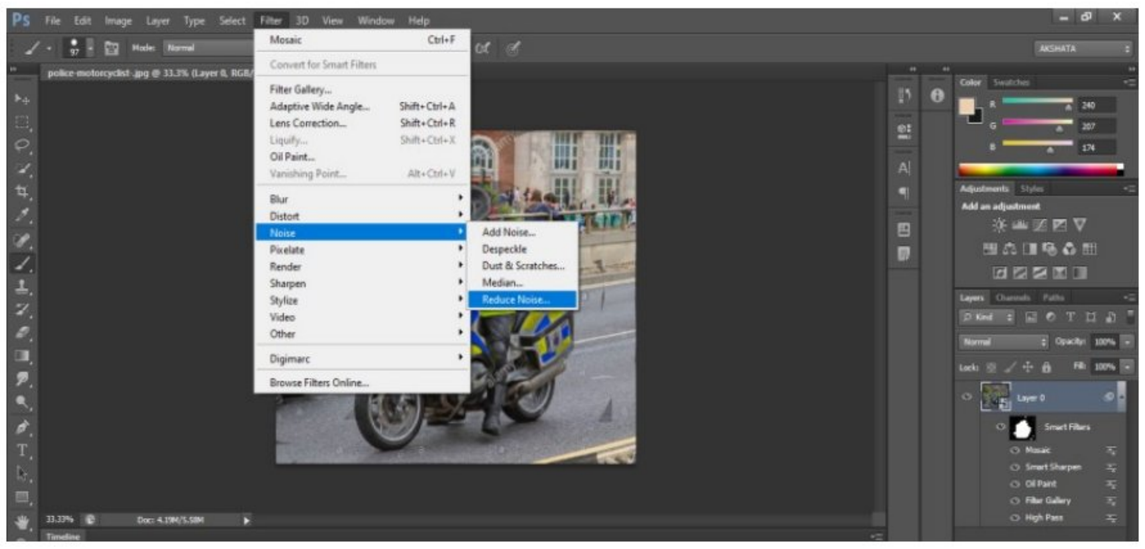
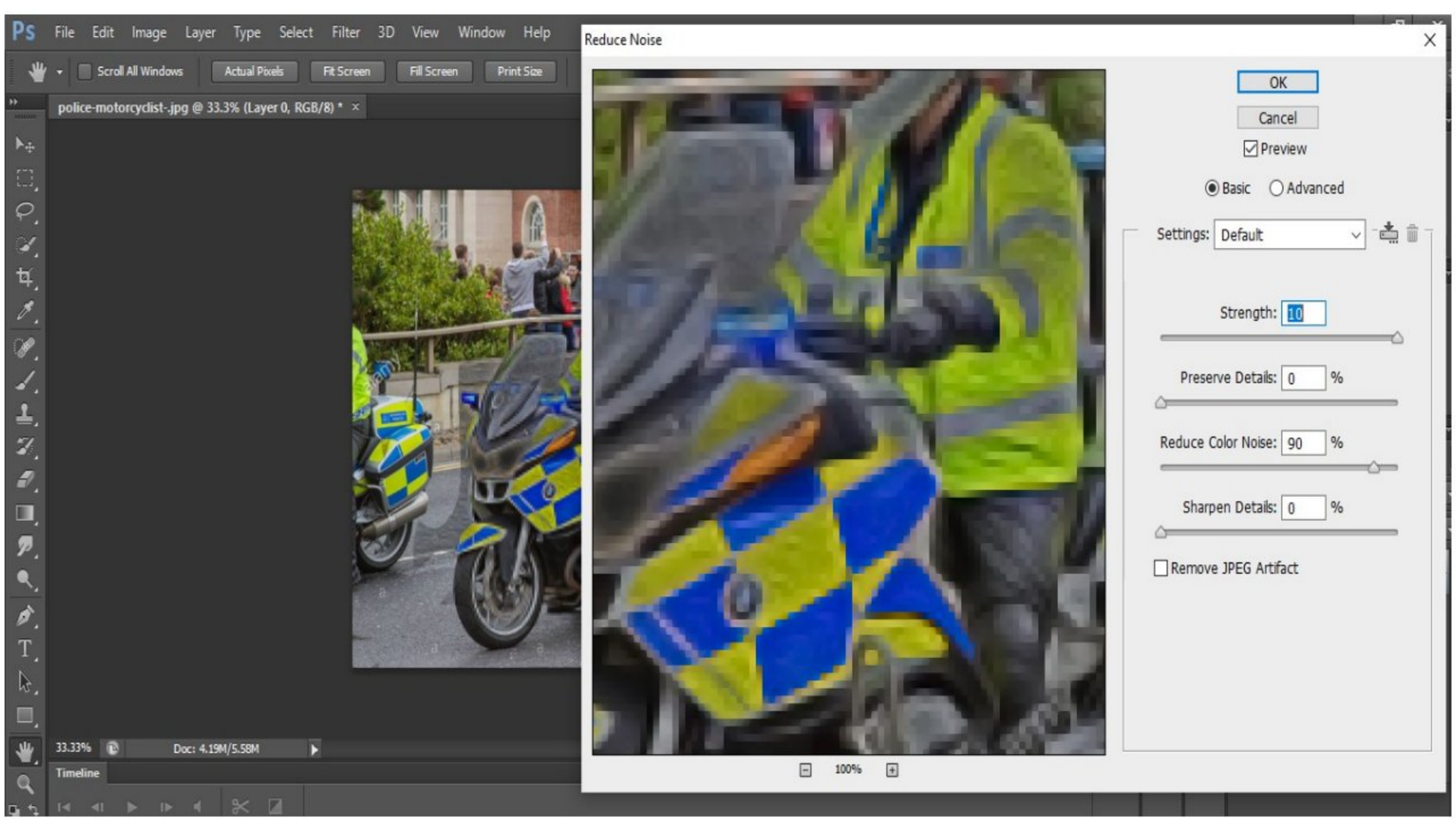


Step 12: Choose Filter>Noise>Reduce noise. It opens dialog box and set the values then click OK.





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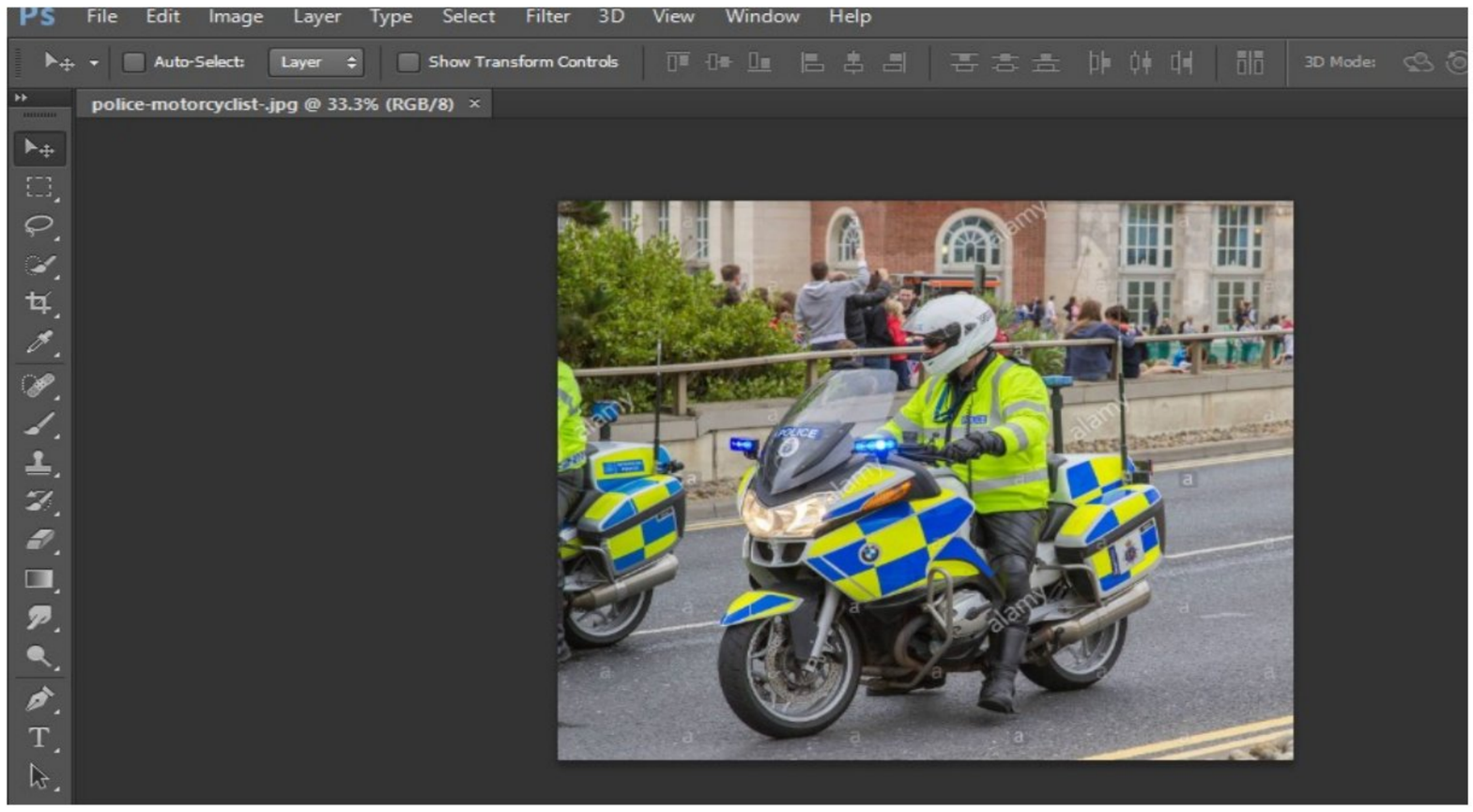
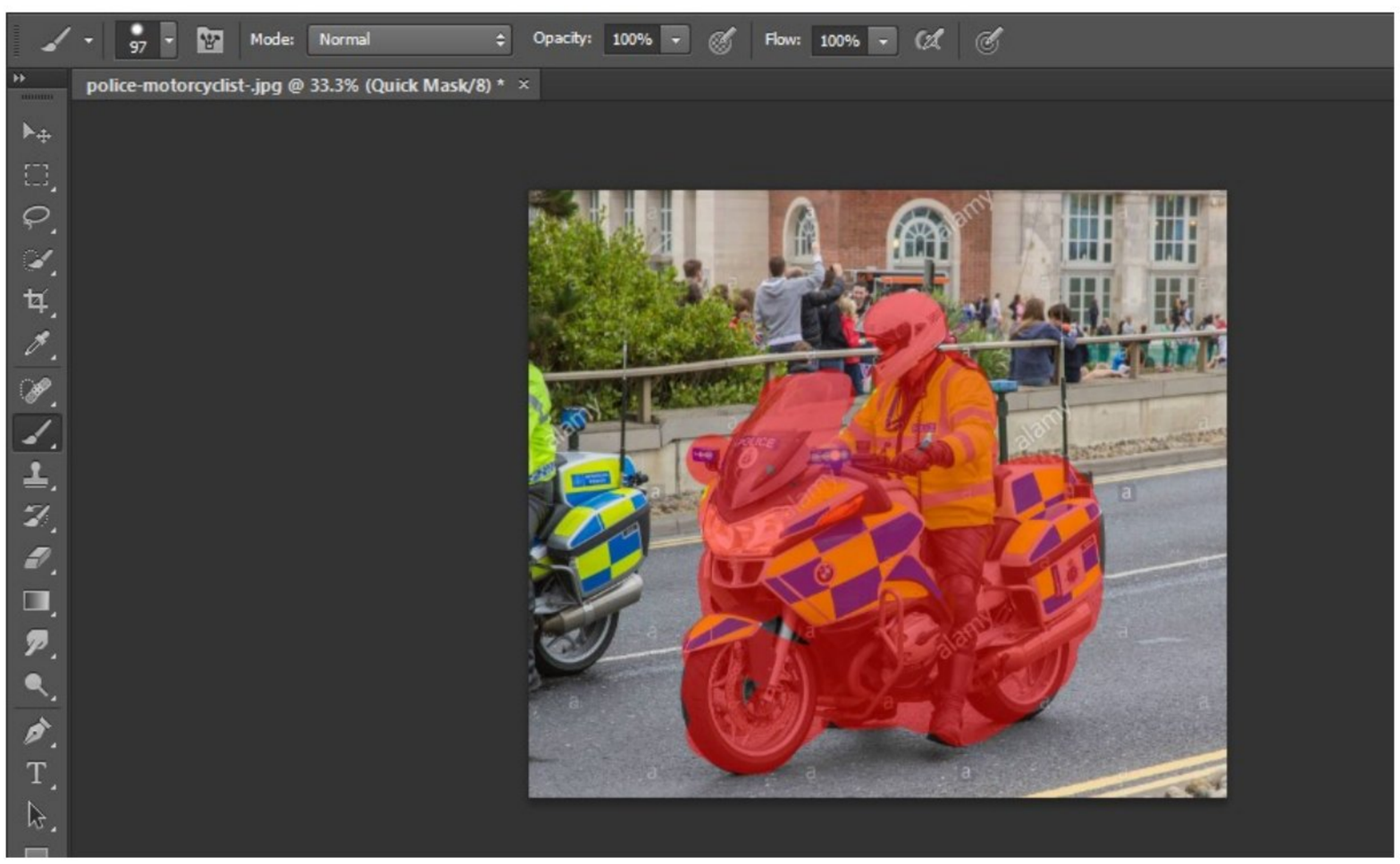
Background Change

Step 1: Open the image in Photoshop.



Step 2: Select the quick mask tool then use brush tool. With the black color you can apply mask, with the white color you can remove it. To select the edge, use a soft round brush and flow, opacity have to be 100%. To select the center, use a hard round brush . Drag brush tool over the image and start brushing.



Step 3: To create the selection, click on the quick mask tool.

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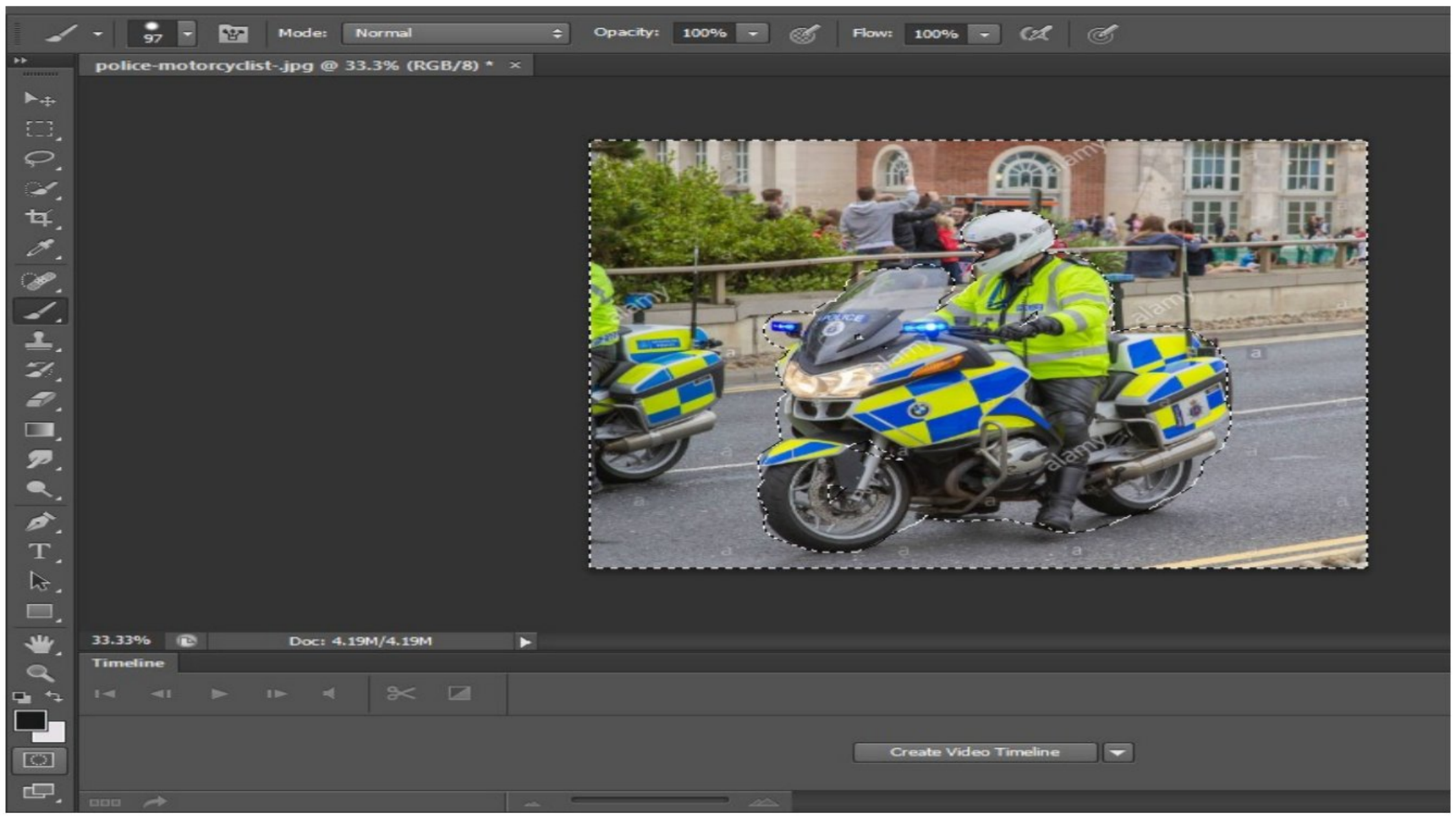
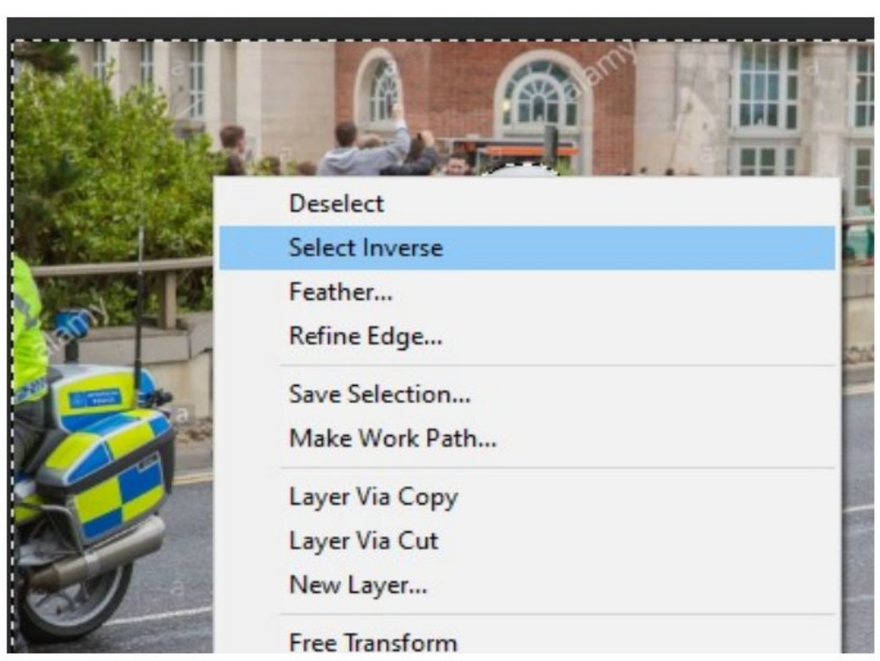
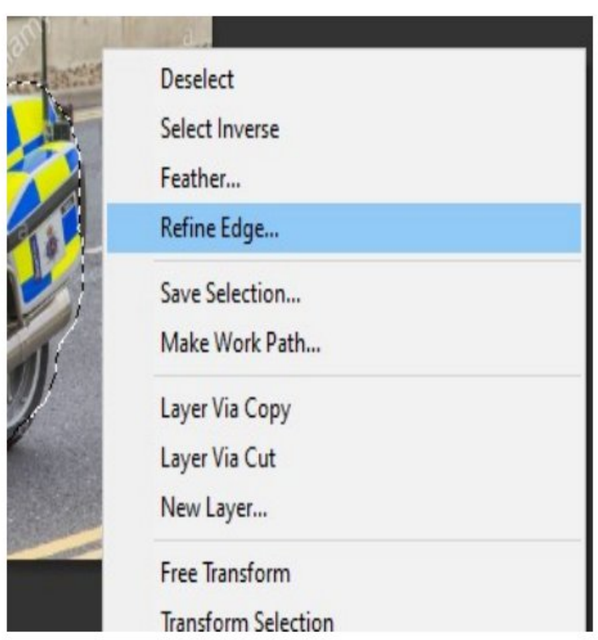
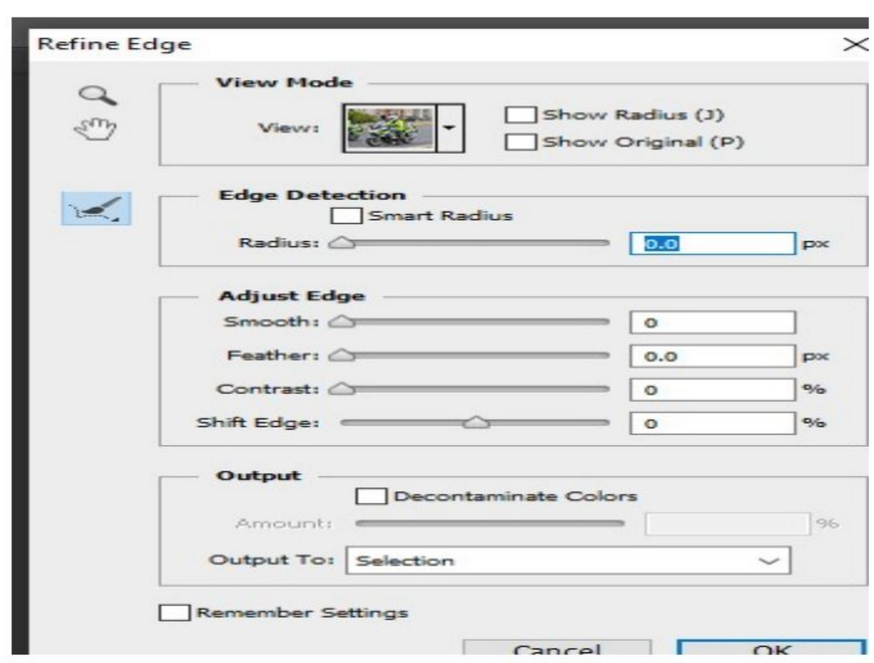


Step 4: Select the marquee tool, then right-click and choose select inverse. Now right click and choose refine edge. It opens Dialog box. After it, adjust the values in the best way to get a smooth and precise selection and output as layer.







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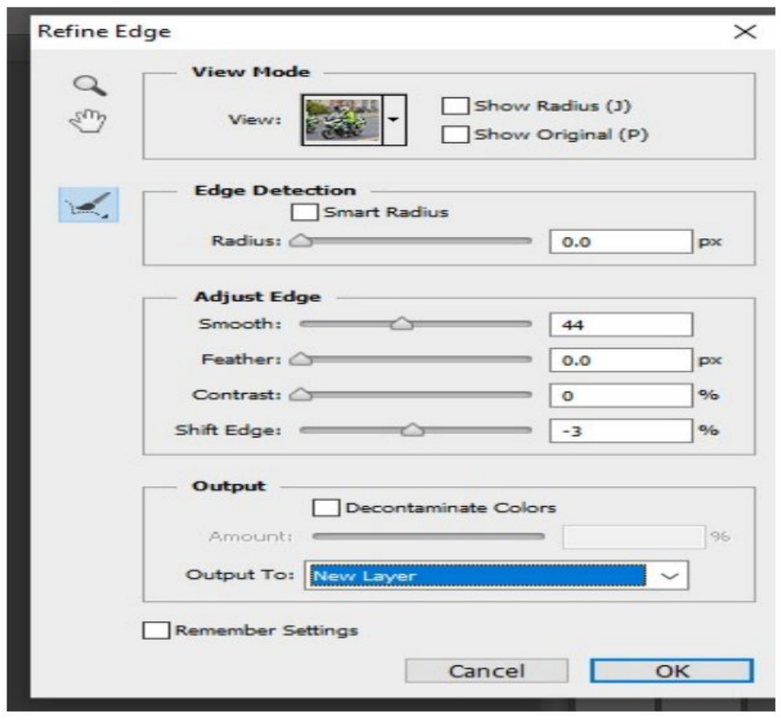

Step 5: Decrease the window size and import the background , then click on Move tool. Drag and Drop new background image into Photoshop.

Step 6: Drag the photo inside the background. To adjust the size, go to edit>free transform. To keep the correct aspect ratio while resizing, hold the shift key and you can do adjustments going to Image-Auto tone-Auto contrast-Auto color.

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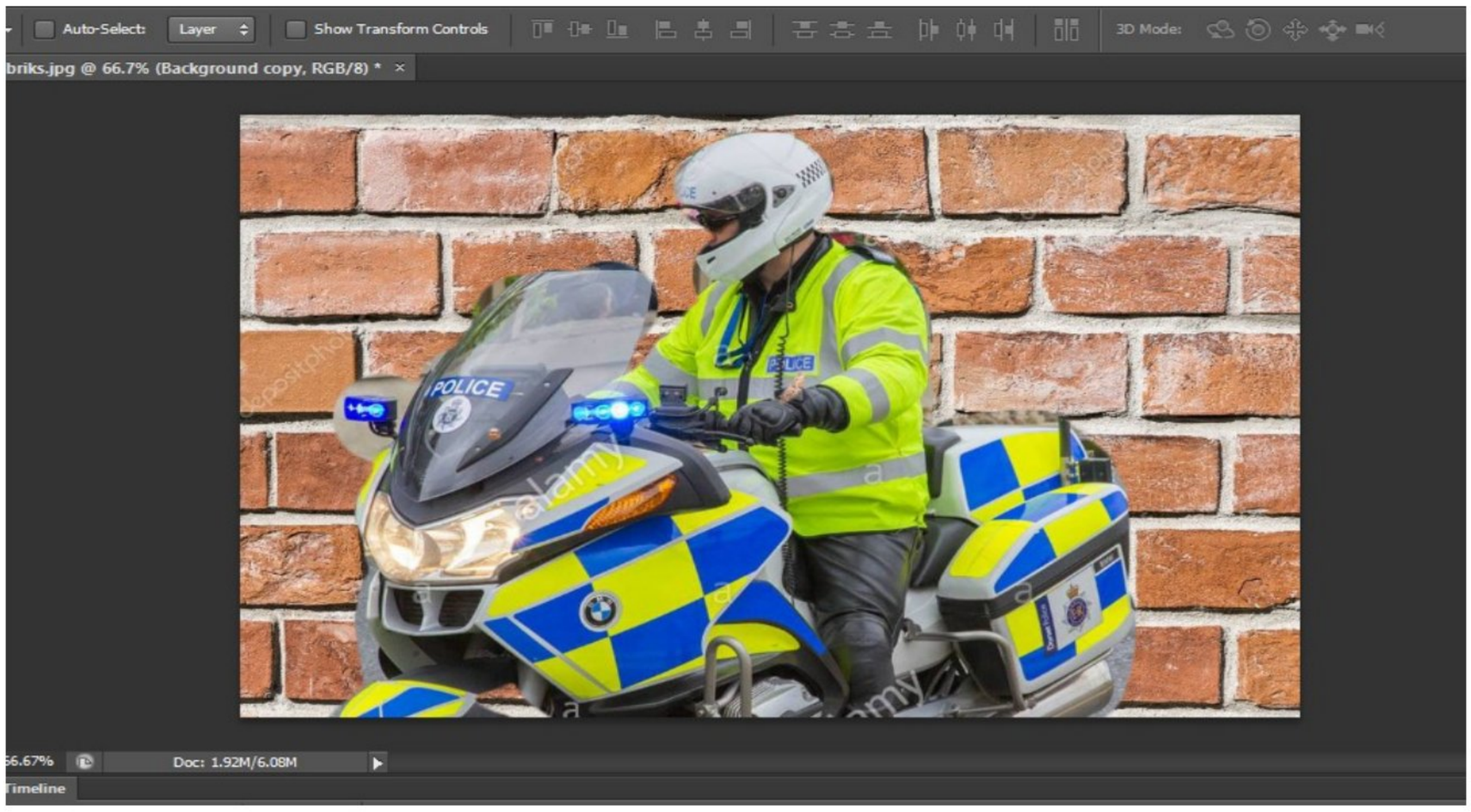

10. Create a professional web layout. Use different layers, textures, colors, text, blending features and filter masking.

Step 1: Open the image in adobe Photoshop.

Step 2: Choose "Horizontal Type tool from tool bar and write something inside the text box.

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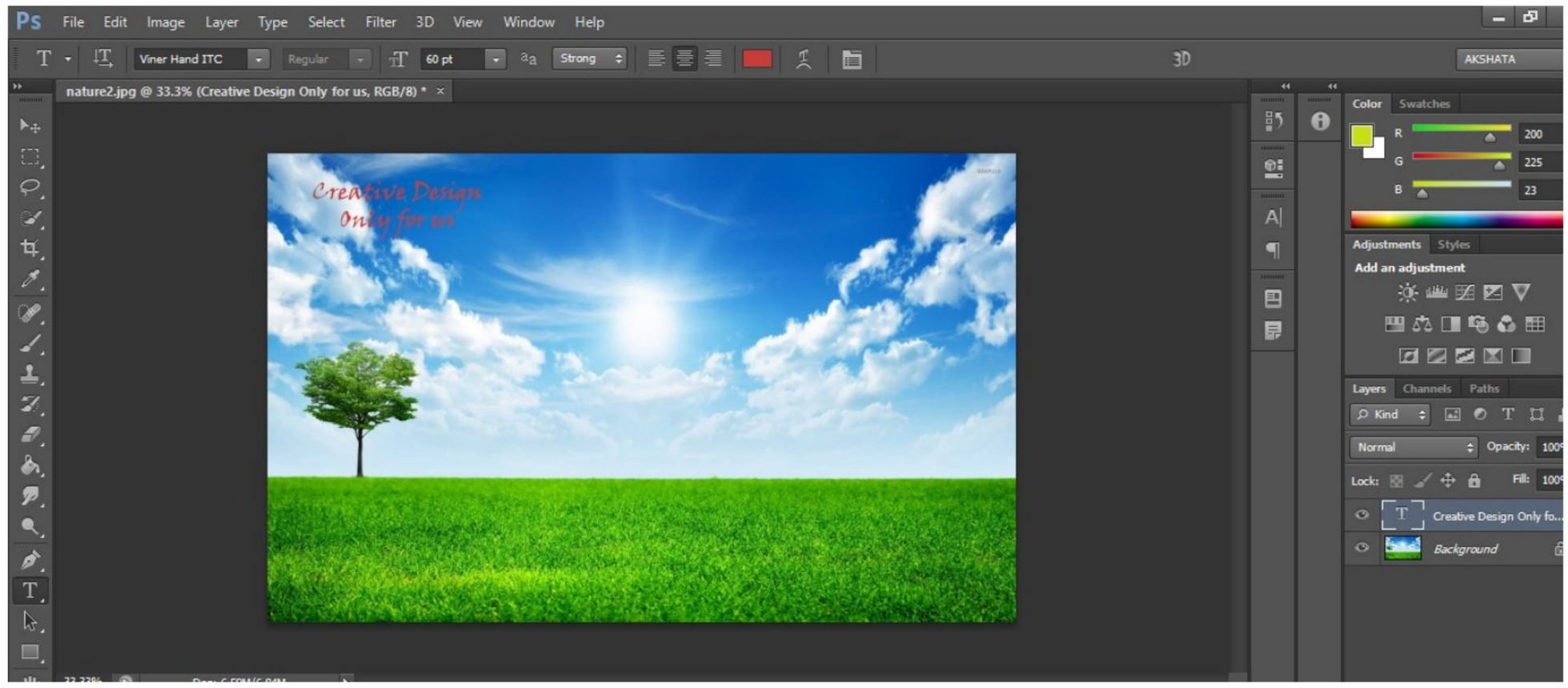

Step 3: Right click on Layer then choose Blending mode.

Step 4: You can choose different layer styles for text and select any blending mode, after setting process, click OK.

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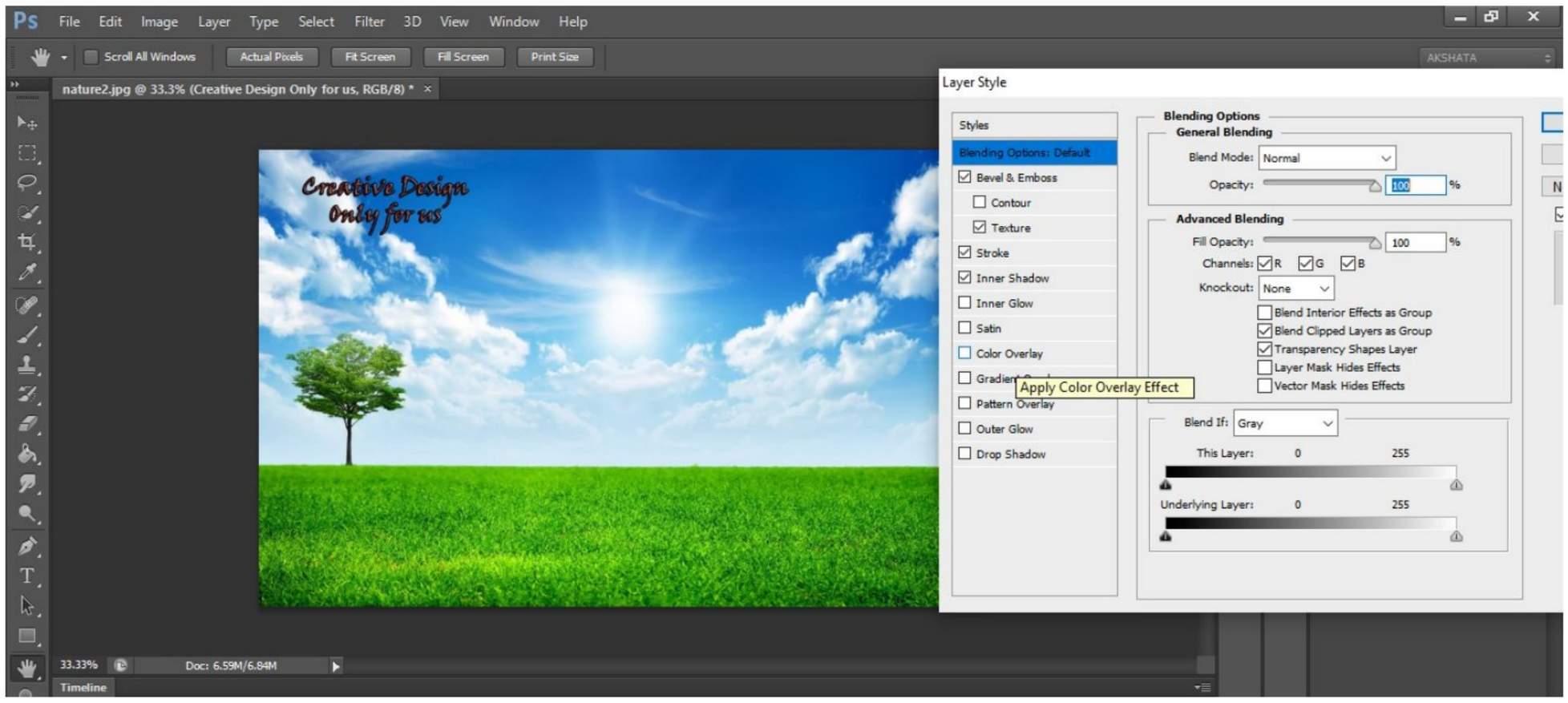
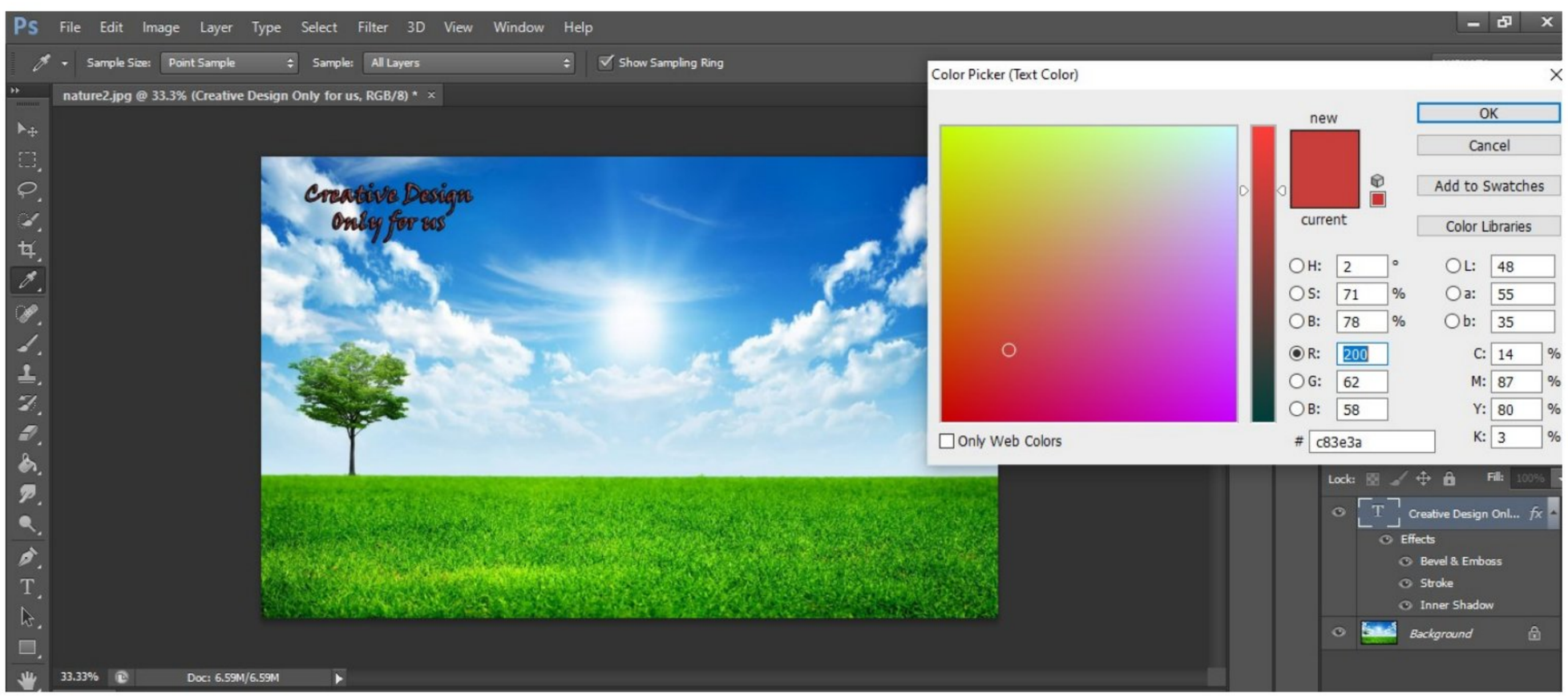


Step 5: The option bar in the top has options to edit your font type, font size, font color, text alignment and text style. You can choose your favorite color to text in option bar.Finally click in option bar to save your edits.



Step 6: Repeat the steps from 2-5 and follows the same procedure.

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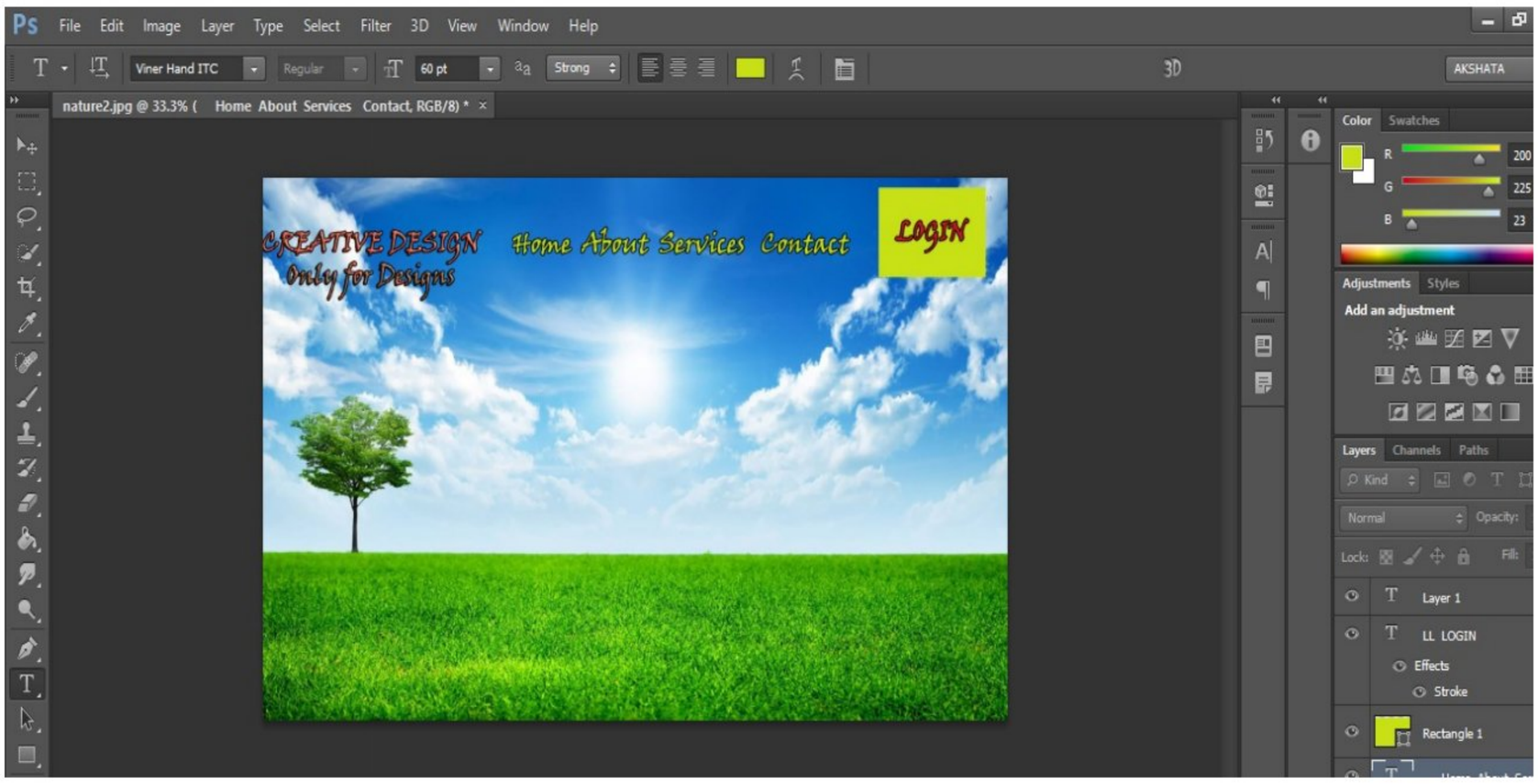
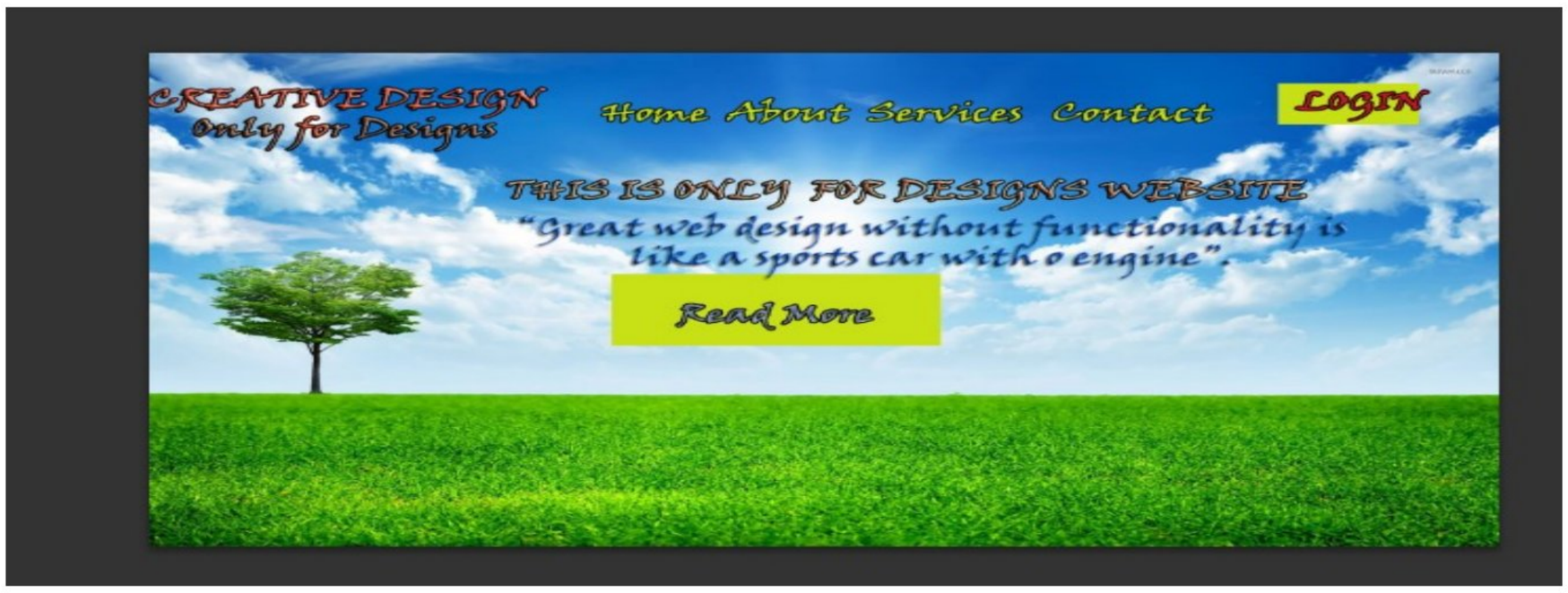
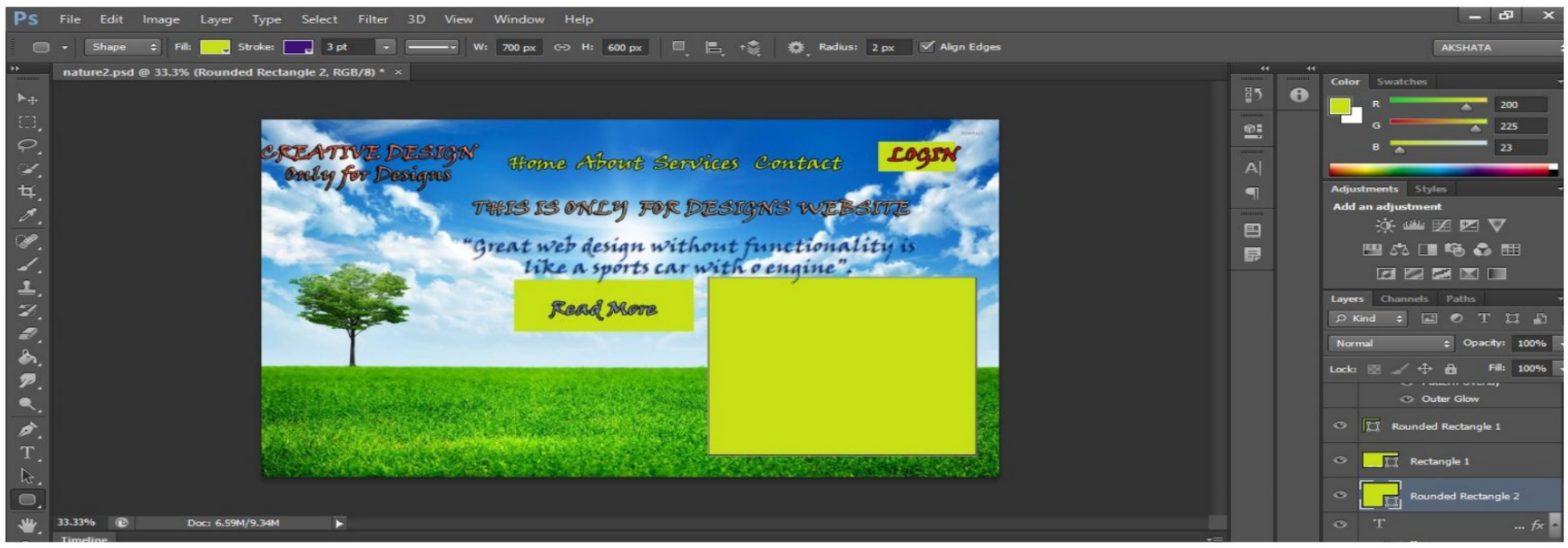
Step 7: Choose Rectangle Tool from tool bar and add a text within rectangular box, then repeat steps from 2-5.



Step 8: Add more texts to web layout so that it will become beautiful.



Step 9: Choose rectangle box from tool bar and change border color by using stroke option and also you can set height, width in option bar.



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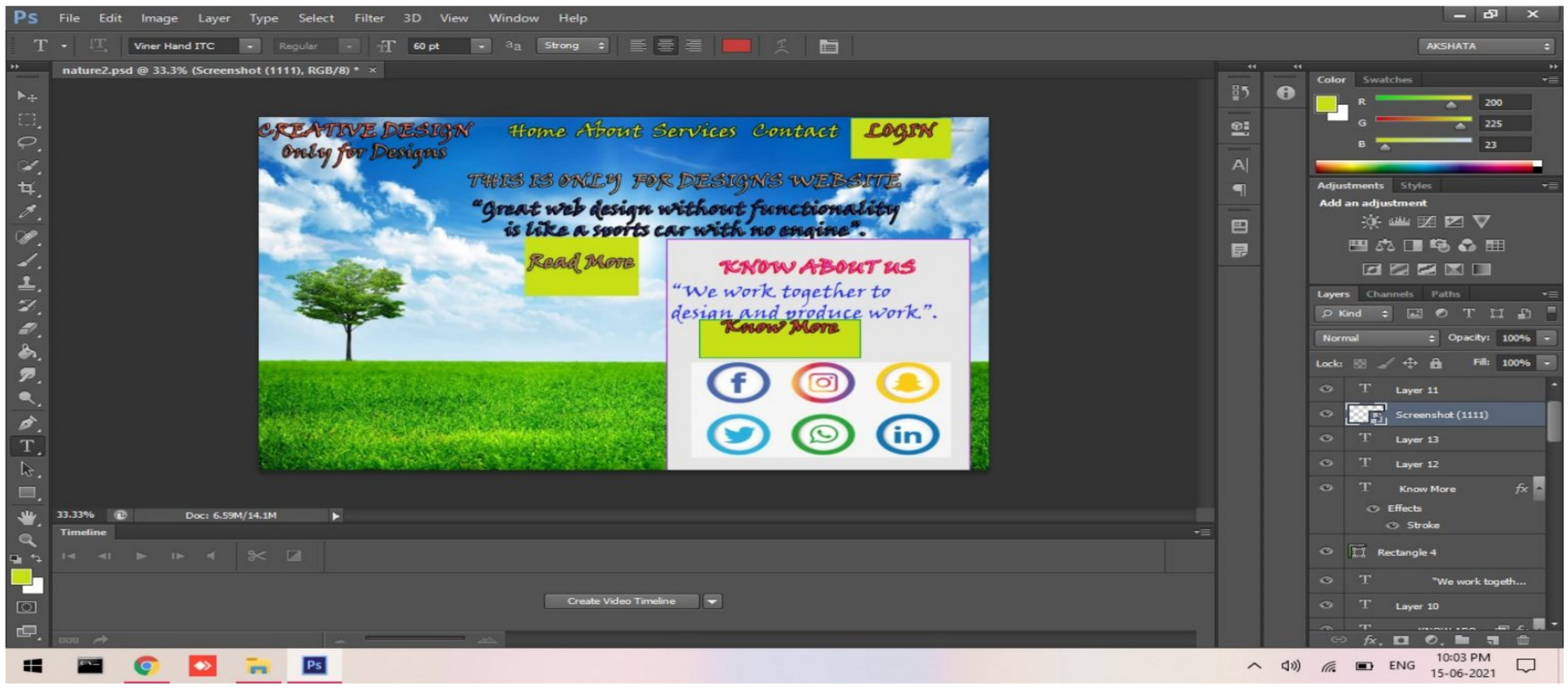
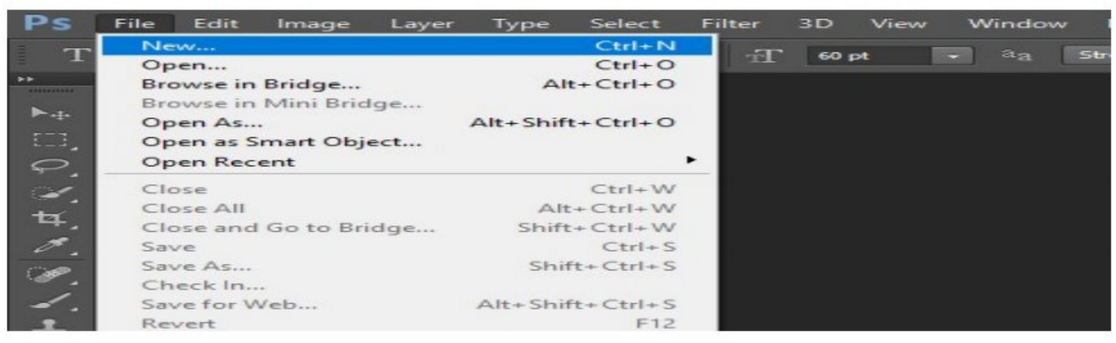
Step 10: Drag and drop the indiuduals social media icons into adobe Photoshop and place those at specified position.

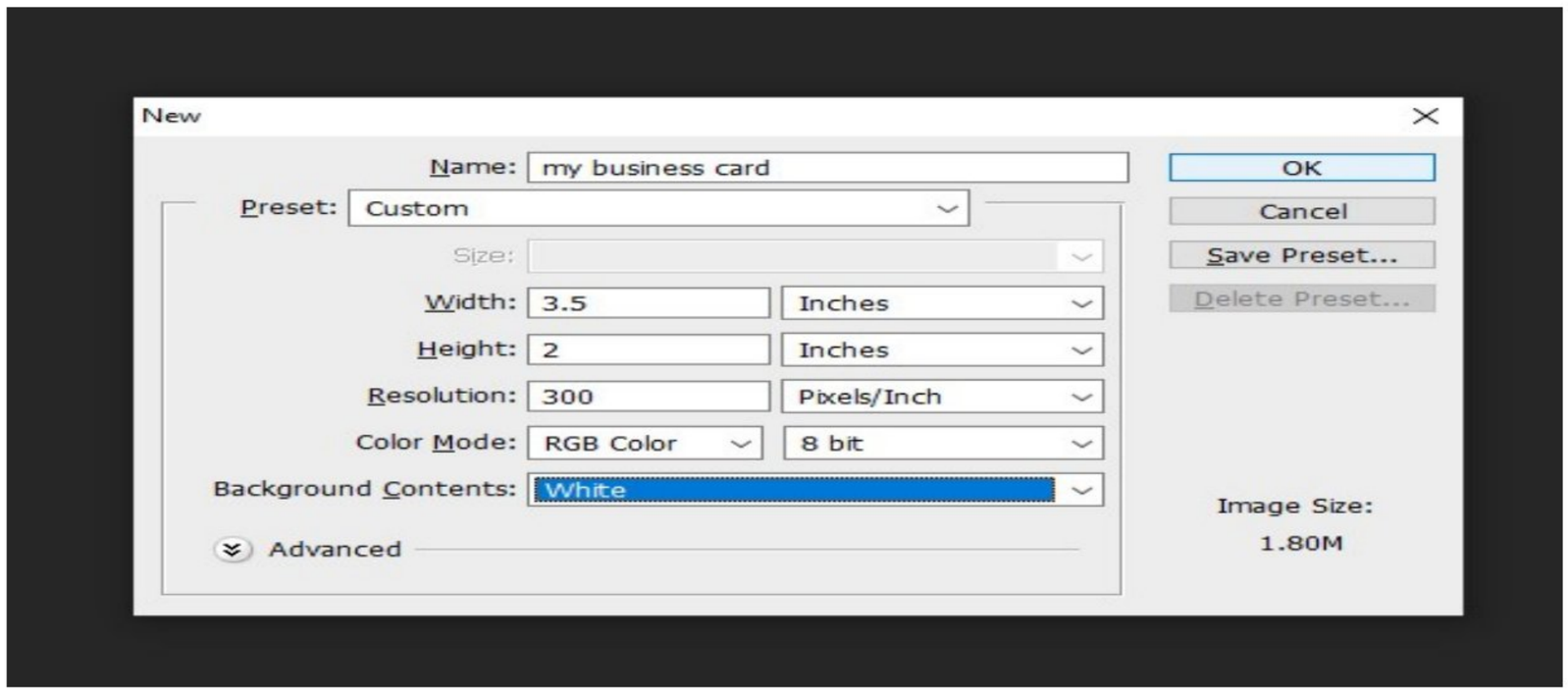


11. Create a innovative logo for your institute considering all the features of your institute.

Step 1: choose file->new.



Step 2: new dialog box opens and select attributes for the new file. Click OK after setting the attributes to create the new document.



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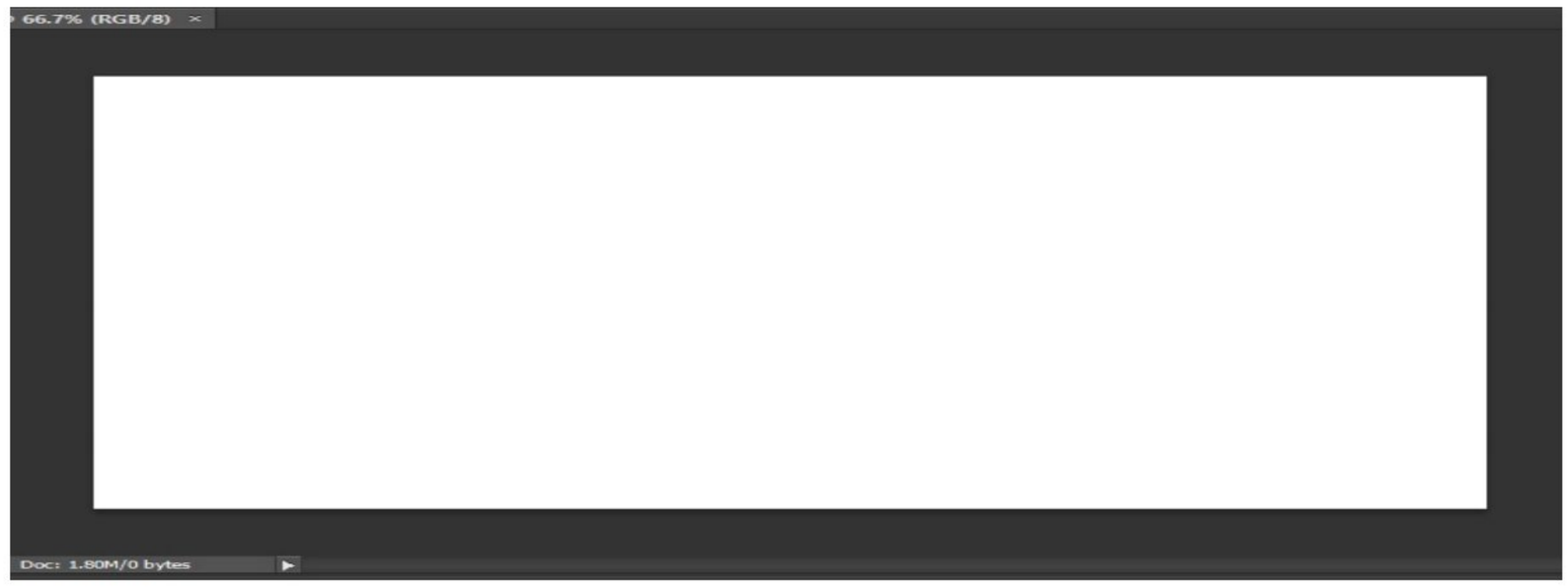
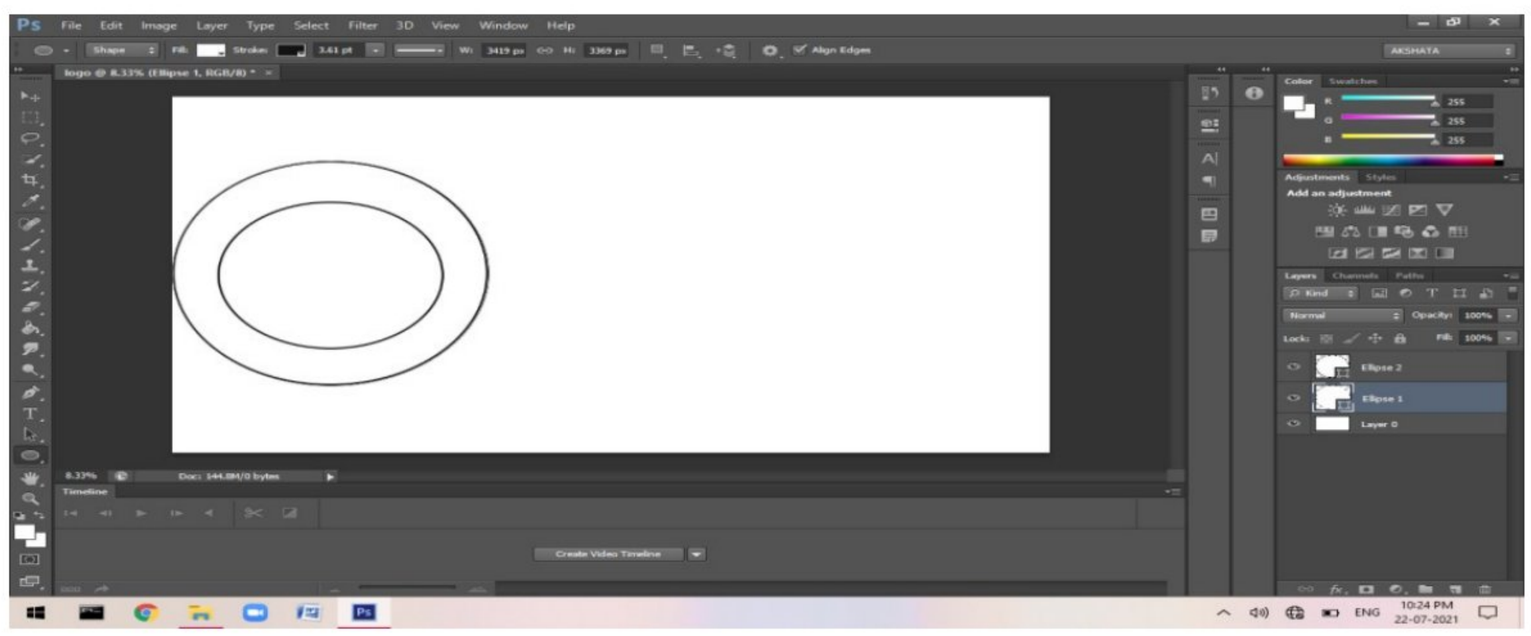
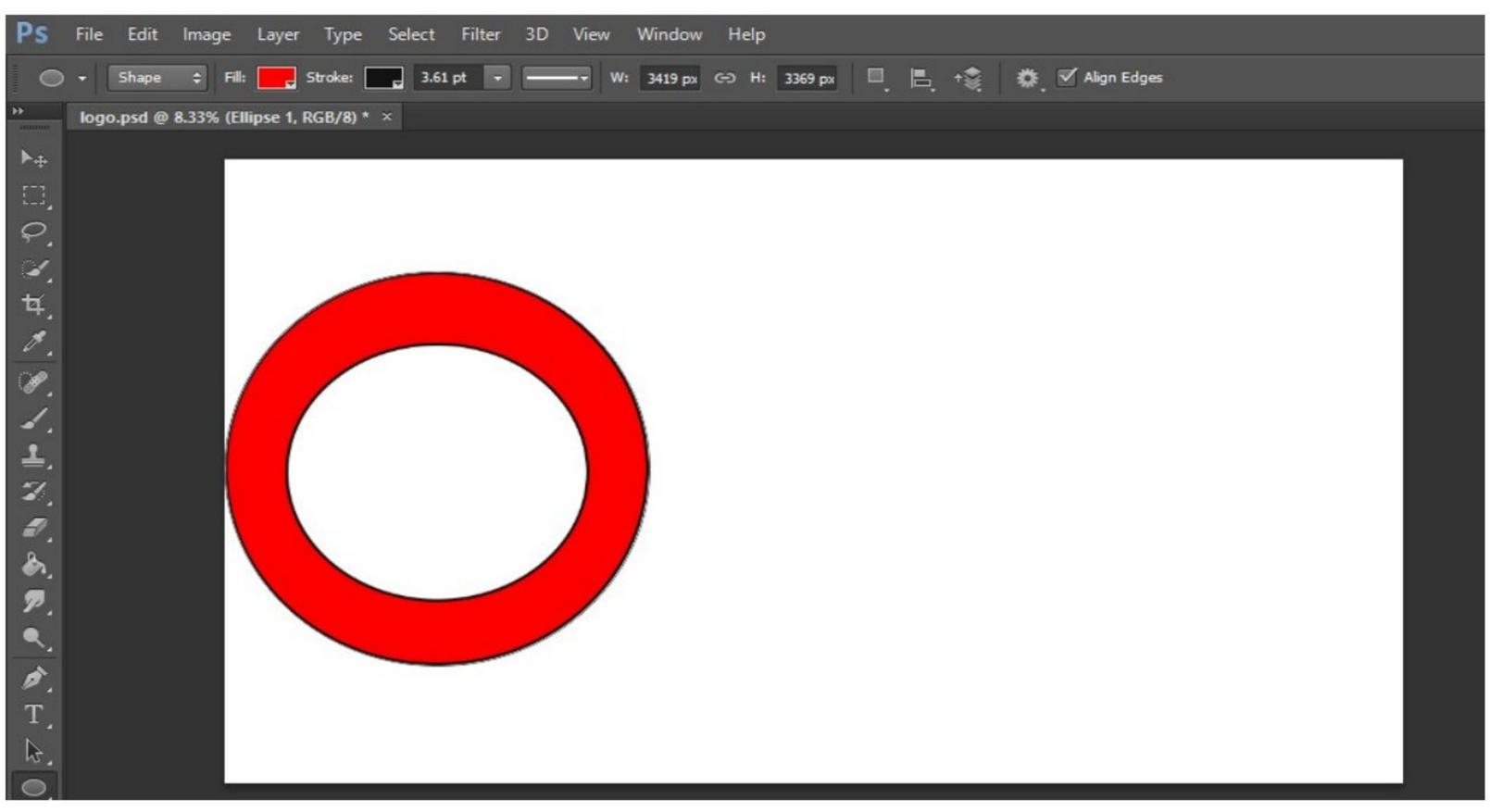


Step 3: from the toolbar, click and hold shape tool and select a tool for the shape you want to draw. Here we had chosen Ellipse tool. With the shape layer selected, you can use move tool to reposition your shape on the canvas. In the pop-up menu. choose fill/stroke option. You can apply the color.





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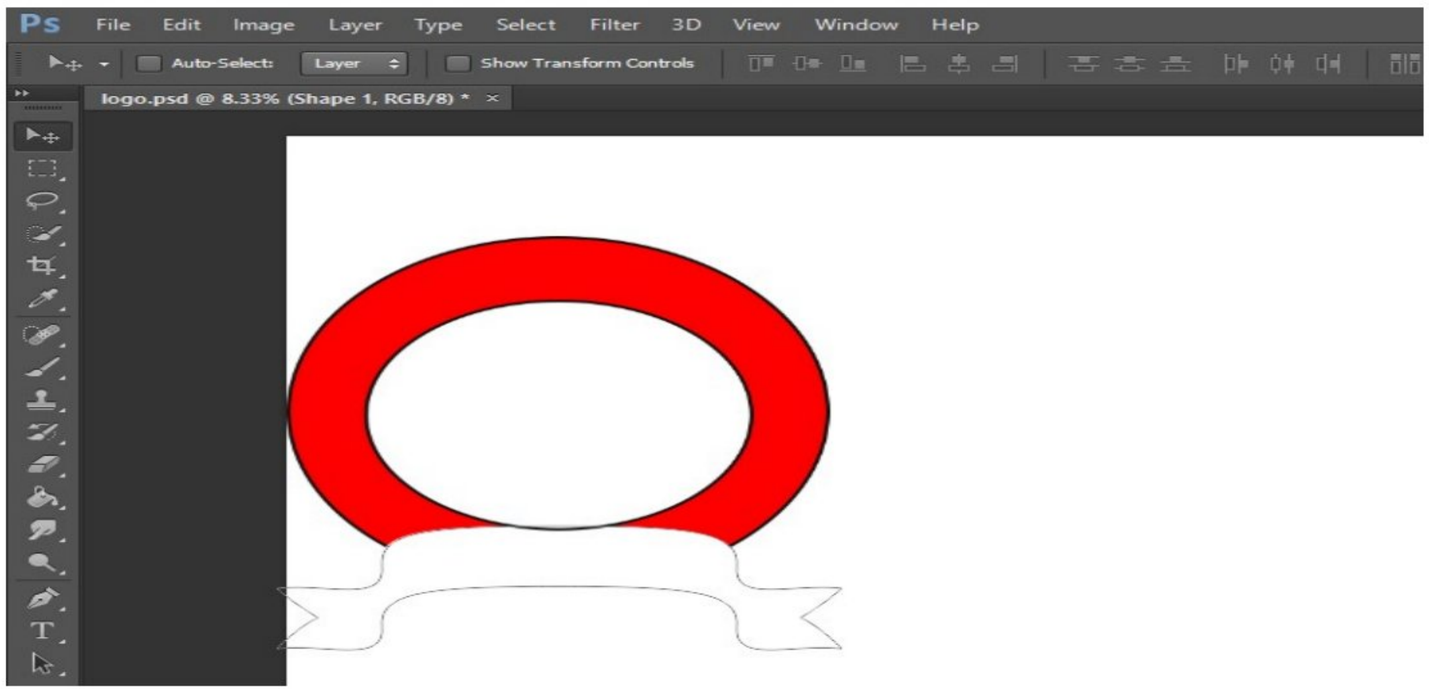
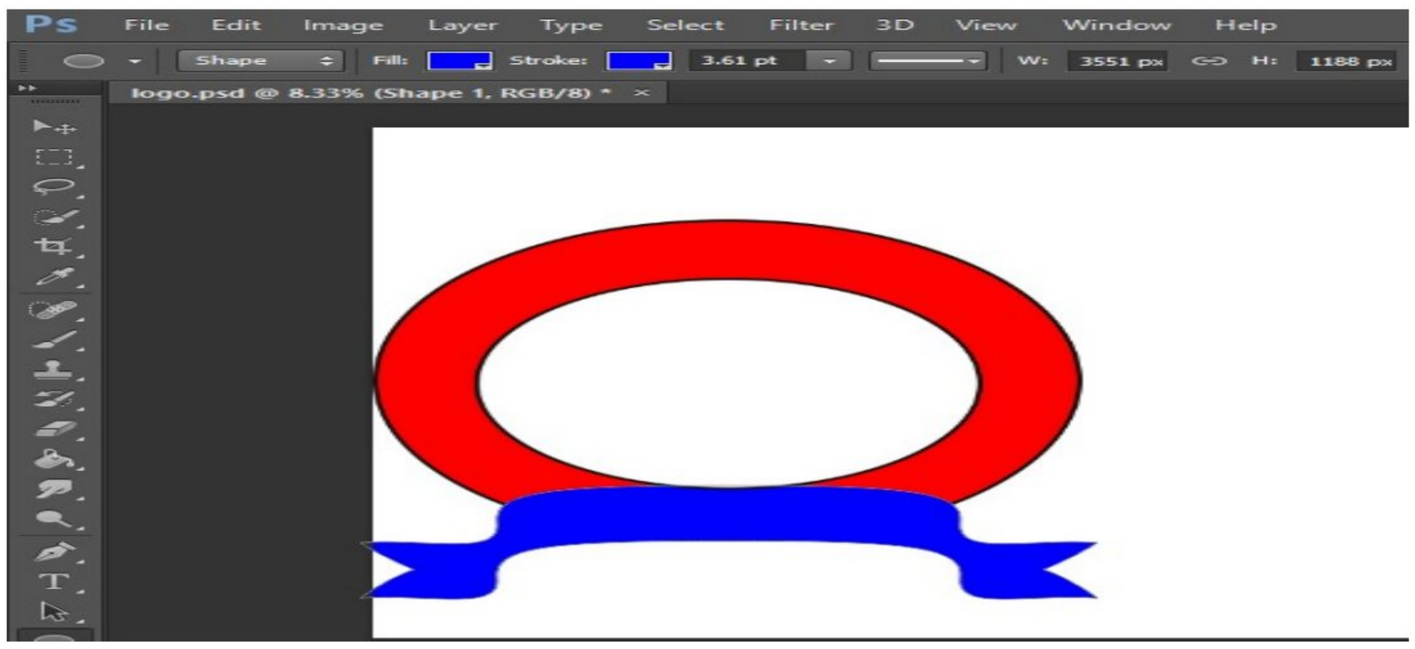
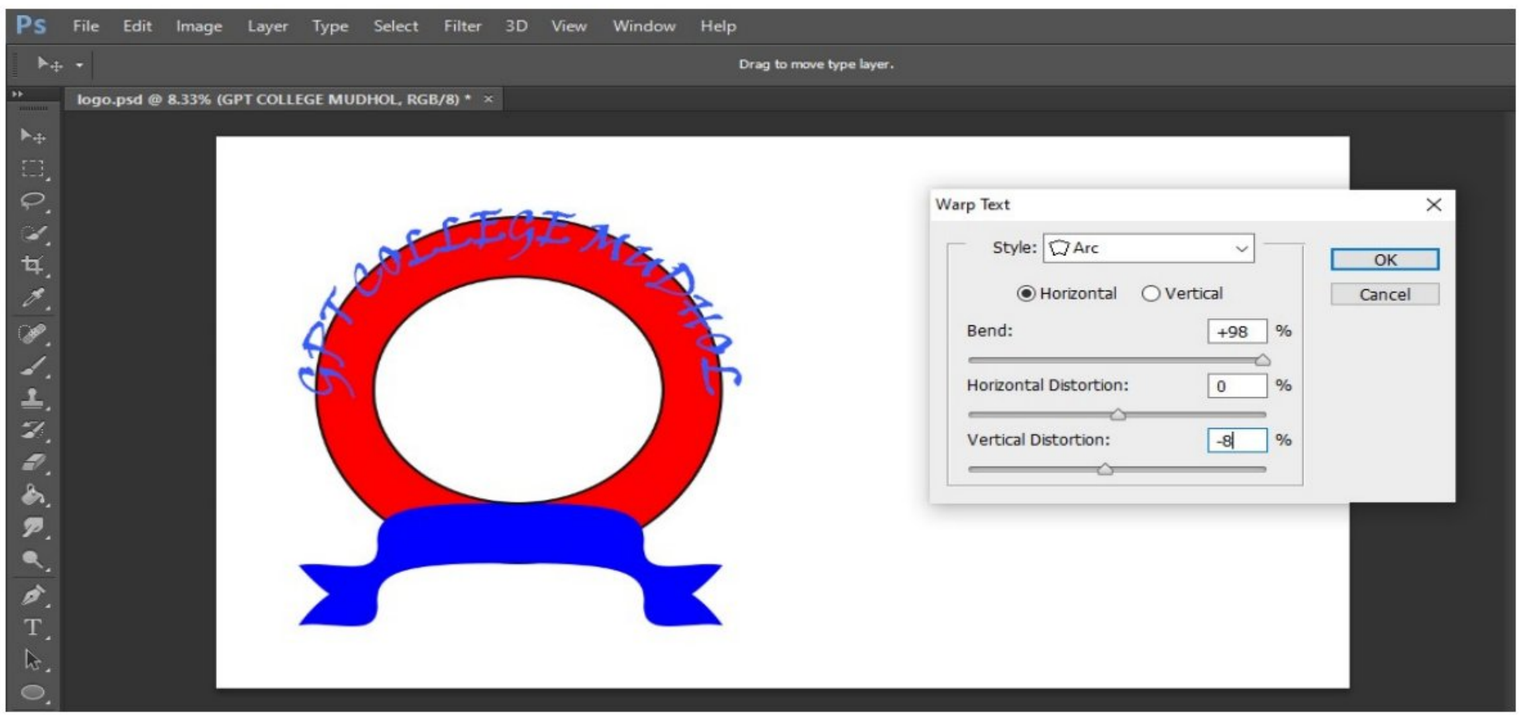
Step 4: select custom tools from tool bar. Drag and draw the shapes into new page then apply color into drawn shape.





Step 5: In toolbox, select the Horizontal type tool. While you are typing, the cursor look like this, so you can adjust the typed text position. Click on wrap-text then click style(arc). Drag your text to the inside of your shape. this will automatically shift to wrap around inside edge of your shape.



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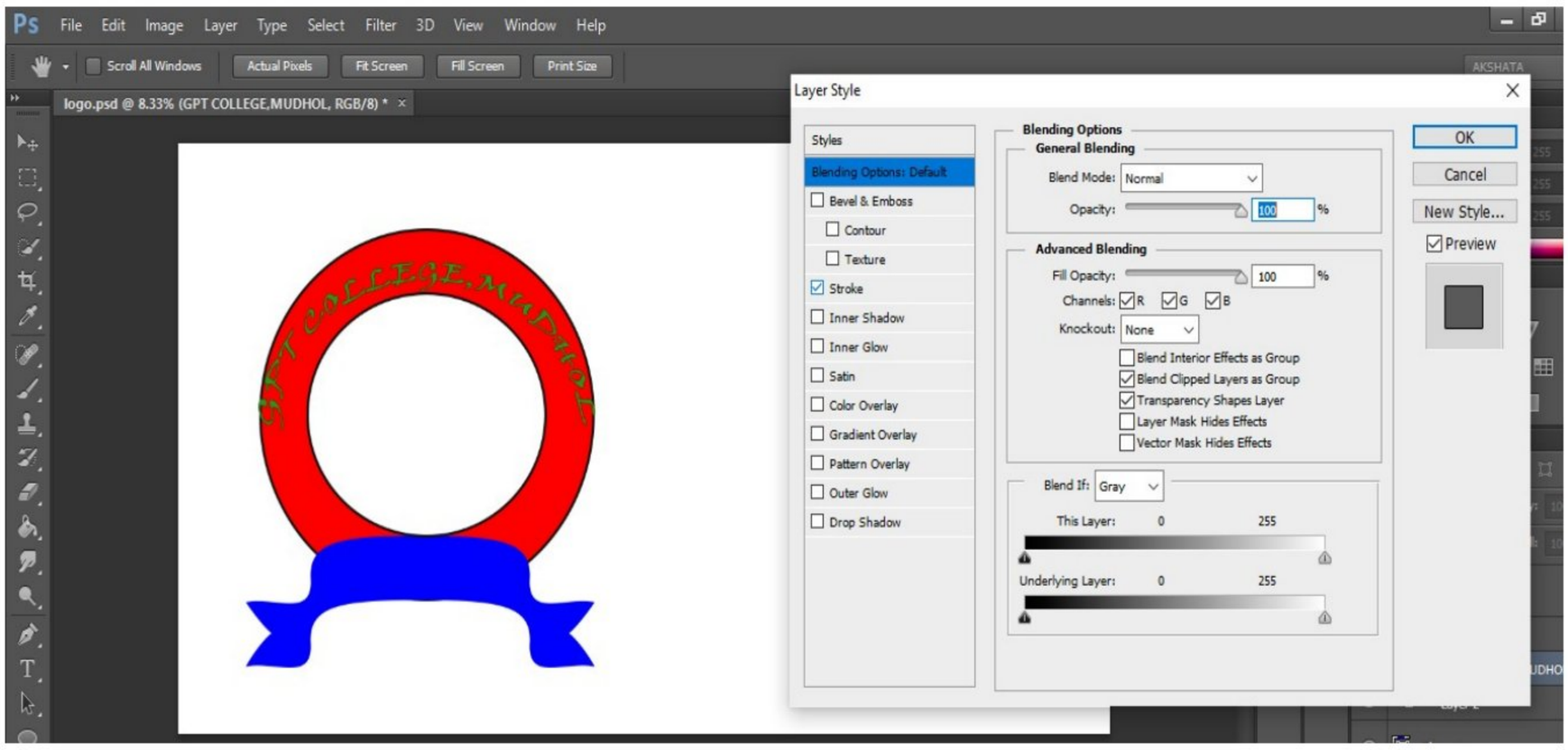
Step 6: make right click on written text. choose blending mode then dialog box will appears. You can apply blending options.



Step 7: you can add image into logo.

Step 8: In toolbox, select the Horizontal type tool. While you are typing, the cursor look like this, so you can adjust the typed text position. You can add features of collage along with logo design. Apply different text fonts with respect to colors.

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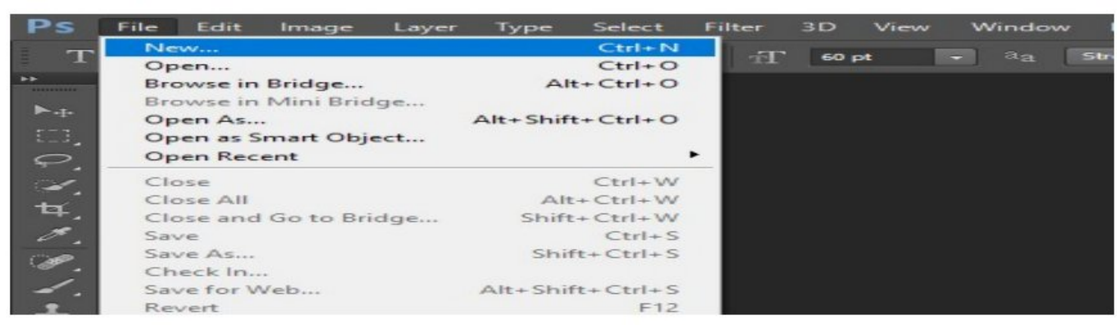
12. Design a flyer for a short term course that is supposed to commence from 3 weeks ahead from the current date.

Step 1: choose file->new.



Step 2: new dialog box opens and select attributes for the new file. Click OK after setting the attributes to create the new document.

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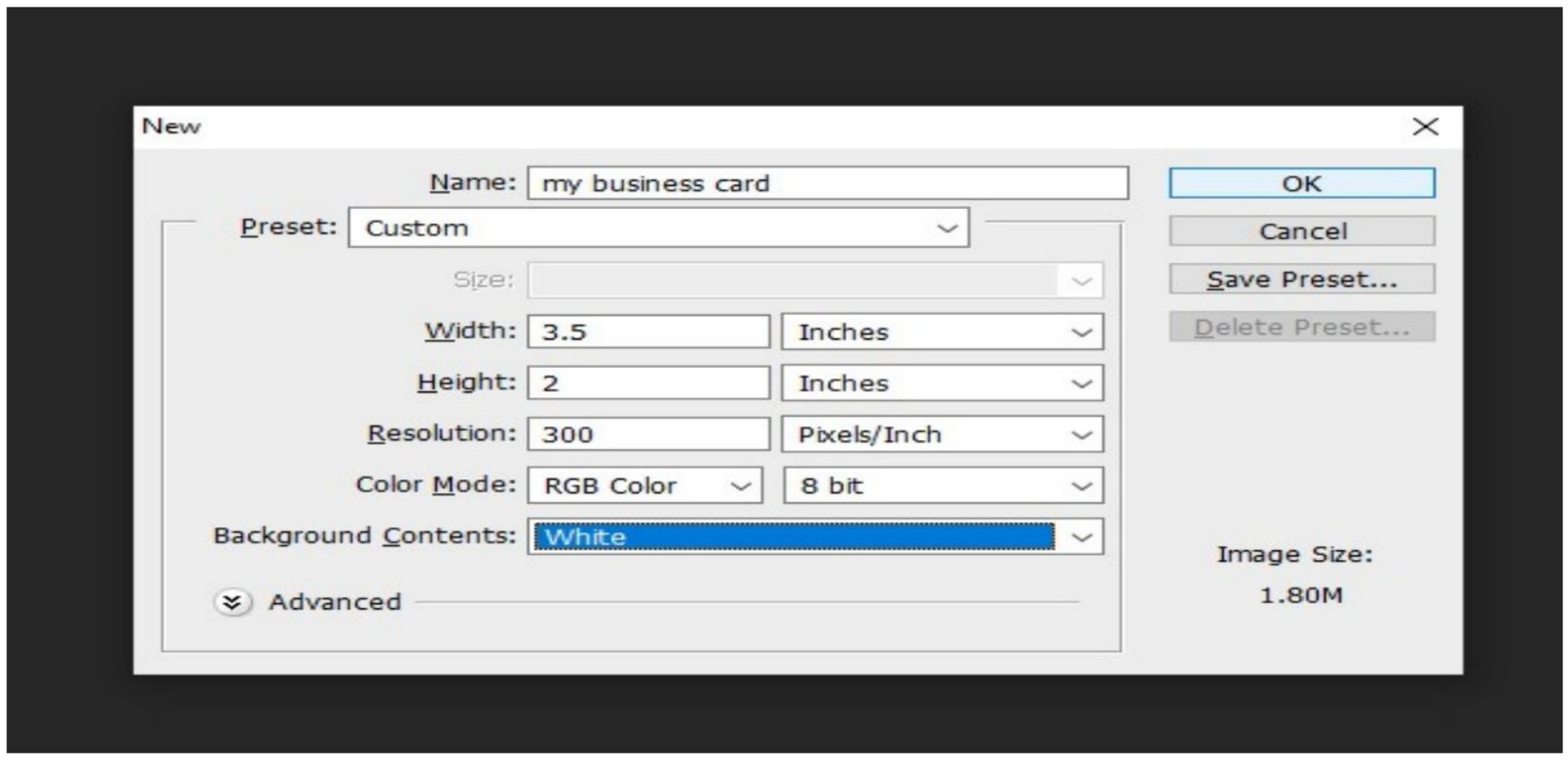
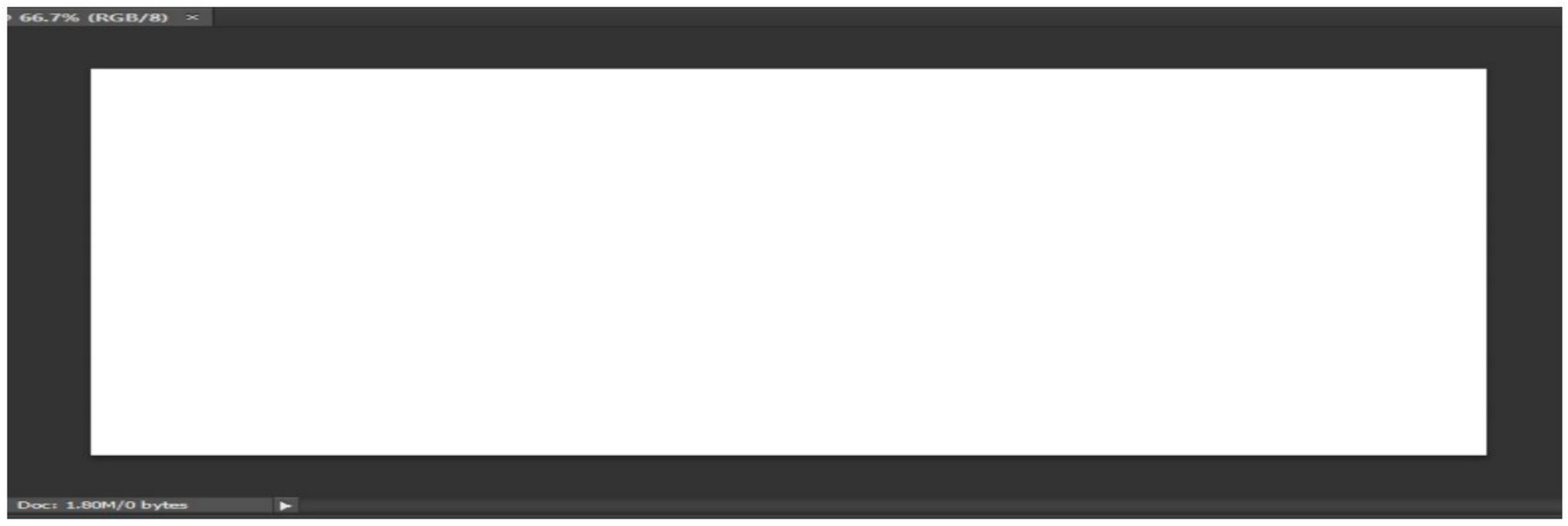
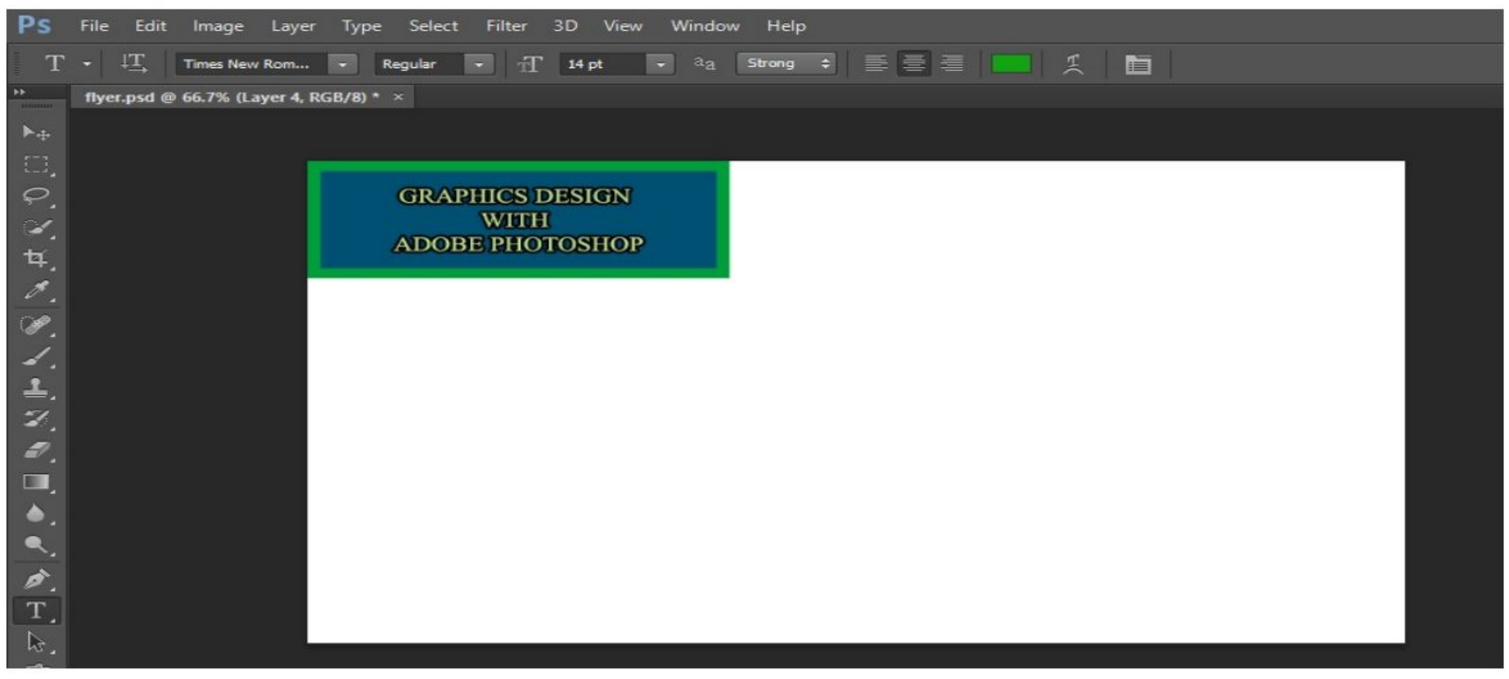




Step 3: select rectangular tool from tool bar and apply fill, stroke with different color, then write text within drawn box.



Step 4: select Text from tool box and write a text in new page. Apply blending modes to look more stylish.

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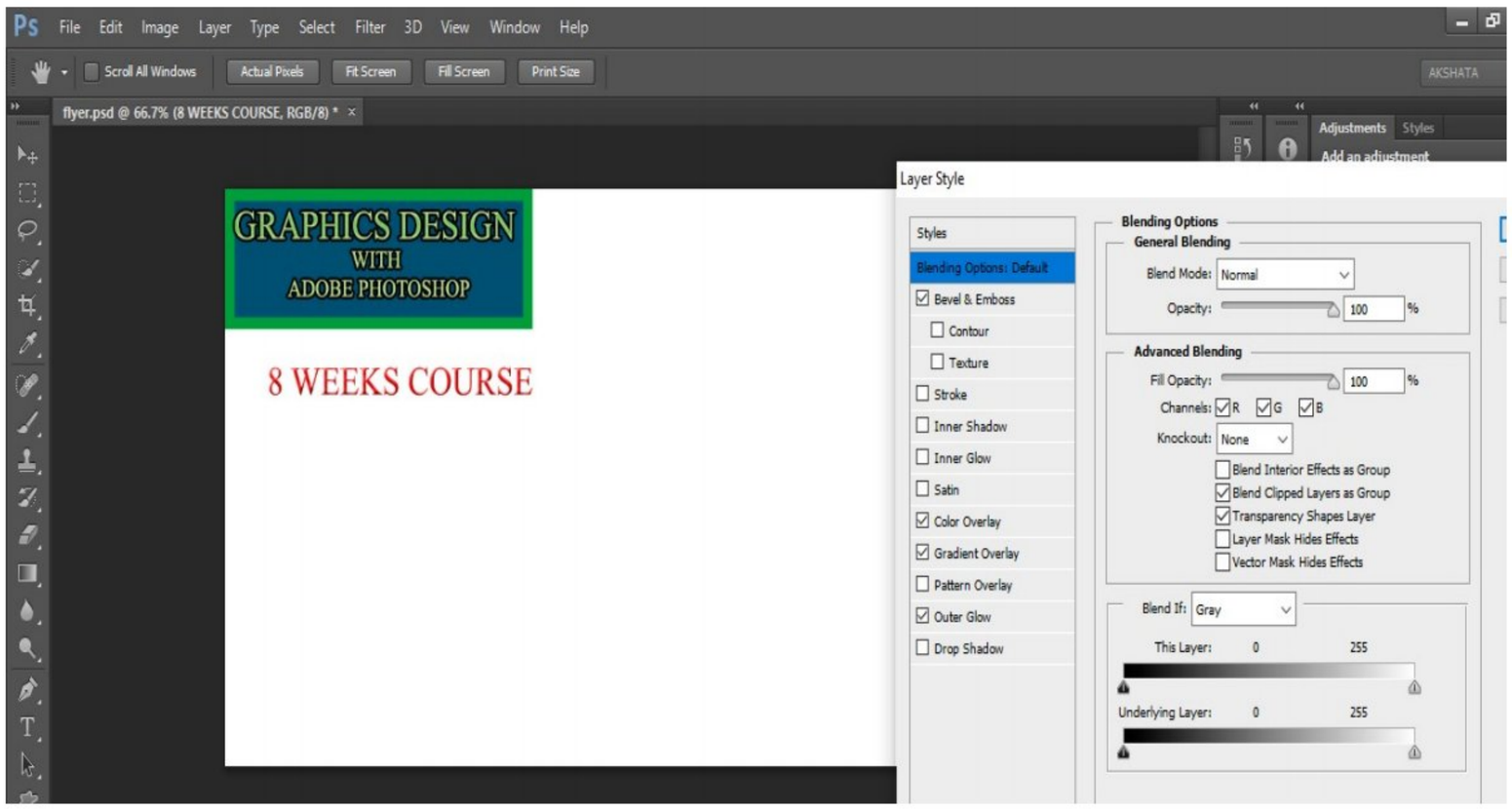
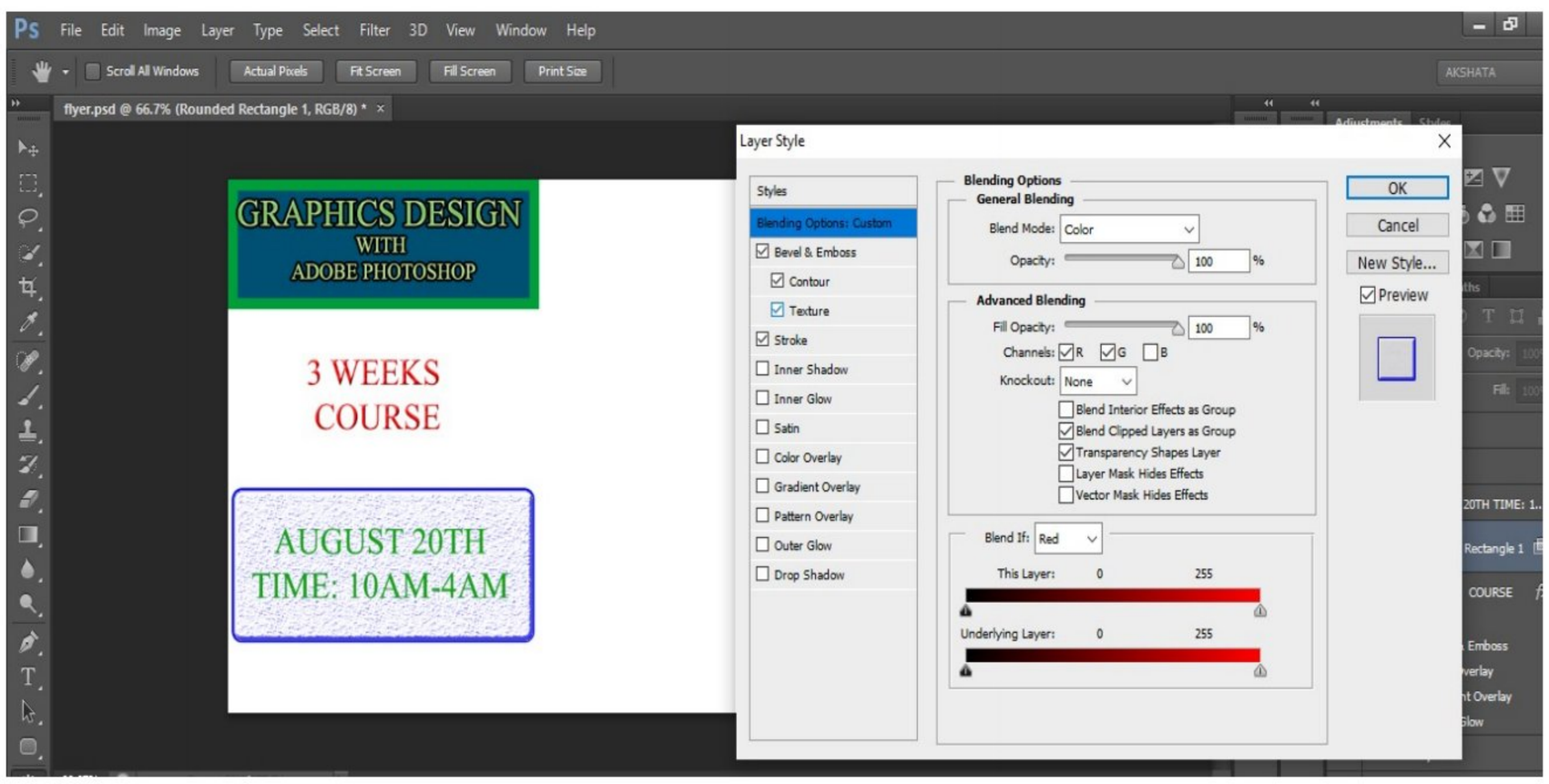
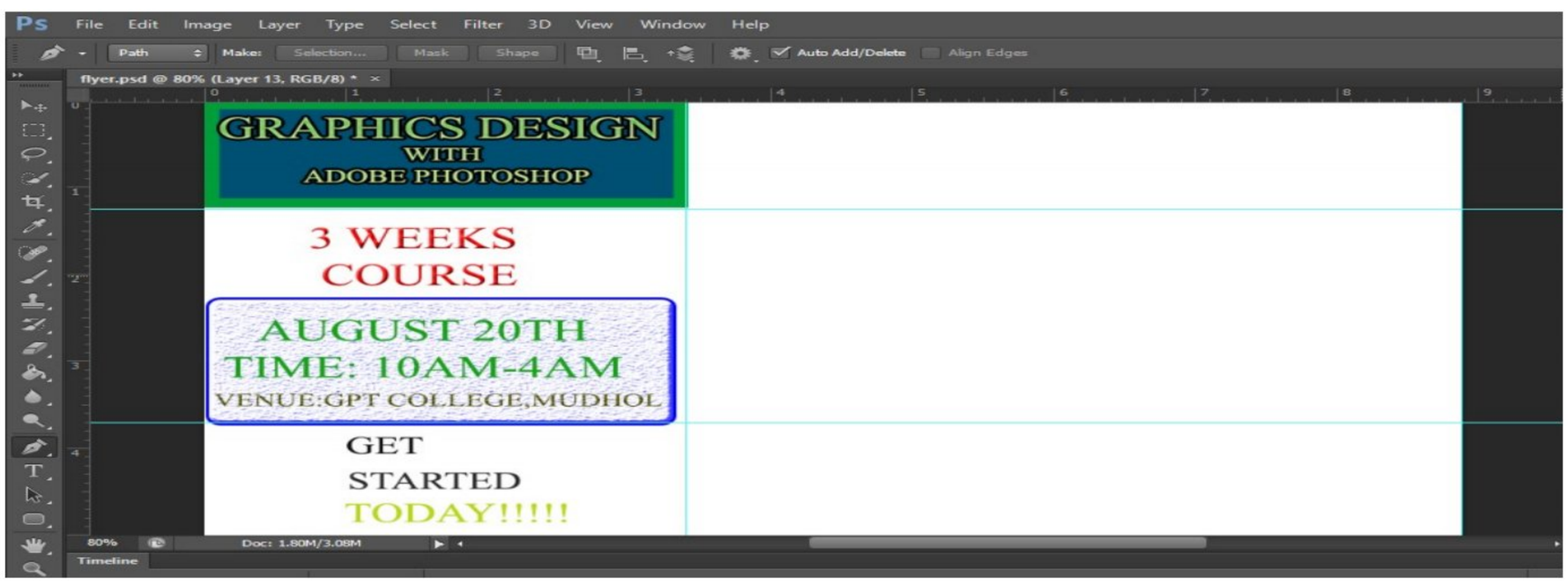


Step 5: Repeat the steps 3&4.



Step 6: make 3 section right side using Ruler which is available in software.



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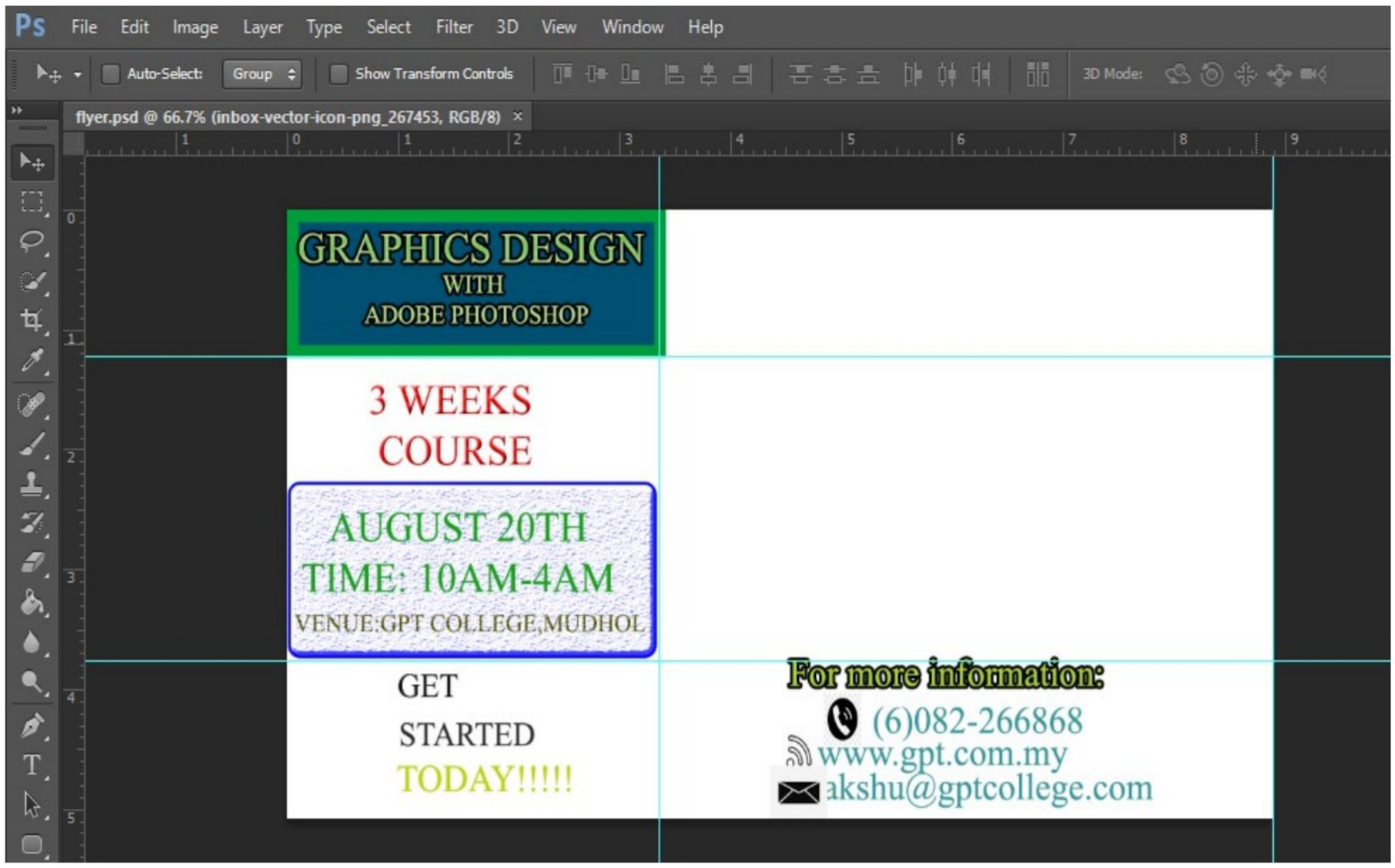
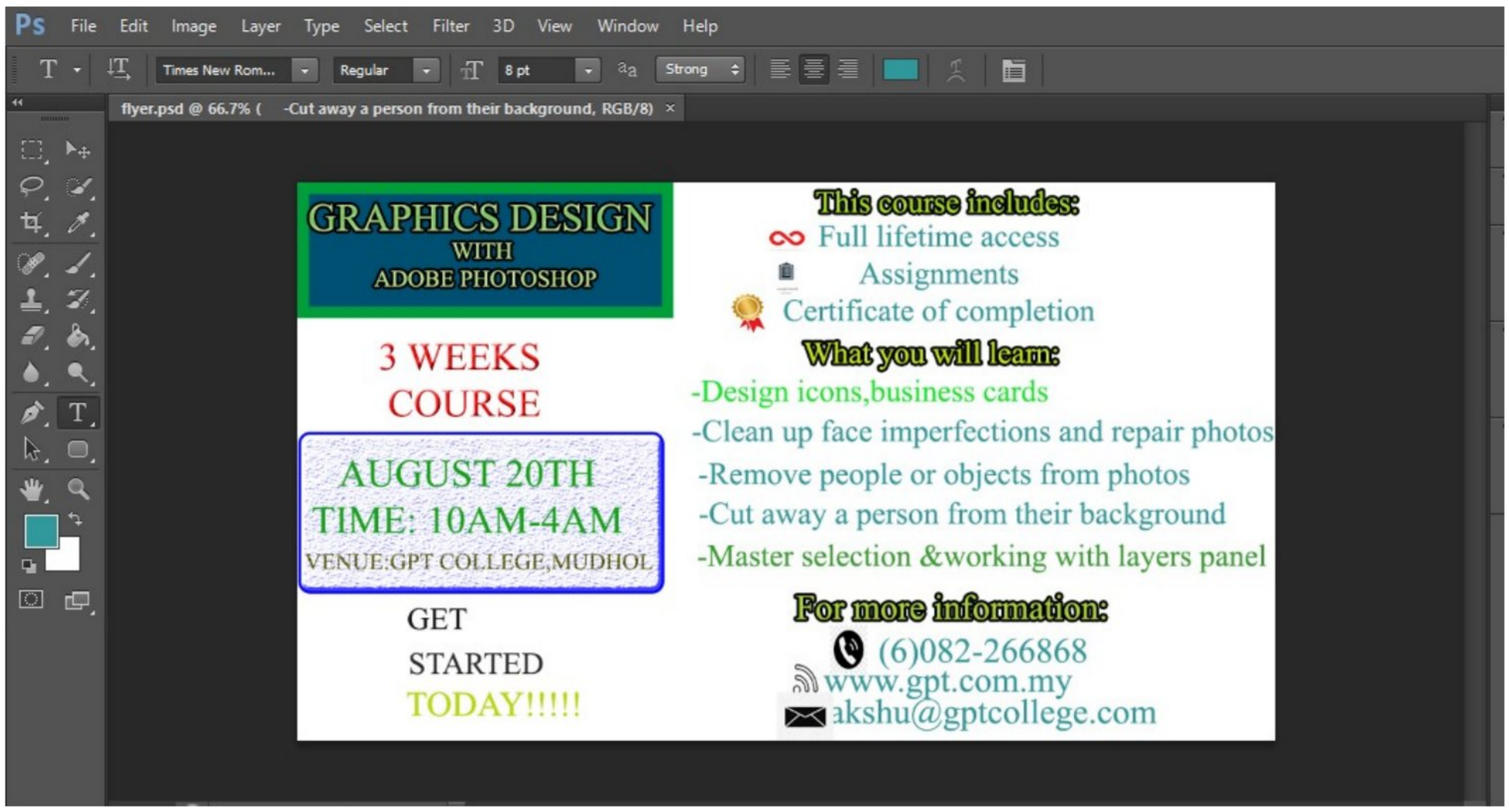
Step 7: choose Horizontal text from tool bar and write text in newly created page and apply suitable colors to written text.



Step 8: Repeat the step 7 to write text in remaining section to look beautifully.



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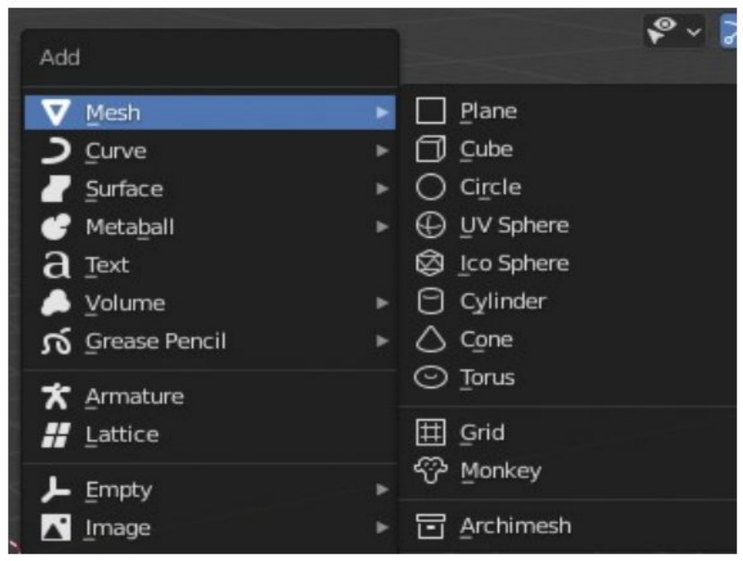
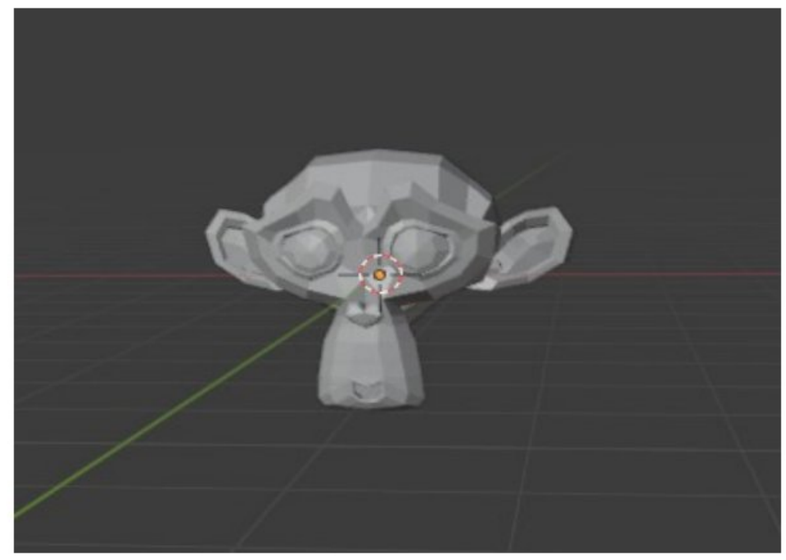
13. i) Add different objects to the space. Practice with both shortcut keys and menus

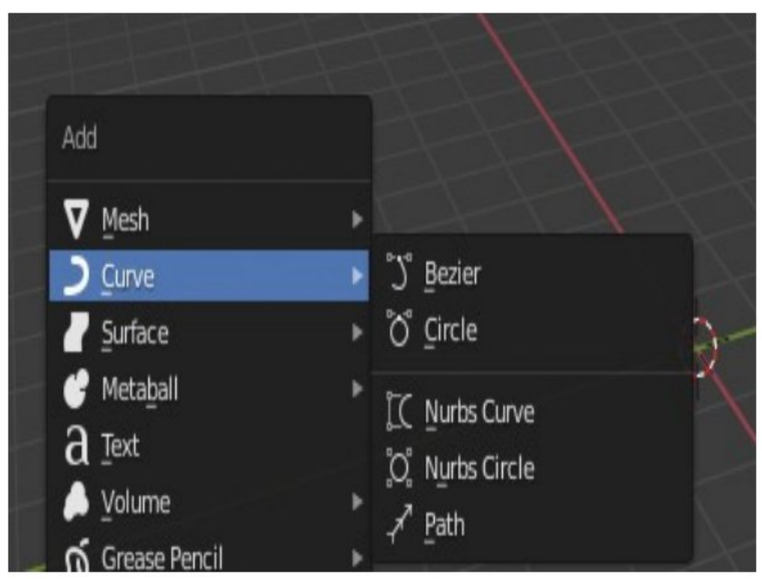
- ✓ To add a new object to your scene in blender, hover your mouse cursor over 3D view and use the Shift +A hotkey. From the menu that appears, choose the type of primitive you want to put into scene.

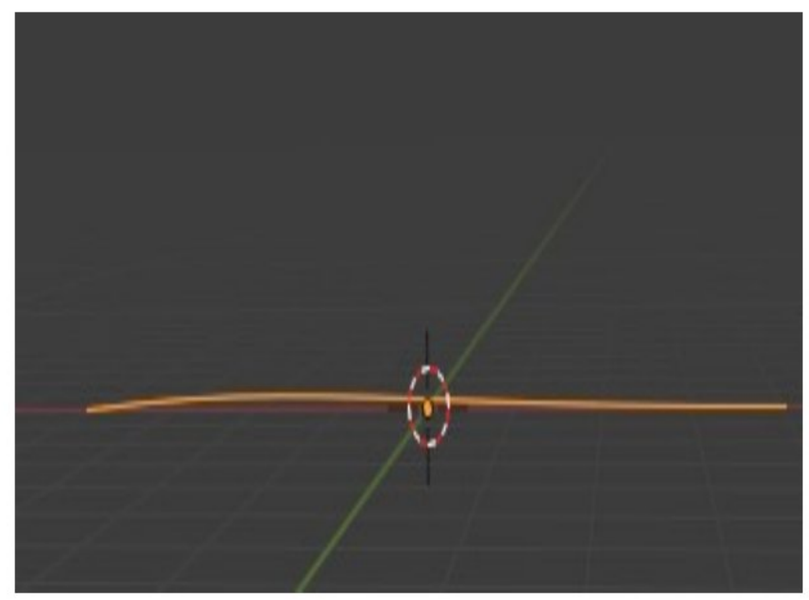
1. Mesh : Go to Mesh>Monkey.



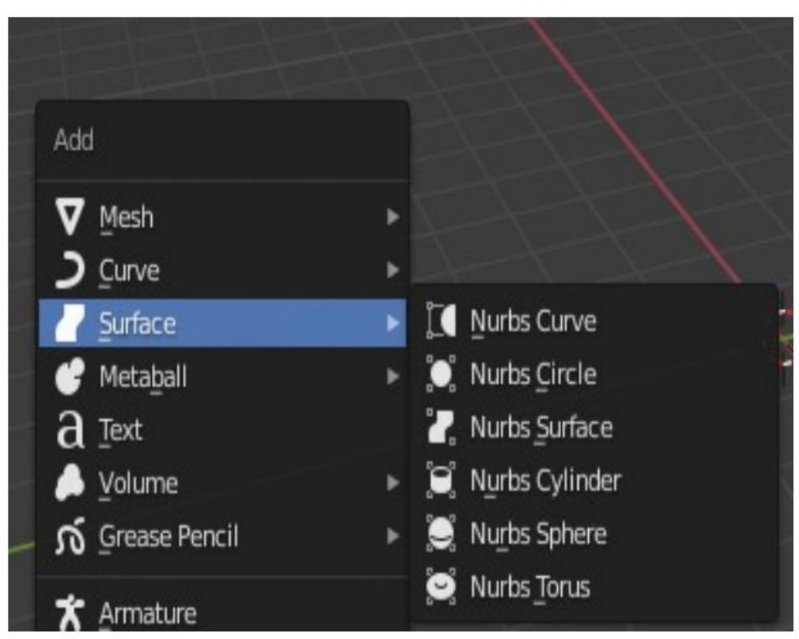


2. Curve : Go to Curve>Bezier.





3. Surface : Go to surface> Nurbs Surface.



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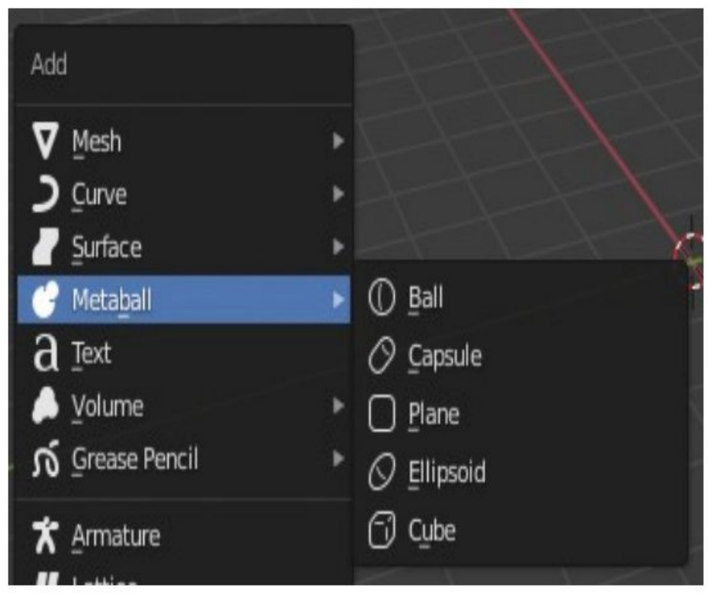
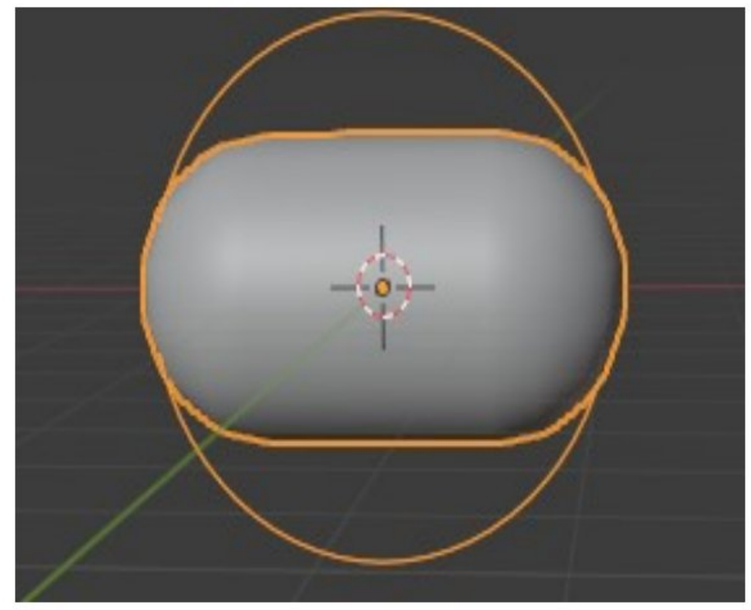
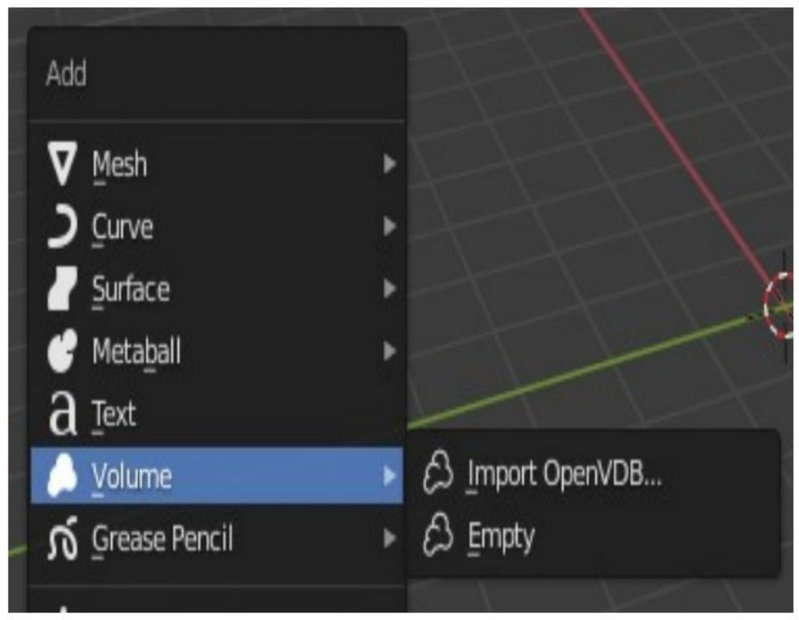
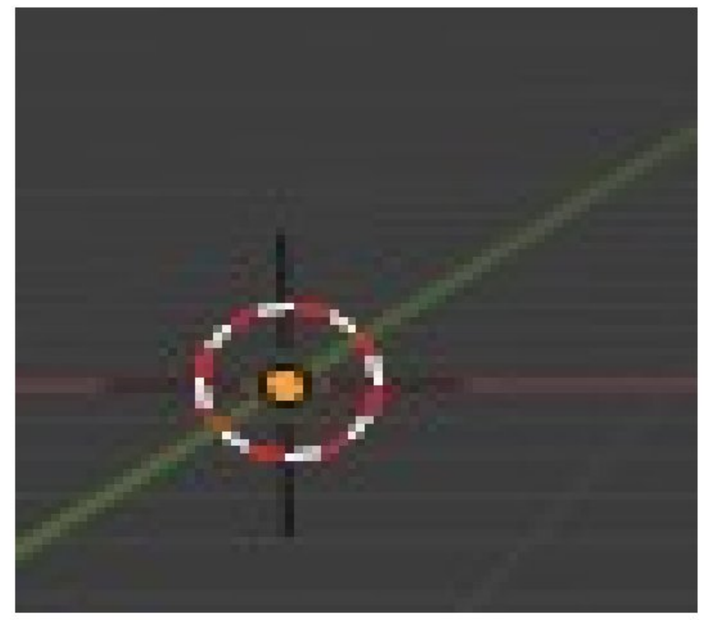
4. Metaball: Go to Metaball>Capsule.



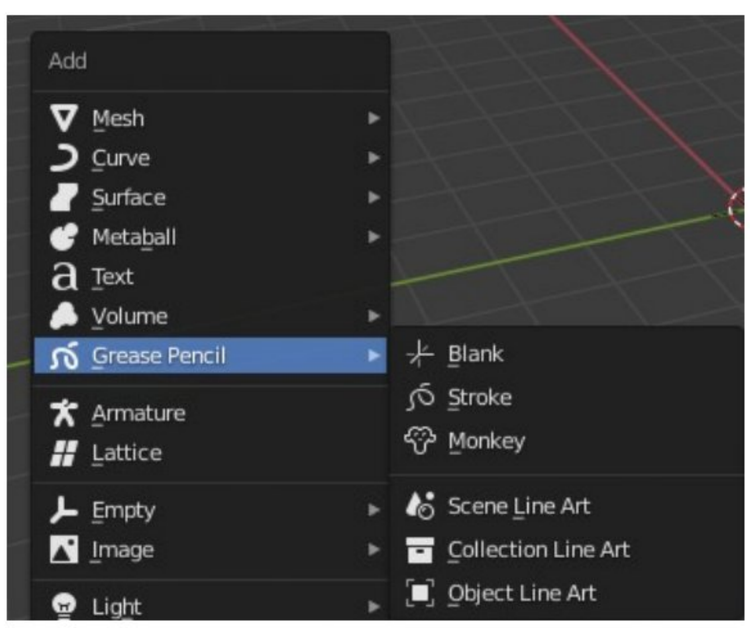


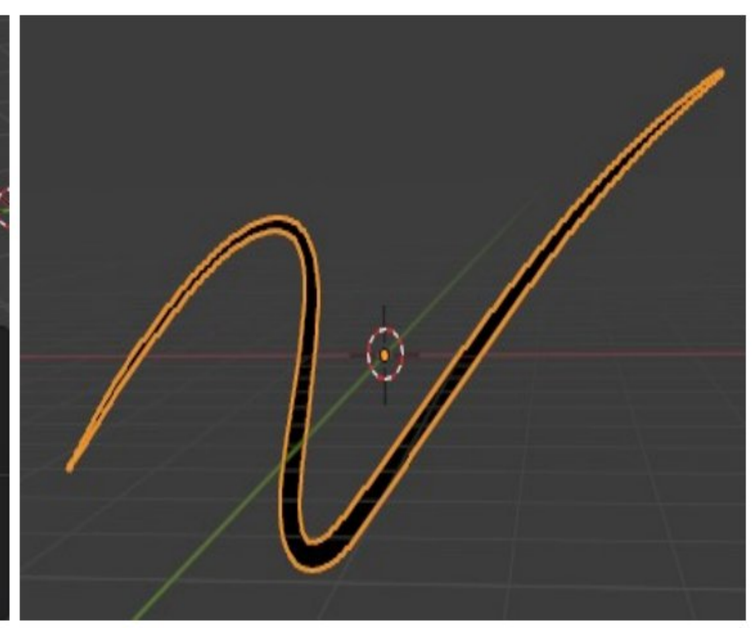
5. Volume: Go to Volume>Empty



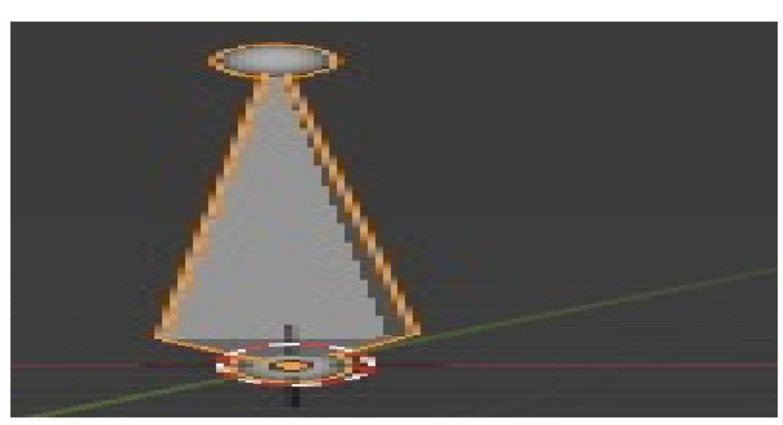


6. Grease Pencil: Go to Grease Pencil>Stroke.





7. Armature



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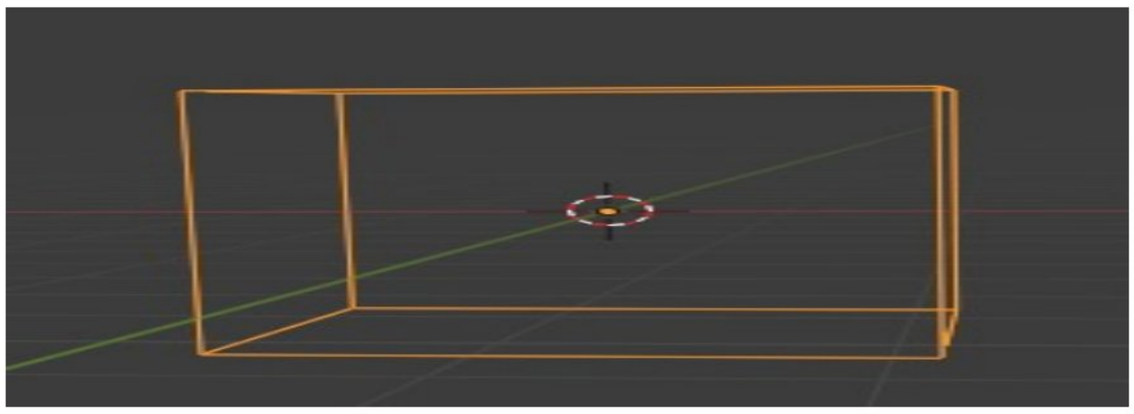
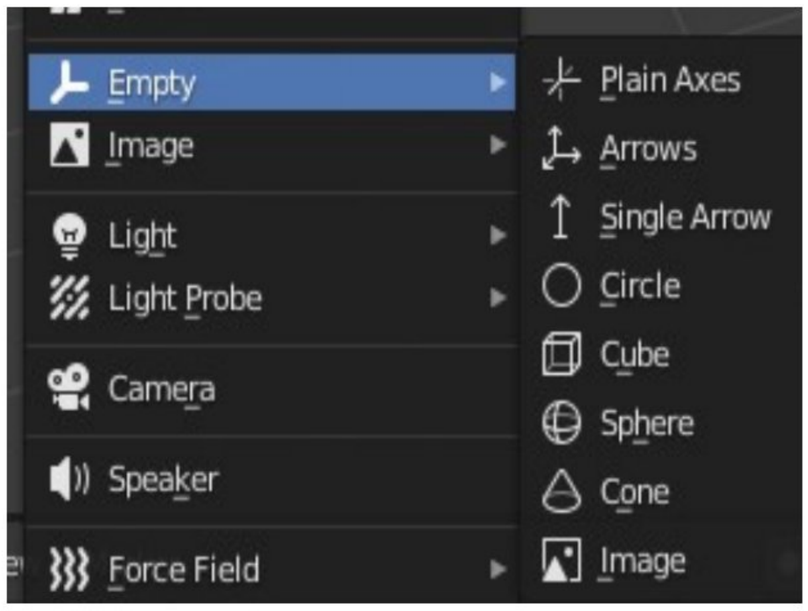
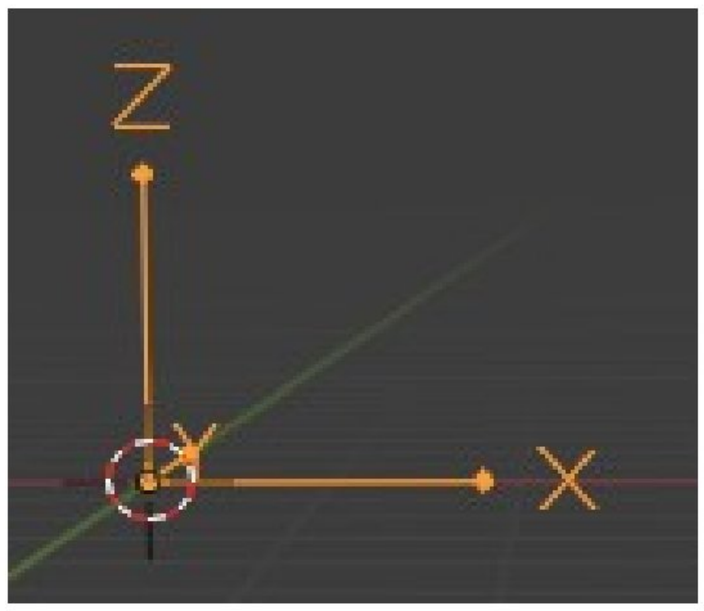
8. Lattice

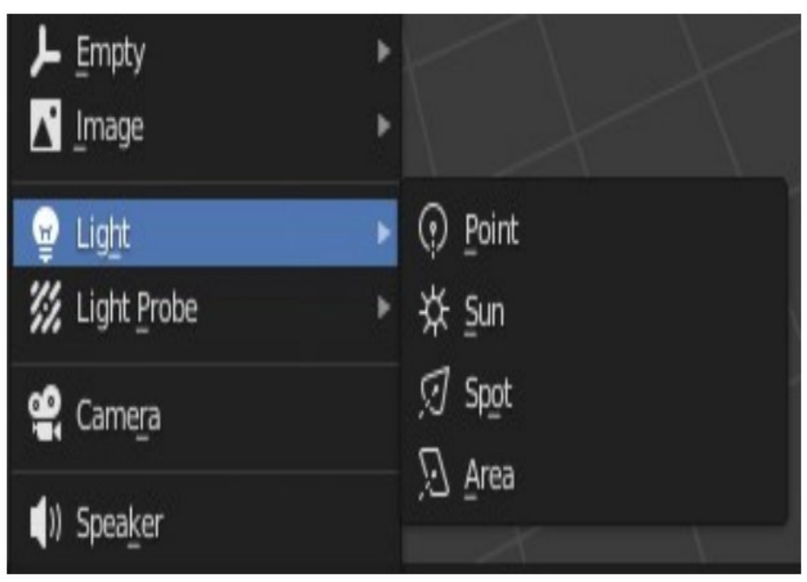


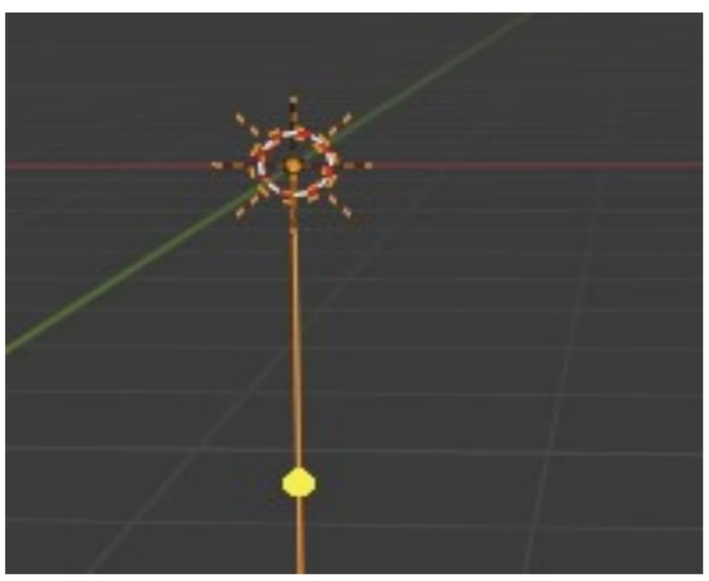
9. Empty: Go to Empty> Arrows



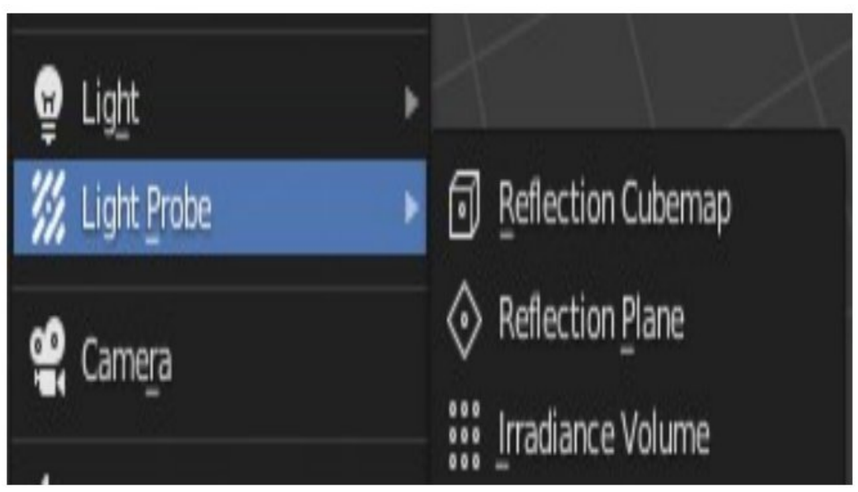


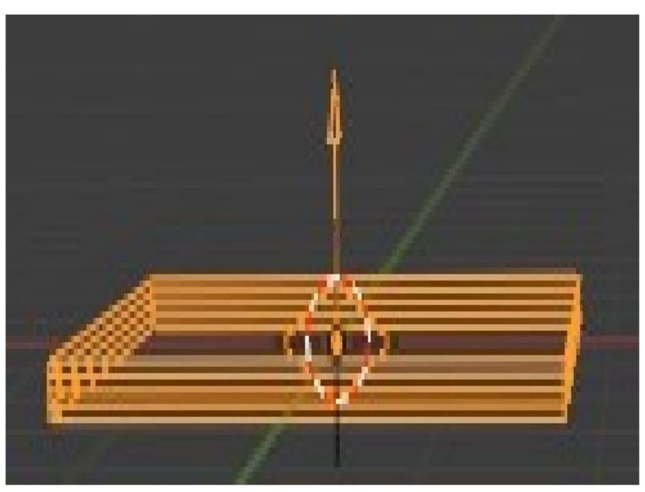
10: Light: Go to light>sun





11:Light Probe: Go to Light probe>Replextion plane.





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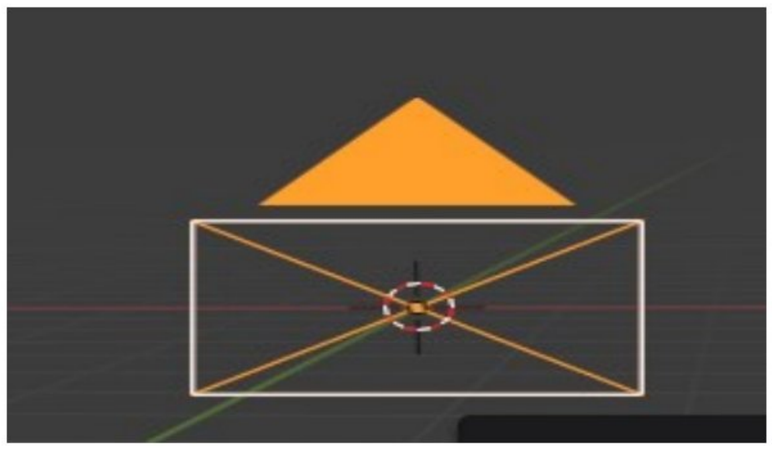
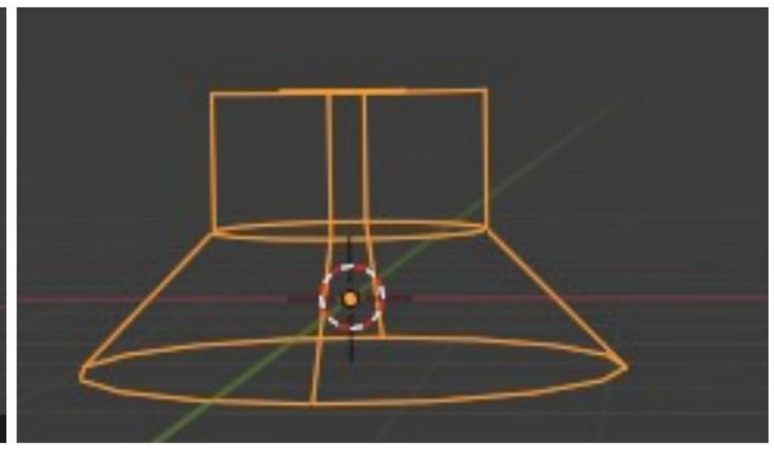
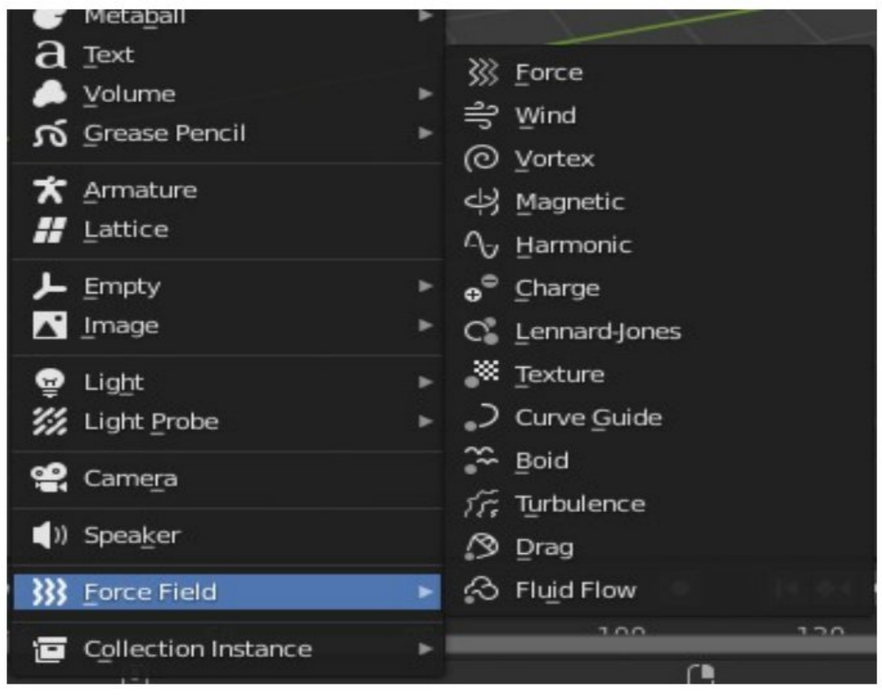
12: Camera

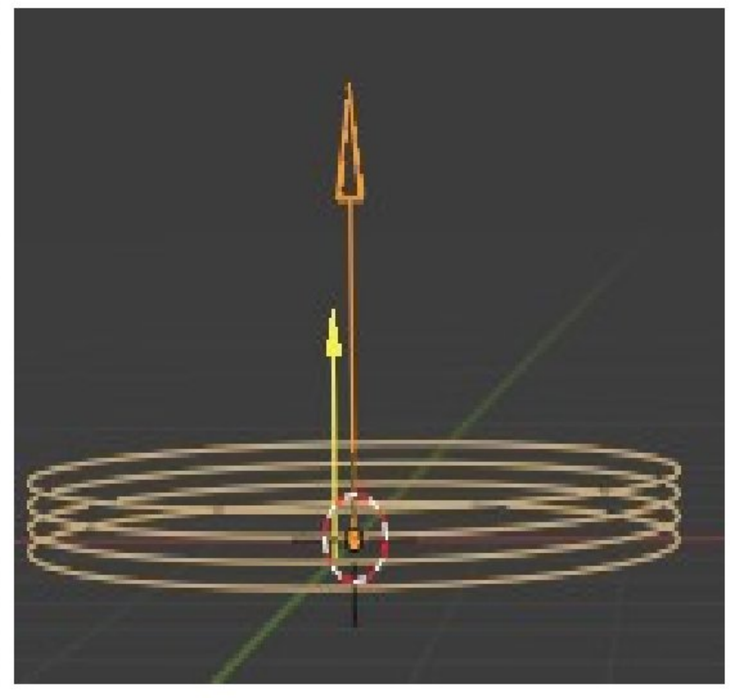


13. Speaker

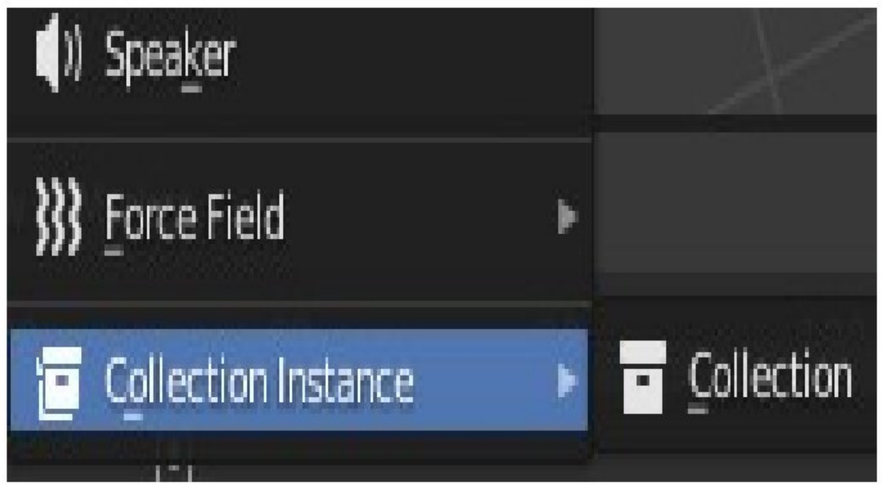


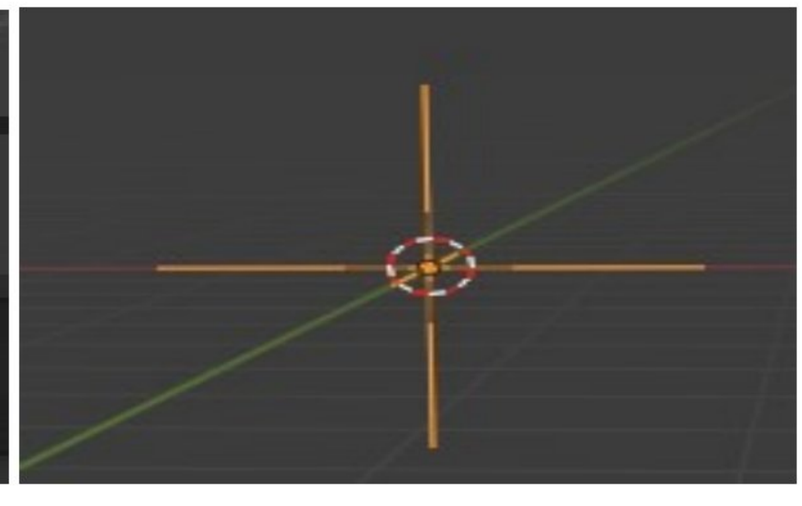
14. Force Field: Go to Force Field> Wind.





15. Collection Instance: Go to Collection instance>collection.





Shortcut keys and menus:

1. "I"—Insert Keyframe
2. "Shift +D"—Add duplicate
3. "R"—Rotate
4. "G"—Move
5. "S"—Scale
6. "A"—Select All
7. "I"—Inset
8. "N"—Properies Panel
9. "Shift +A"—Show Add menu
10. "E"--Extrude
11. "w"--Object context menu
12. "I"--Insert keyframe menu

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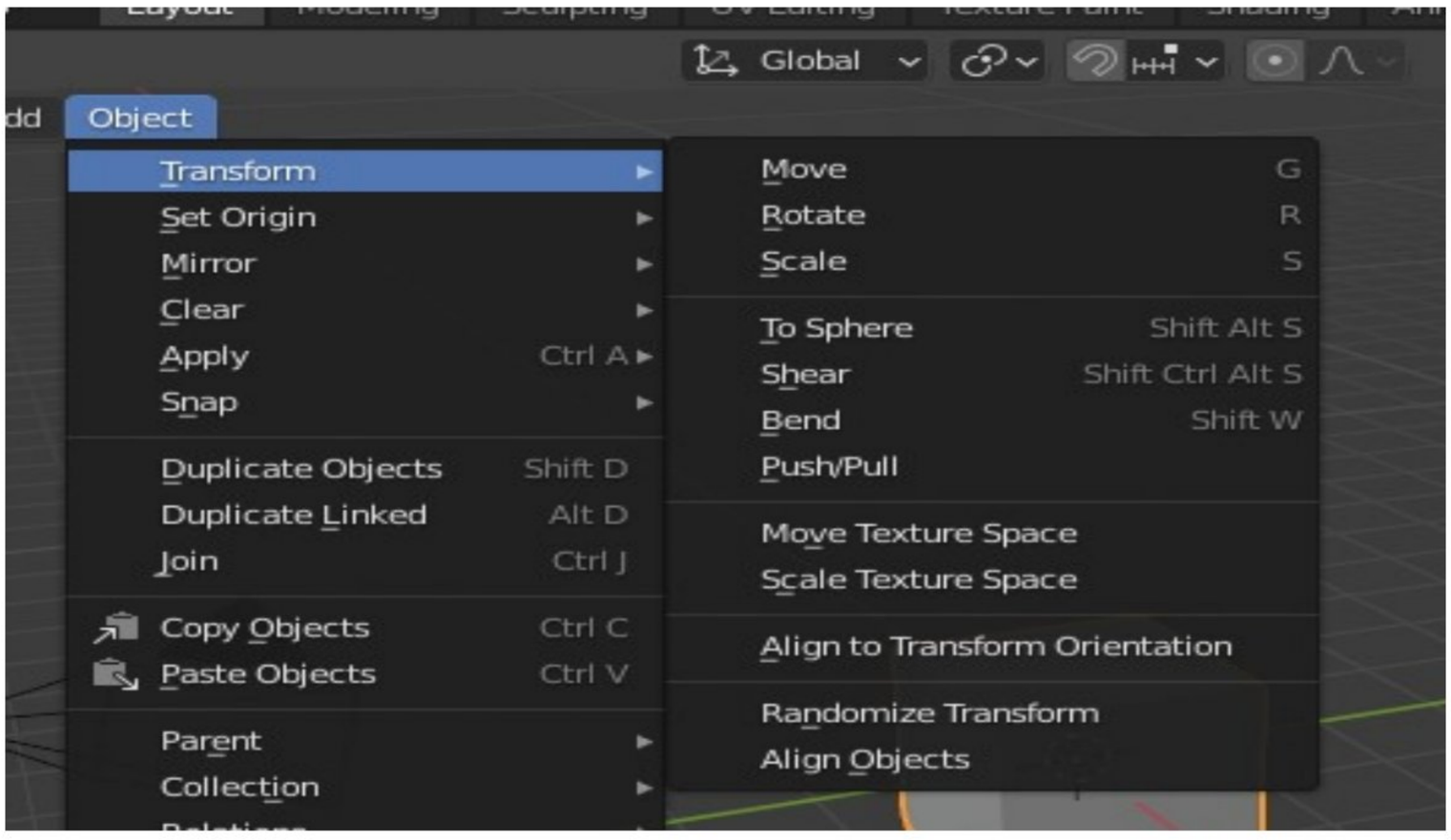
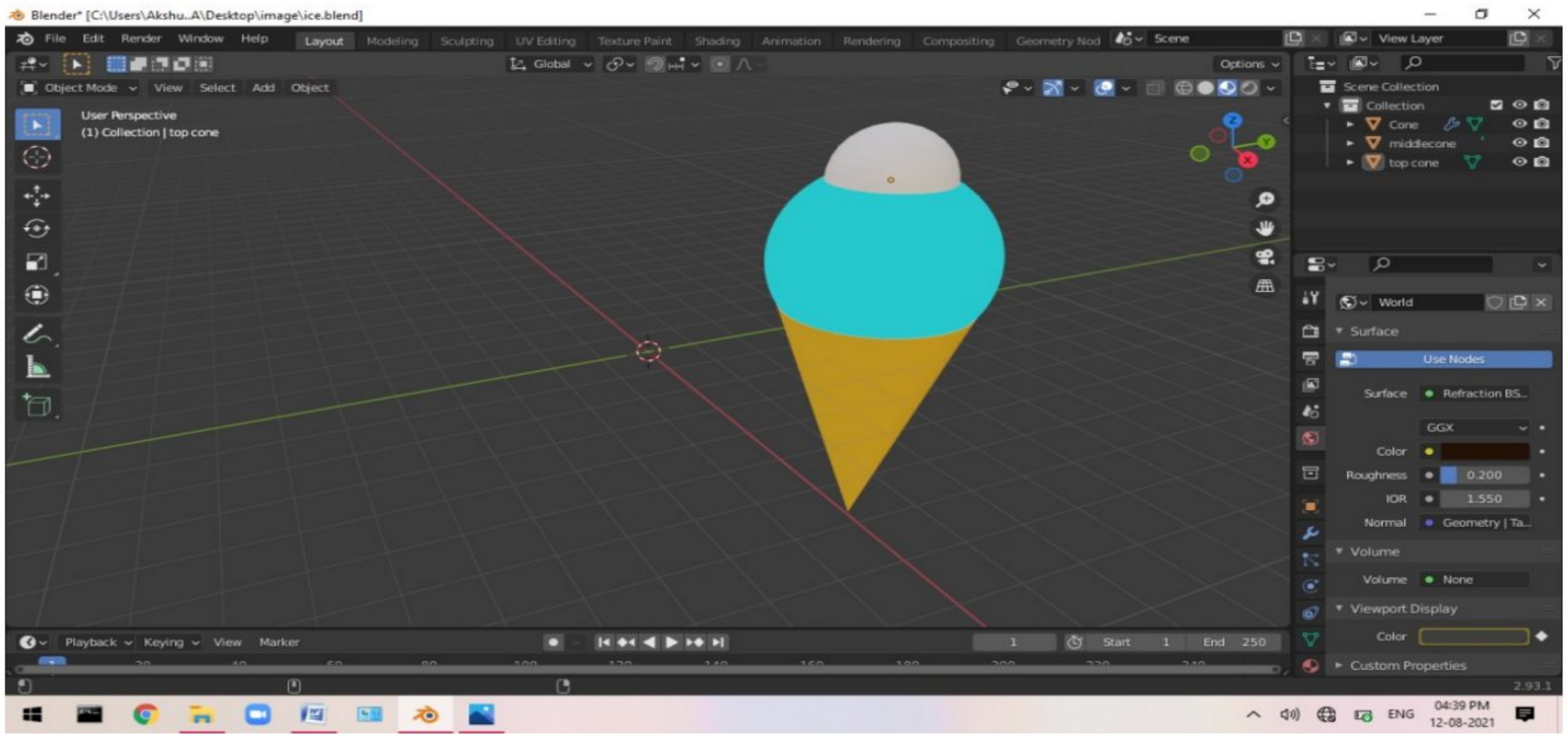
ii) Perform Transformation operations on objects added in 14 (i).

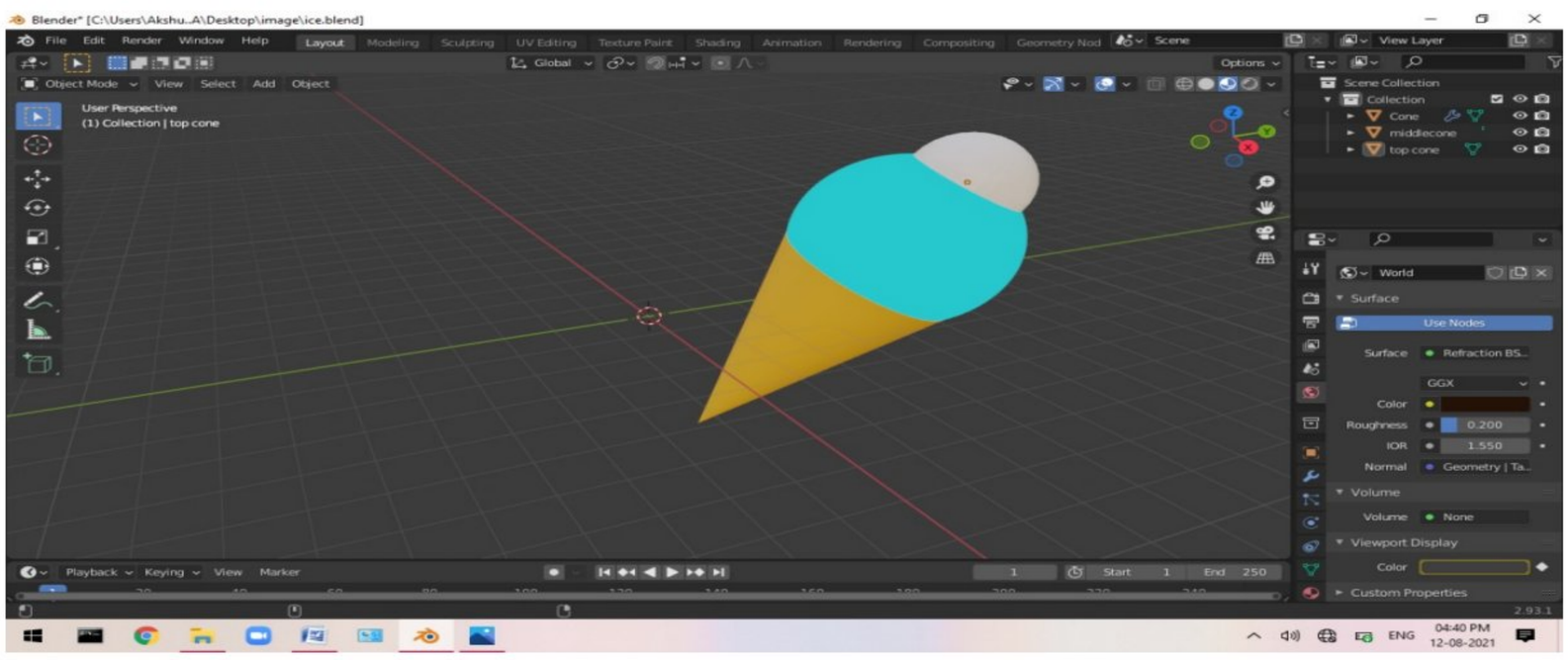
Transformation Operations: go to Object>Transform



1. Move



2. Rotate



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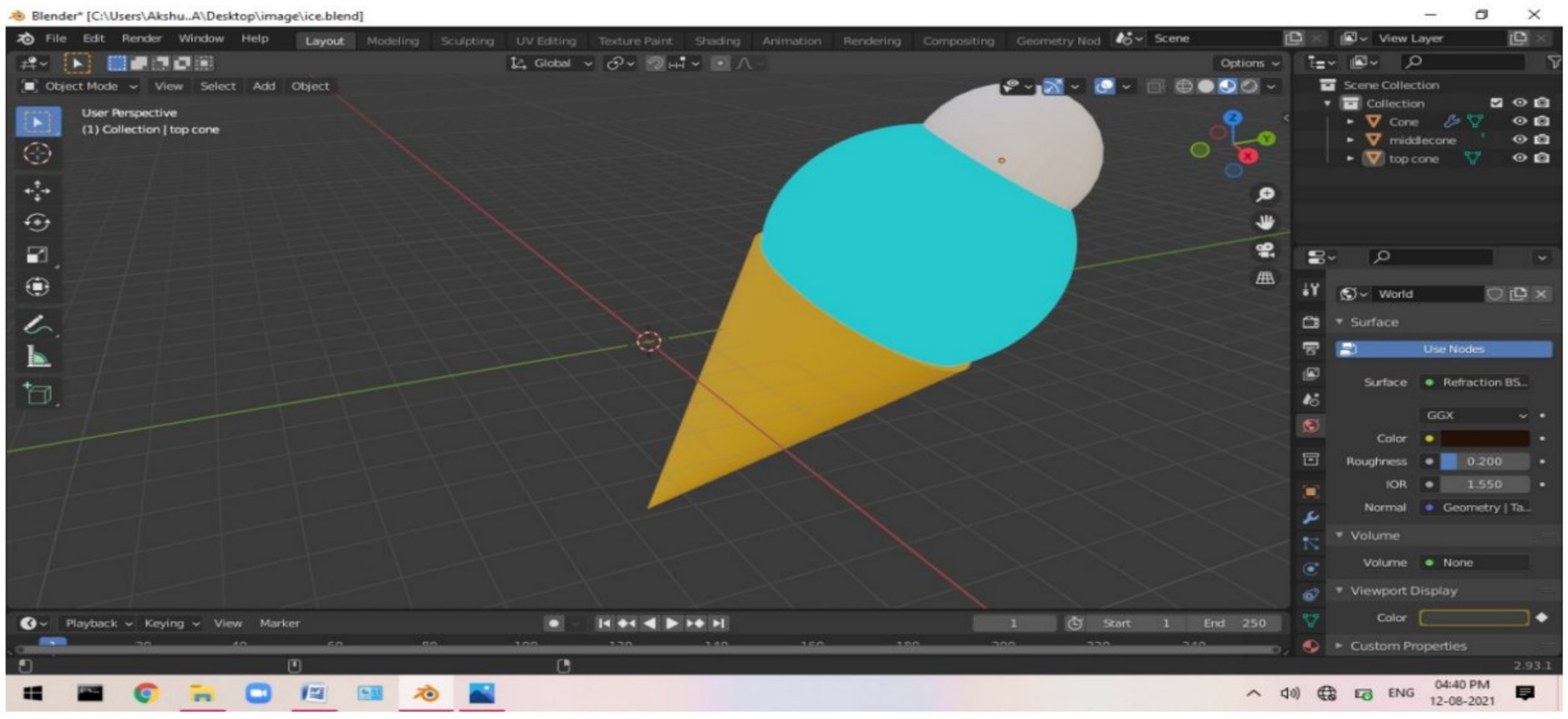
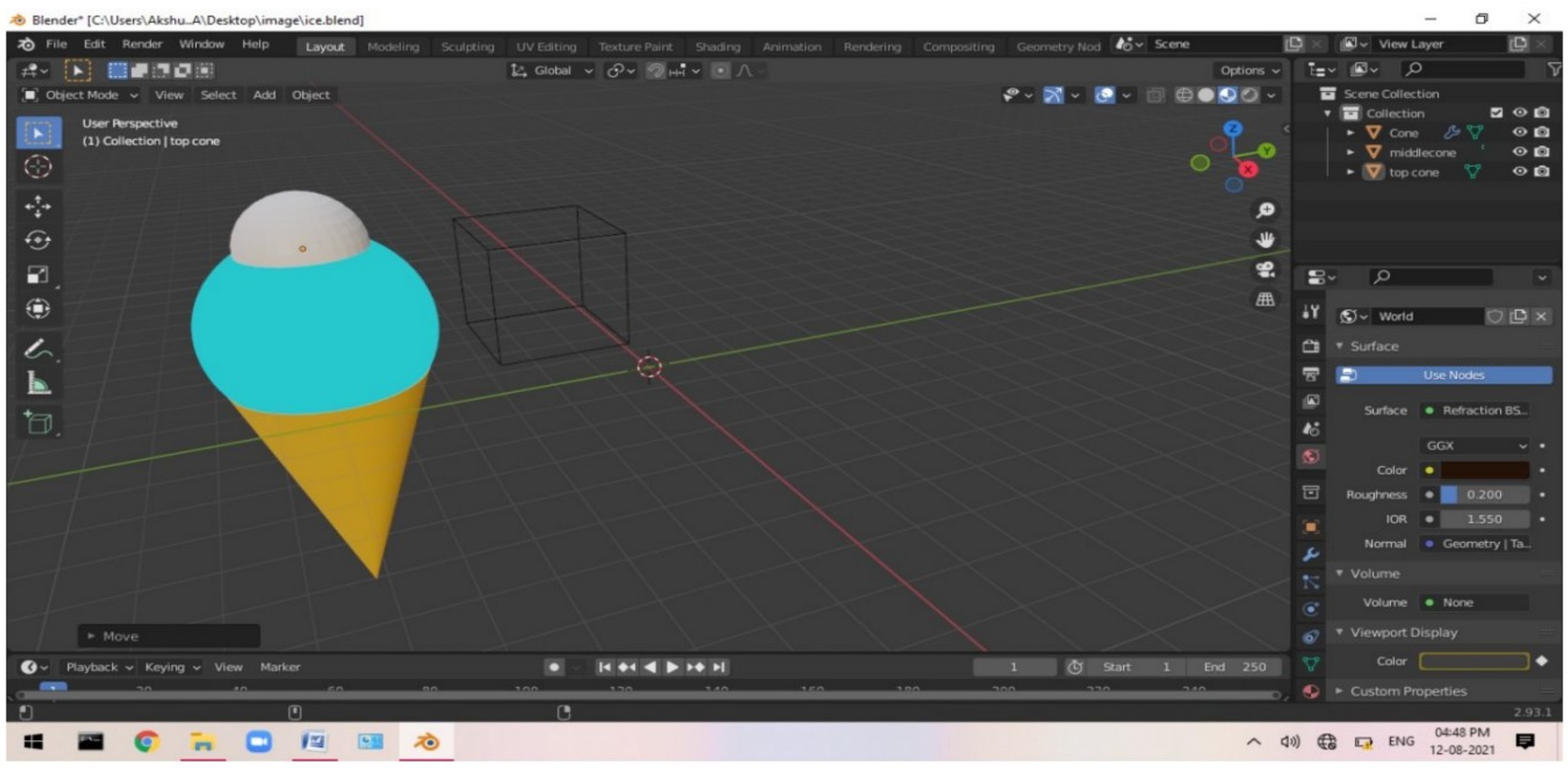
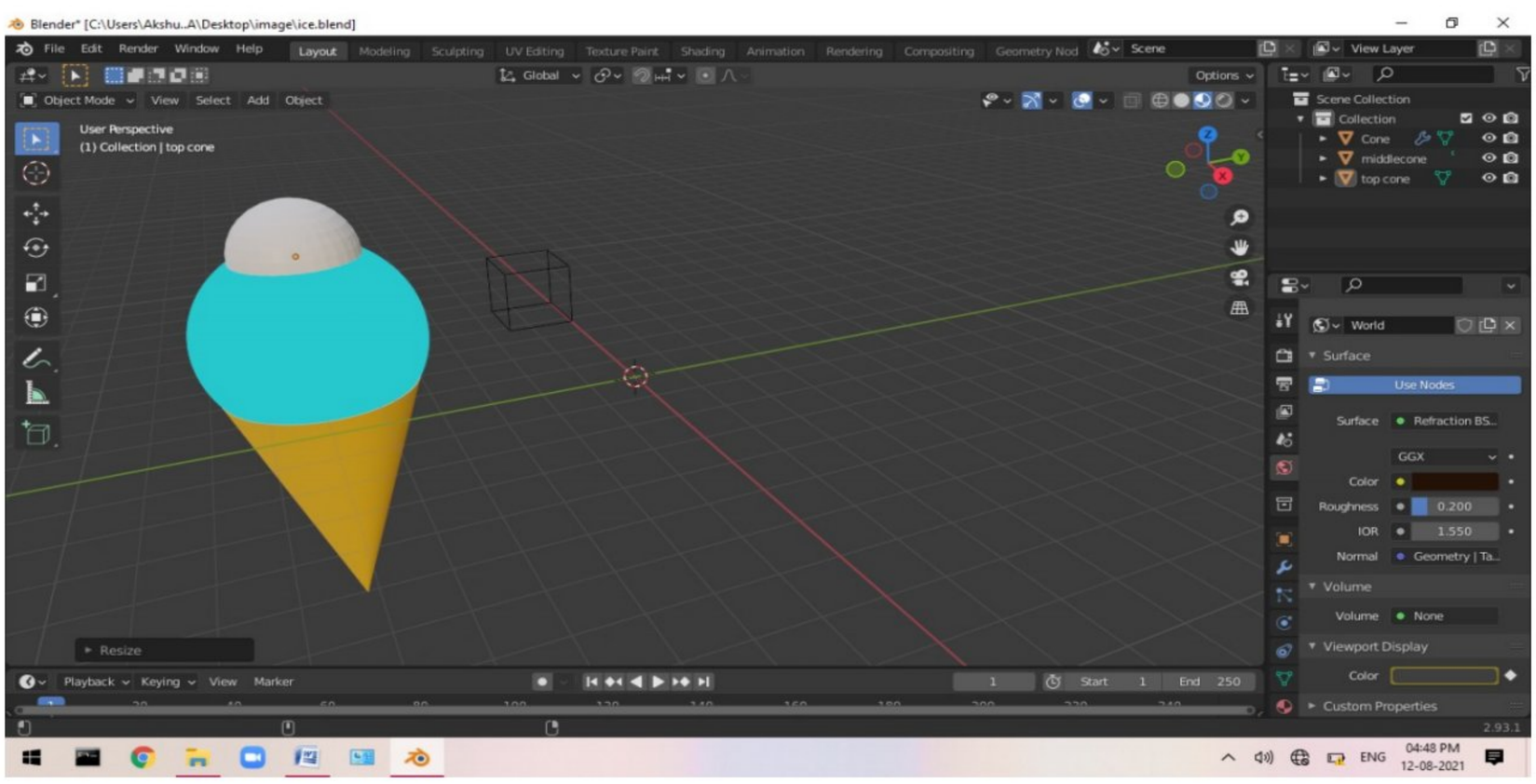
3. Scale



4. Move texture Space



5. Scale Texture Space



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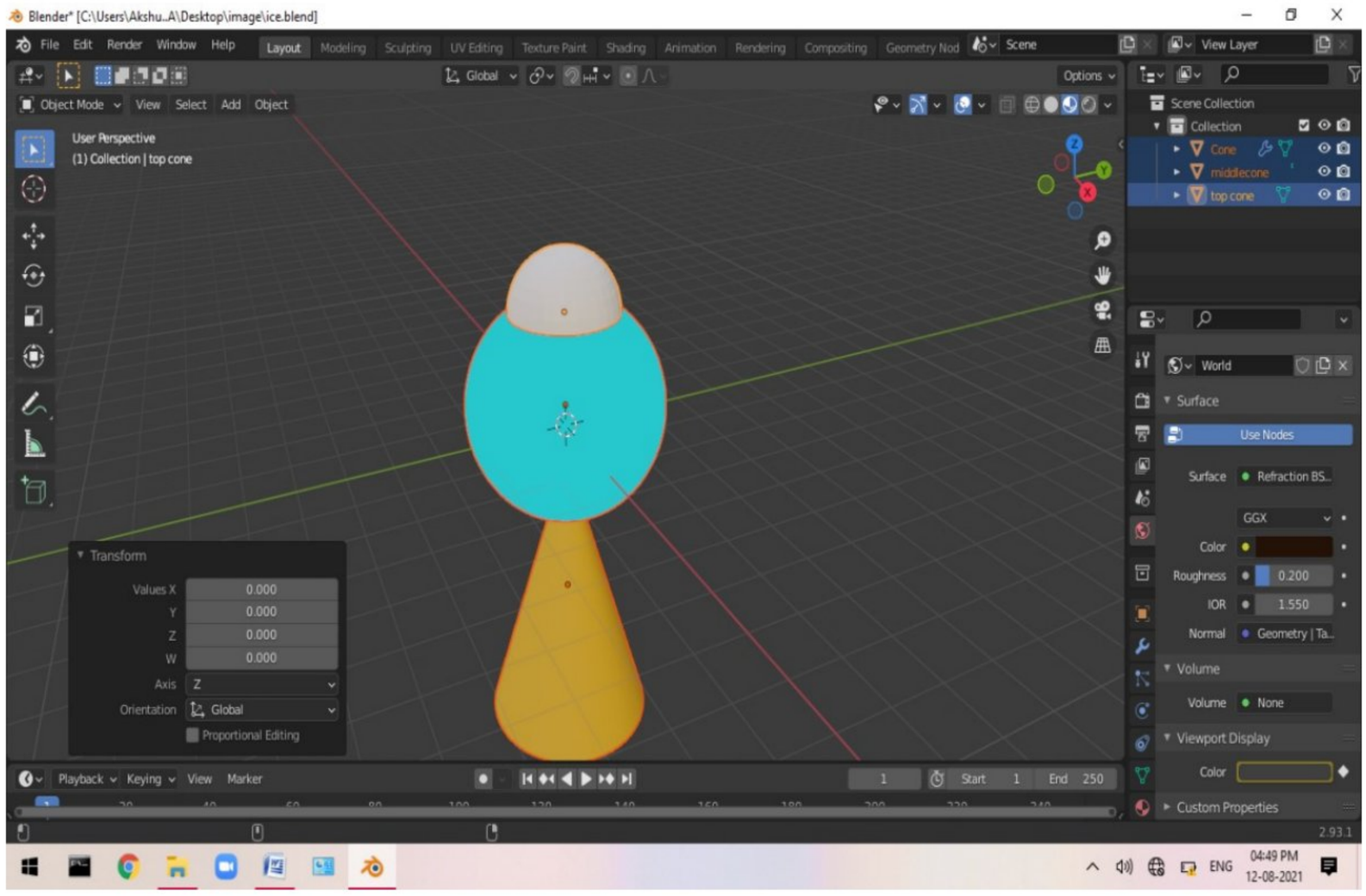
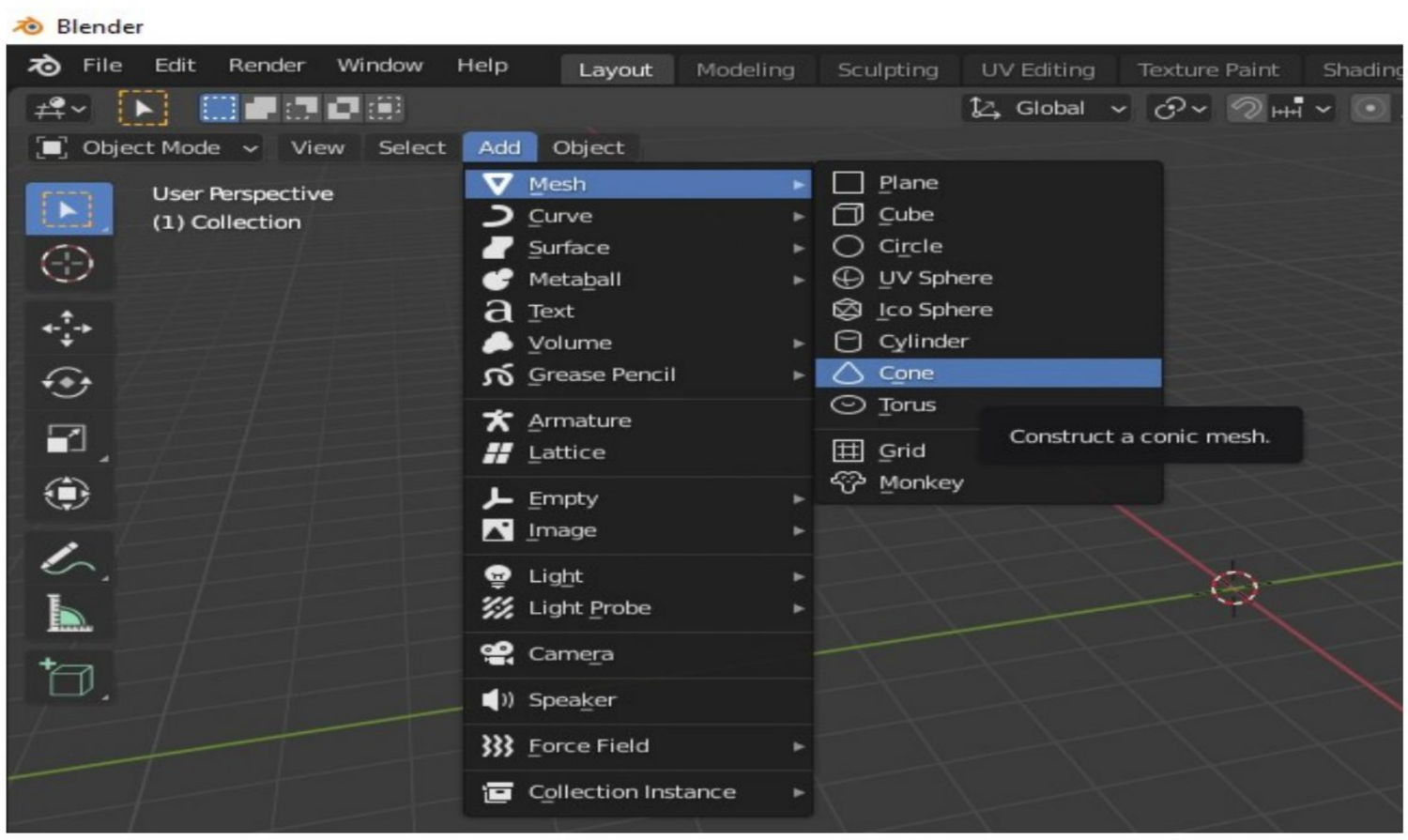
6. Align to Transform orientation



14. Create Primitive objects like an ice-cream cone, snowman, house, tunnel and like.

ICE-CREAM CONE

Step 1: Press Shift +A to bring up the add menu. Select “Mesh” and “Cone”.



Step 2: In the lower left hand corner you will see a black box that says “Add Cone”. Click on that to open it. Set cone values as per your requirements.

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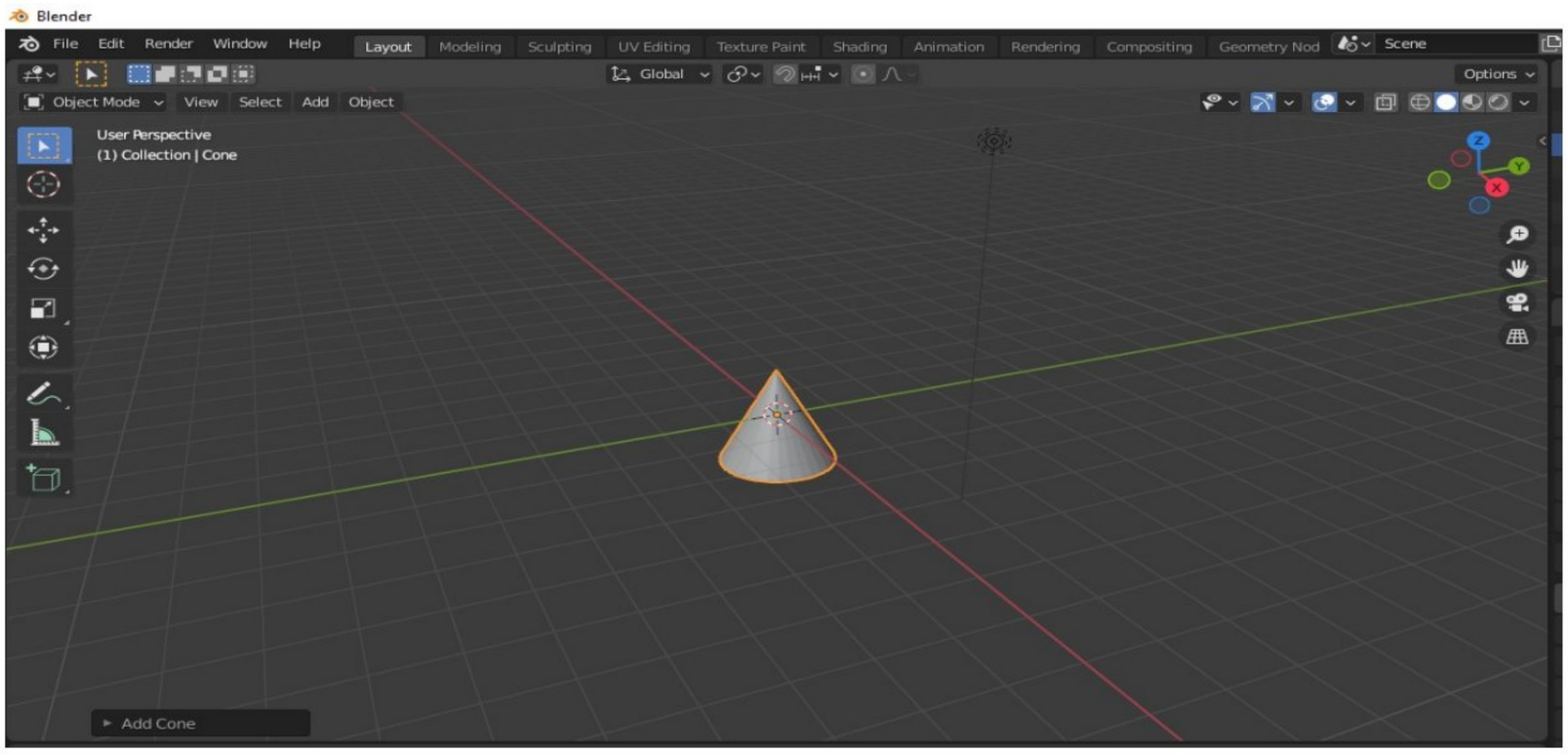
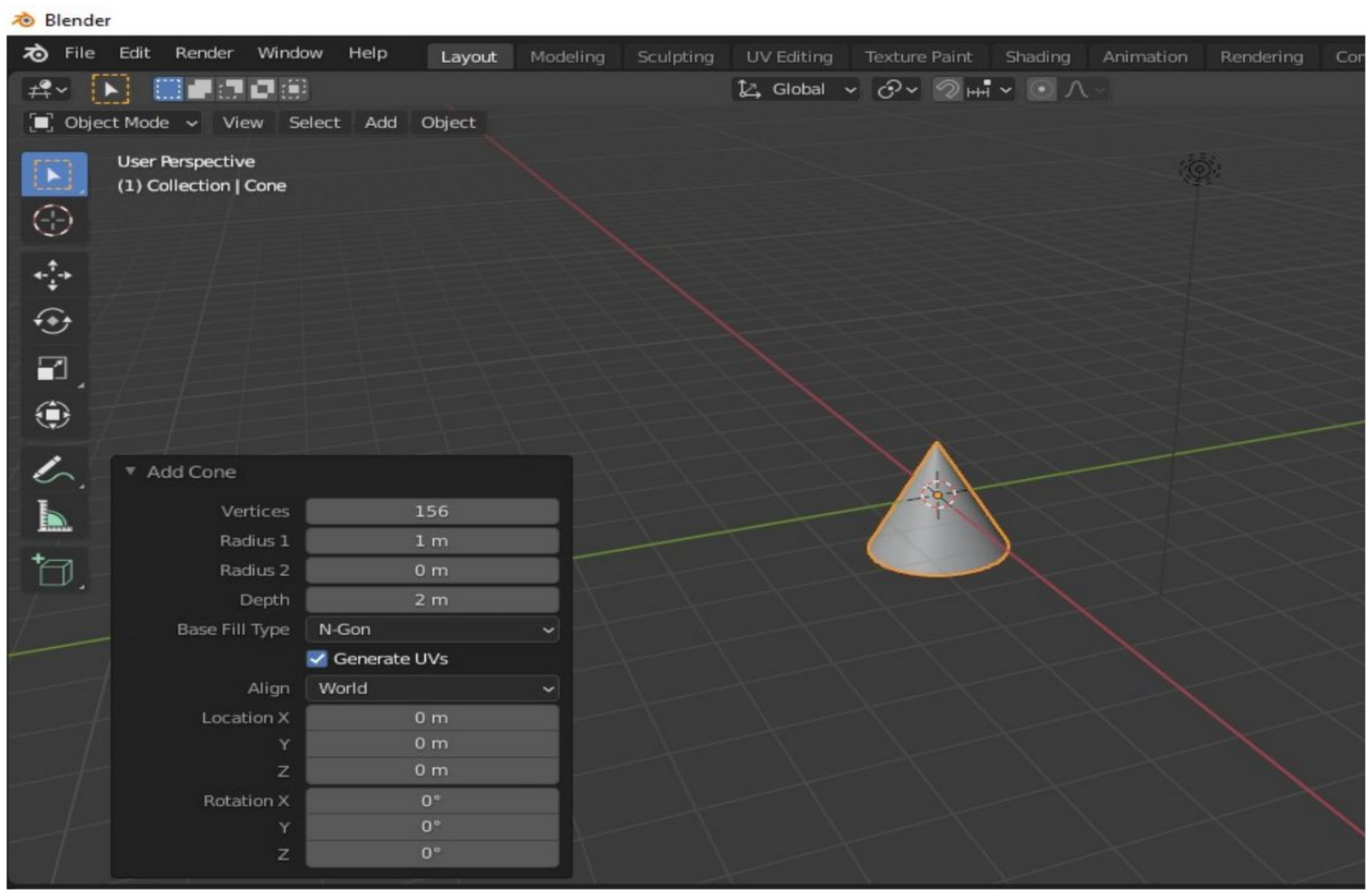
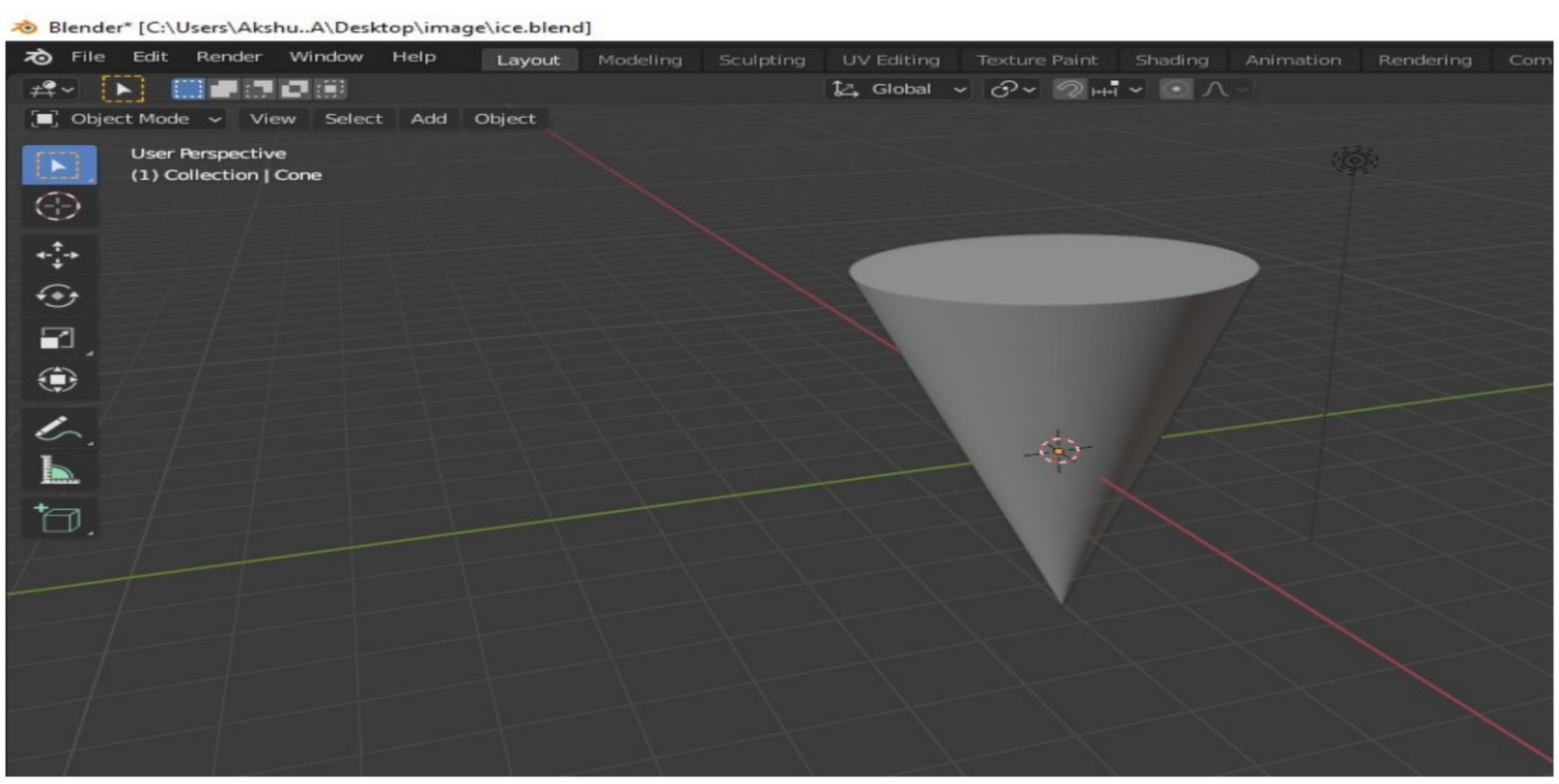




Step 3: Rotate the cone using Rotate option.



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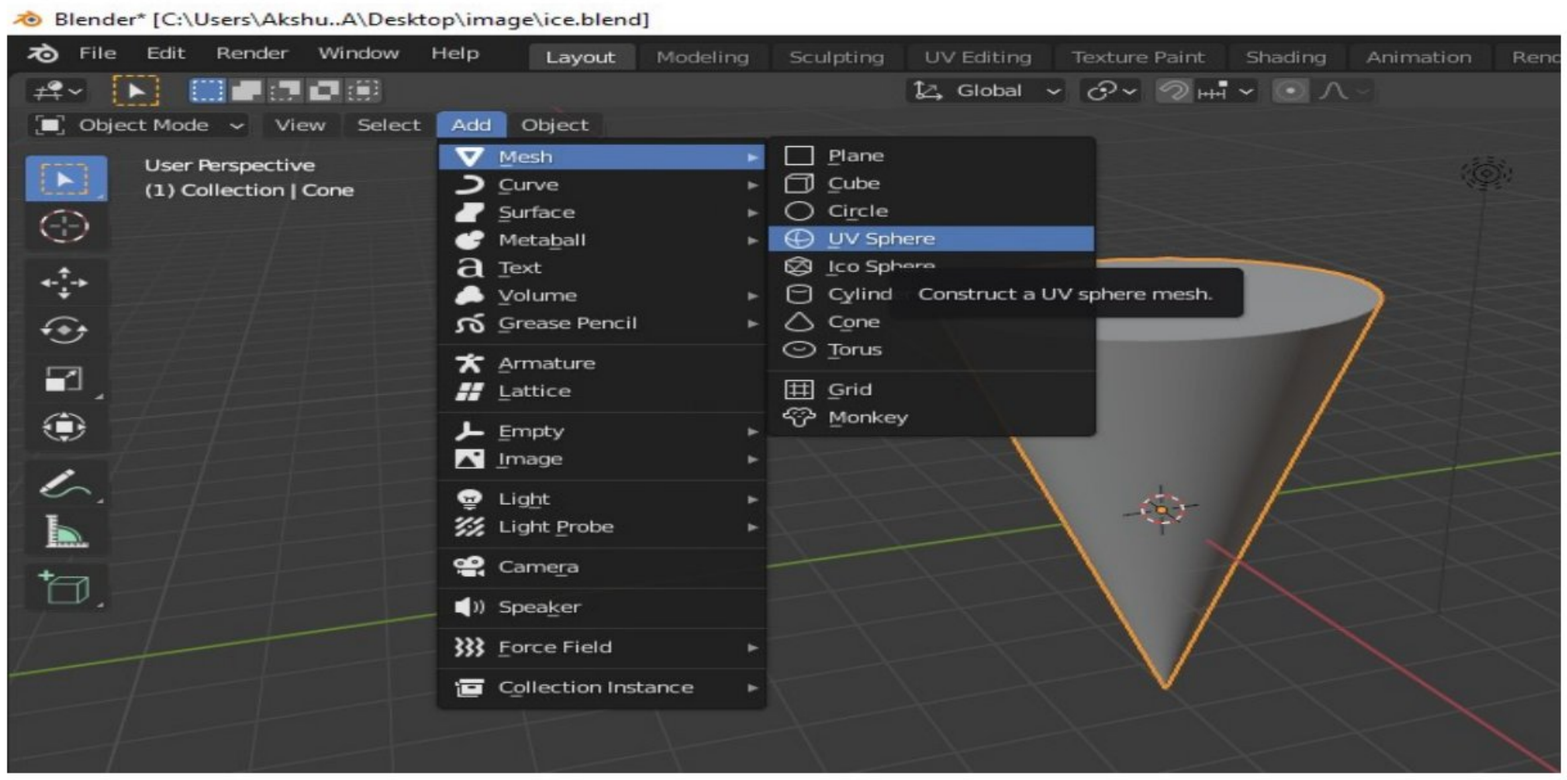
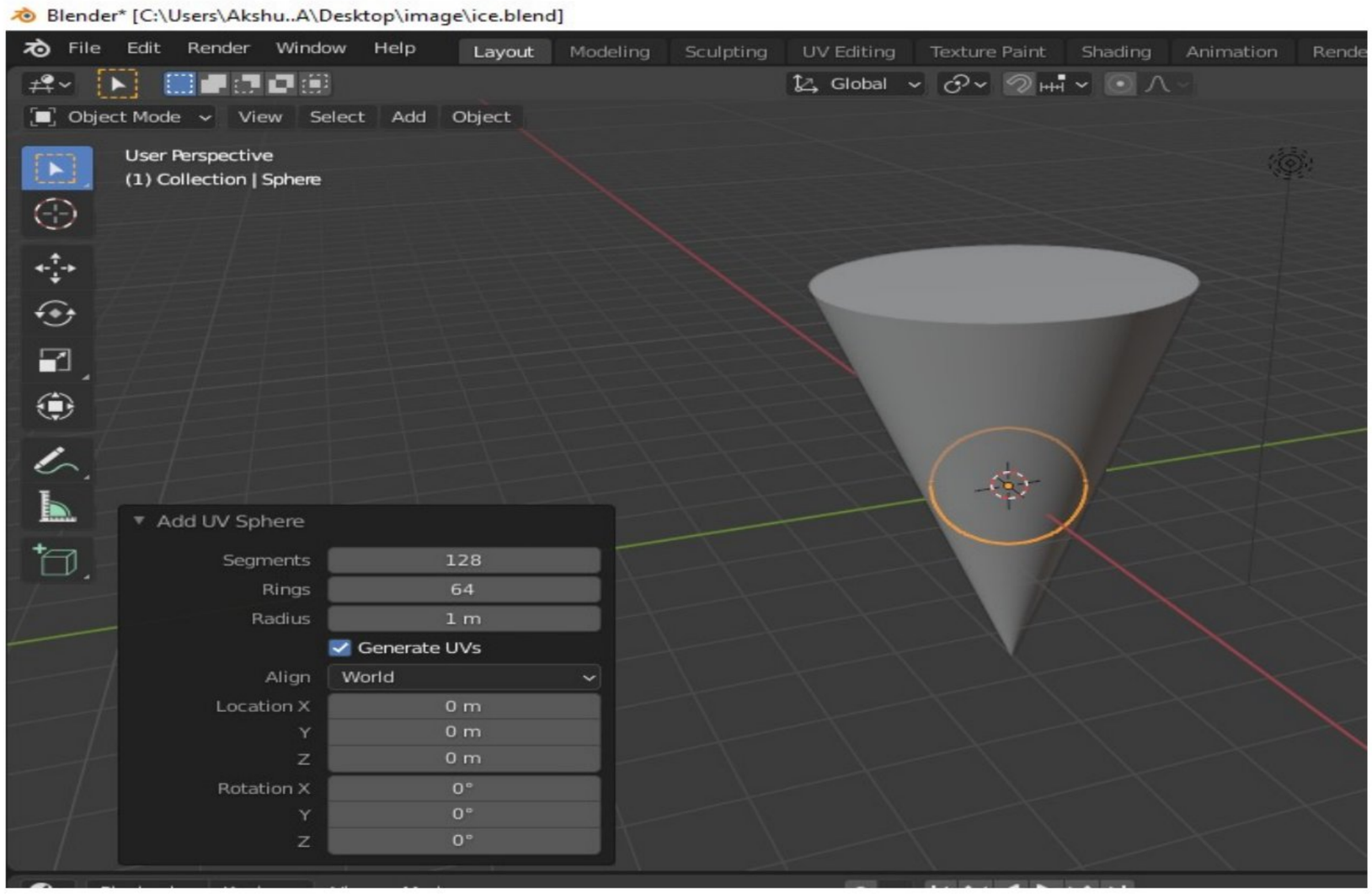
Step 4: Press Shift +A and under “Mesh” select “UV Sphere”. Set UV values.





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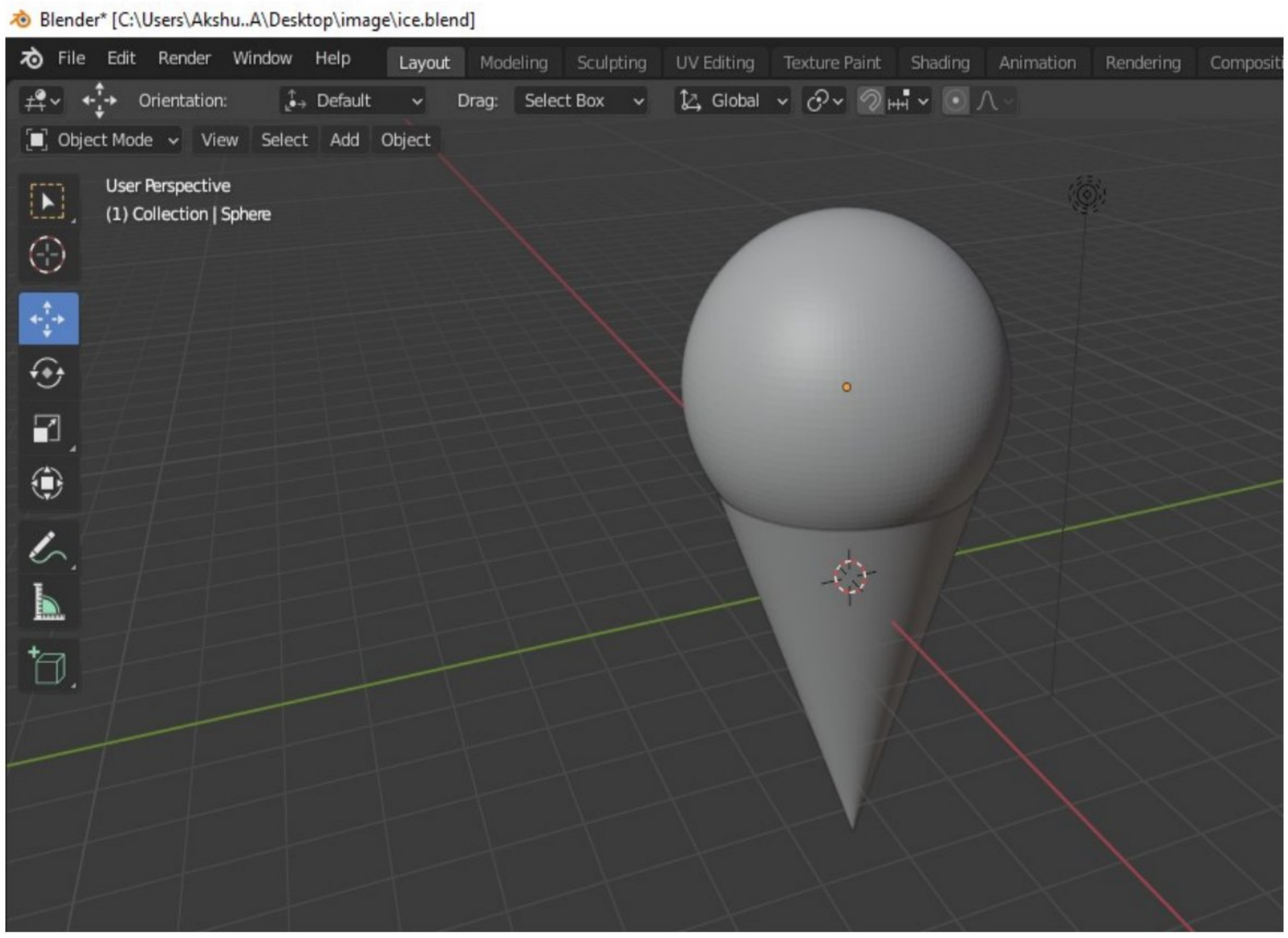
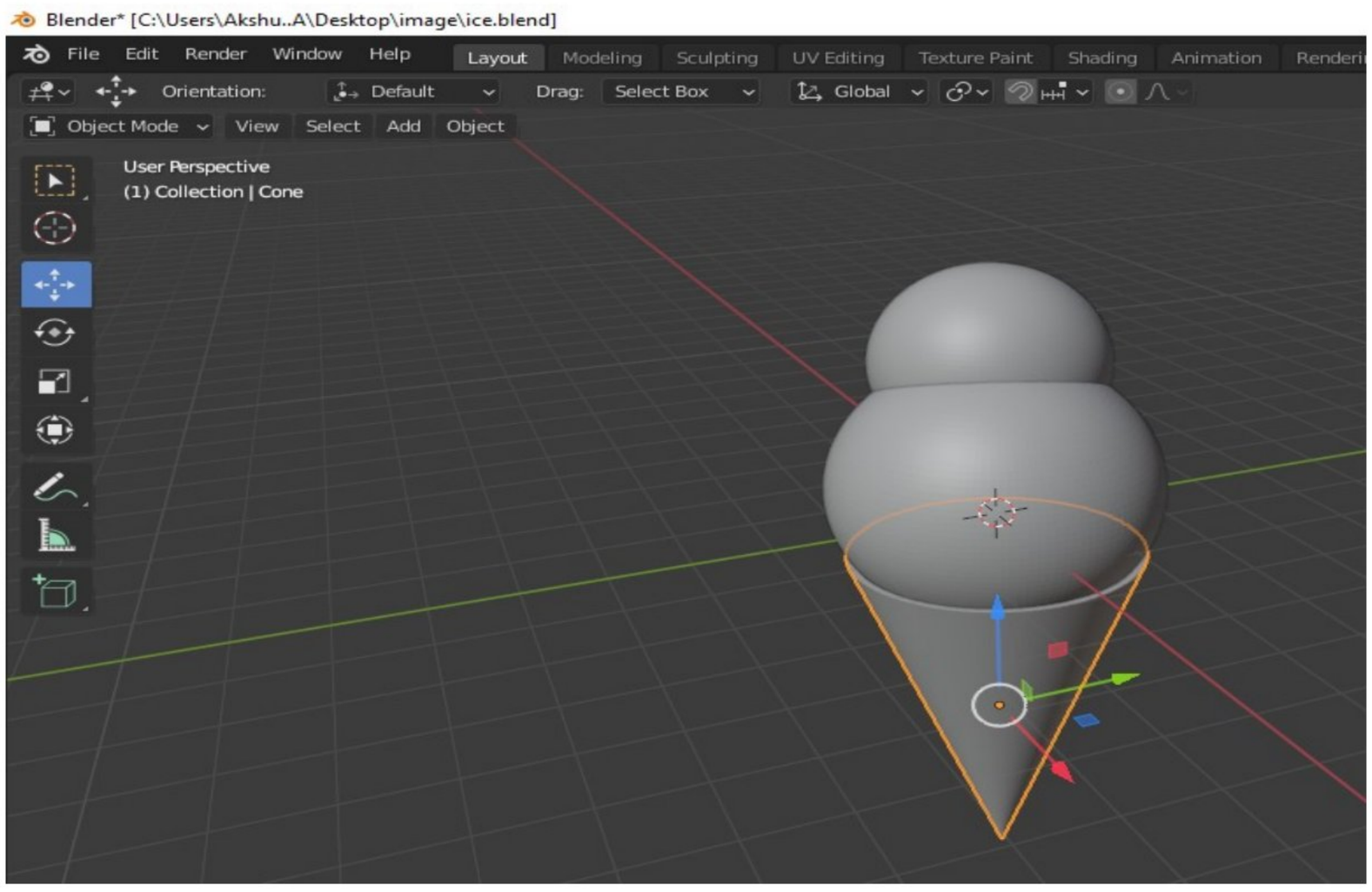
Step 5: Press G then Z to move your sphere up to the top of the cone.



Step 6: To add another sphere, select previous cone and press Shift +D duplicate, then Z to move it straight up. Press S to scale it in and make it slightly smaller.



Step 7: Naming the shapes in your object. In the upper right hand corner of the interface, you will see a window with the list of the default names of all the shapes used for ice-

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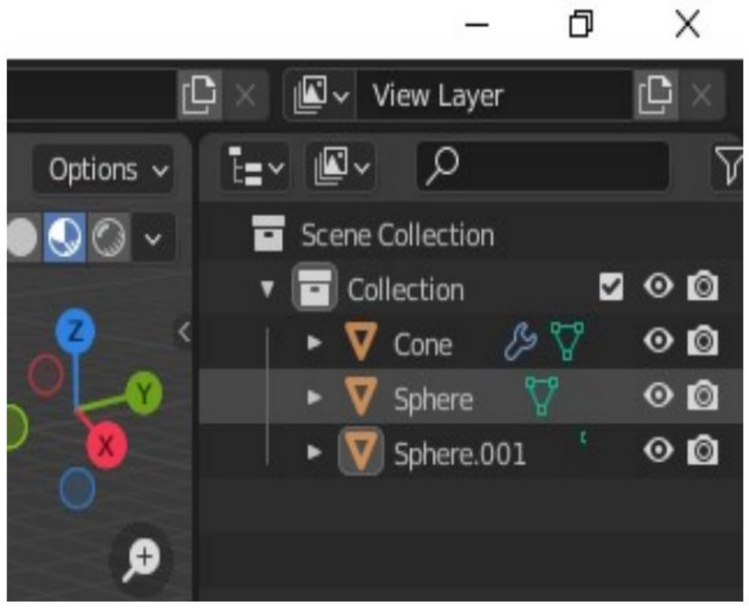
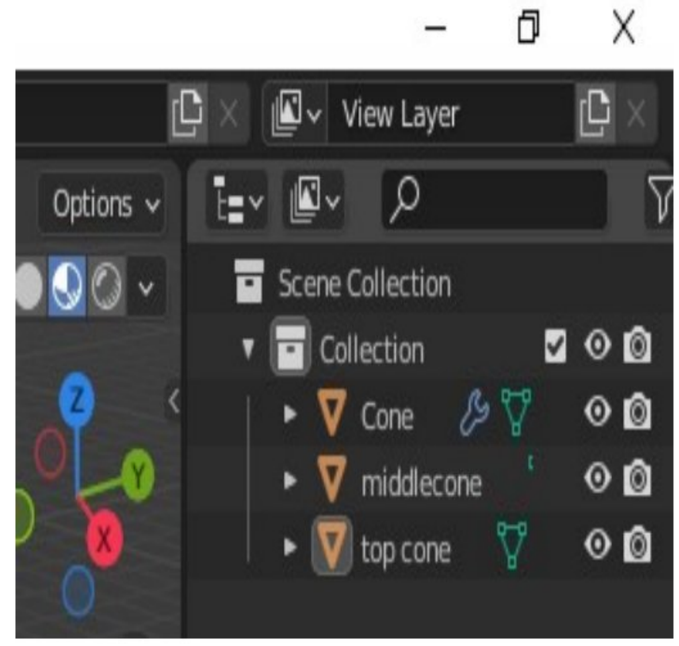
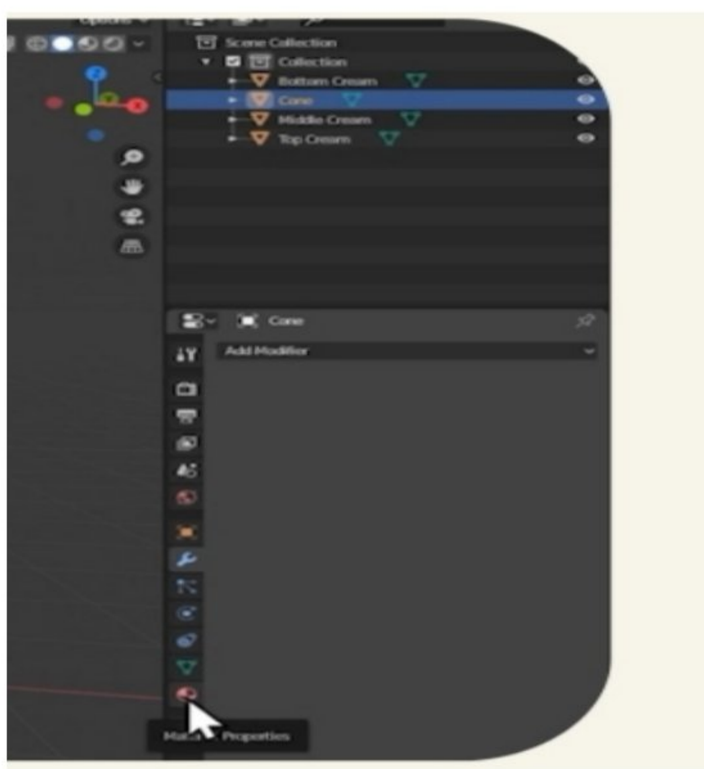
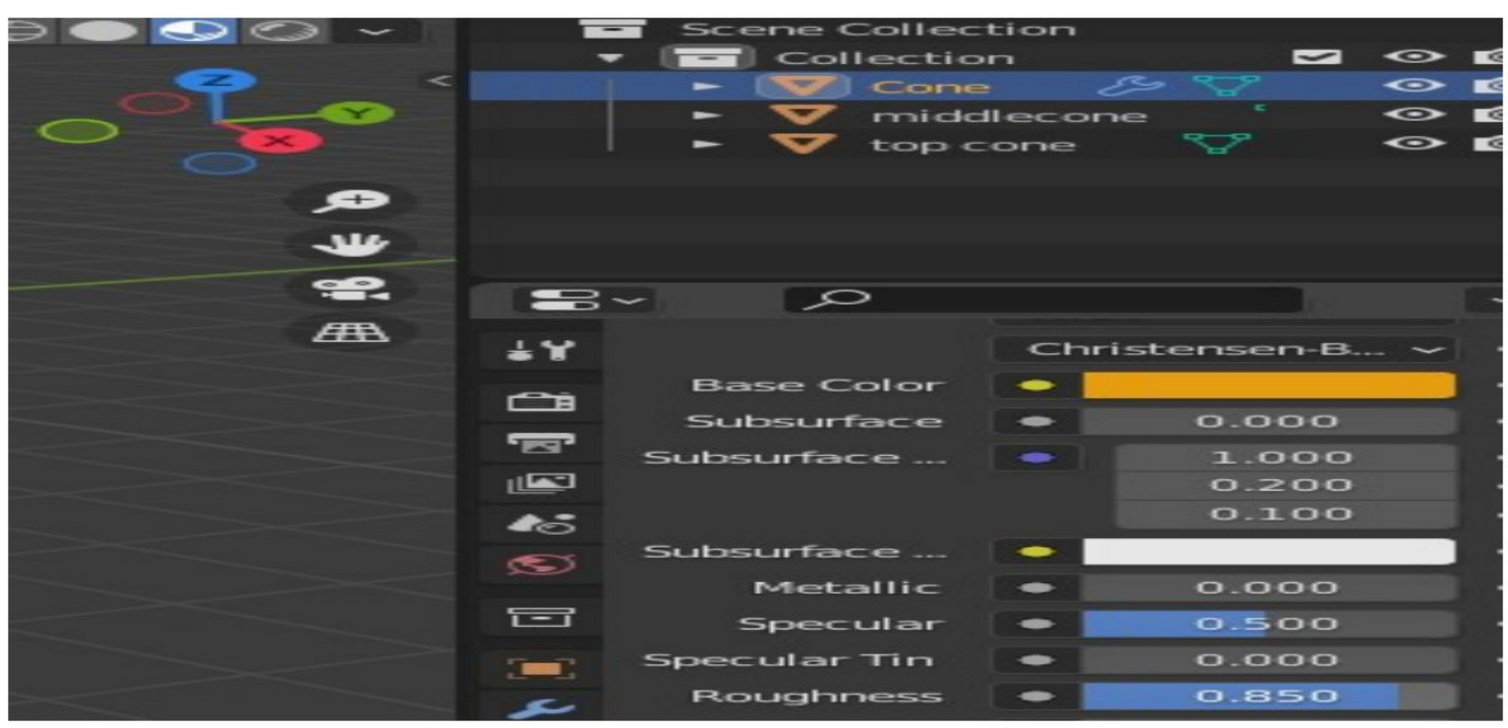
cream cone model. Double click the object from the list and give unique names for all other shapes.





Step 8: Make sure that your cone is selected. Go to the material Properties tab and click "new". And Press Z and go to the material preview menu. Select the color of your cone by using base color. Adjust the roughness to approximately 0.850.





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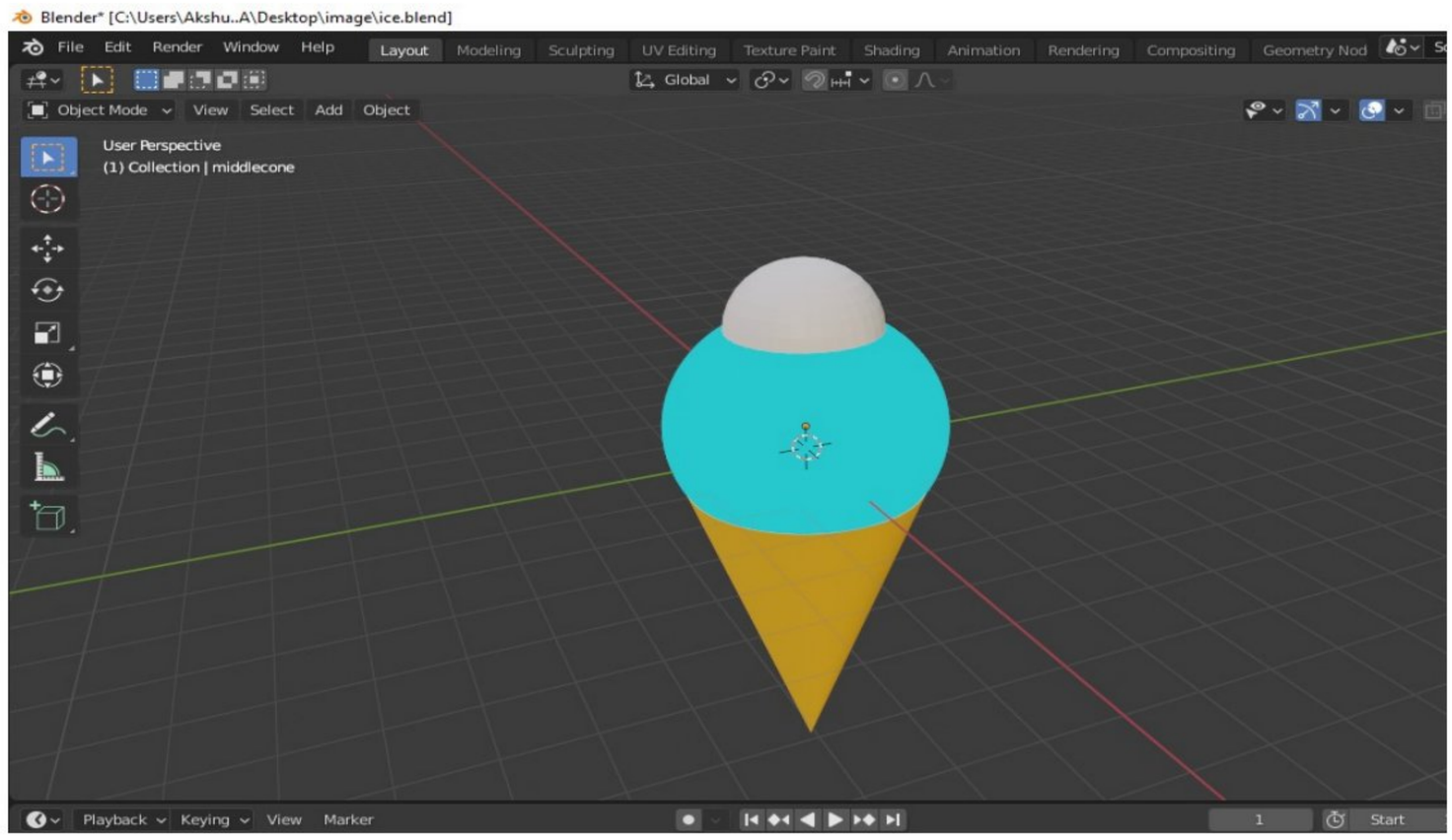
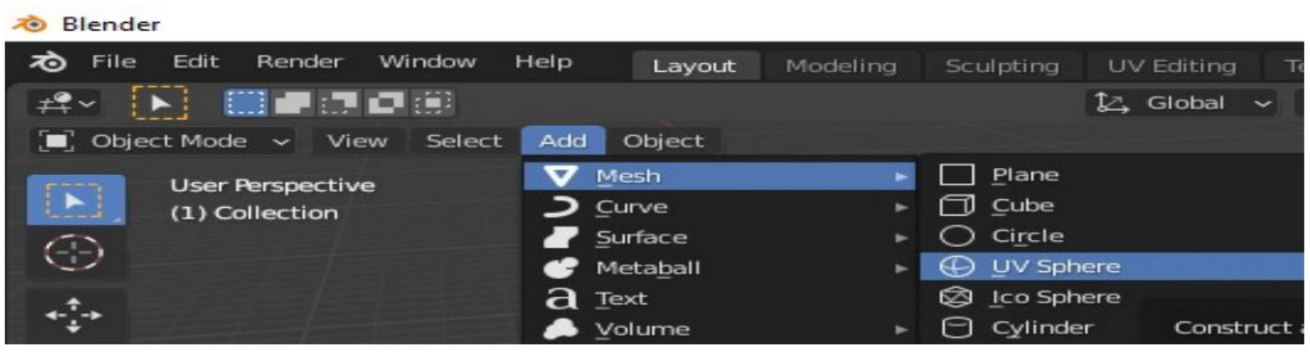
Step 9: Repeat step 8 for your ice cream scoops. This time decrease the roughness slider. Increase the specular tint, sheen, sheen tint, clear coat and clear coat roughness sliders to add some extra shine.

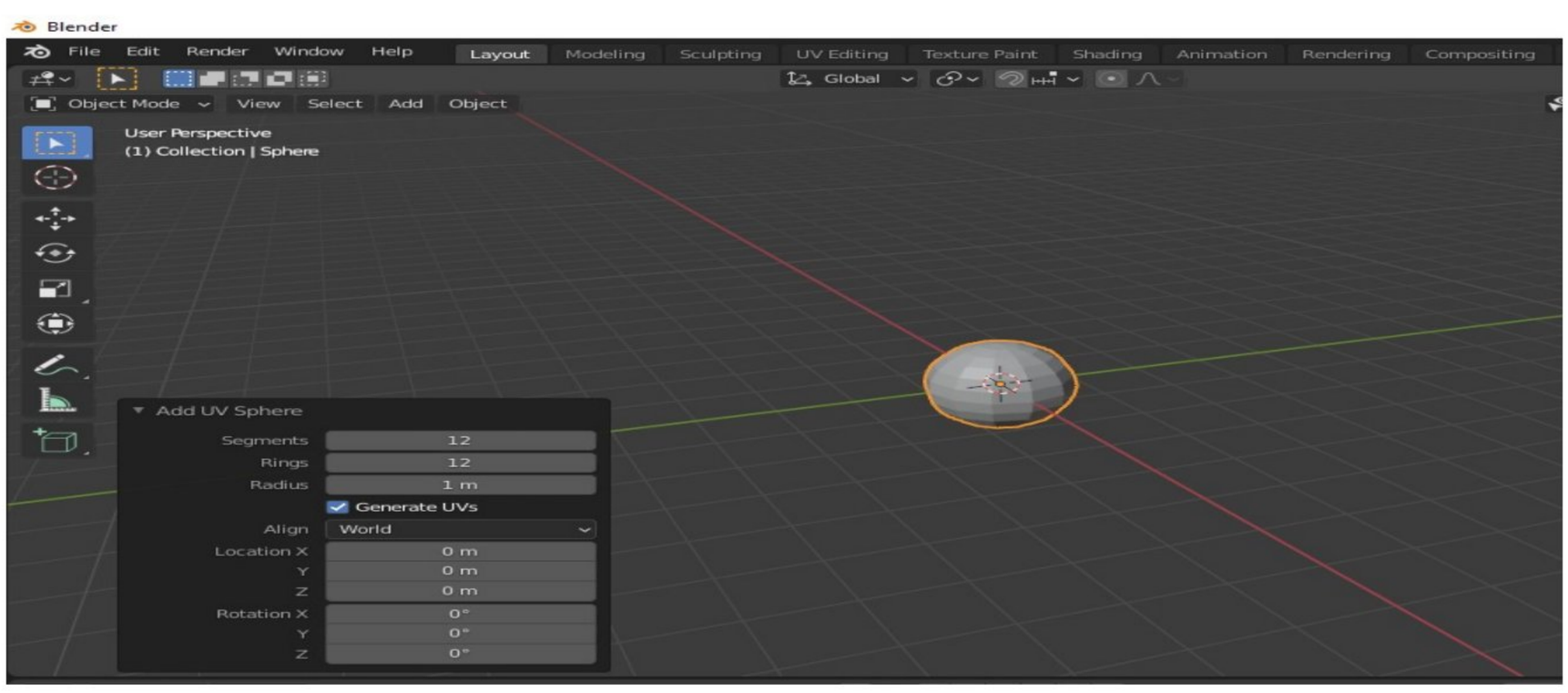


SNOWMAN

Step 1: Press Shift +A to bring up the add menu. Select "Mesh" and "UV sphere".



Step 2: In the lower left hand corner you will see a black box that says "Add UV sphere". Click on that to open it. Set cone values as per your requirements.



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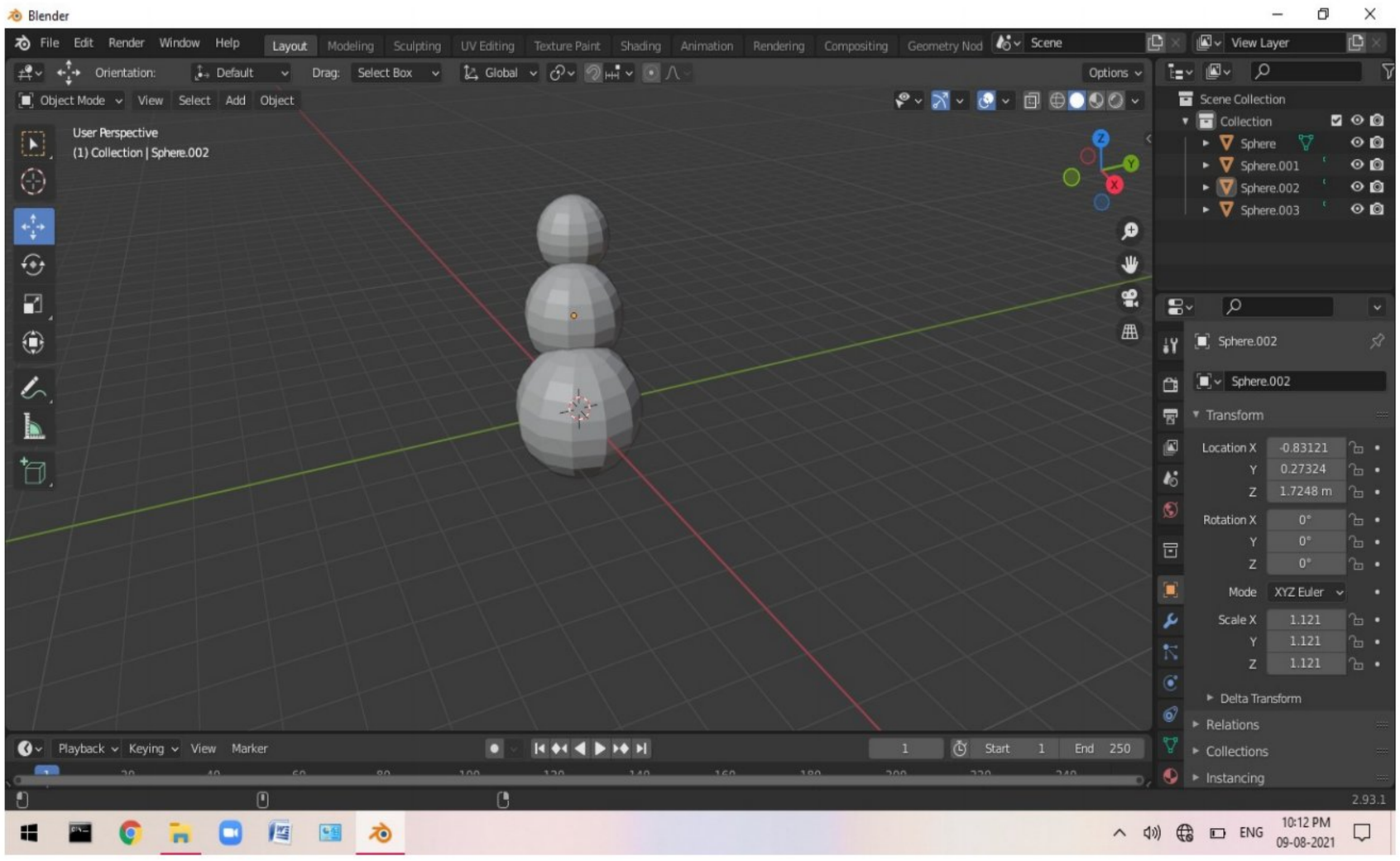
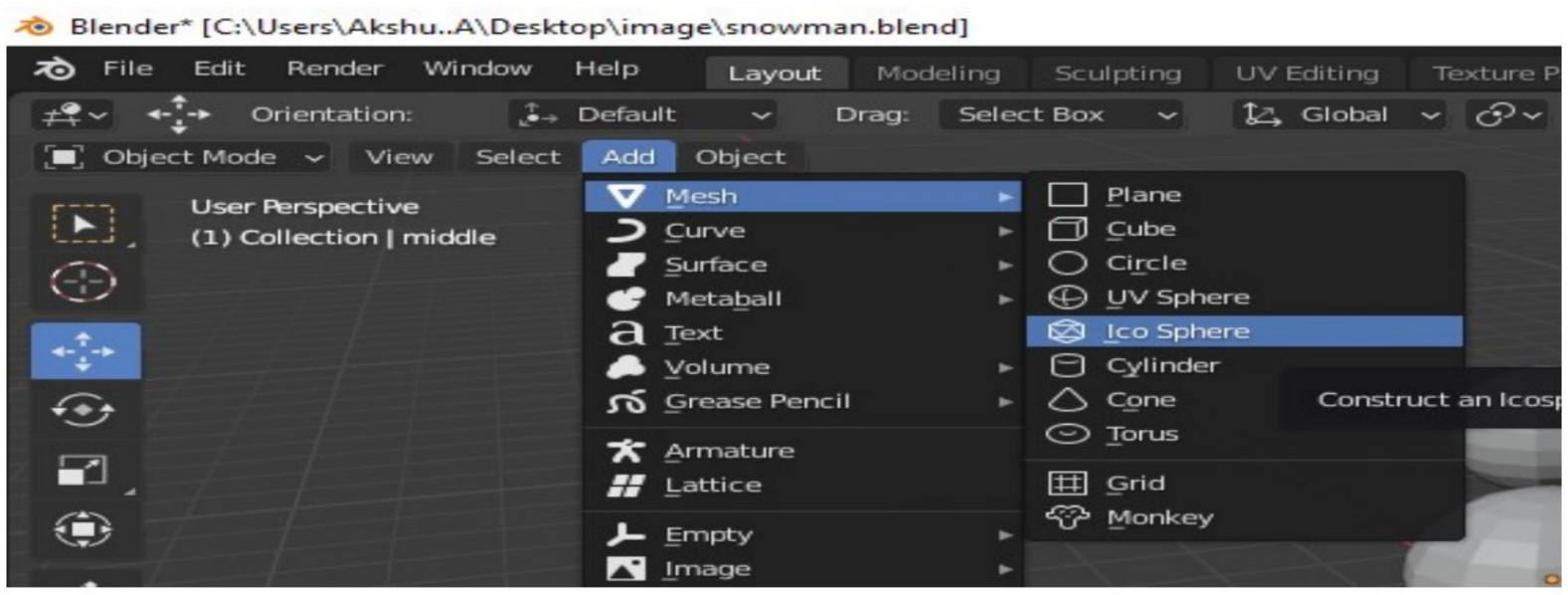
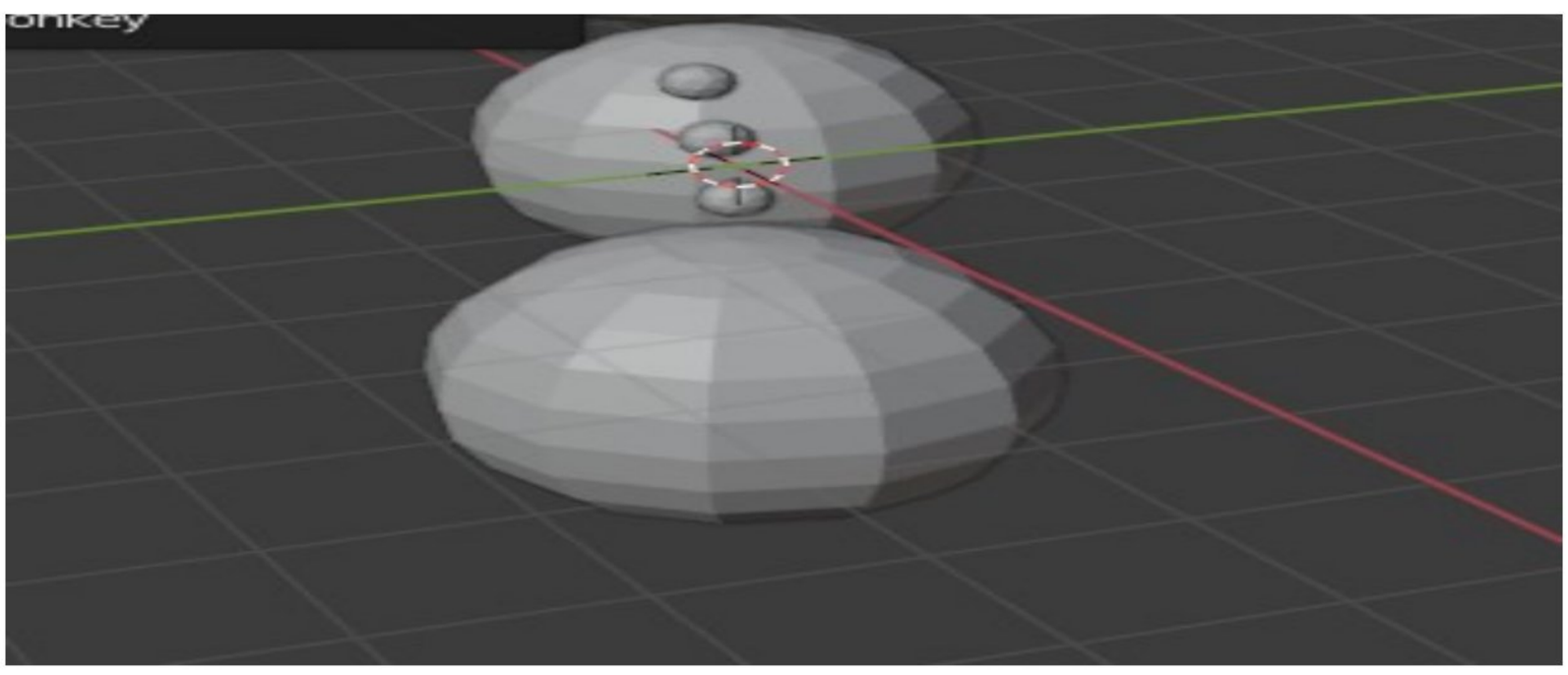
Step 3: Press shift + D to duplicate objects and click "G" to move object one by one.



Step 4: Press Shift +A to bring up the add menu. Select "Mesh" and "Ico sphere".



Step 5: Place Ico sphere and duplicate object using shift +D.



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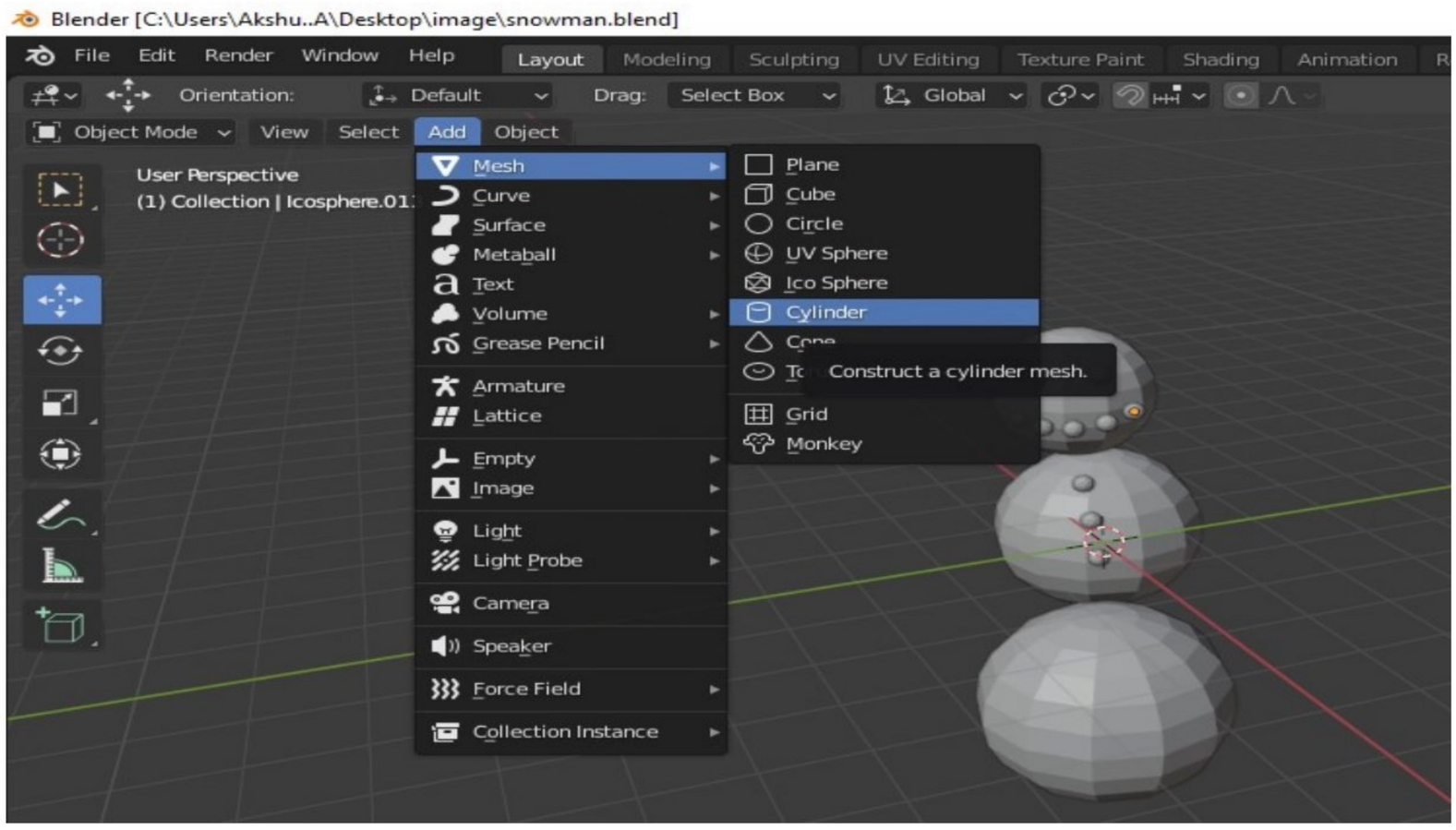
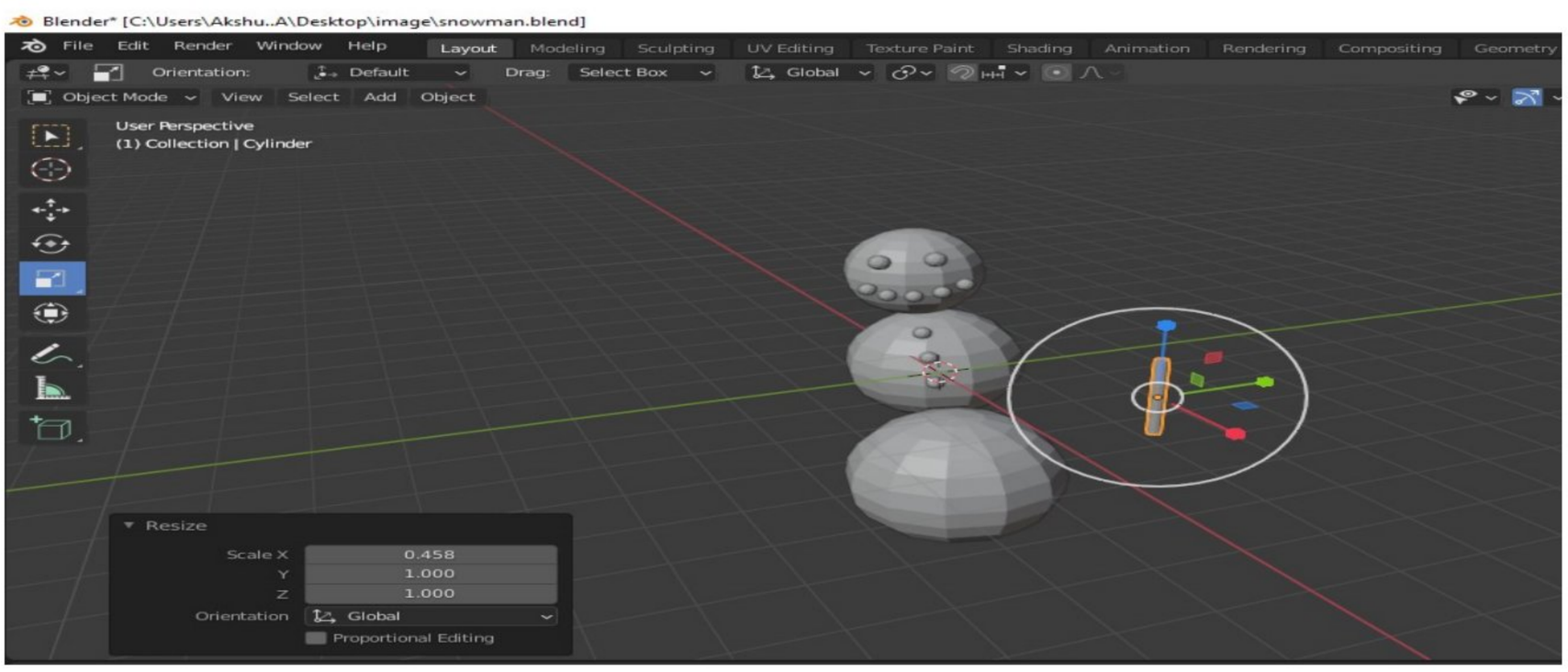
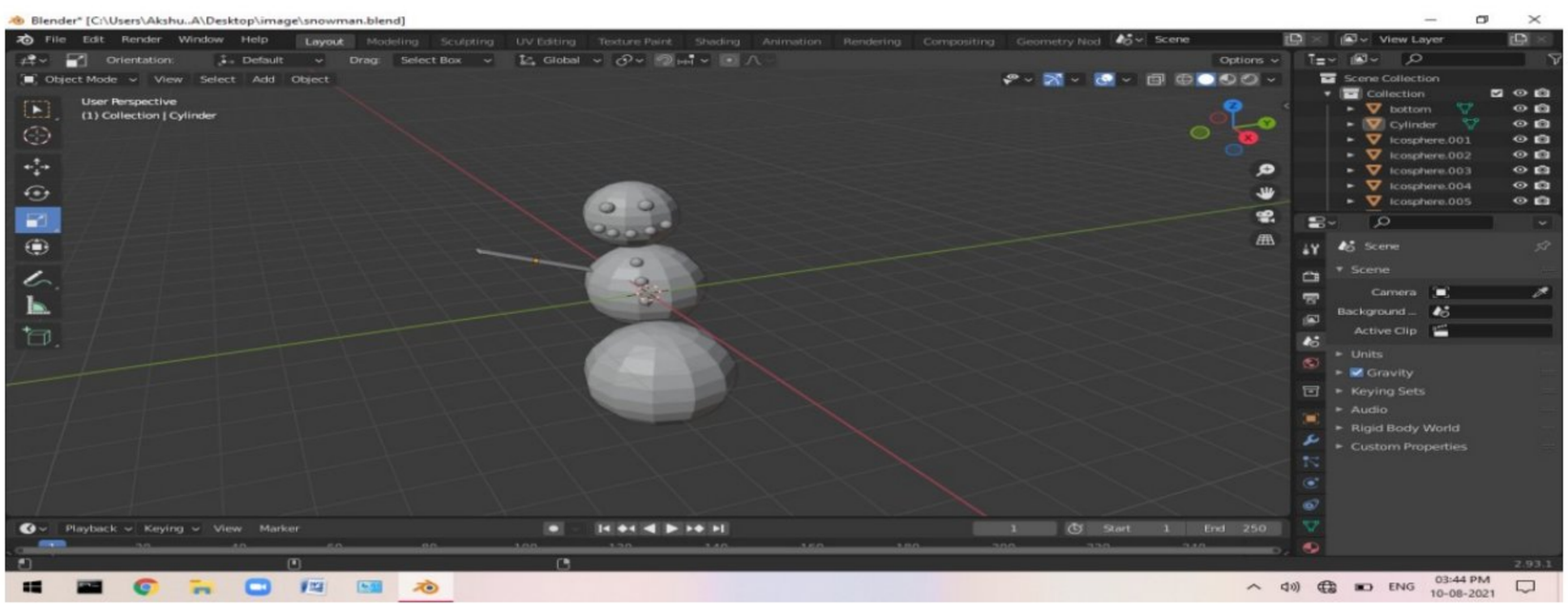
Step 6: Press Shift +A to bring up the add menu. Select “Mesh” and “cylinder”.



Step 7: scale the object by pressing “S” from keyboard. Rotate the object using rotate option. Add it to middle UV sphere and Resize object.





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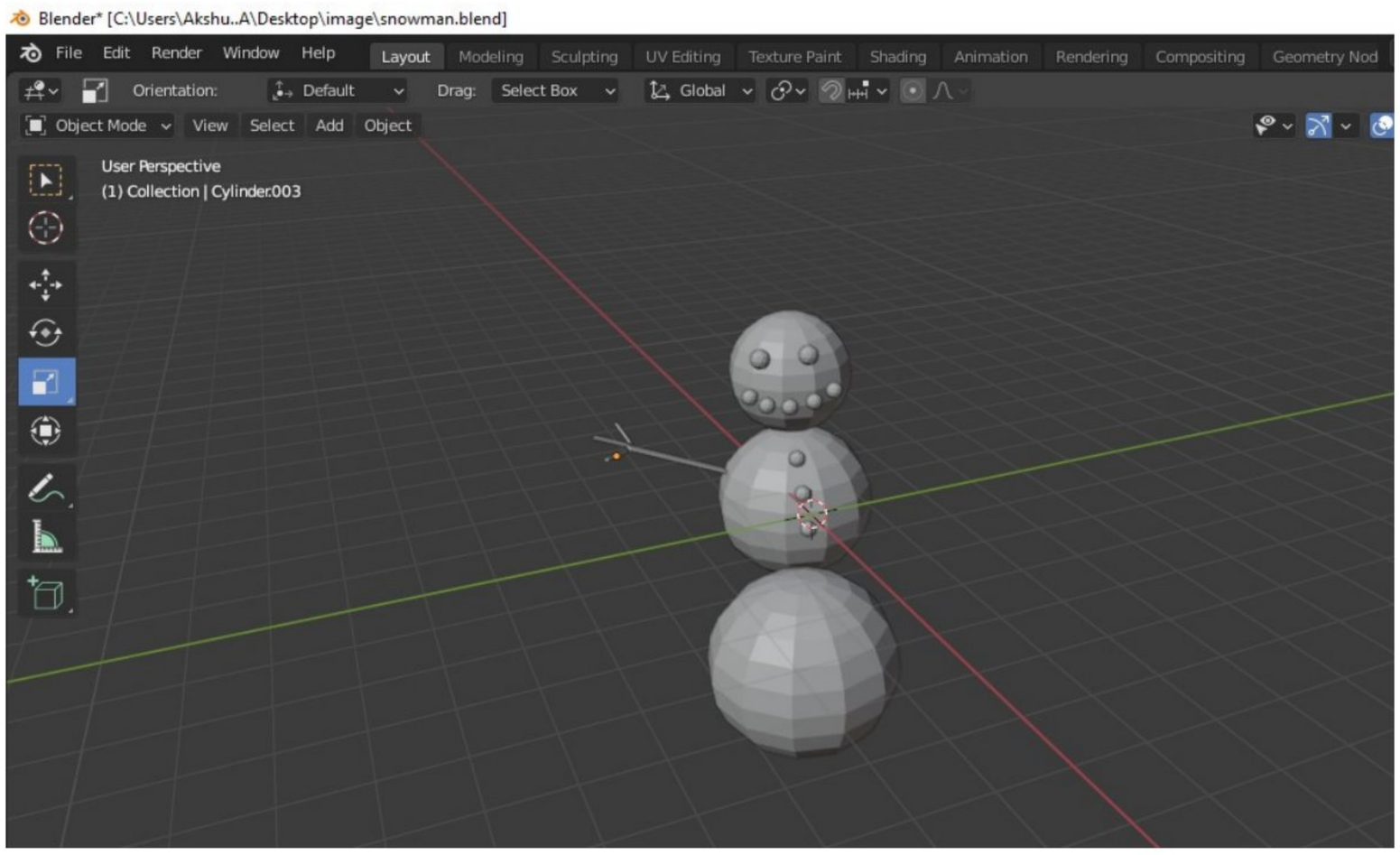
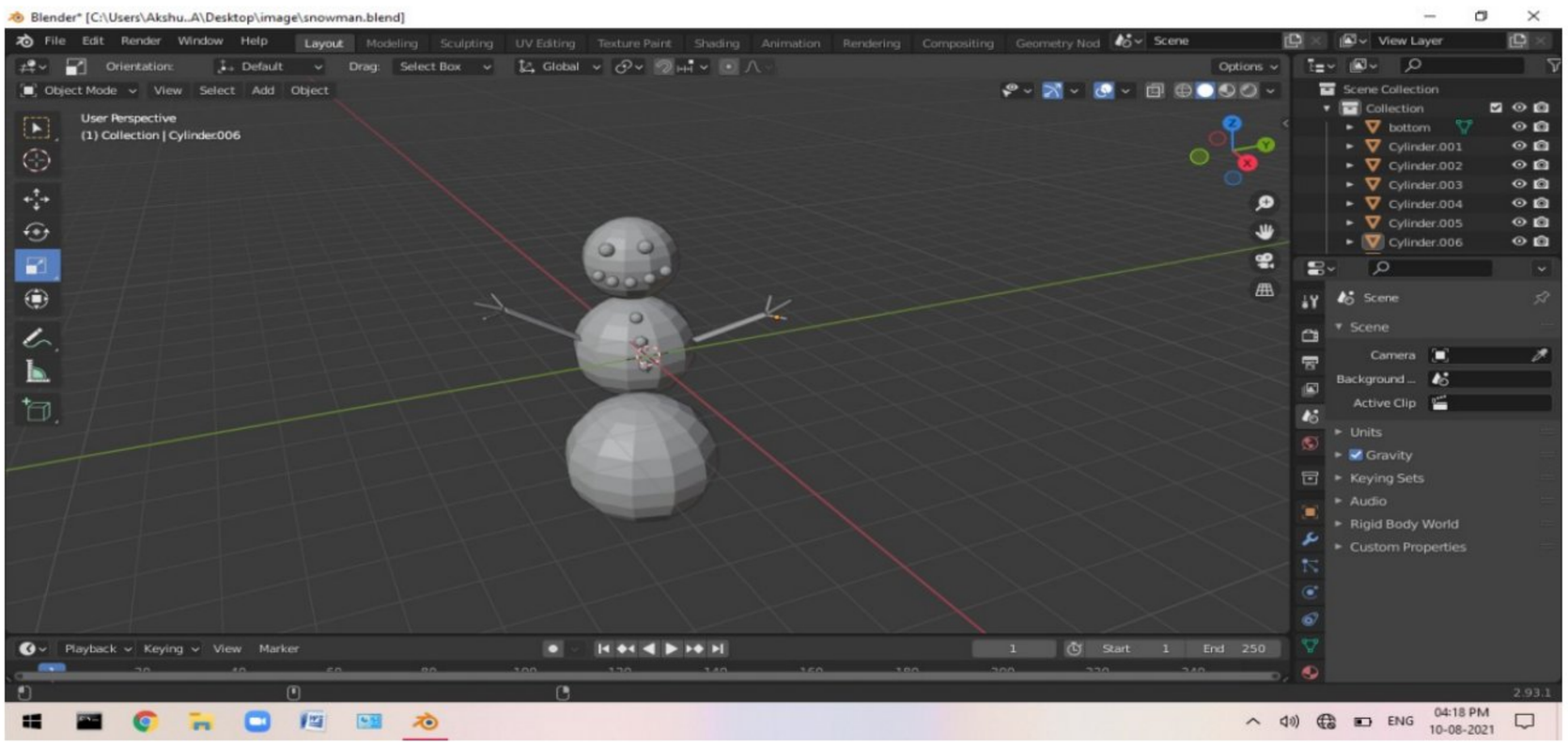
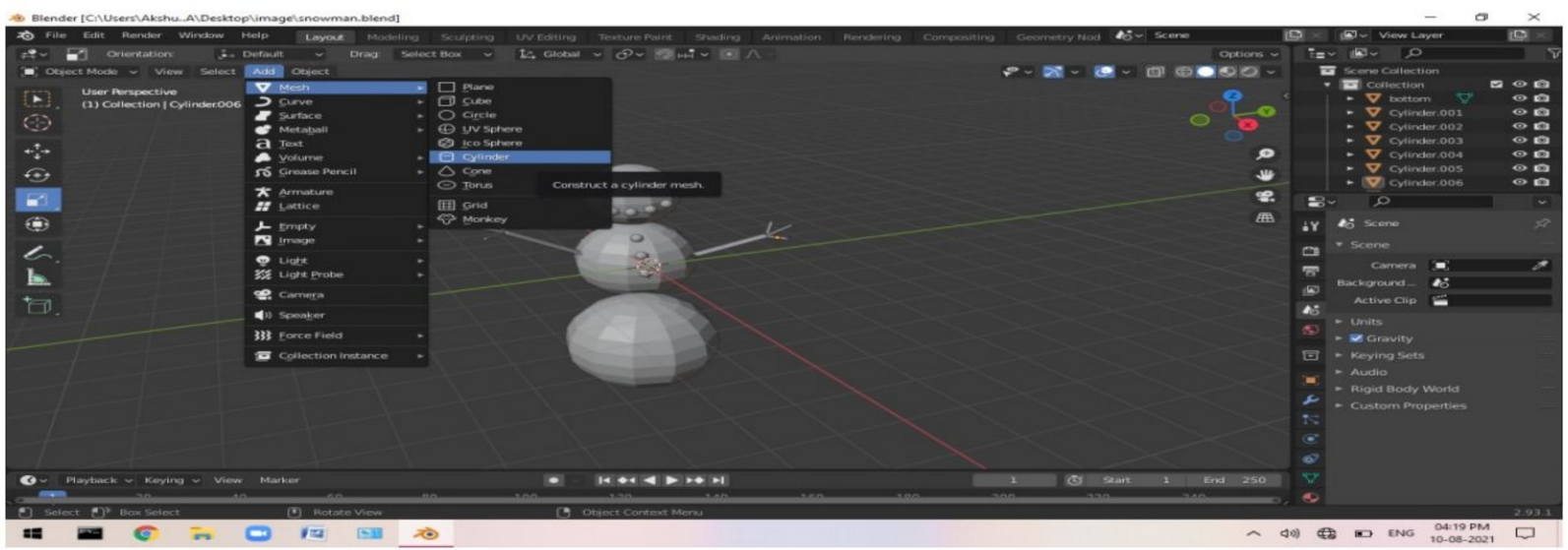
Step 8: Duplicate the object by pressing “Shift +D” from keyboard. Place it with modified cylinder.



Step 9: Repeat the step 8.



Step 10: Press Shift +A to bring up the add menu. Select “Mesh” and “cylinder”.



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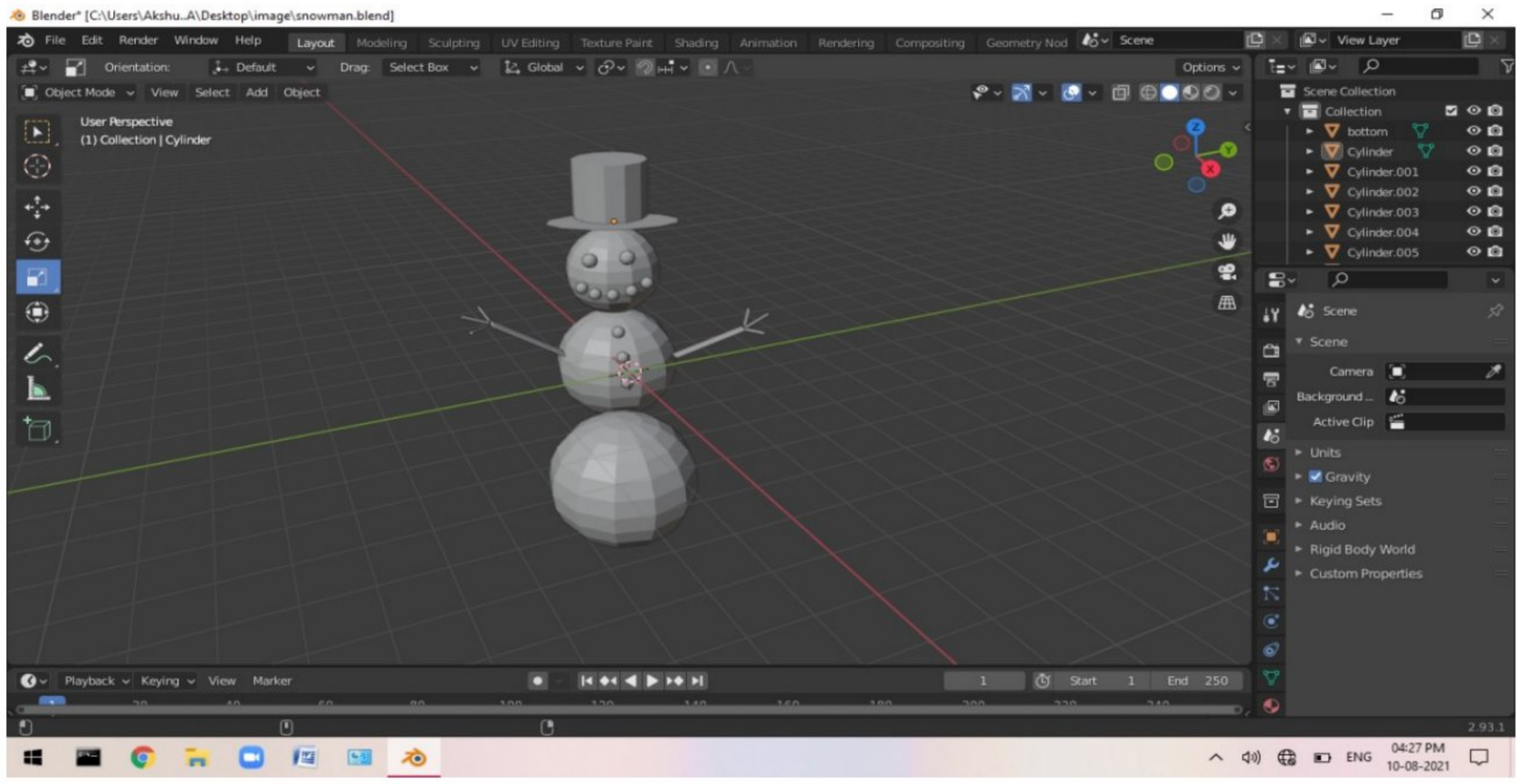
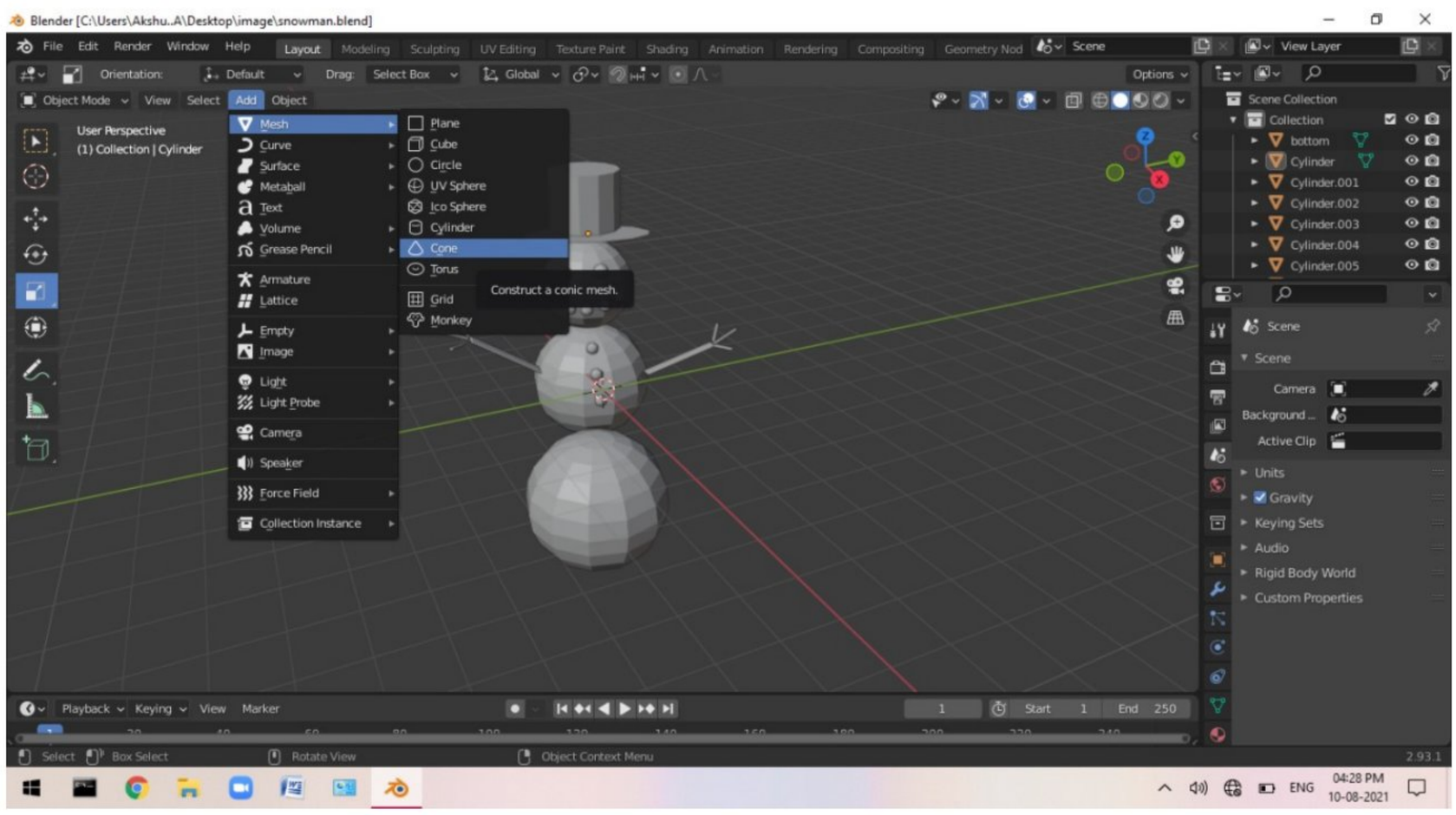
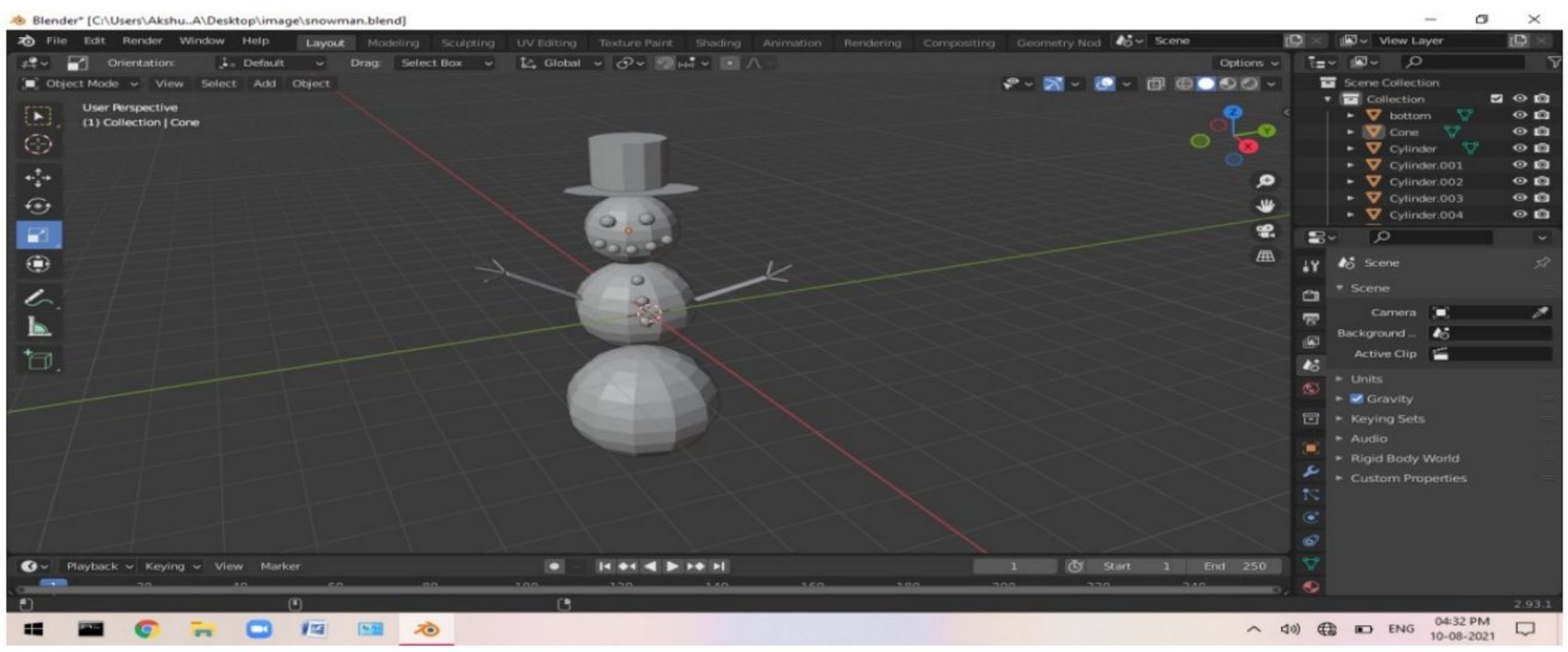


Step 11: Press Shift +A to bring up the add menu. Select “Mesh” and “cone”.



Step 12: place cone in top sphere.



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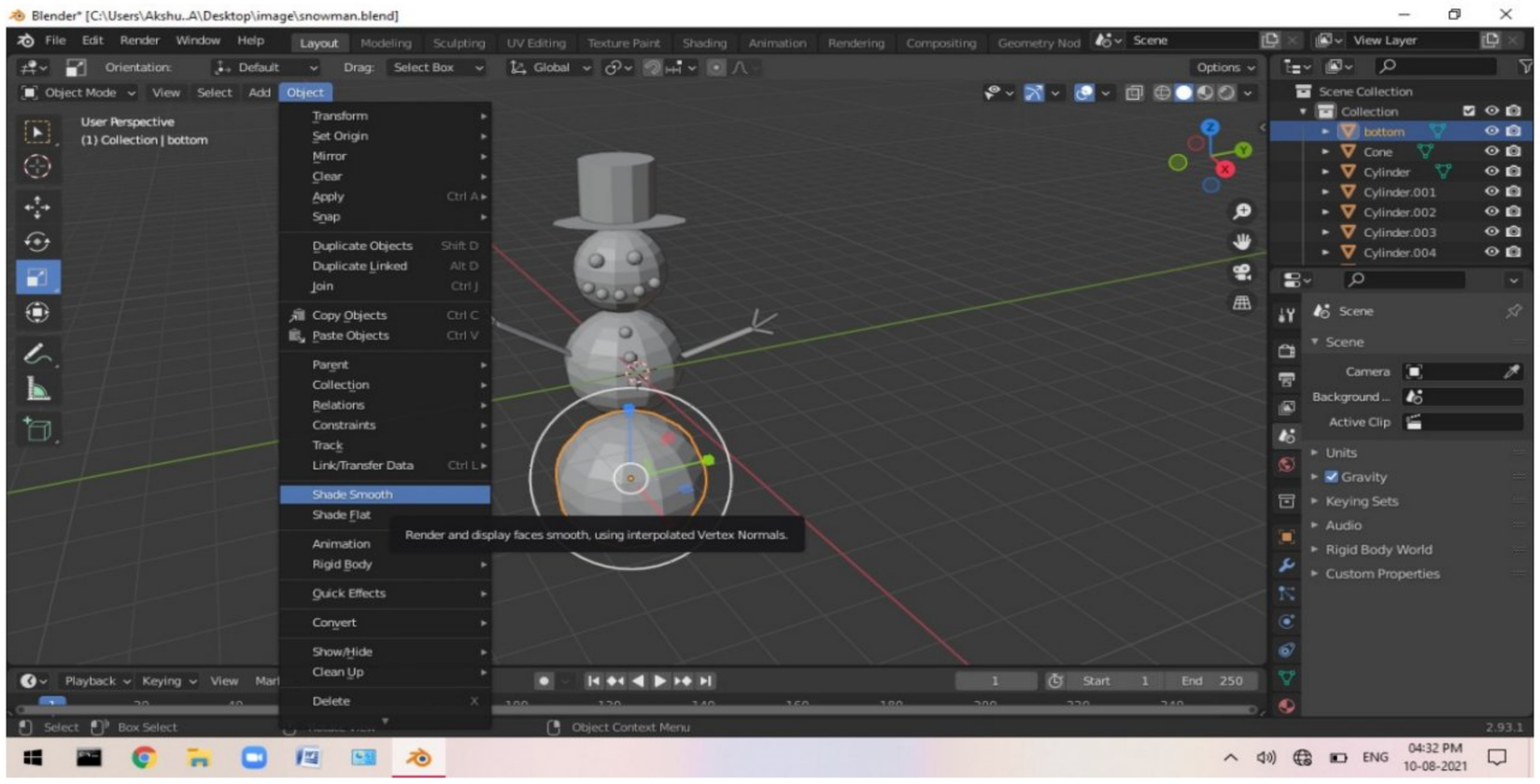
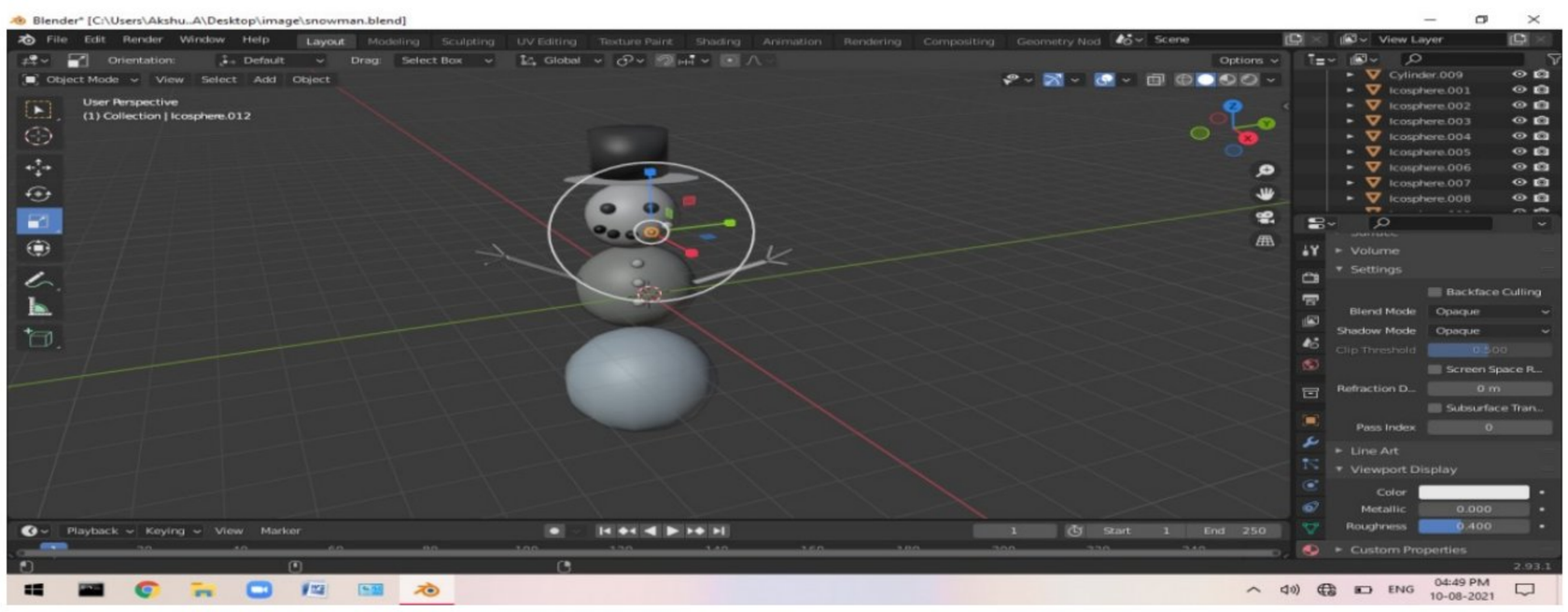
Step 13: click “object” option, select each sphere and choose “Shade smooth”.

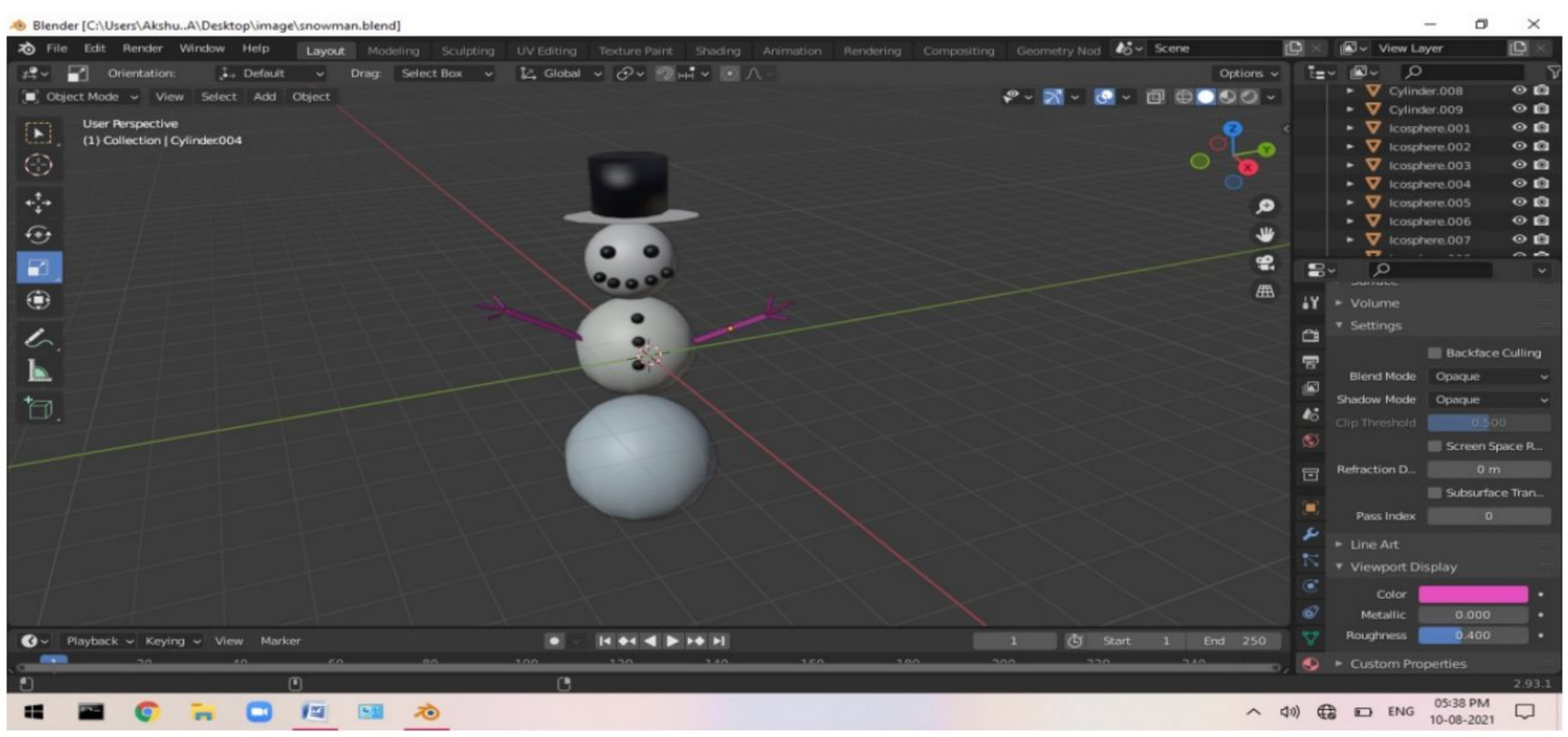


Step 14: select color to each object by clicking material properties then click “new”.

Click on “viewport display” and adjust &choose color.



Step 15: Apply your interested colors to each object.



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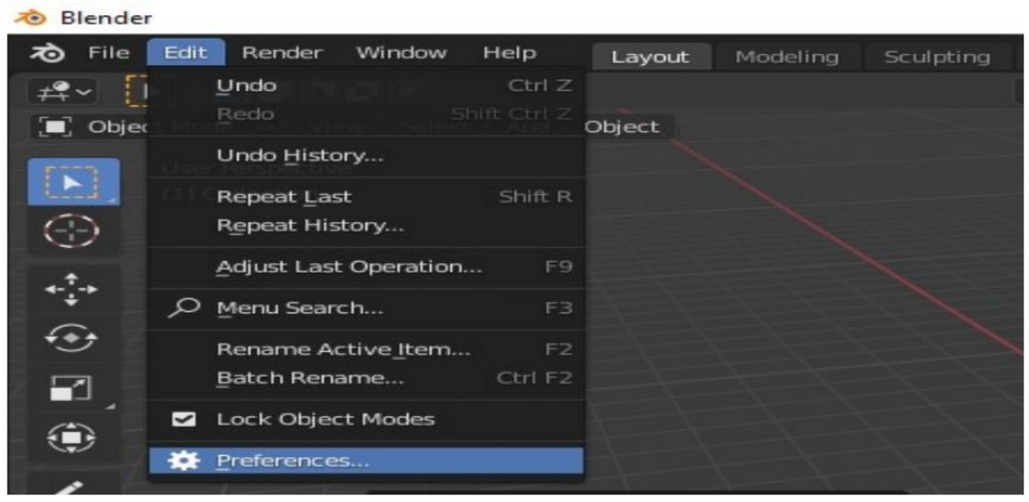
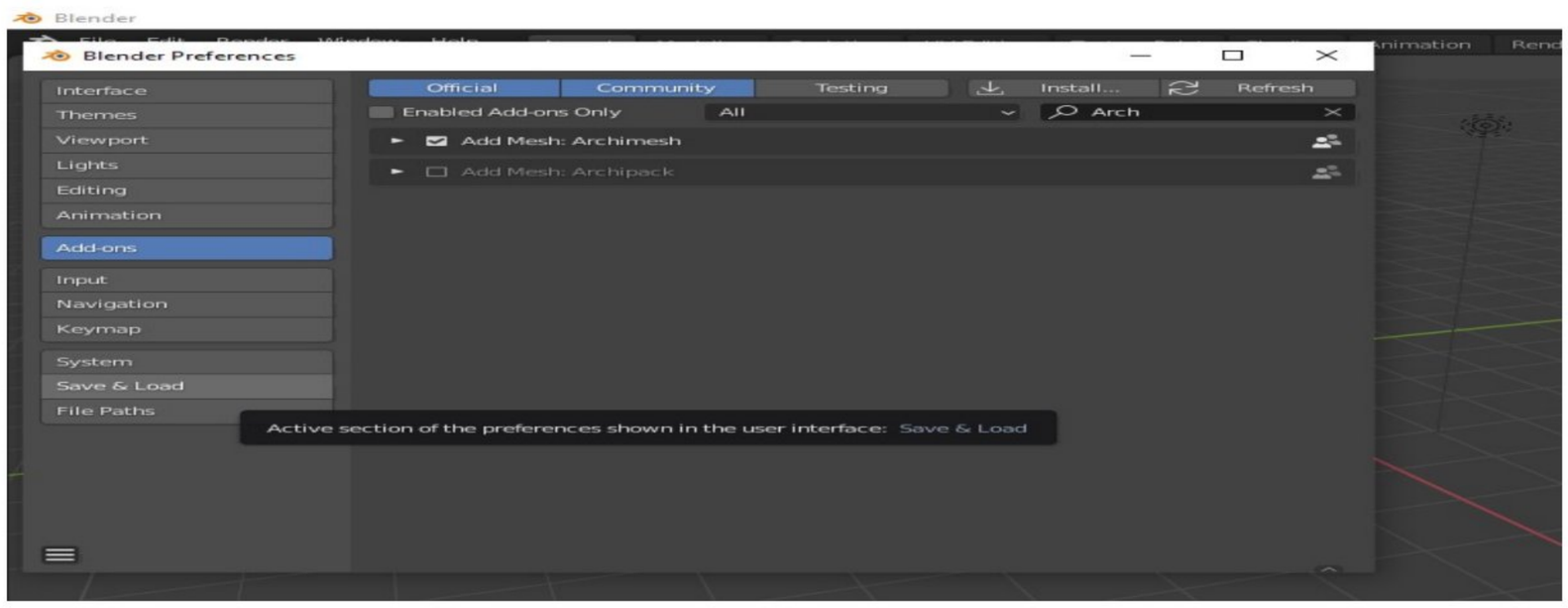
HOUSE

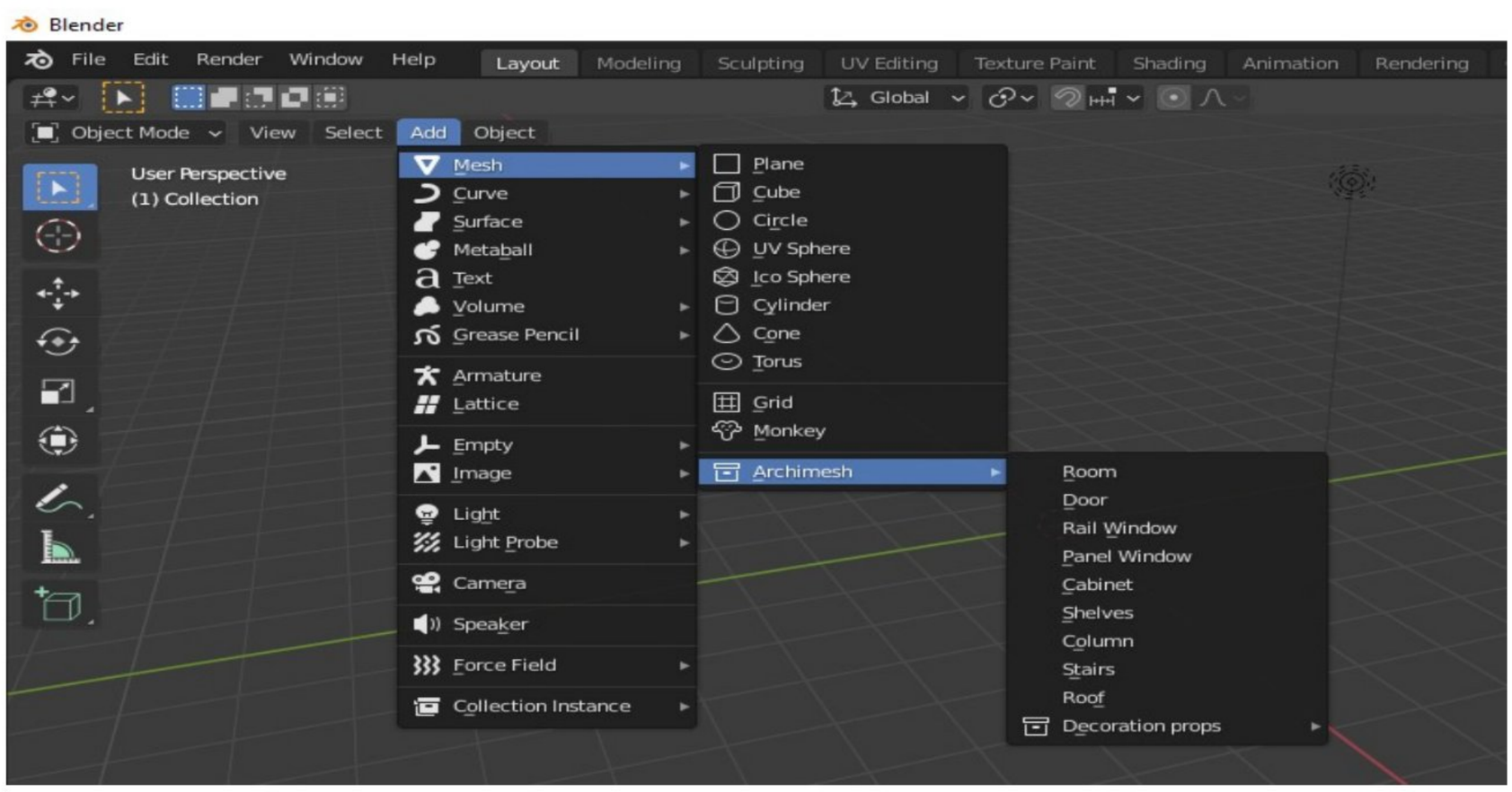
Step 1: With blender open, access Preferences from Edit->Preferences. Go to the Add-ons tab and select.



Step 2: Search for "Archimesh" and you will find it. Check the box and save it.



Step 3: Once the add-on is added, Shift +A adds Archimesh to the Add mesh item. You will find the Room, Door, Rail Window, Panel window, Cabinet, Shelves, Columns, Stairs and Roof.



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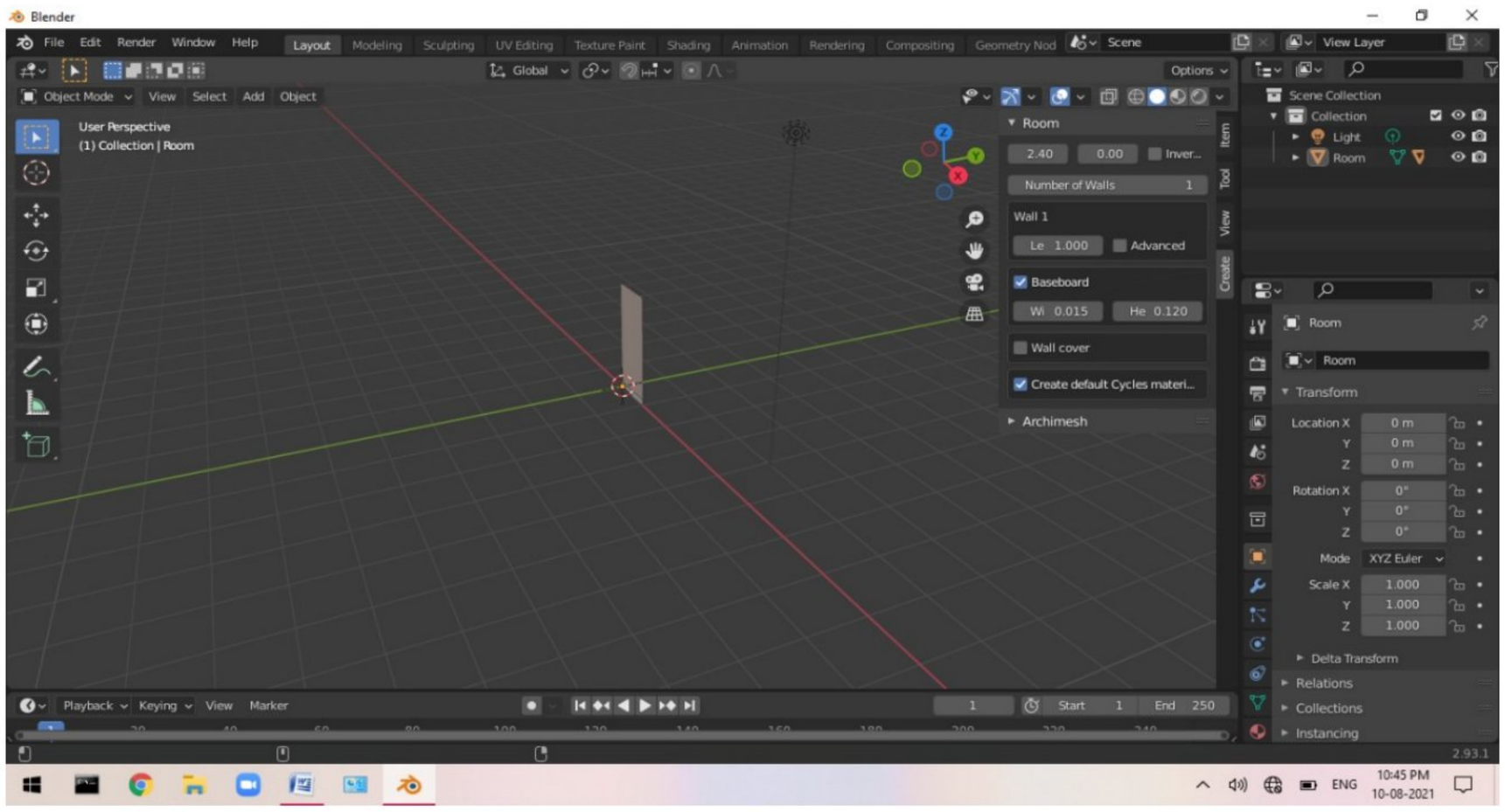
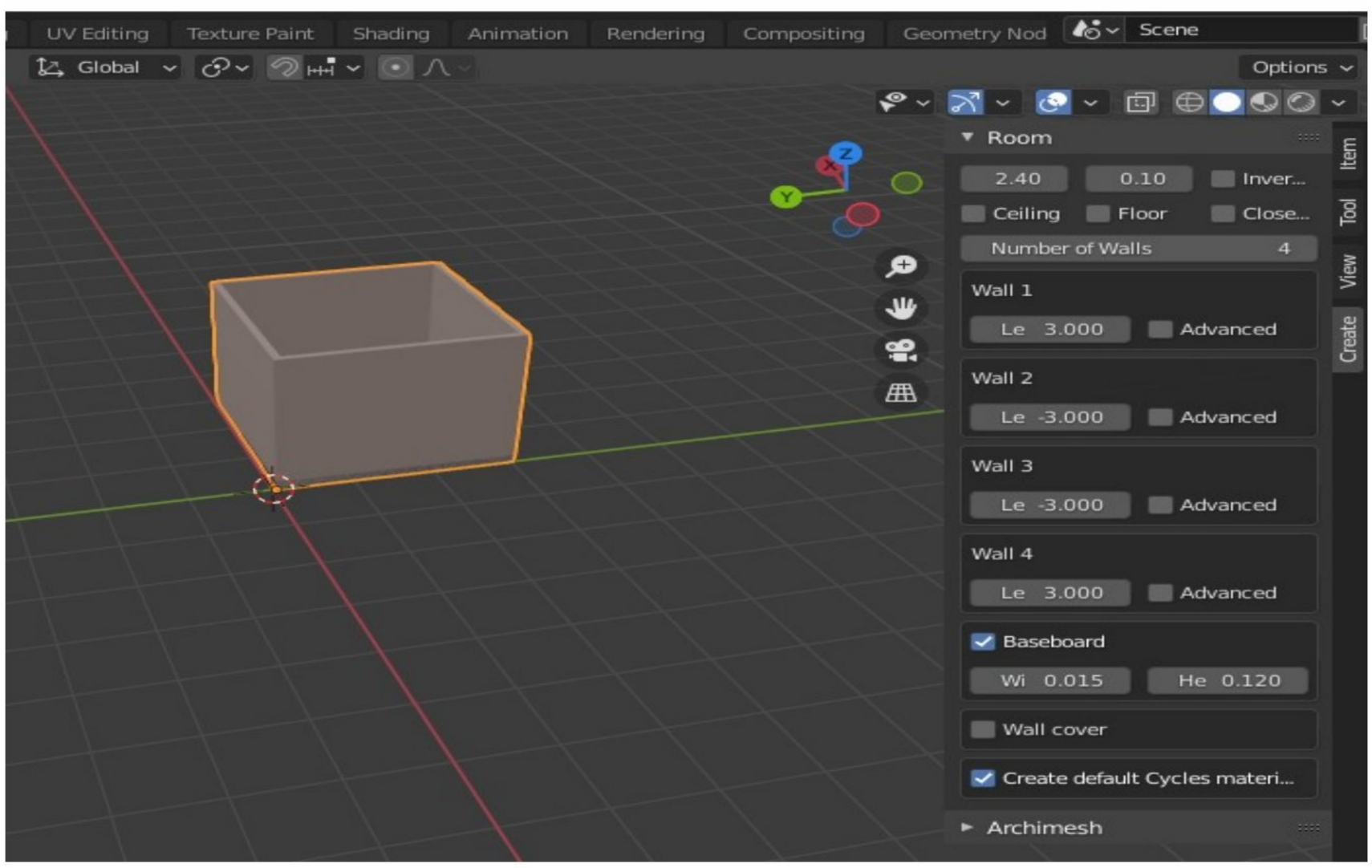
Step 4: Go to Add>Mesh>Archimesh>Room to get a mesh for Room. Then a small wall will pop up.



Step 5: If you select another wall, you can also select it to see this menu. Let's create room by manipulating this menu. First ,we will set the number of walls i.e. 4 and menu will contain more menus from wall 1 to 4. In each wall menu, you can set length of wall. If you want to make square room with 4 walls, make wall 1 and 3 the same length, wall 2 and 4 to the same length.



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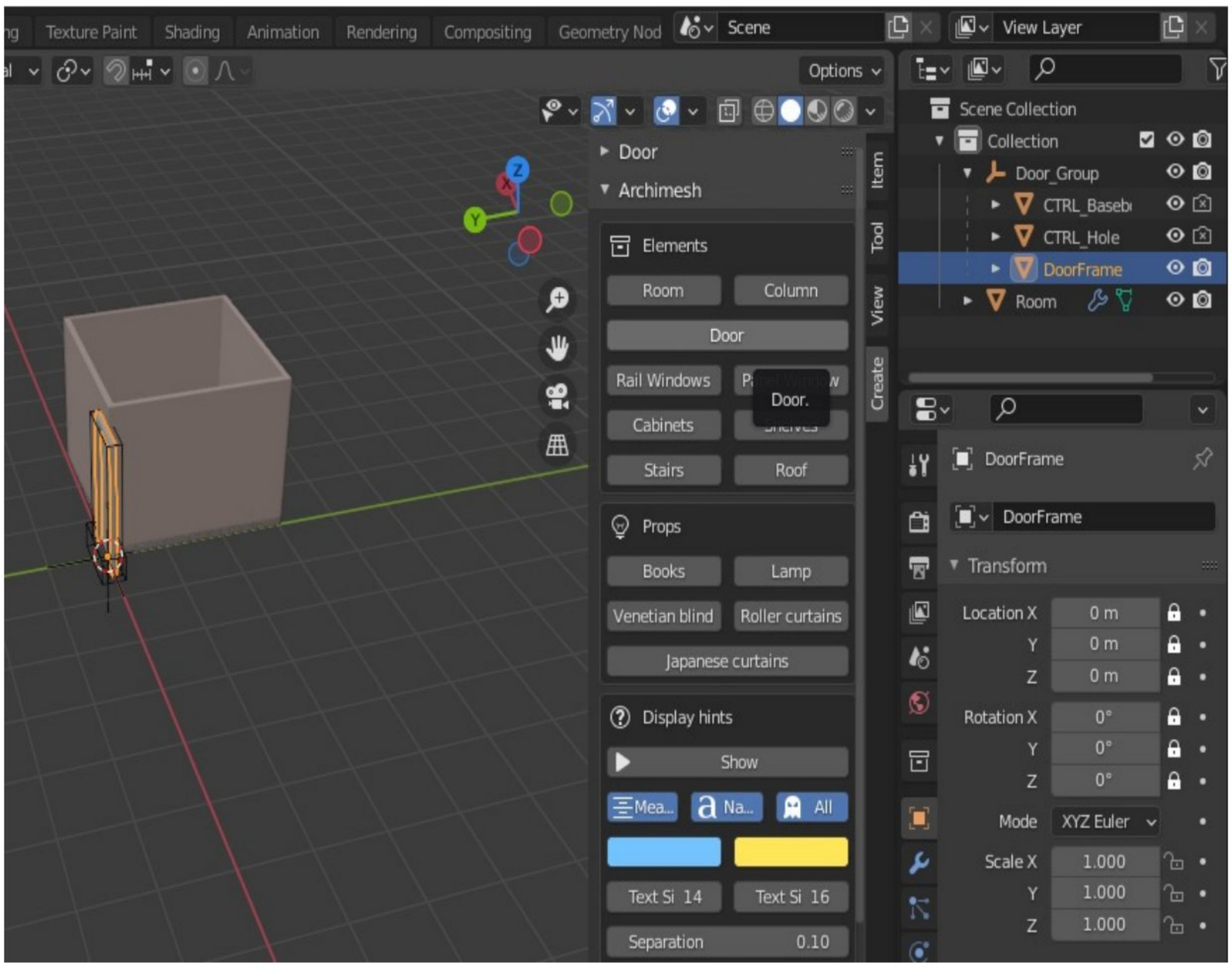
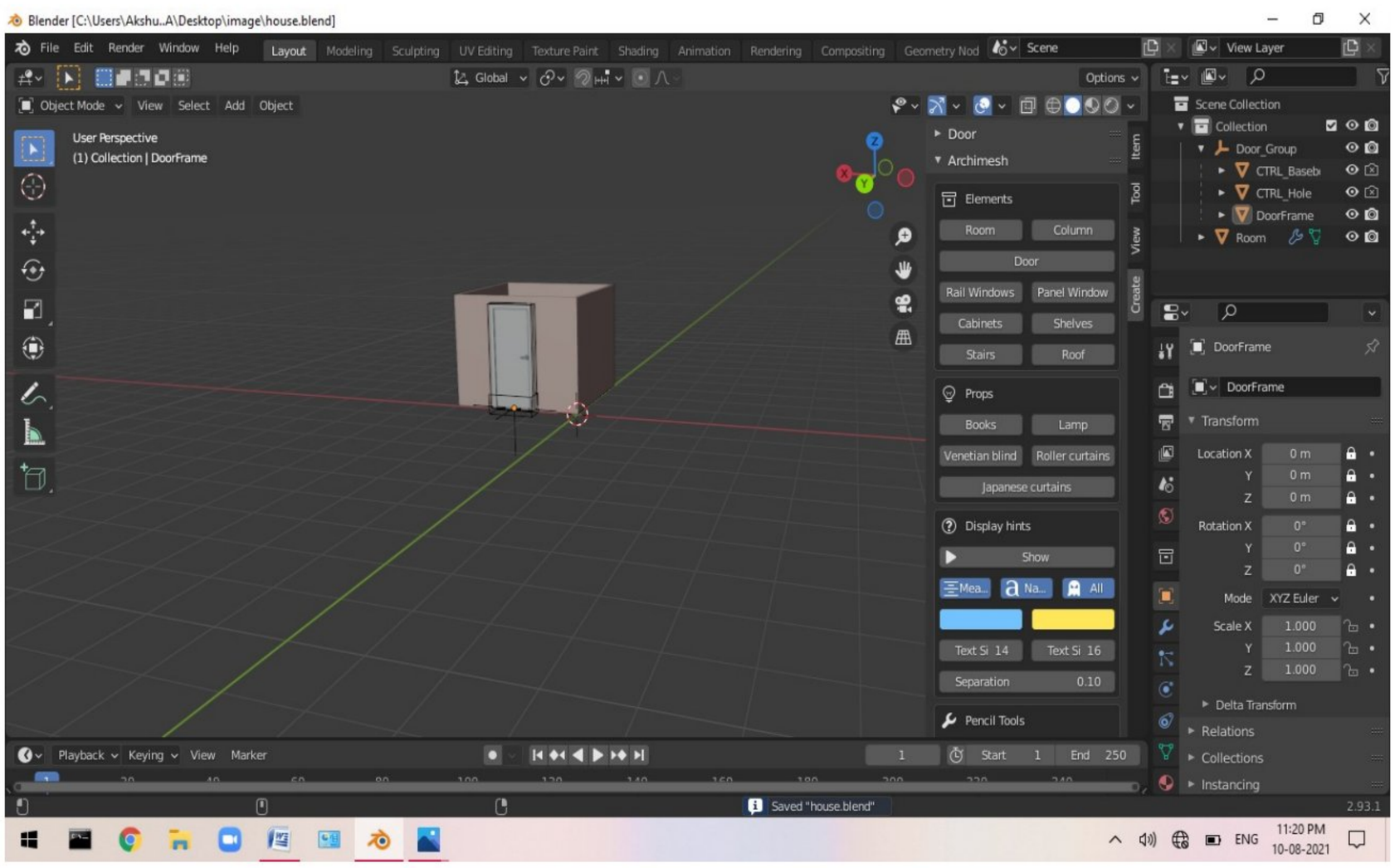
Step 6: click Archimesh>Elements>Door.



Step 7: select Door_ group, CTRL _base, CTRL_ Hole, Doorframe using Shift key then click “G” from keyboard to place door. In order to open the door, click “R”.



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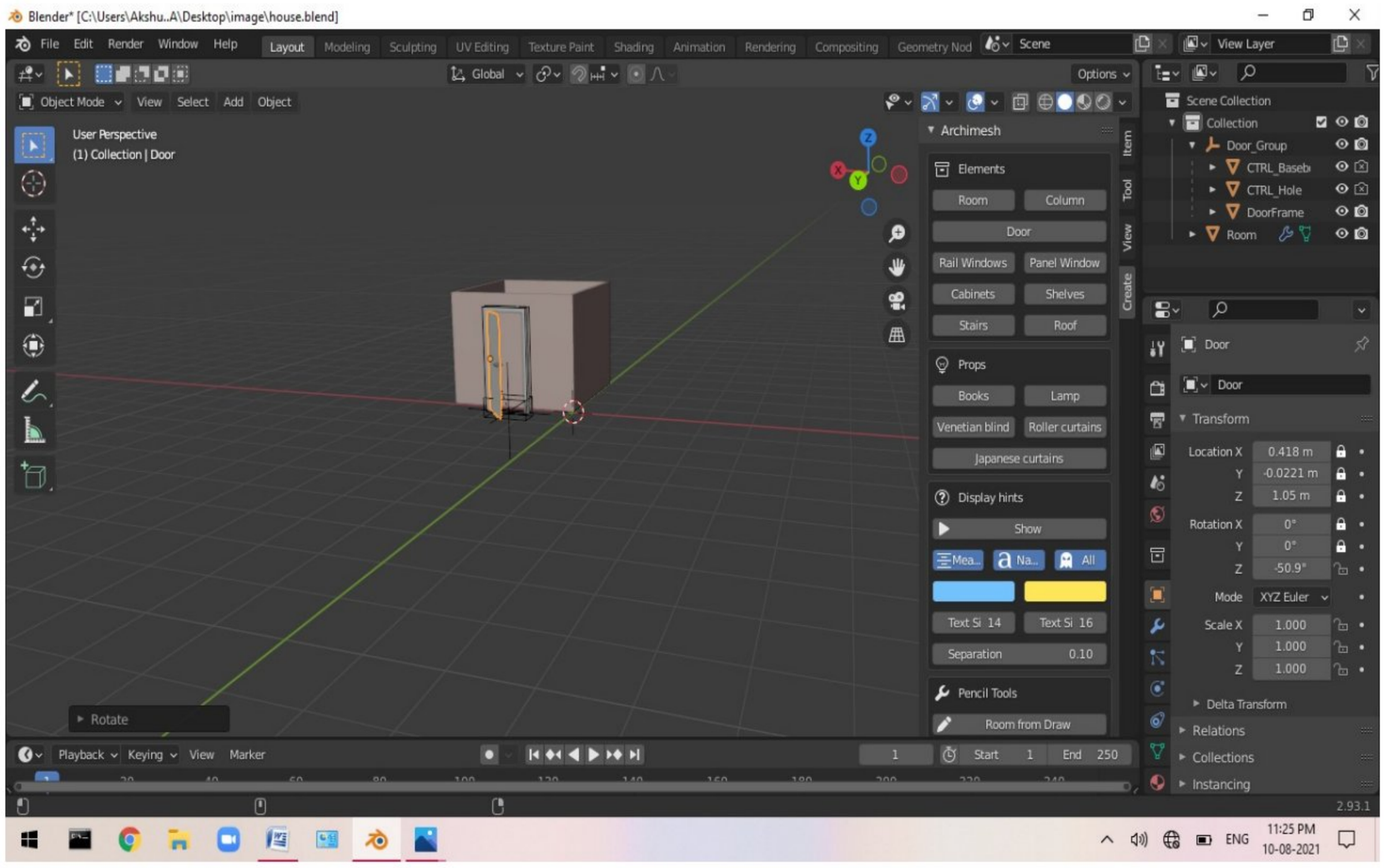
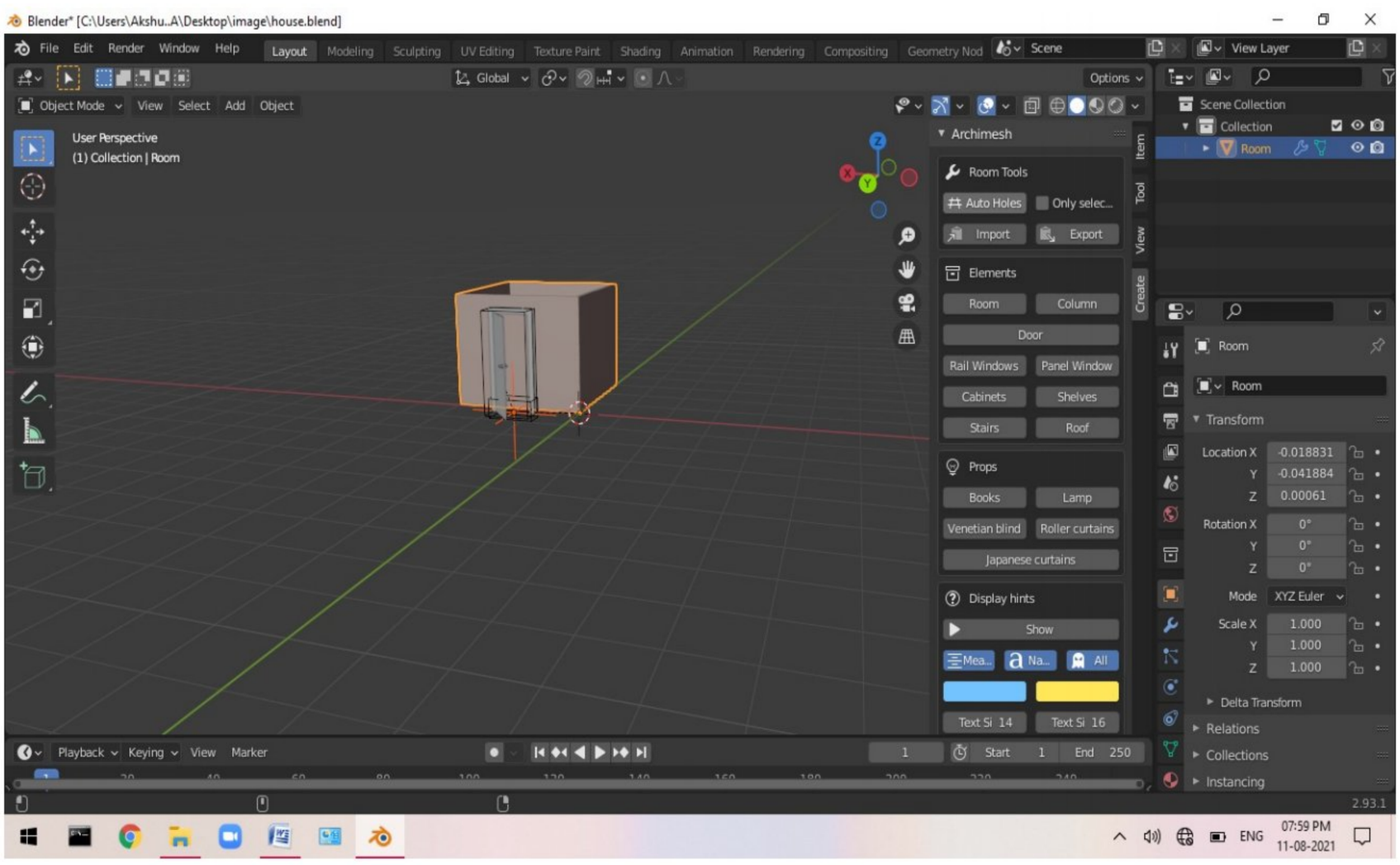


Step 8: Select walls of home and Select Auto hole from wall menu. By doing so, you will make hole in the wall.



Step 9: Turn on window (there are two types of windows: Rail window& Panel window).Choose Rail window. Select Window _Group and its submenu. Press “G” to move. Hit “R” then “G” and set angle -90 degree. Click “G” then “y” to slide.

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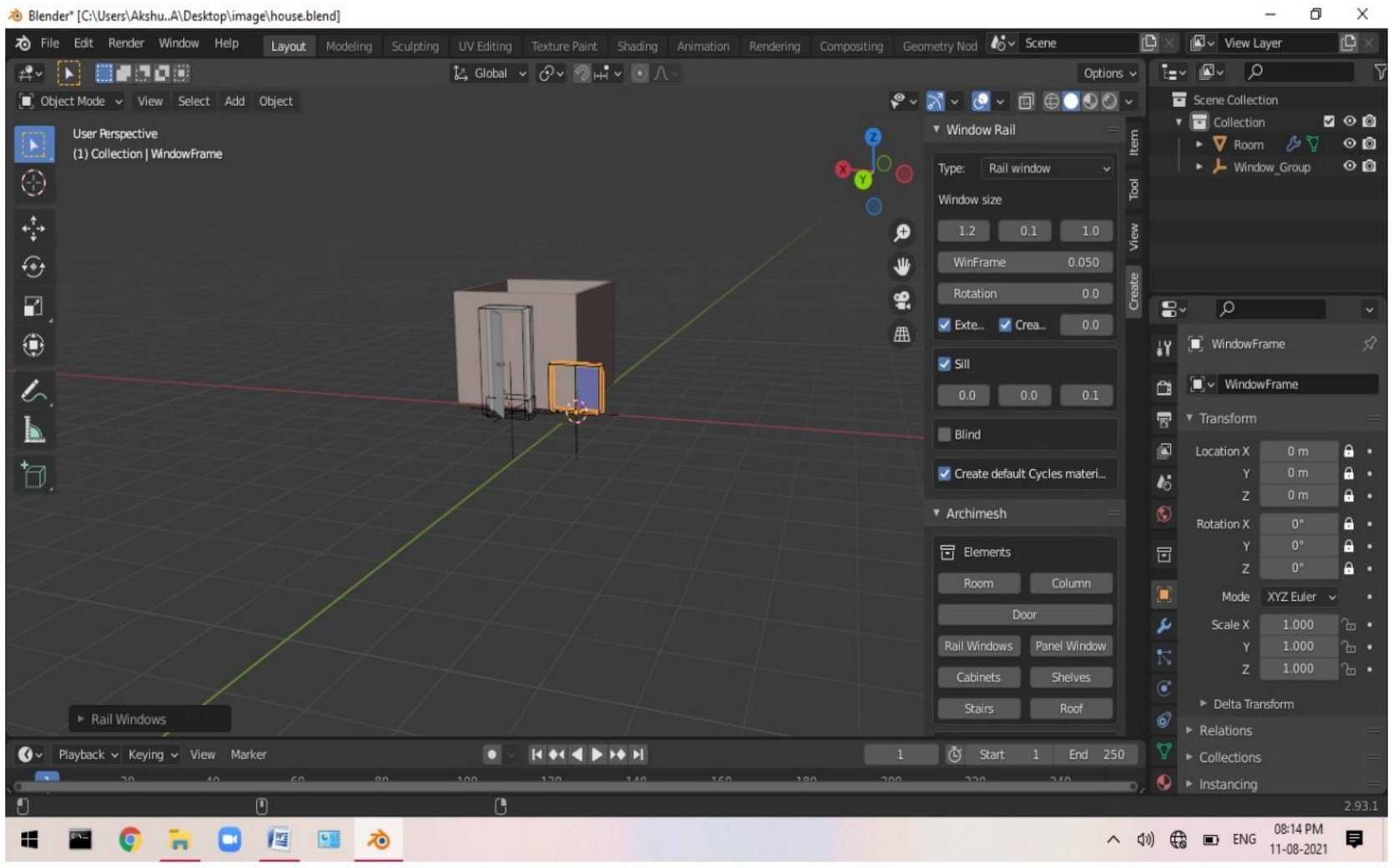
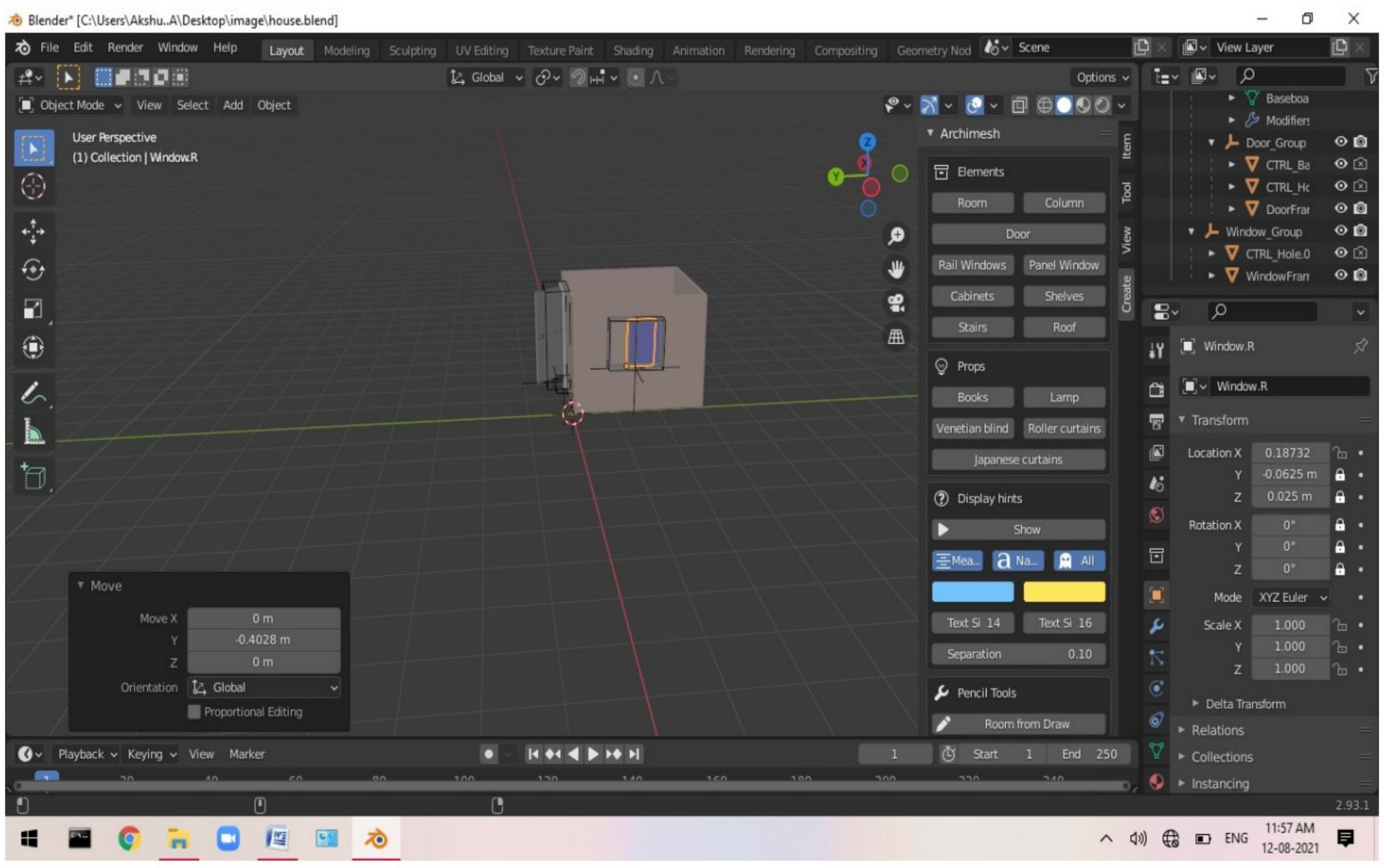


Select one window, hit “G” then “Y”. You can slide the window.



Step 10: select Room and click on Auto holes. Under the “Room” menu, and click on “Floor”.

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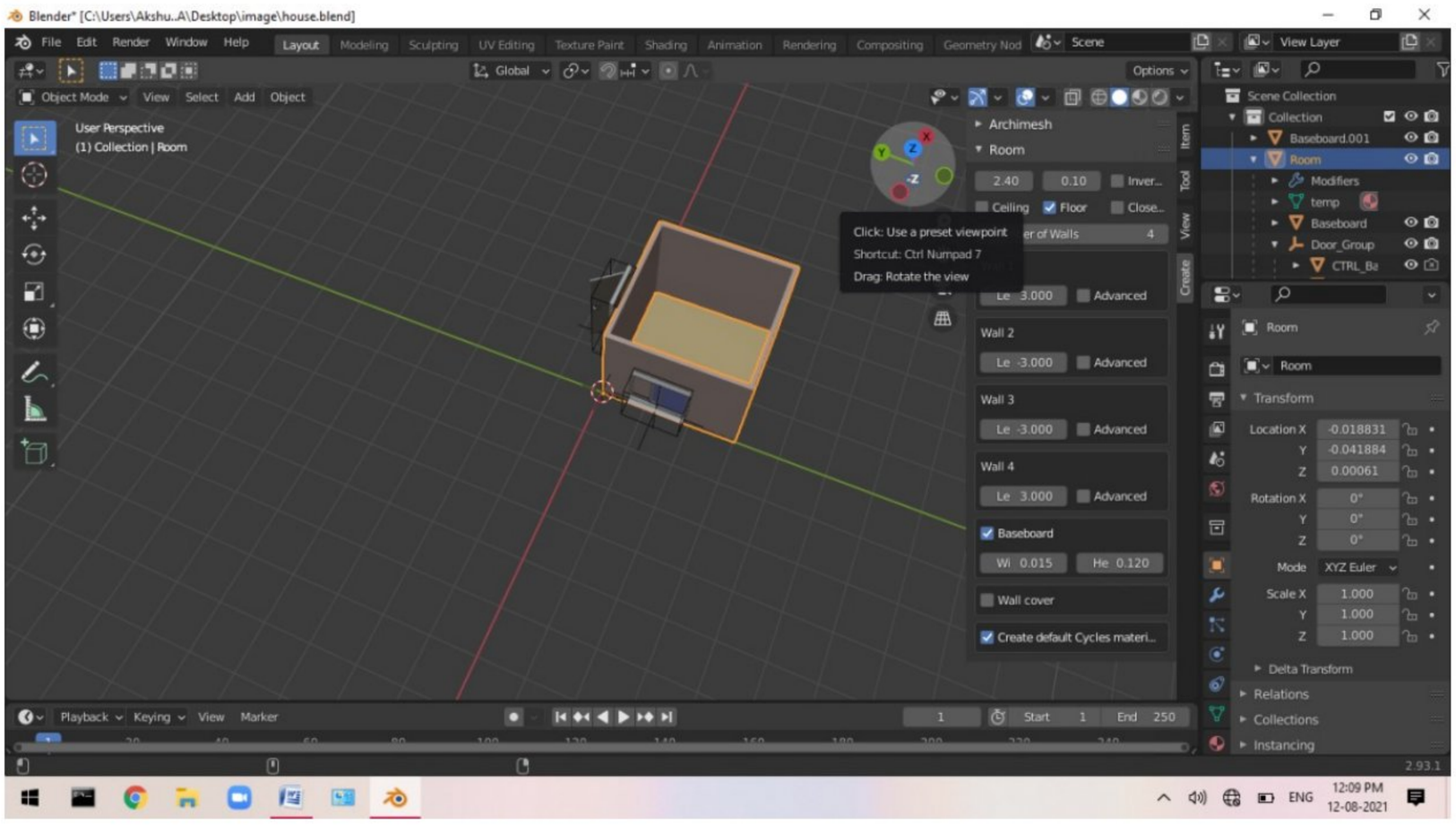
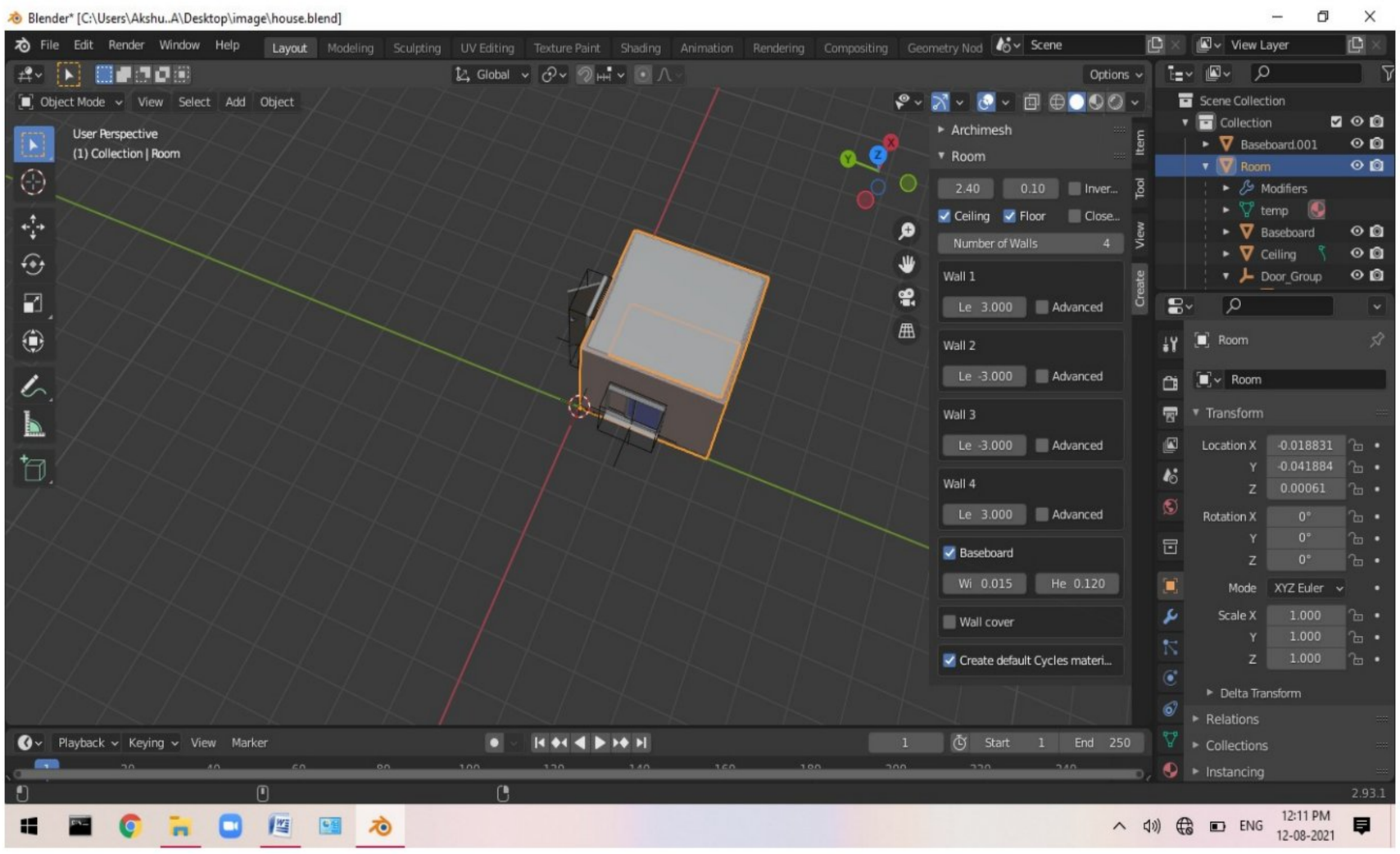
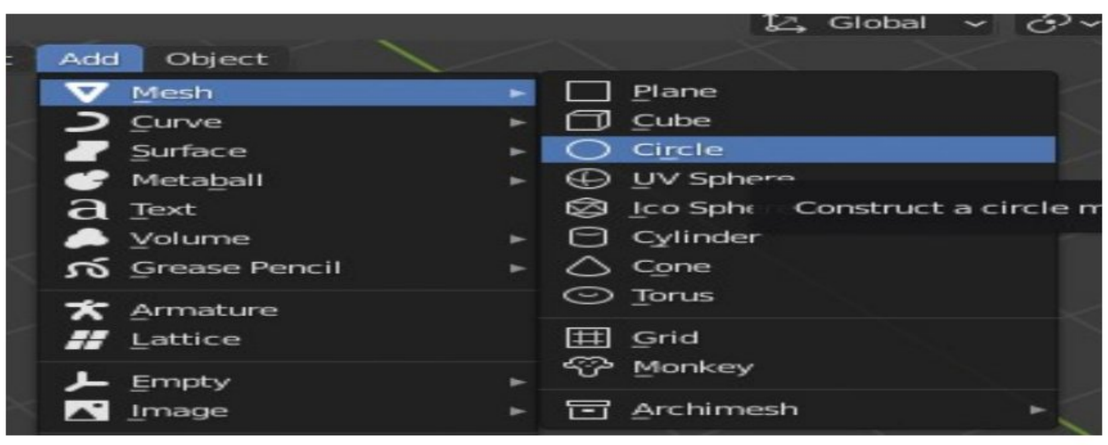


Under the "Room" menu, and click on "Celing".



TUNNEL

Step 1: Go to Add>Mesh>Circle and scale object by hitting "S".



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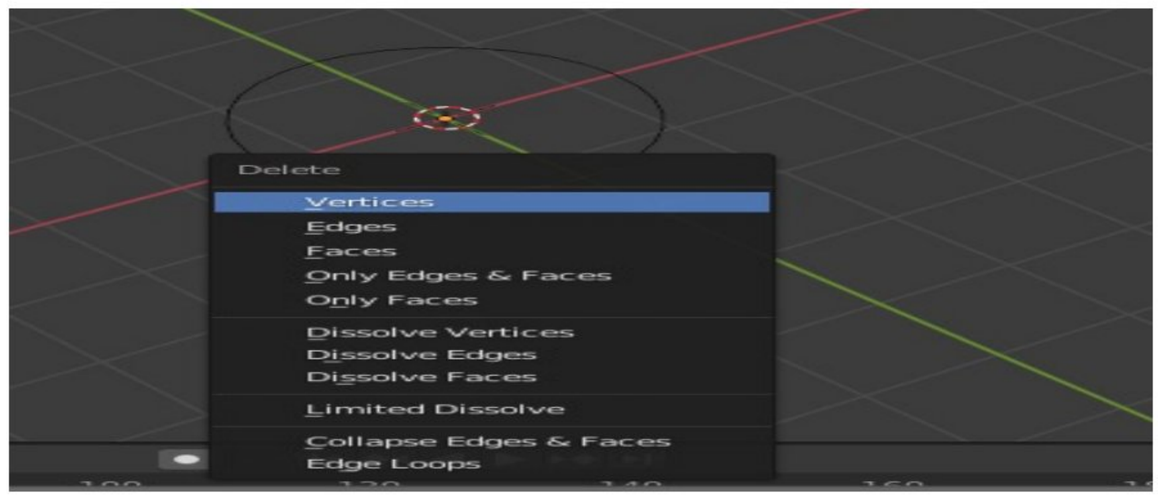
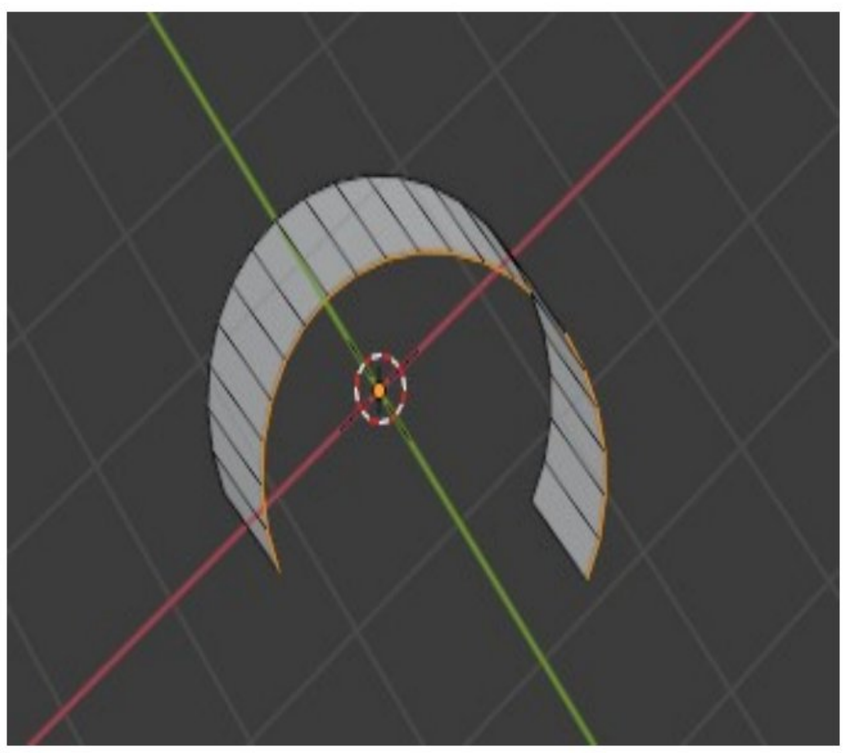
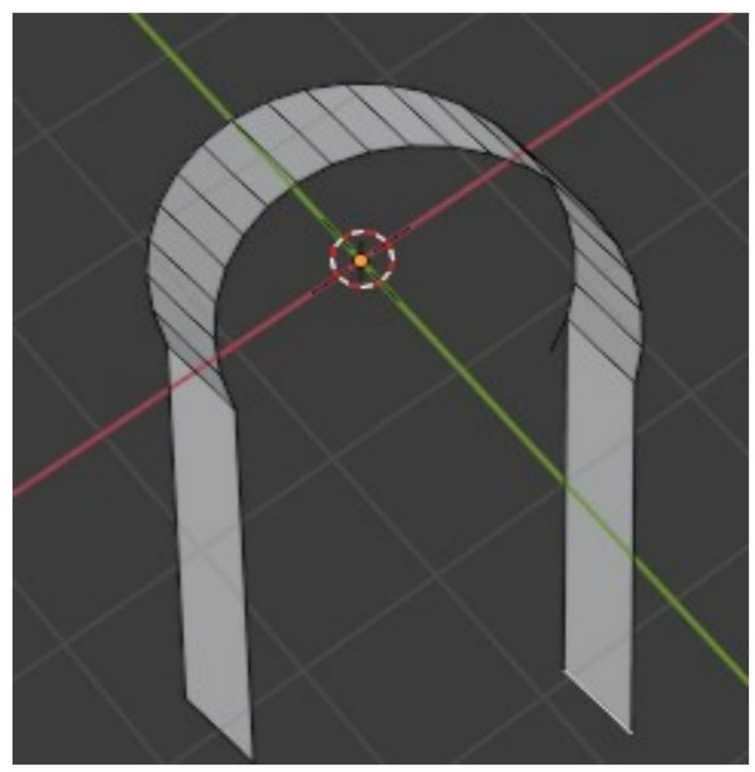
Step 2: Switch to Edit Mode. Delete bottom part of circle by hitting “delete” from keyboard then choose vertices.

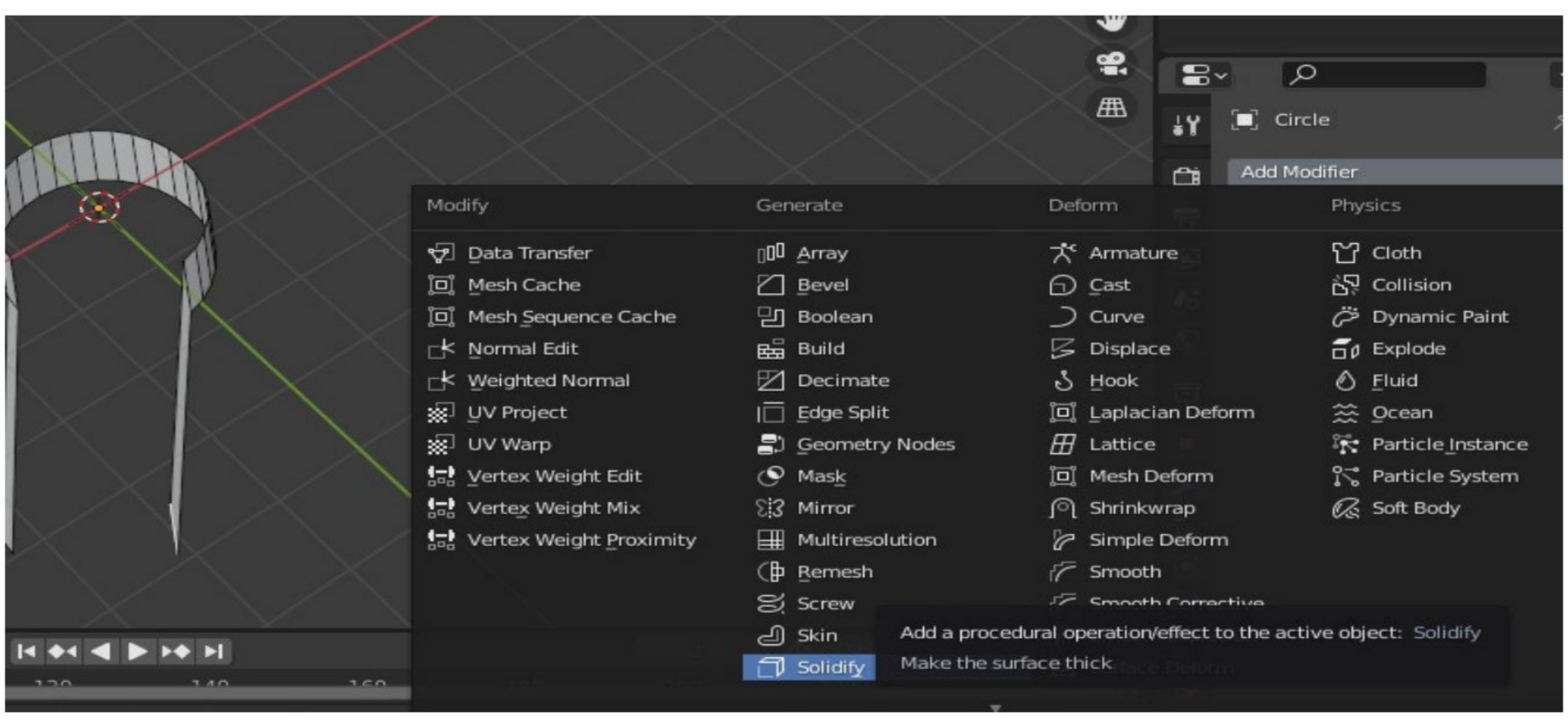


Step 3: Press “E” ie Extrude the object. Go to “edge select mode” and choose Edges, then hit “E” it extrudes down -words.





Step 4: Choose modifier menu, then click on modifier and choose “Solidify”. You can increase thickness of object then click “Apply”.



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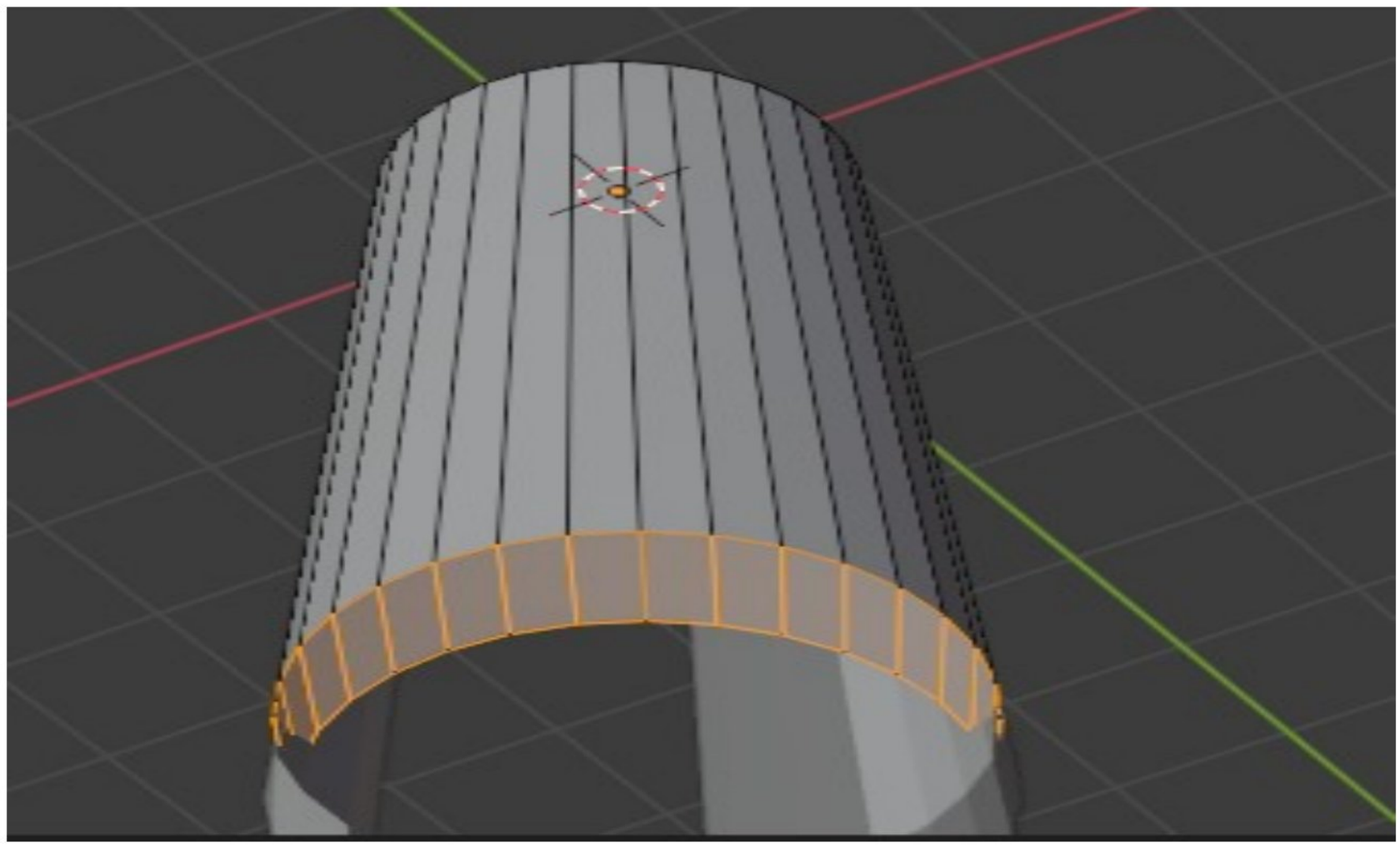
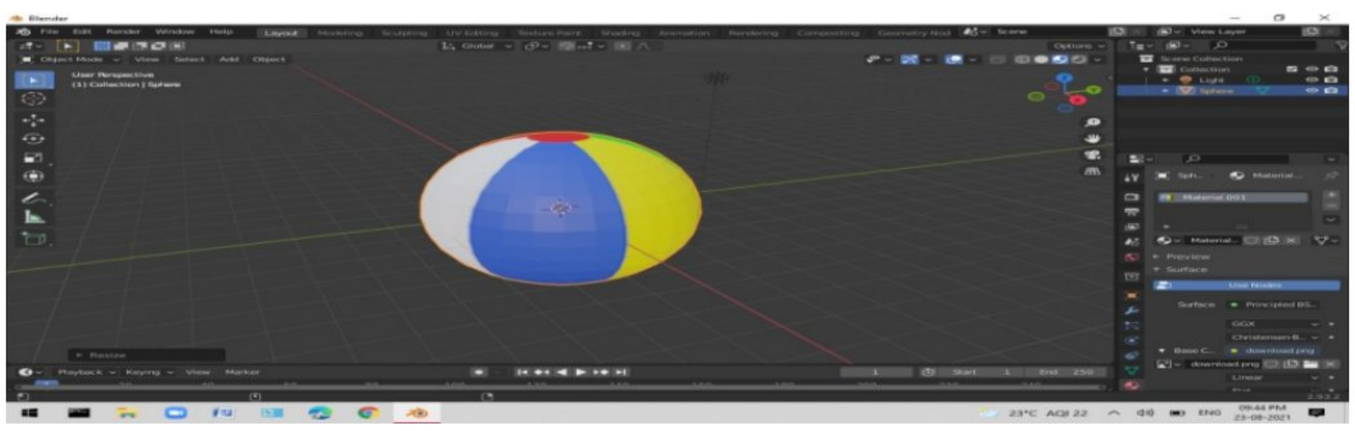
Step 5: Hit “E” Extrude whole object.



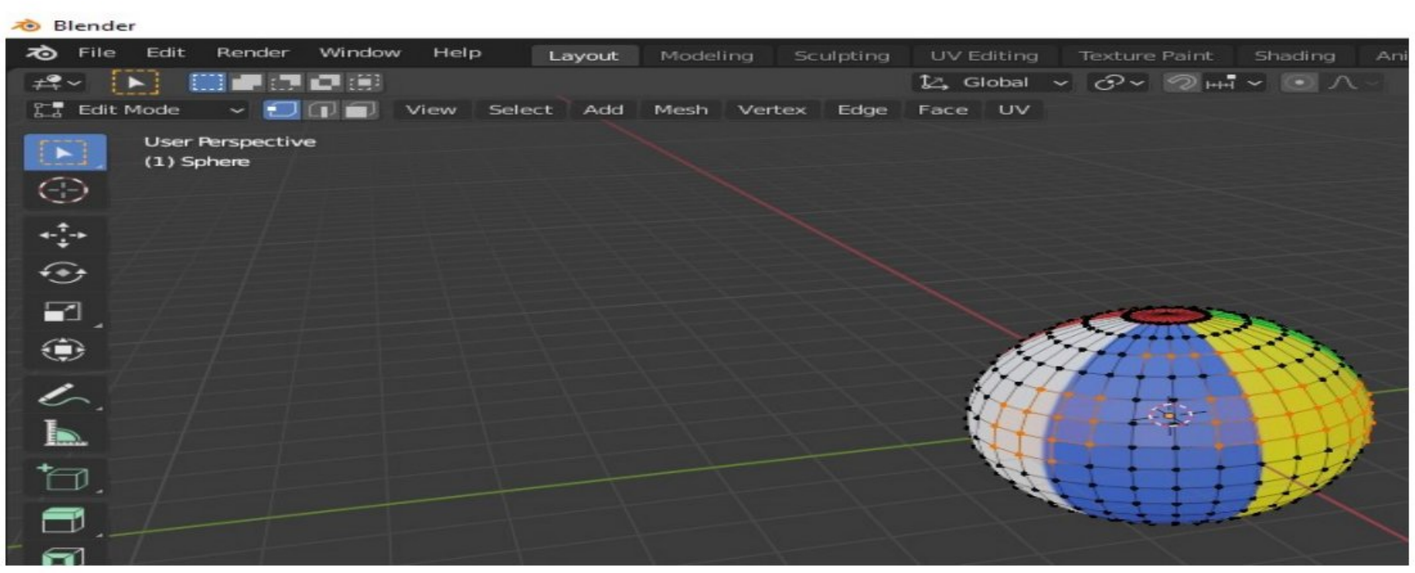
15. Change the structure of objects by editing vertices, Edges, Faces and transform the same and observe the changes.

Editing vertices

Step 1: Use uv sphere as ball and apply texture. Switch to Edit mode.



Step 2: Choose “Vertices mode” and select vertices.



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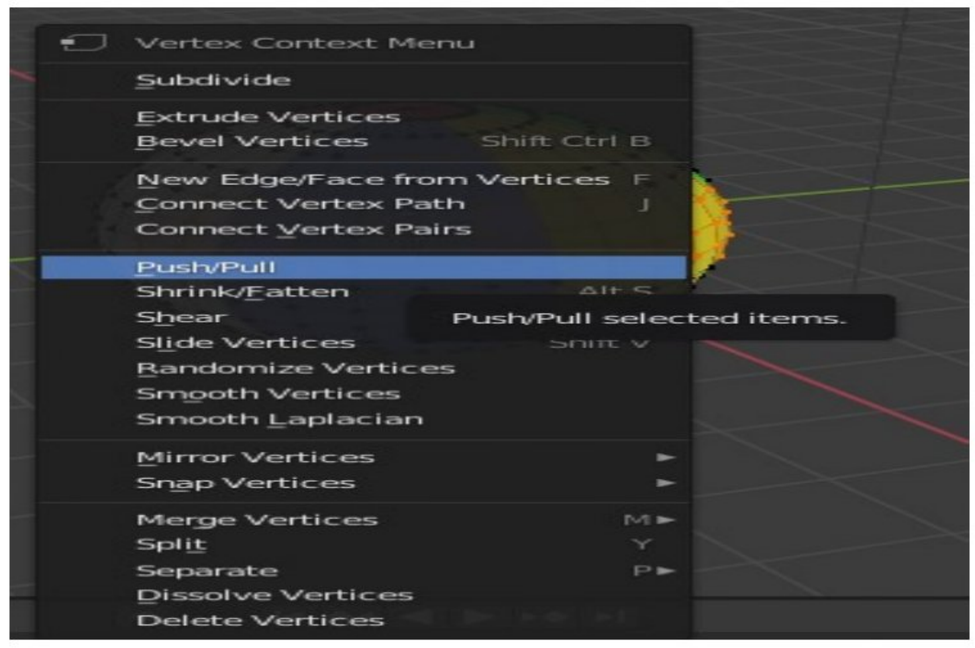
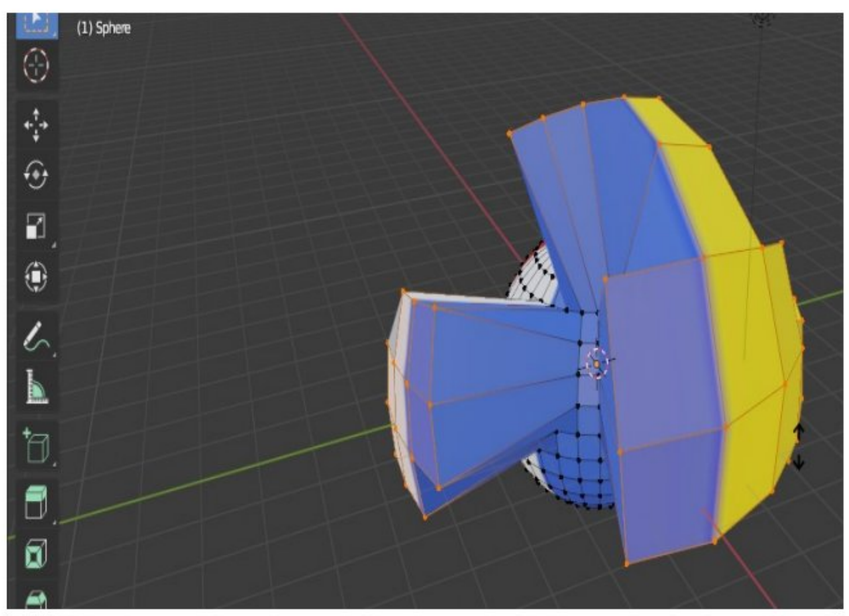
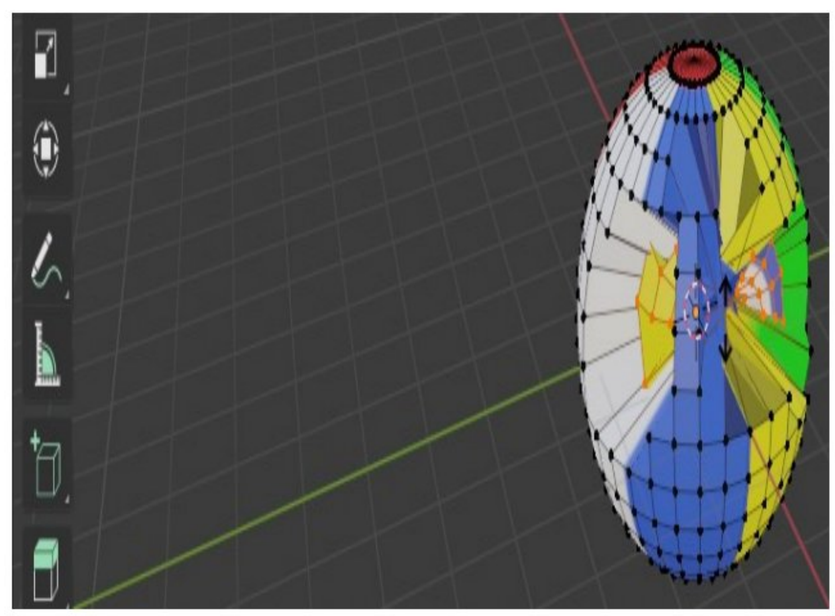
Step 3: Make right click on selected vertices and choose push/pull option from vertex contex menu.

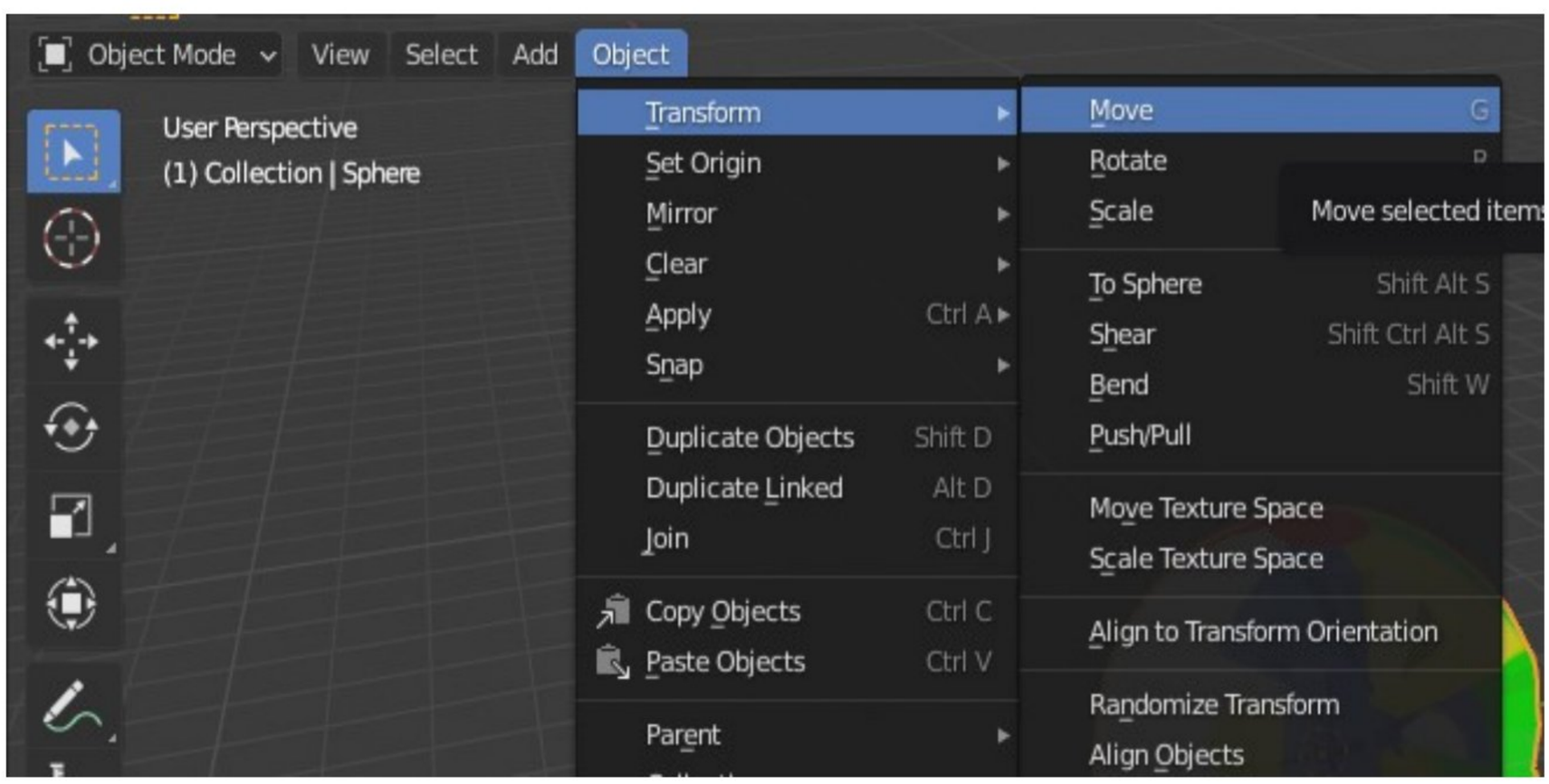


Step 4: obtain push /pull result.





Transform: Move,Rotate,Scale and Move texture space(object mode)



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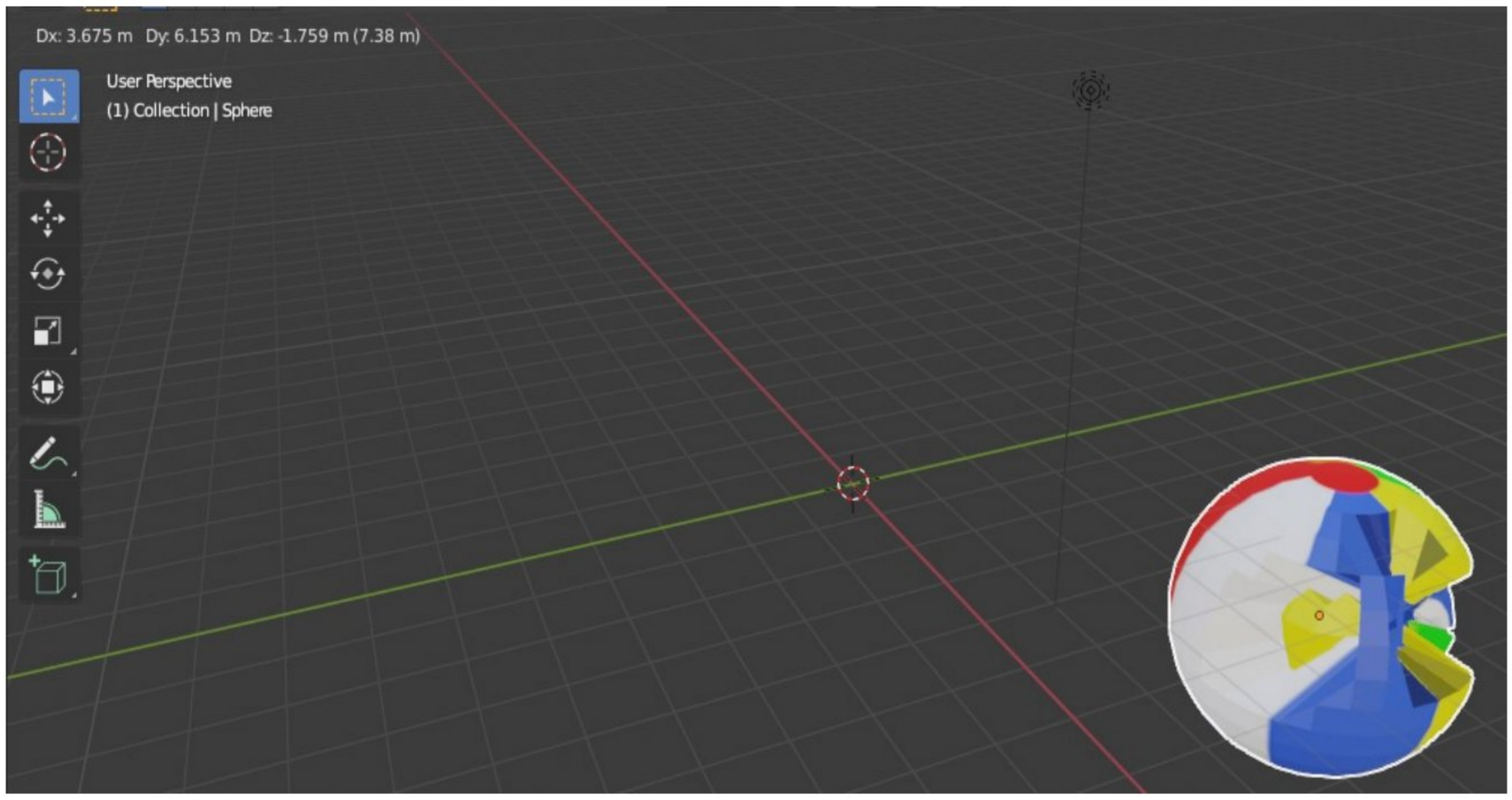

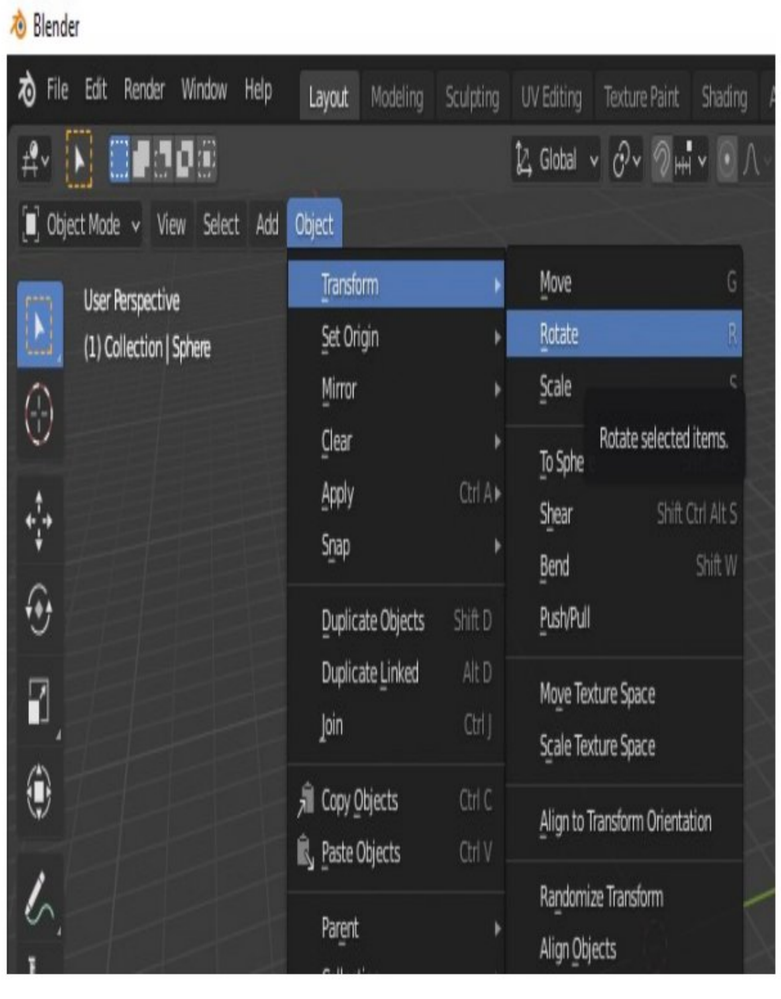

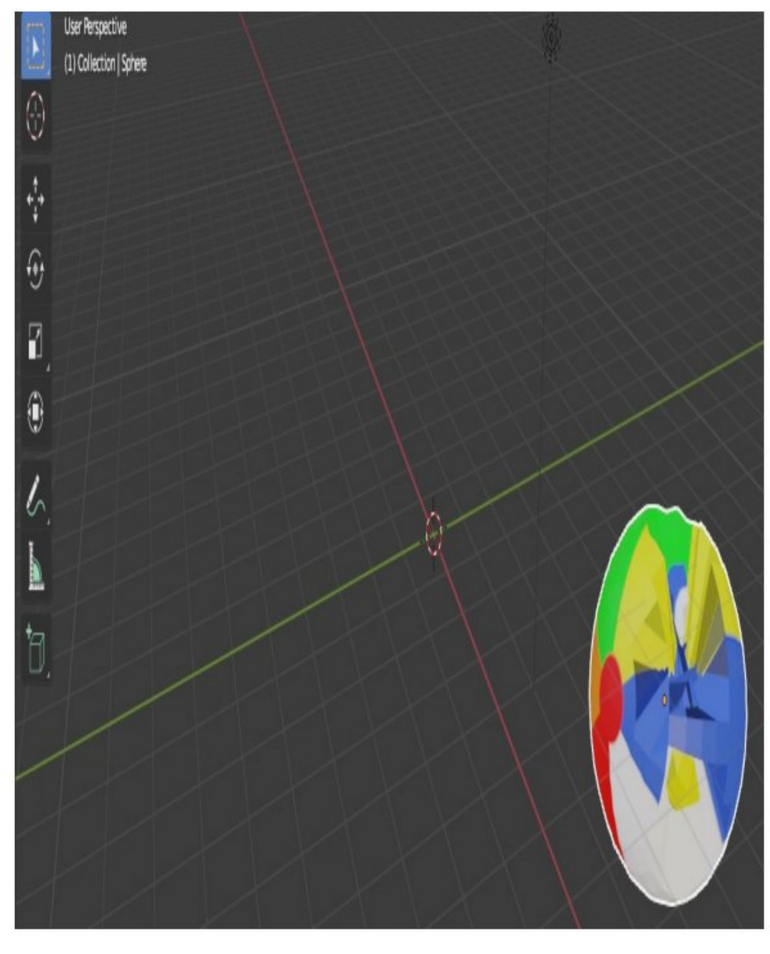

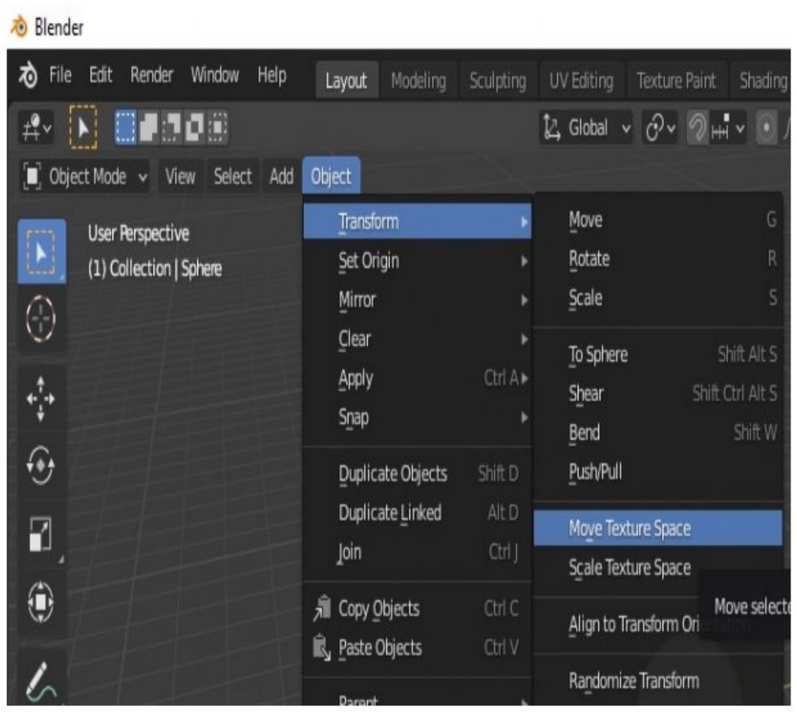

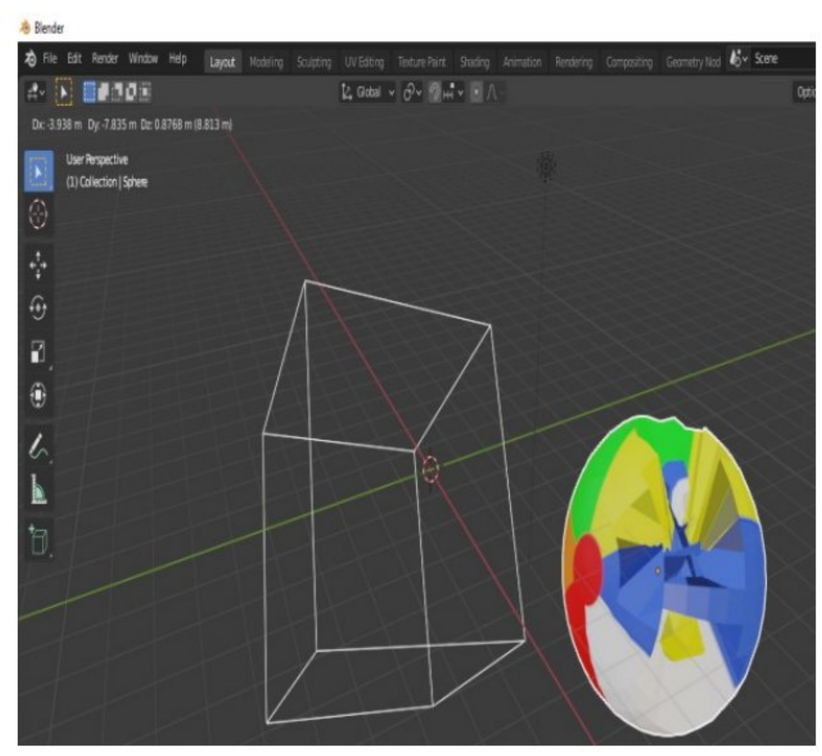

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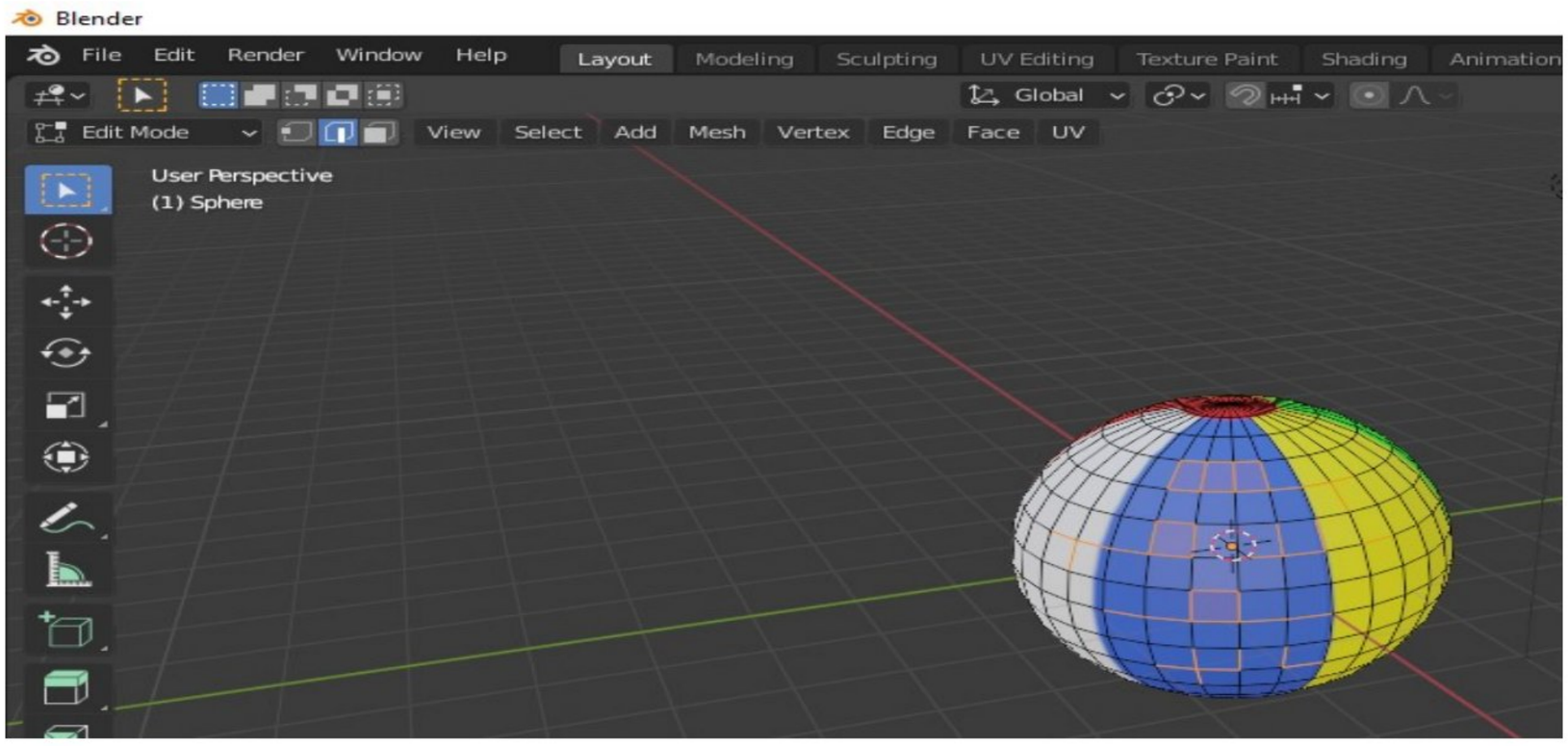
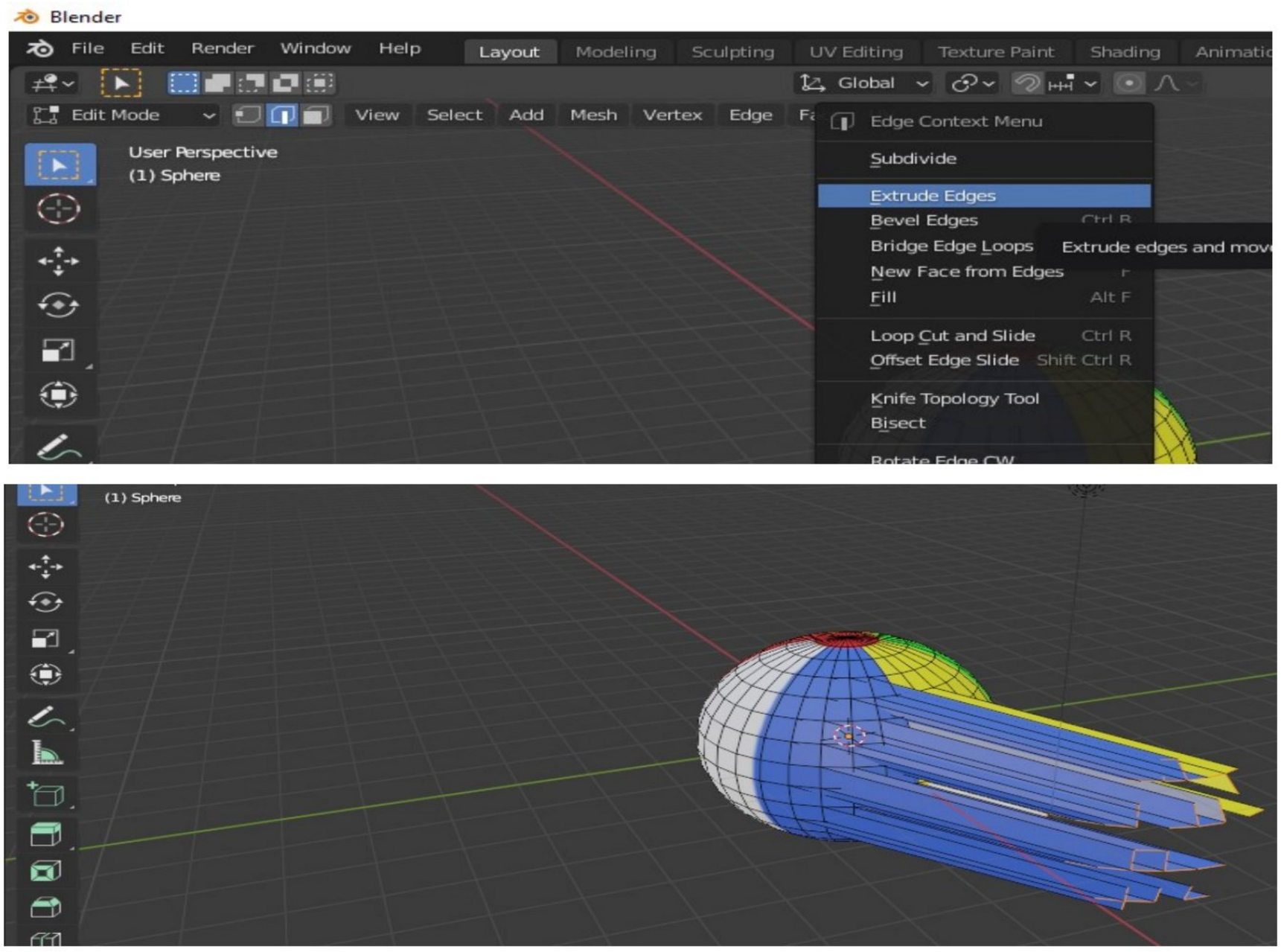
Editing edges

Step 1: Use uv sphere as ball and apply texture. Switch to Edit mode.

Step 2: choose “Edge mode” and select edges.



Step 3: make right click on selected edges and choose “Extrude edges” from edge context menu.



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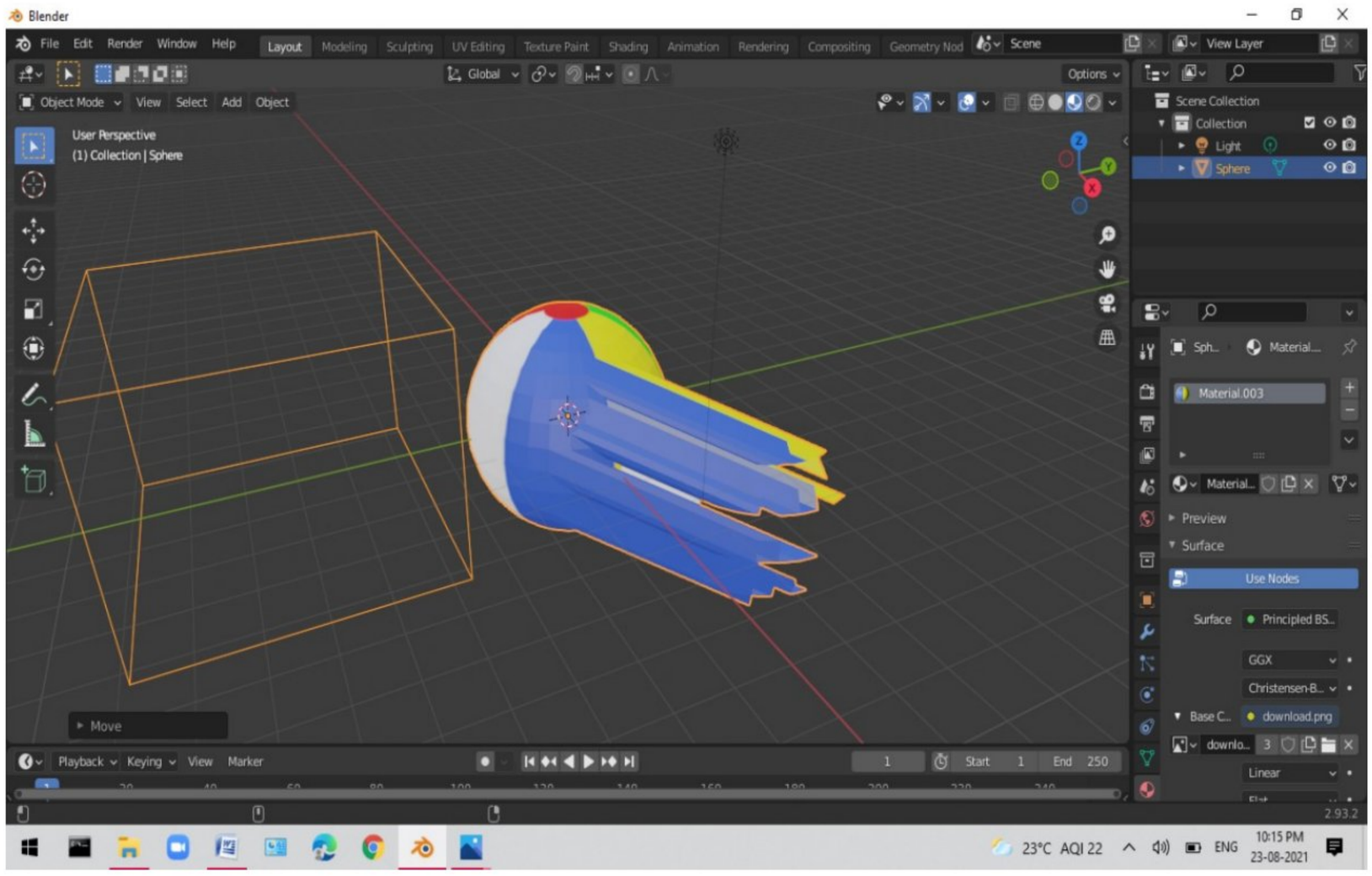
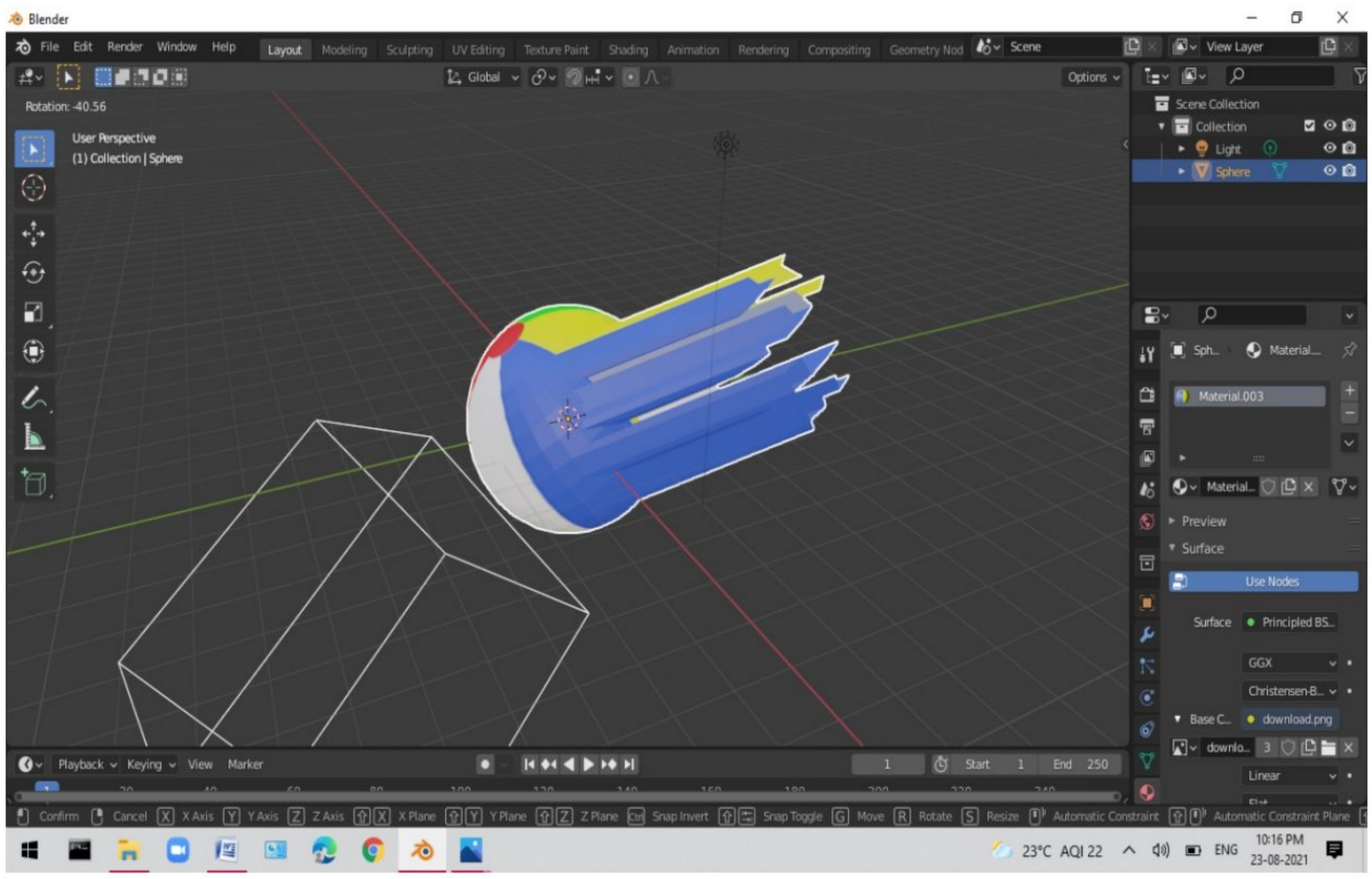
Transform: Move texture space,Rotate.





Editing faces

Step 1: Use uv sphere as ball and apply texture. Switch to Edit mode.

Step 2: choose “Face mode” and select Faces.

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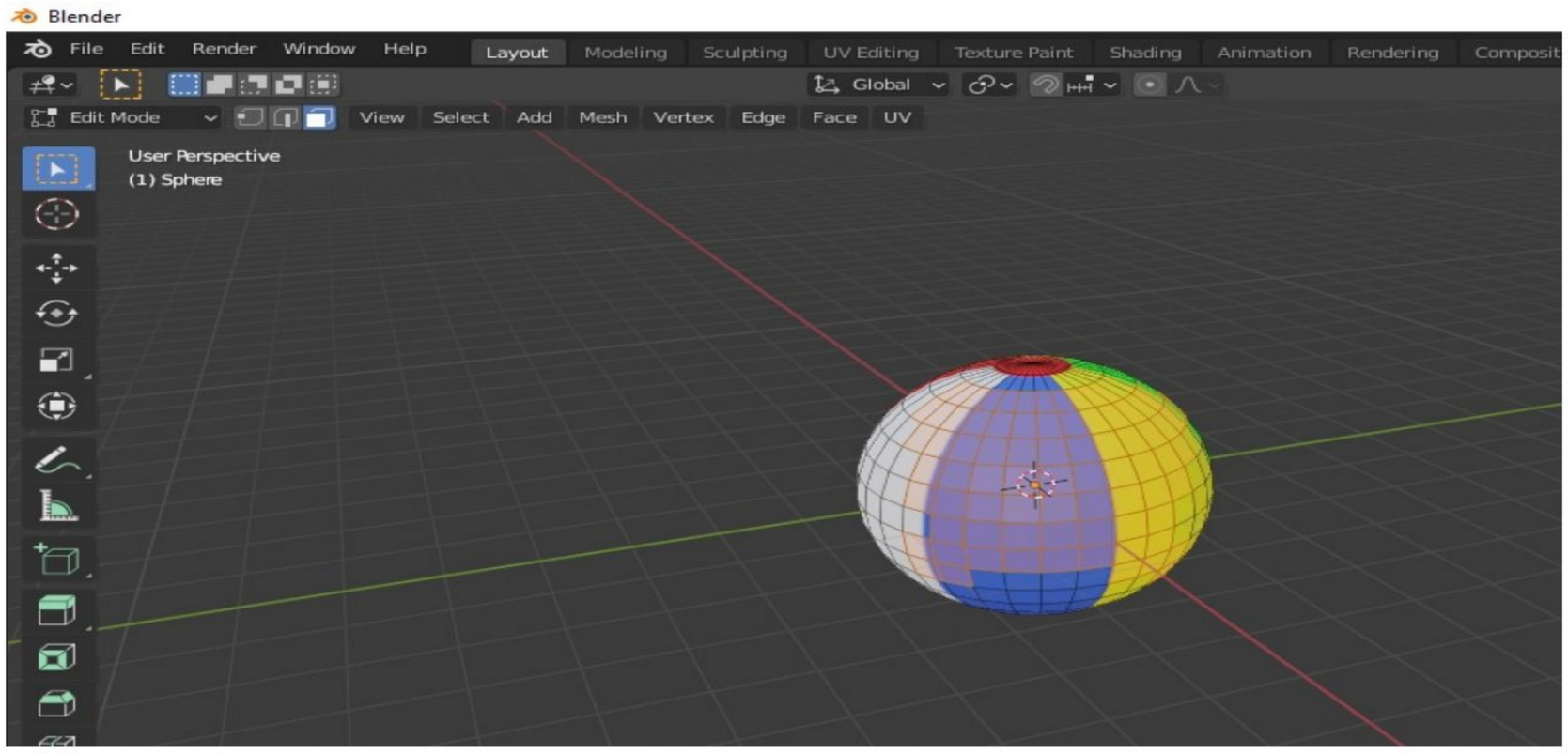
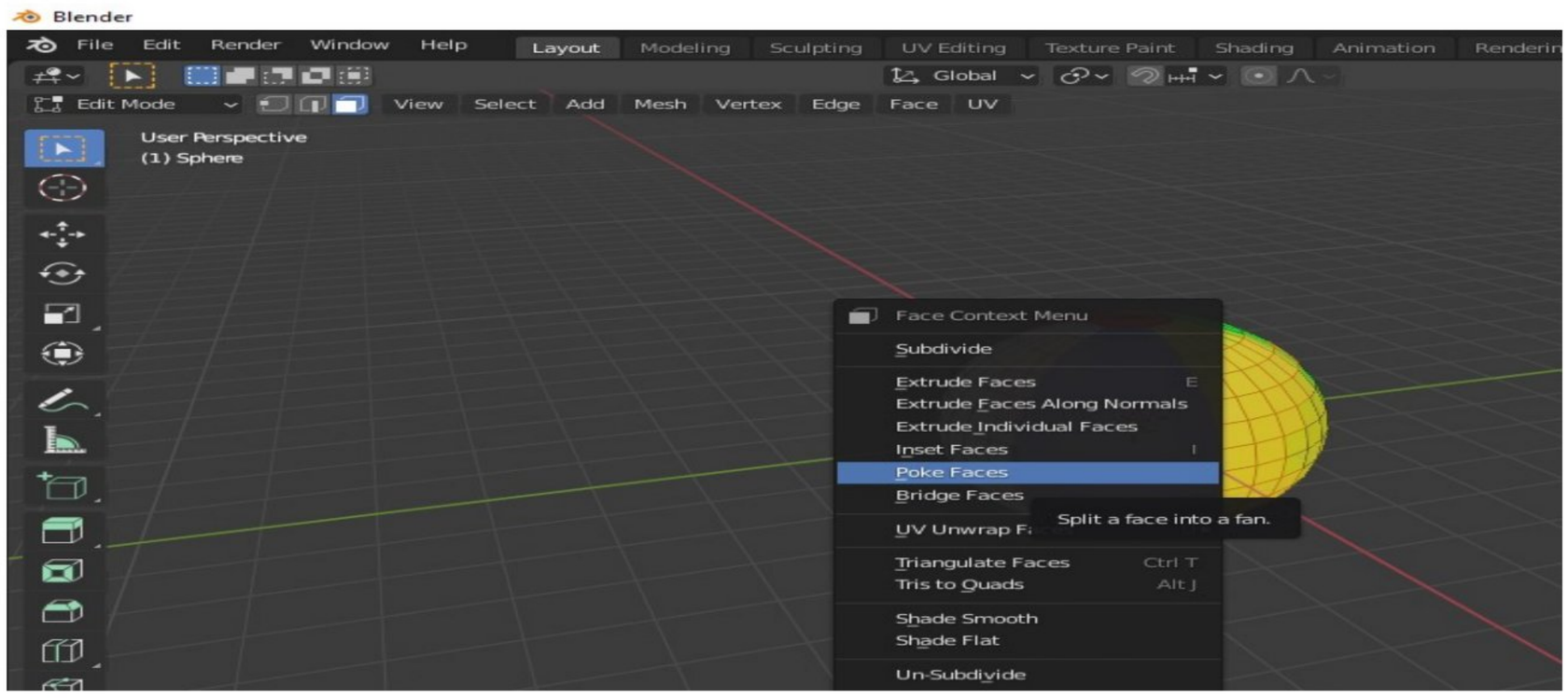
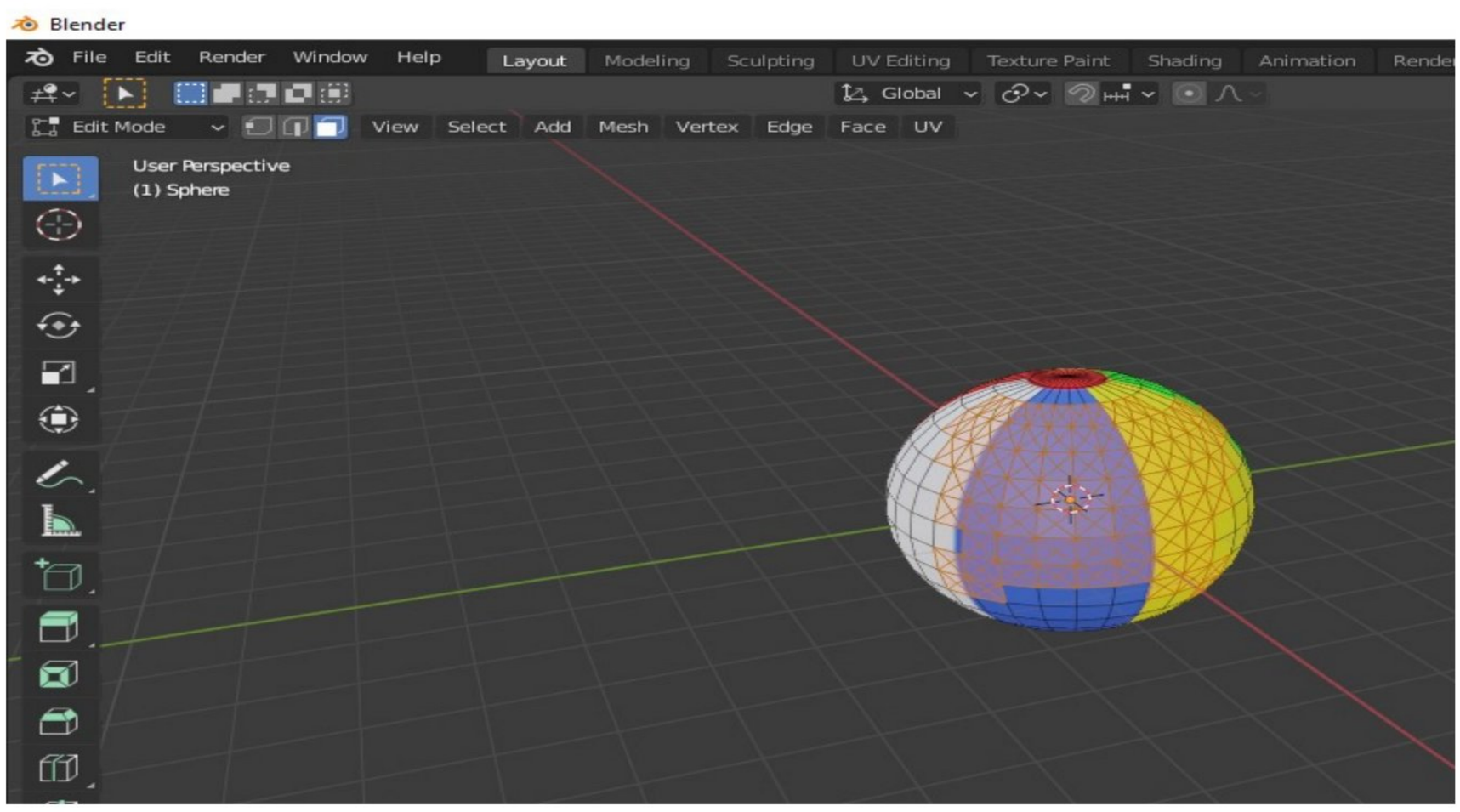


Step 3: Make right click on obejct and choose “Poke Face”.





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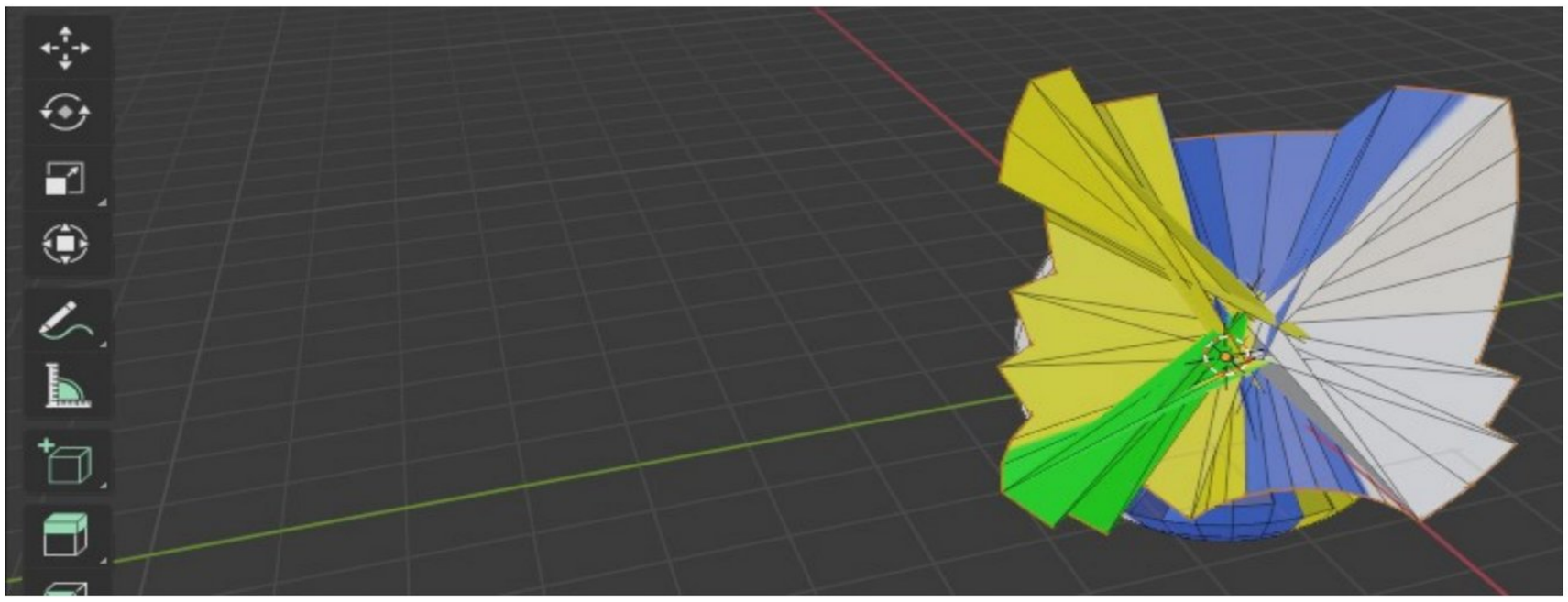
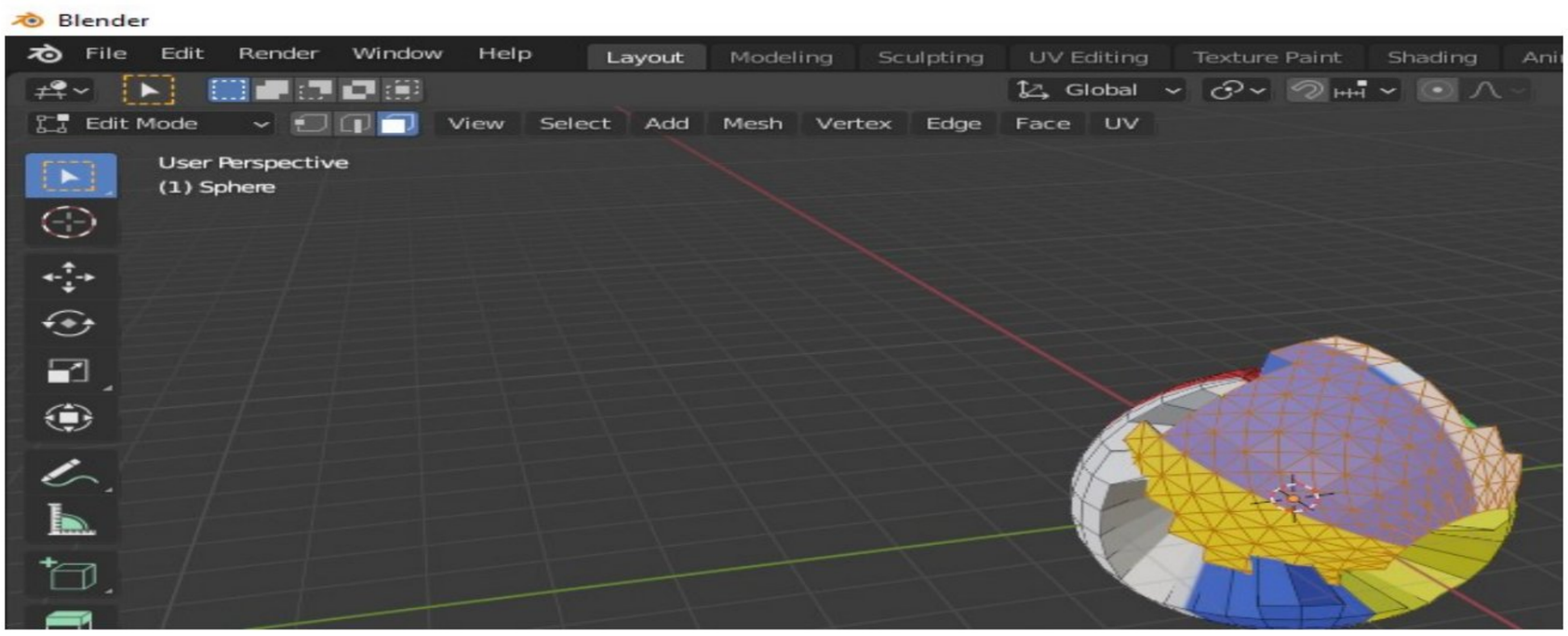
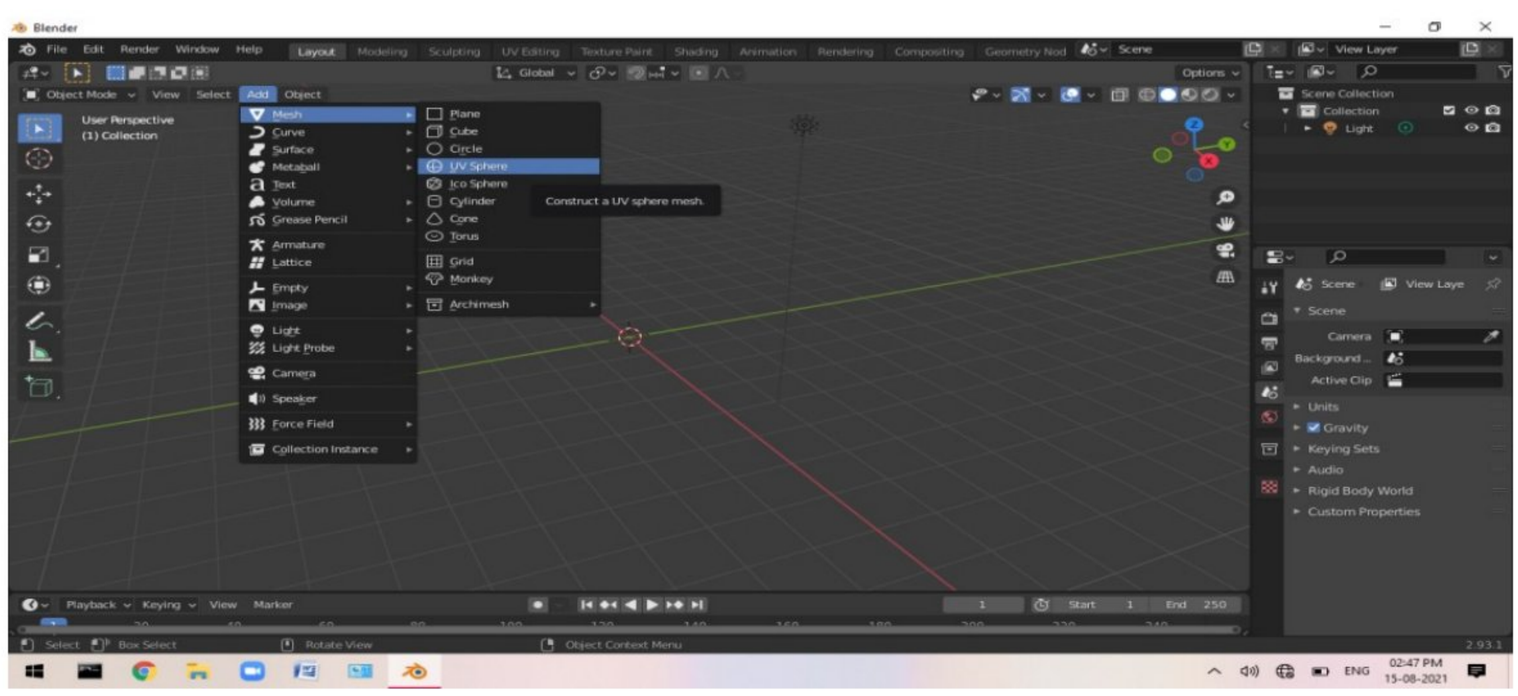
Transform: Scale And Rotate





16. Design a red ball lying on green grass. Apply suitable texture and render the same.

Step 1: Add>Mesh>UV sphere and scale the object by hitting "s".



Step 2: Go to "Material Properties" then choose "Base color" for object. Apply suitable color to object.

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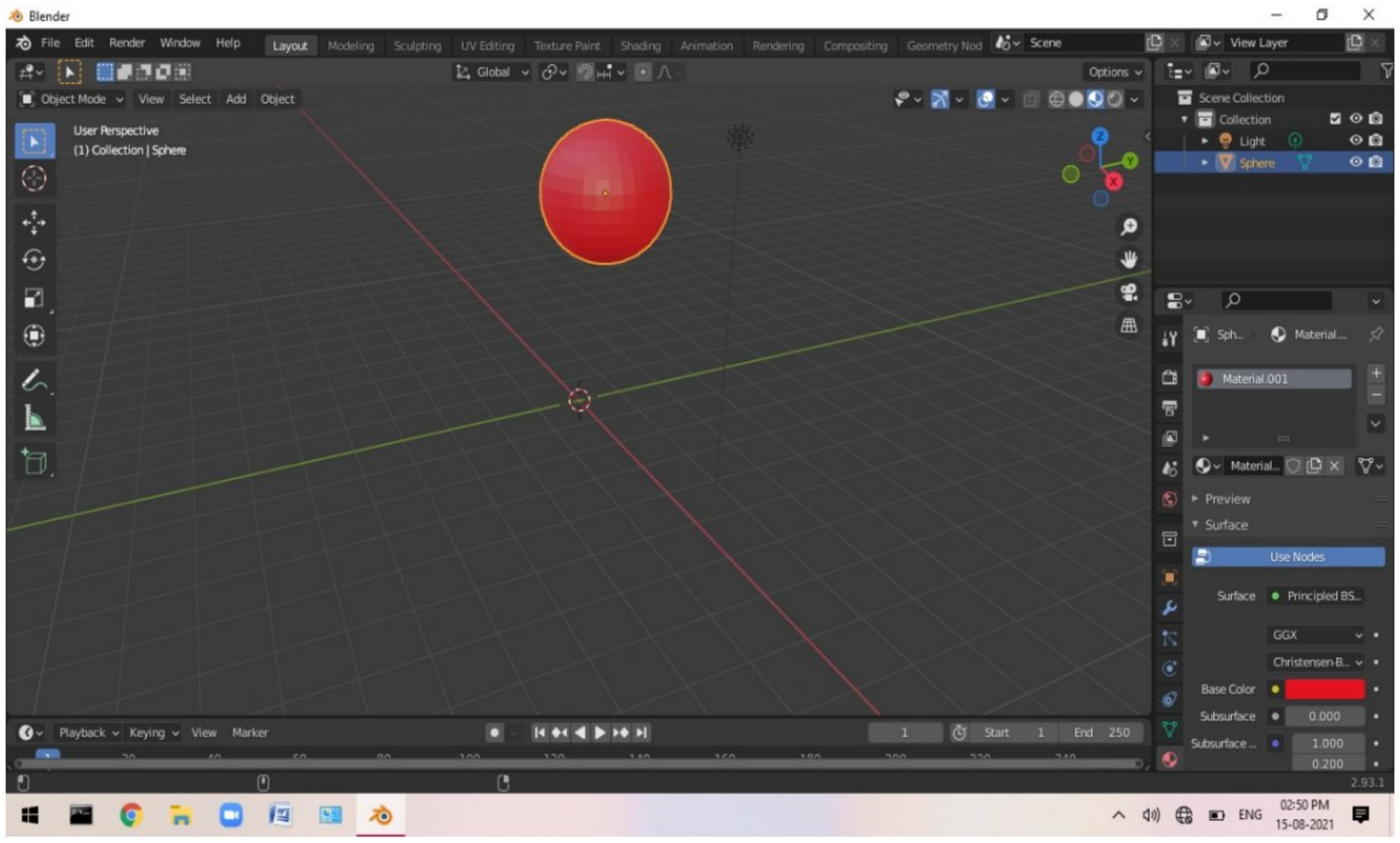
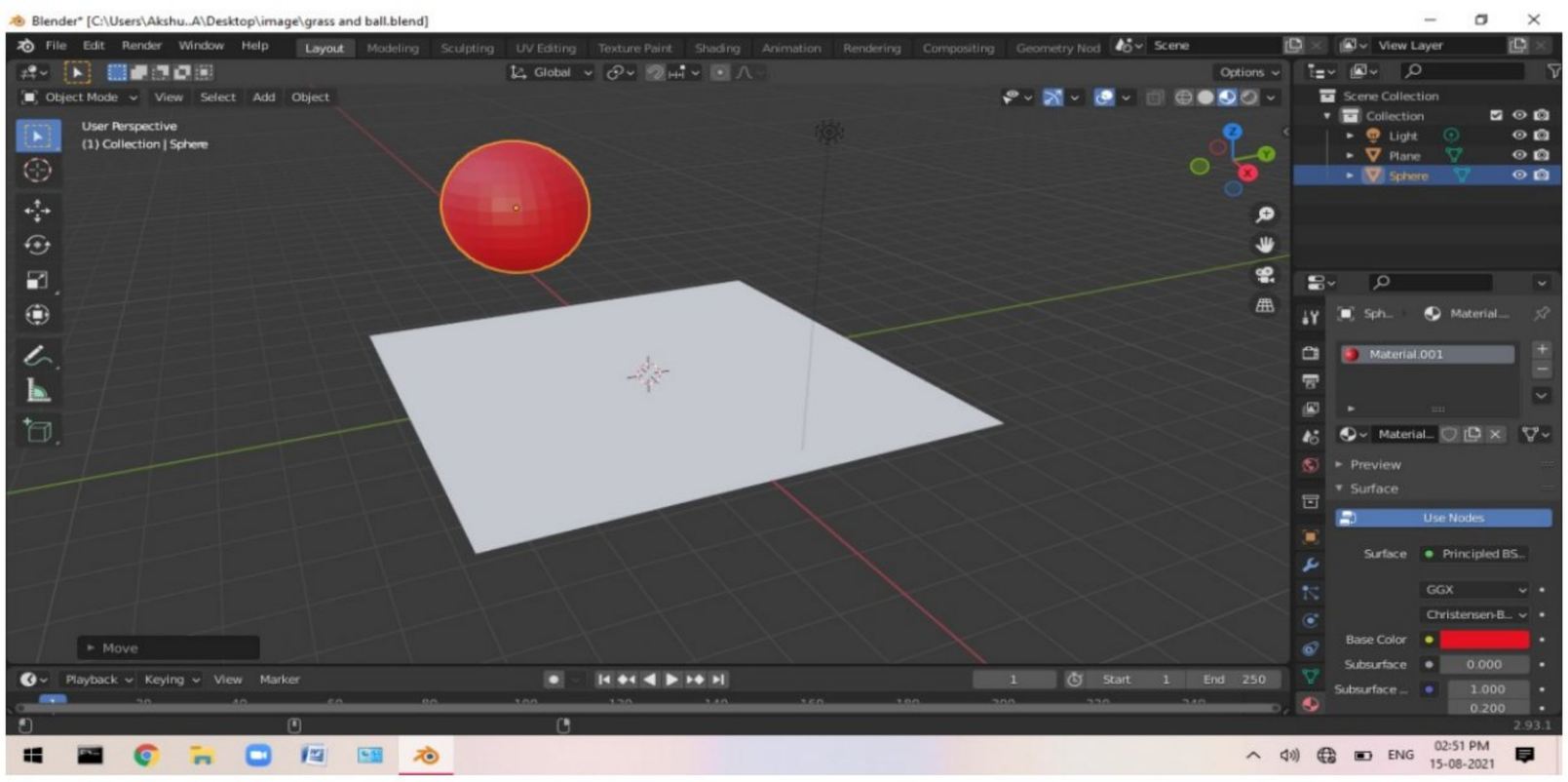


Step 3: Add>Mesh>Plane and scale the object by hitting “s”.



Step 4: Go to “Particle Properties” then click “+” and choose Hair option. Set hair length as “0.4” and number of hairs are of “50000”. Click on “Advanced” tab. Select “Physics>Force” set brownian as “0.3” and choose “Green color” as base color.

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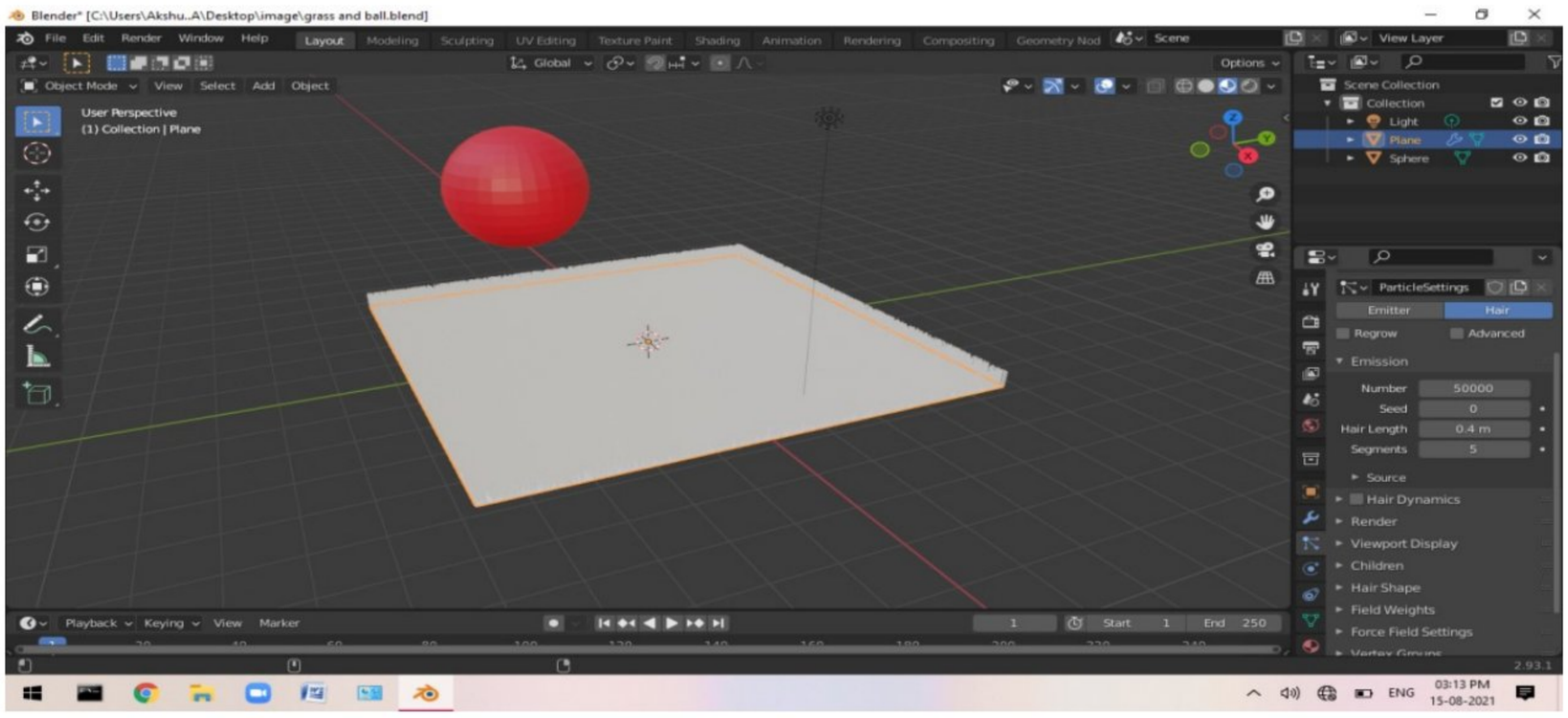

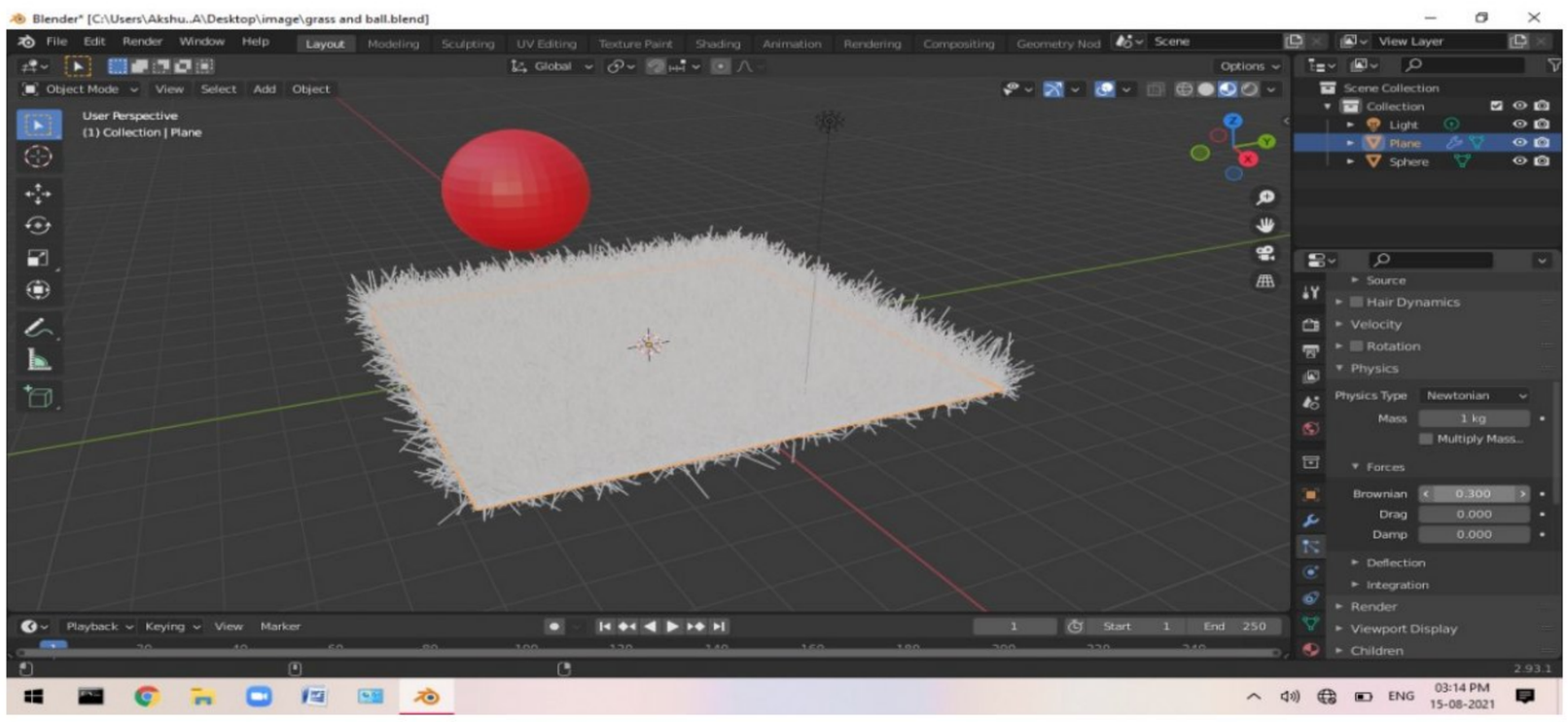

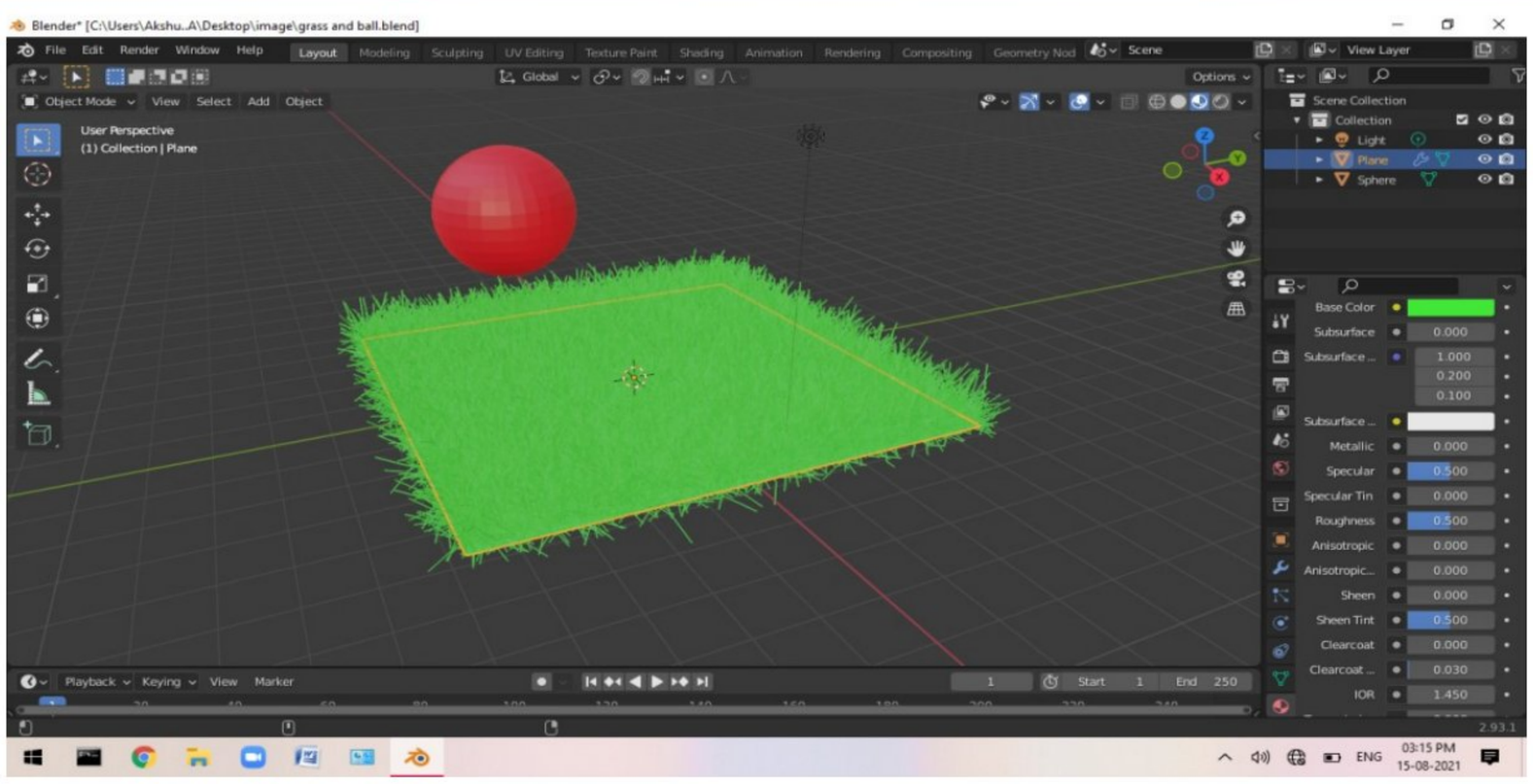

Step 5: In the "materials" tab under the "surface" section, search for "Base color" and click on the small dot to its right. From the many new options displayed, click on "Image texture".

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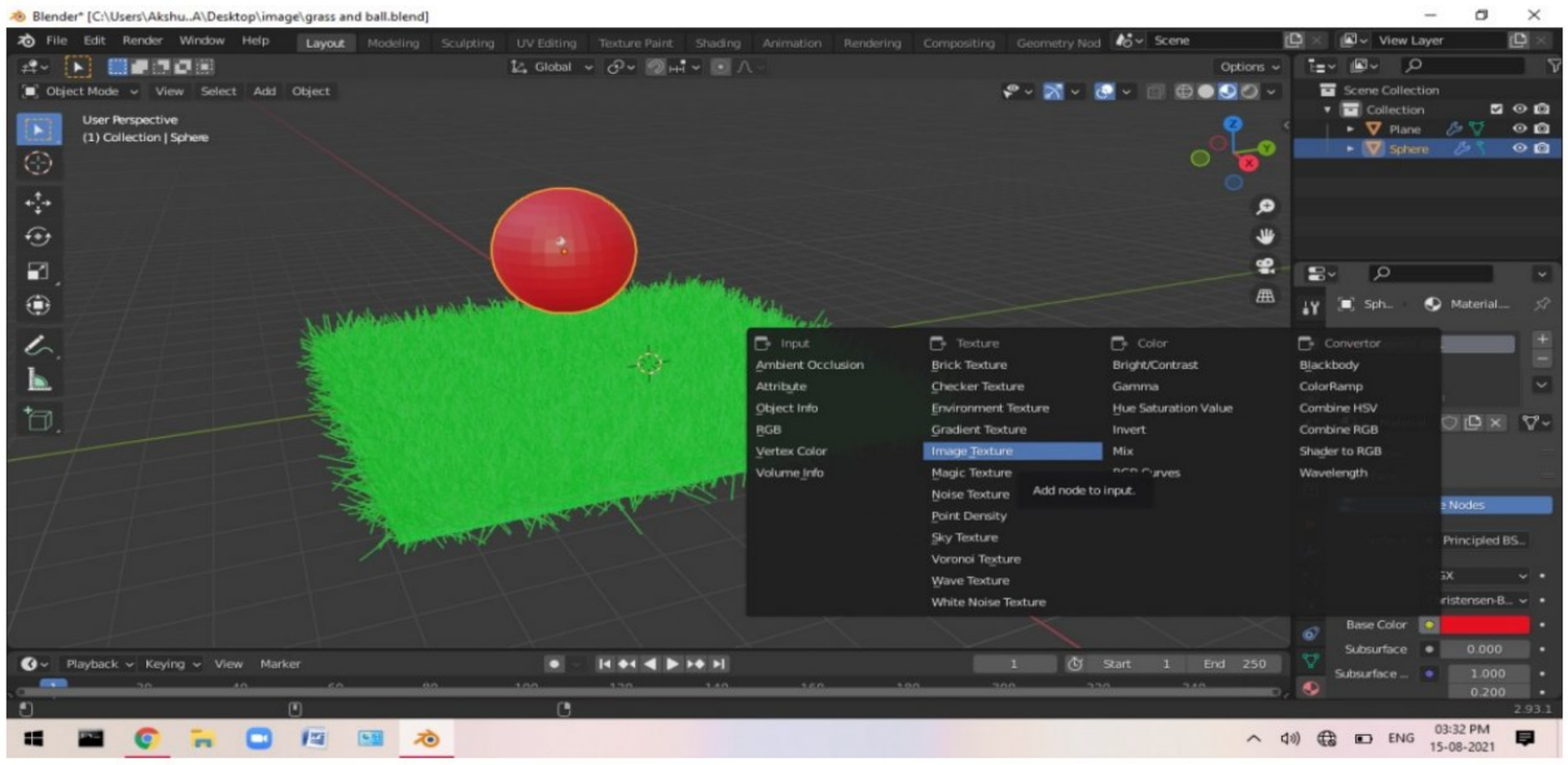
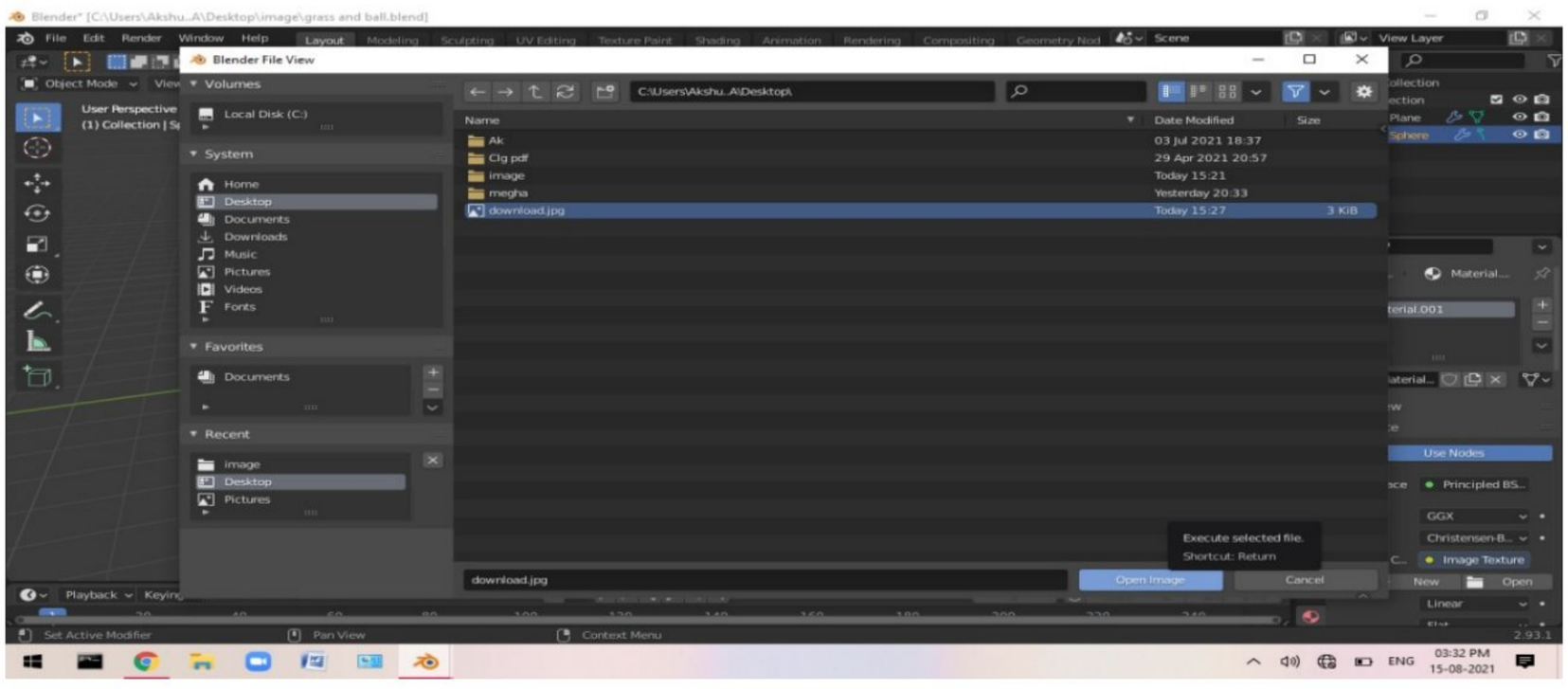


Step 6: Click open then choose file and click on “open image”.



Step 7: Texture will be appeared on the selected object.

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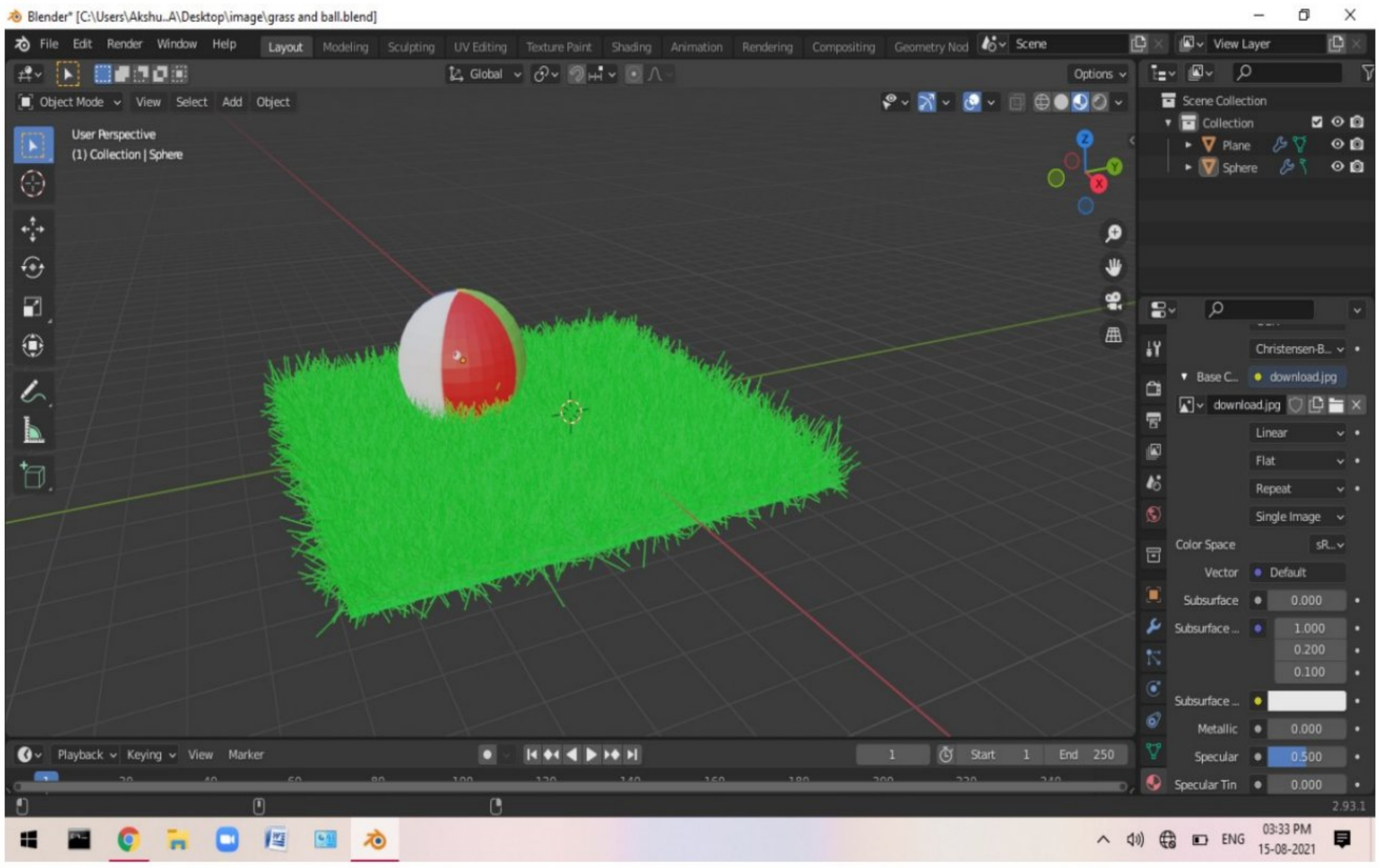

17. Animate the ball in Ex.15 (both rigid and elastic) to bounce thrice and roll. Use suitable animation Principles. Add booing sound when the ball bounces.

Step 1: Use Texture ball which is designed in Experiment number 16.

Step 2: In the timeline, set scrollbar at 1st frame. Choose ball position and click "I" from keyboard,then choose "Location".

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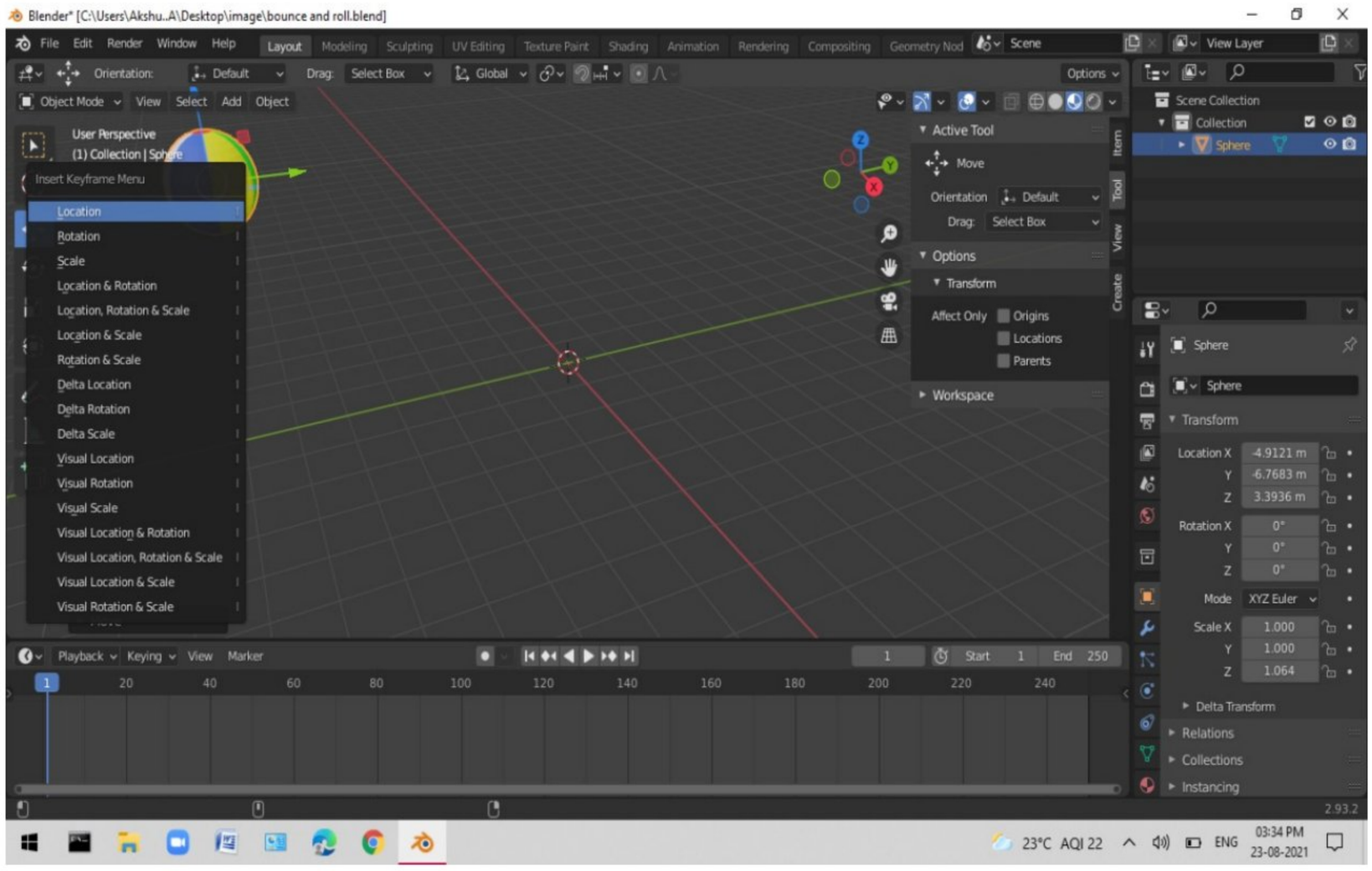

Step 3: Move Playhead to 20th frame. Choose ball position and click "I",then choose location. Repeat the same steps upto three bounce.

Step 4: Move playhead to 120th frame. Select Ball,move it towards "Z" axis then click "I" and choose "Location".

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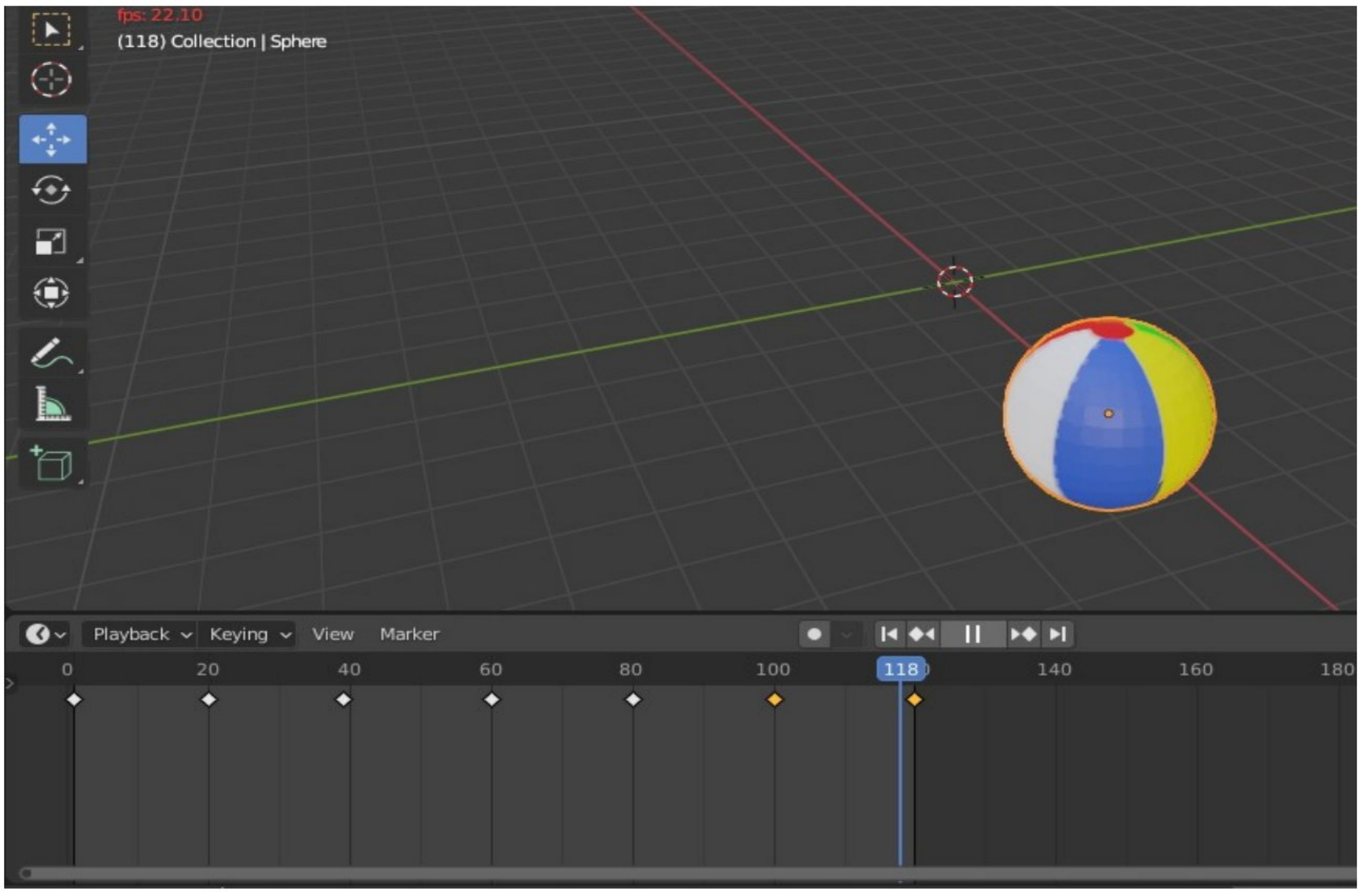
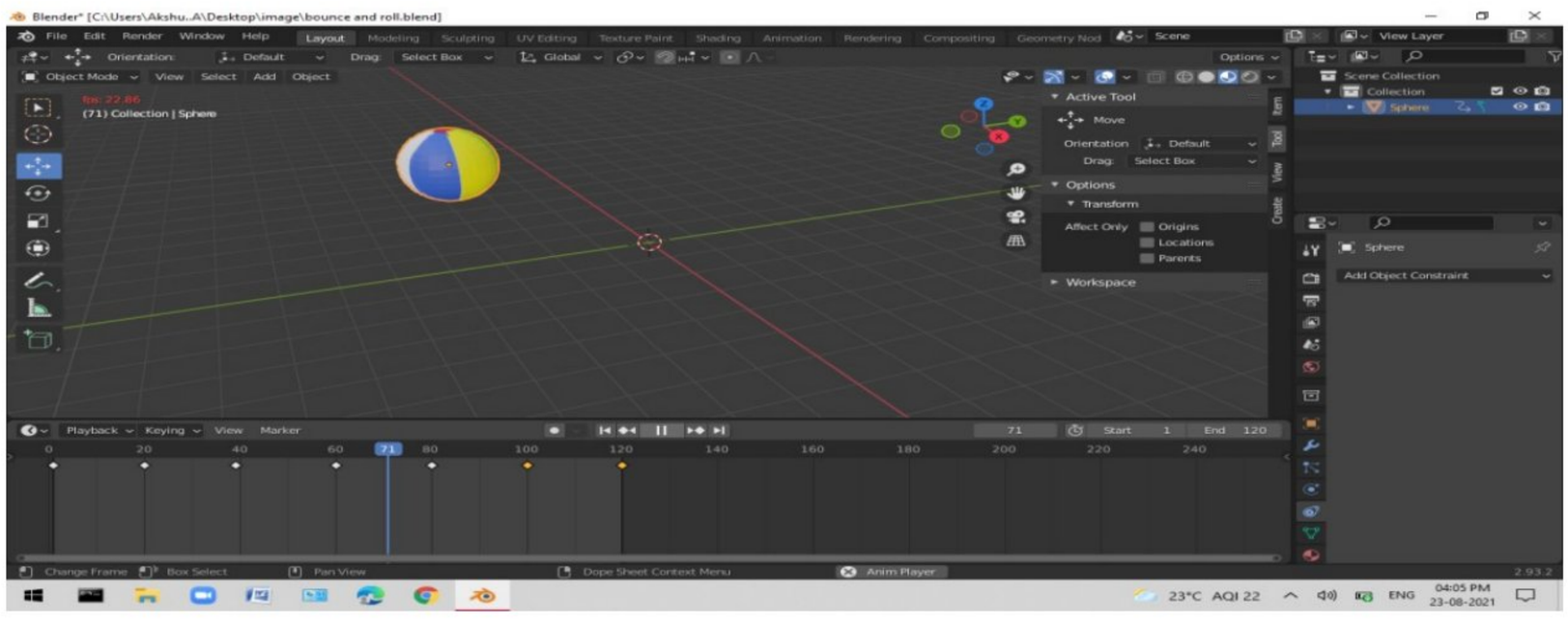


Step 4: Click on “play button” and dice will bounce and roll depends on keyframes.



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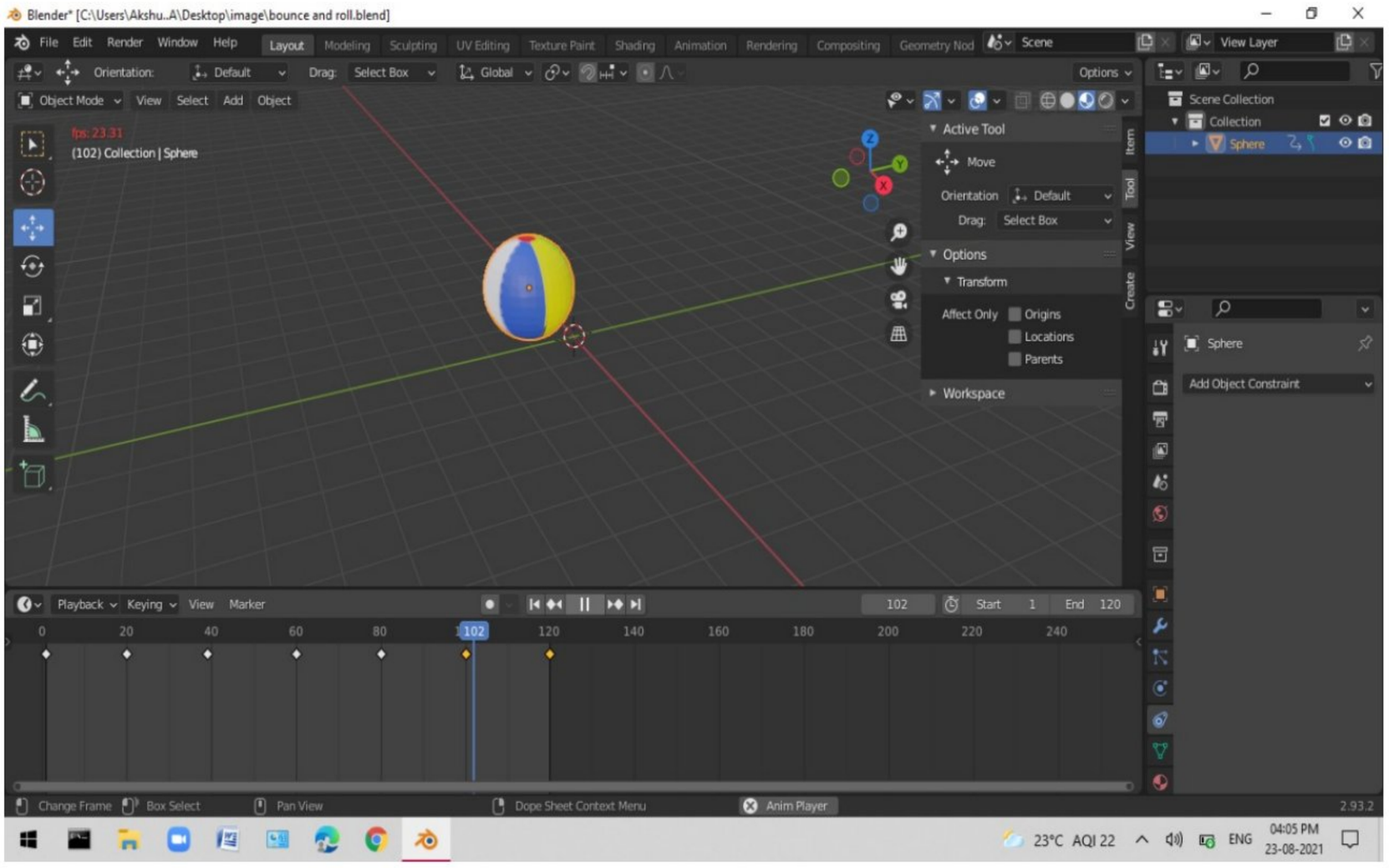
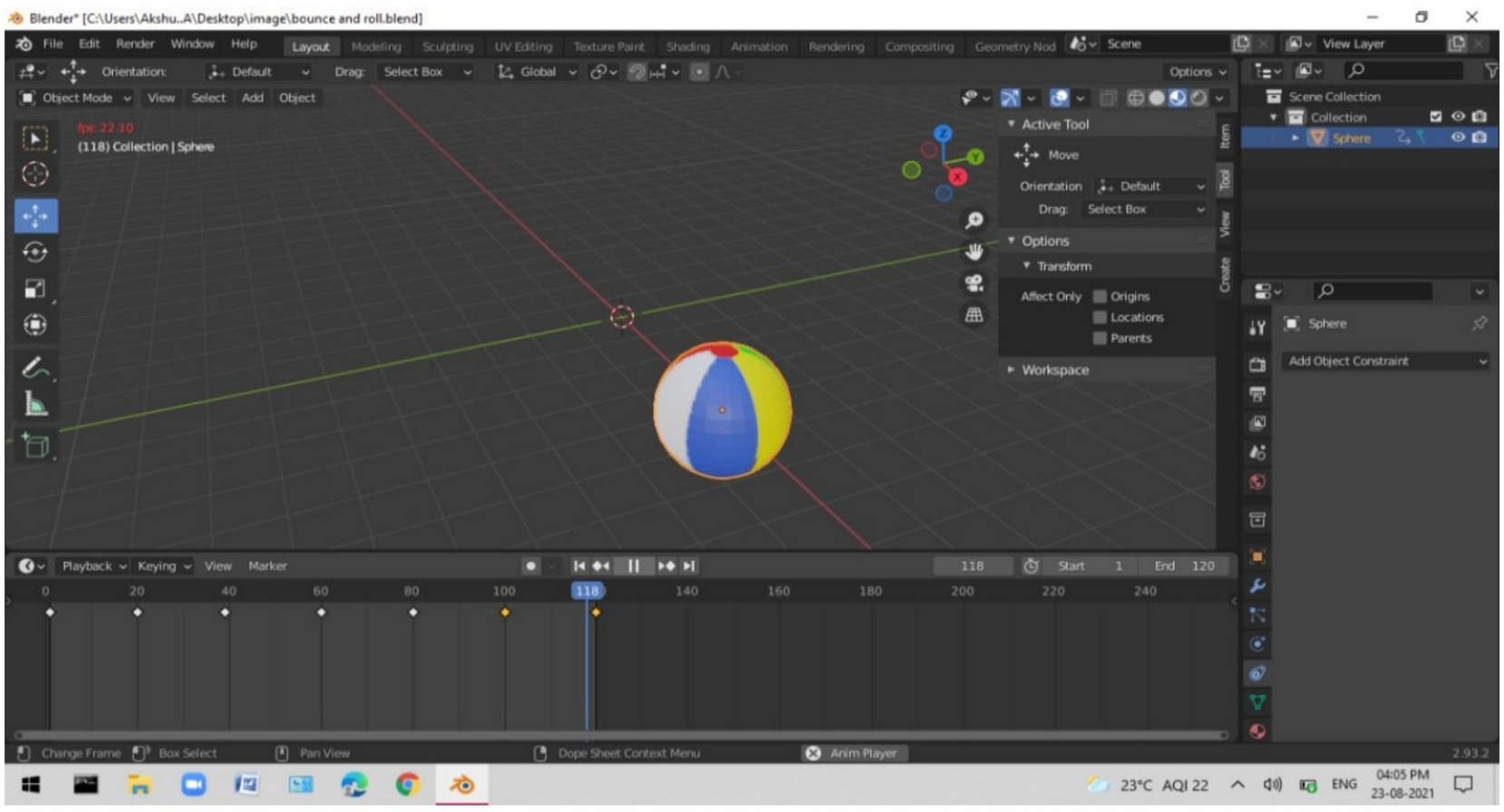
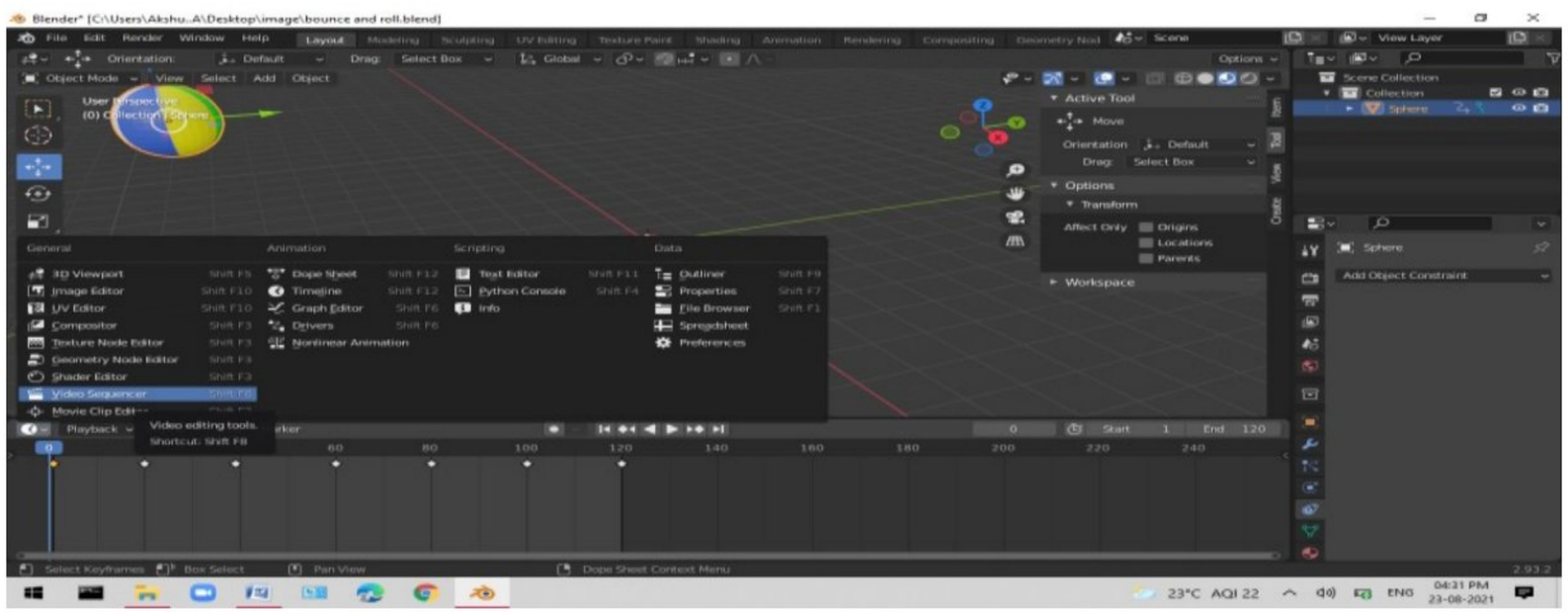




Step 5: You can add “booing” sound when the ball bounces in video sequence.



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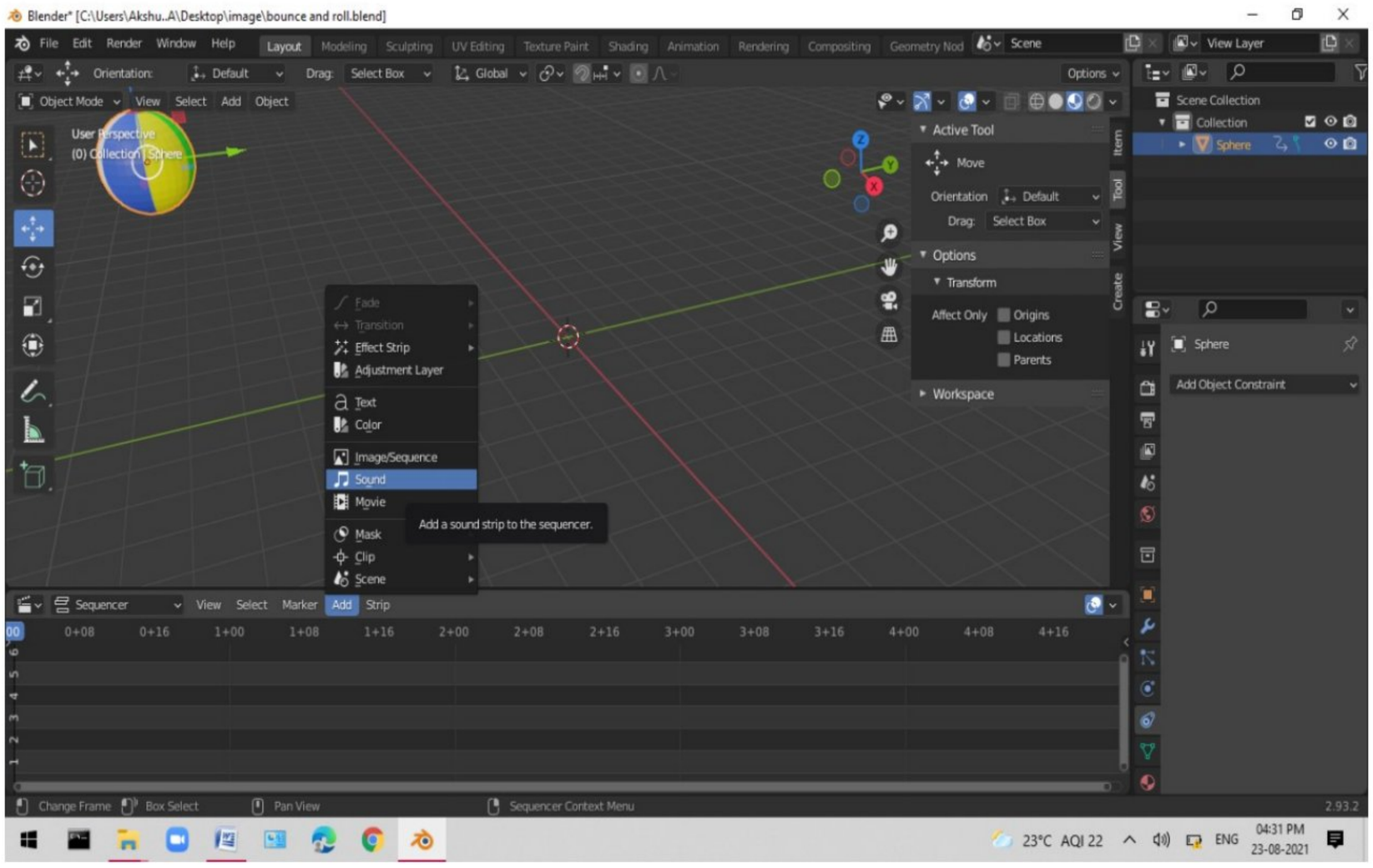
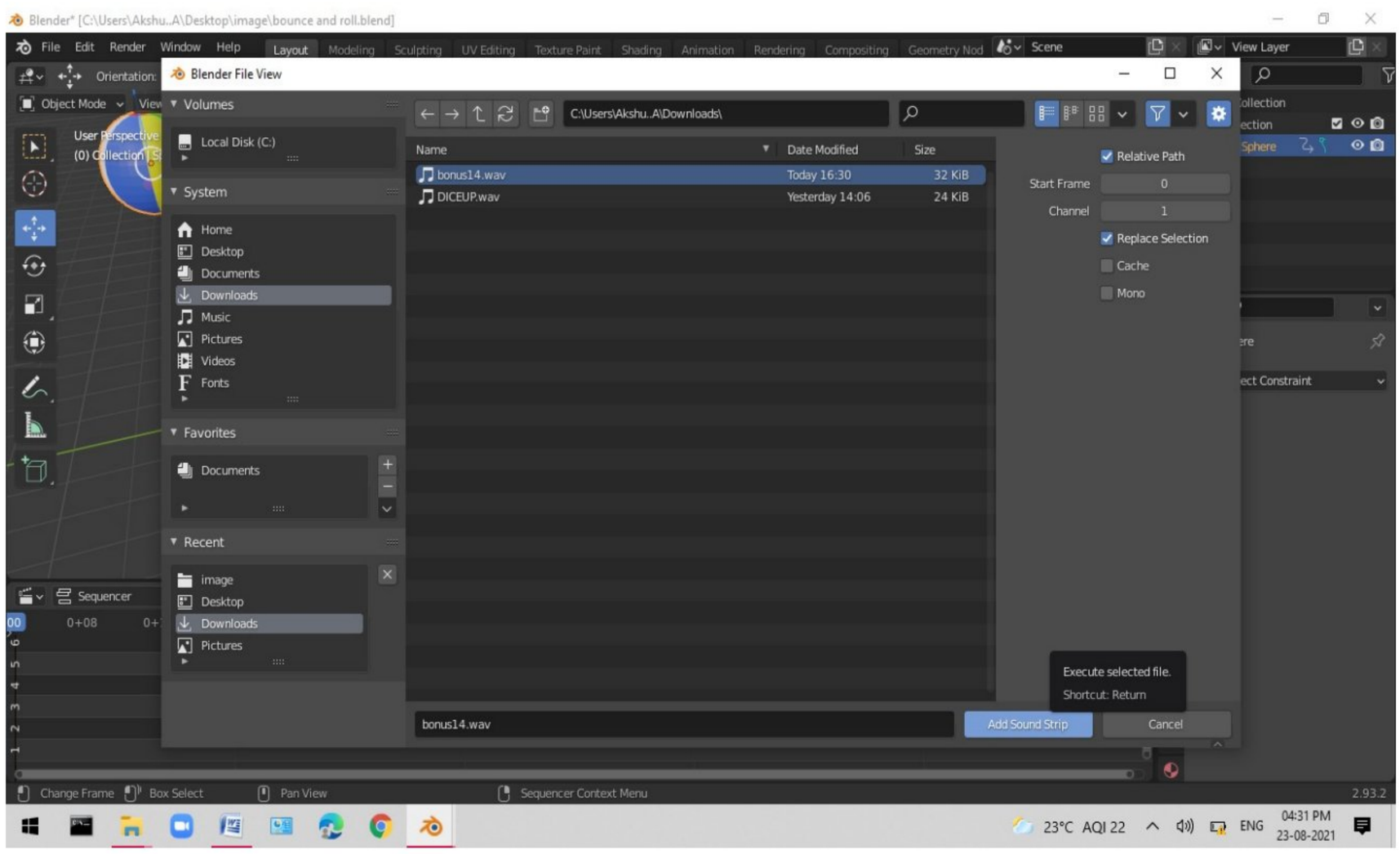
Step 6: click “Add” and choose “Sound”&locate sound file that you want into your animation.Click “Add sound strip” button.





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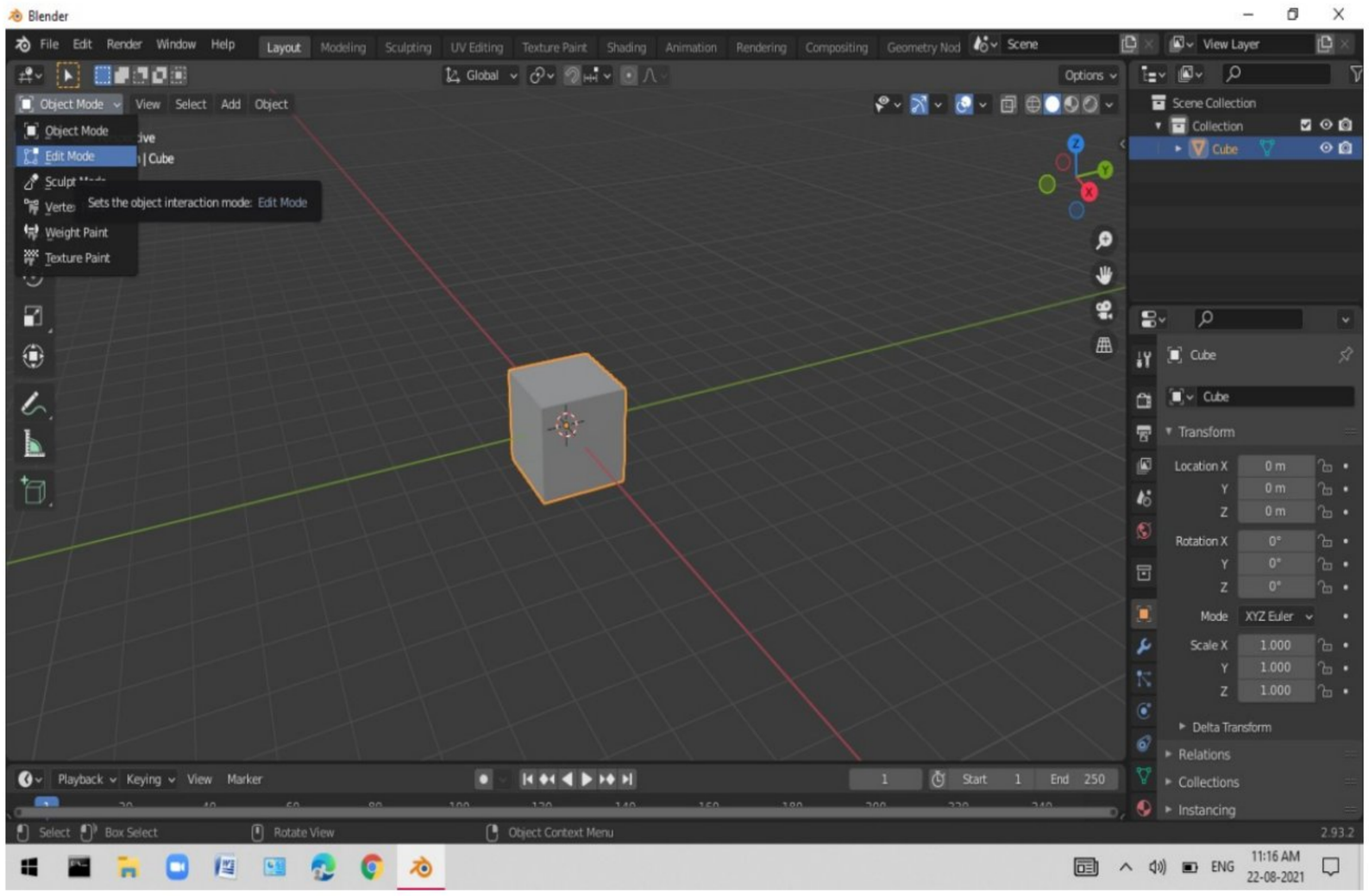
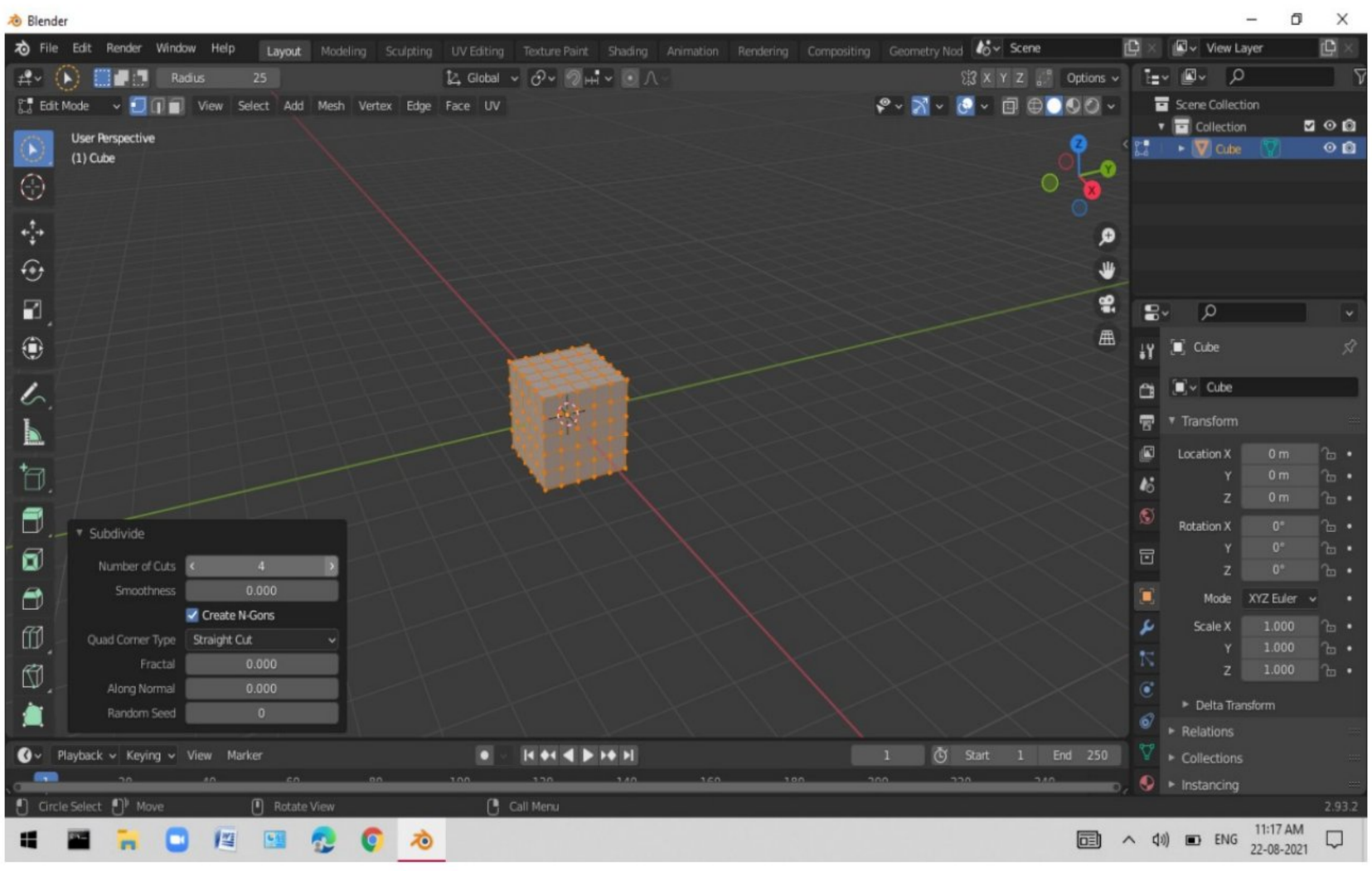
18. Design two playing dice and animate the same. Add suitable sound for dice fall.

Step 1: Select cube and Tab into edit mode.



Step 2: right click on cube,chhose "Subdevide" then subdivide default cube into 5*5 grid(number of cuts=4).



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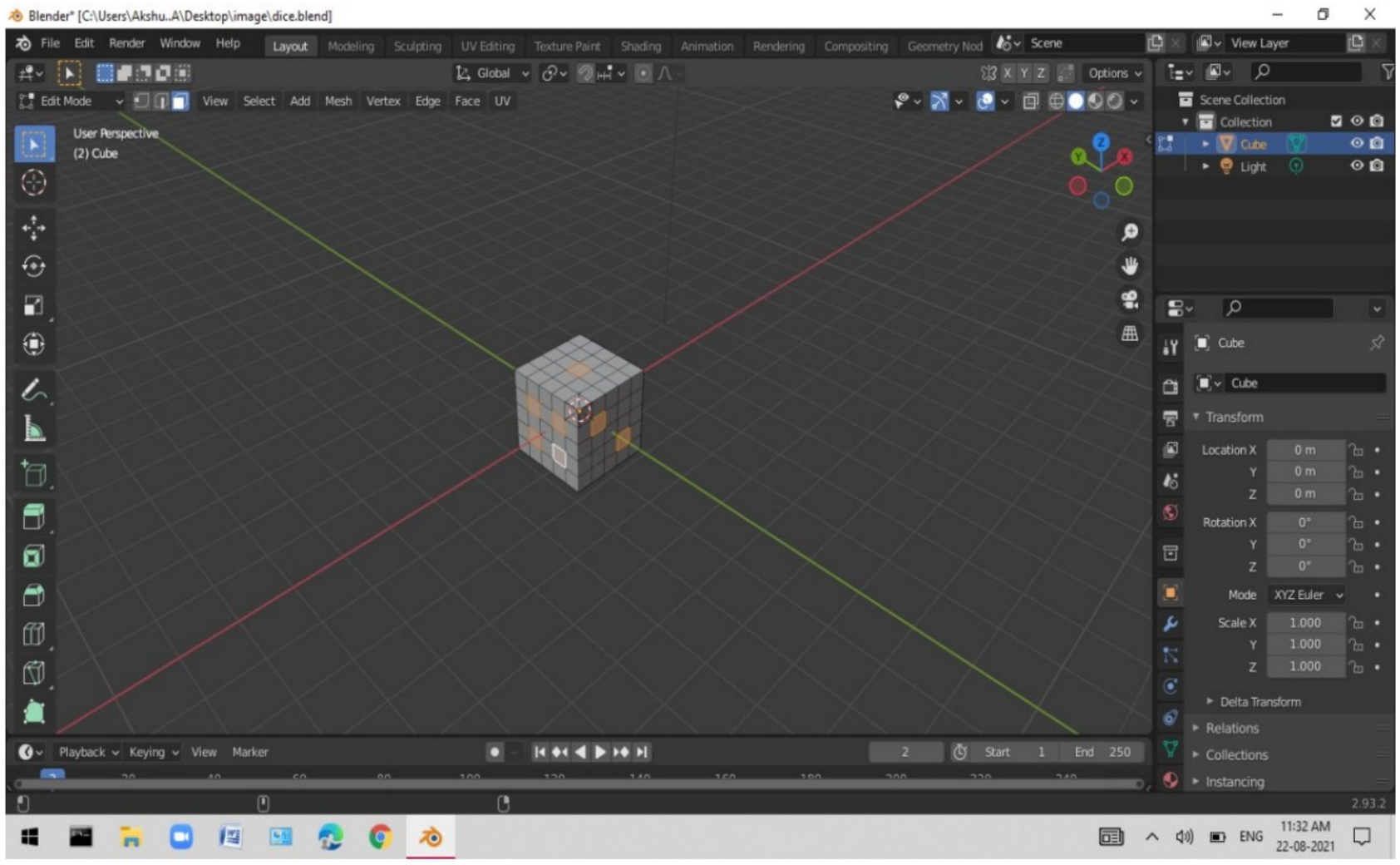
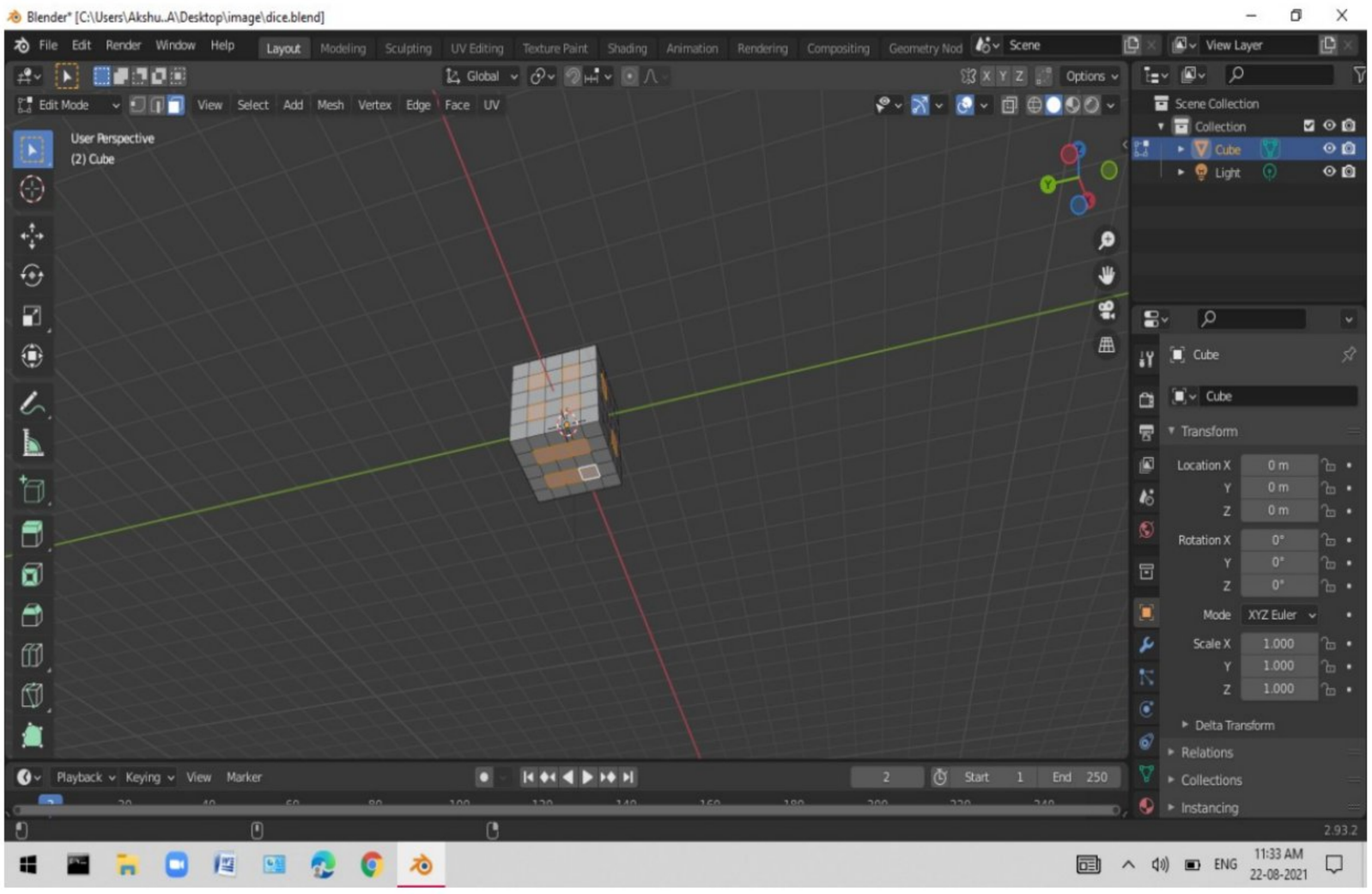
Step 3: choose Face mode and hold shift key &choose faces in top,bottom,front,back,right and left.





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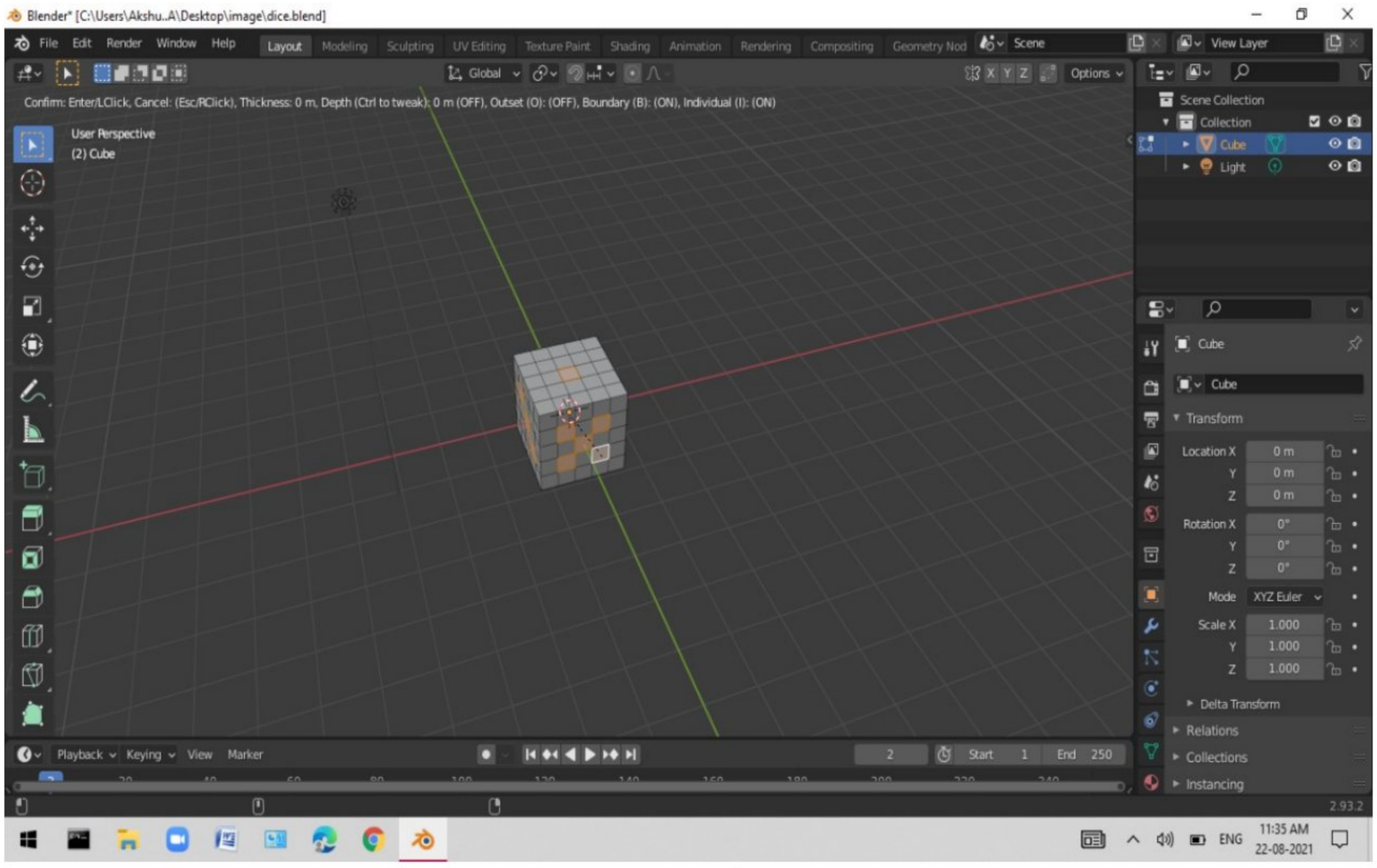
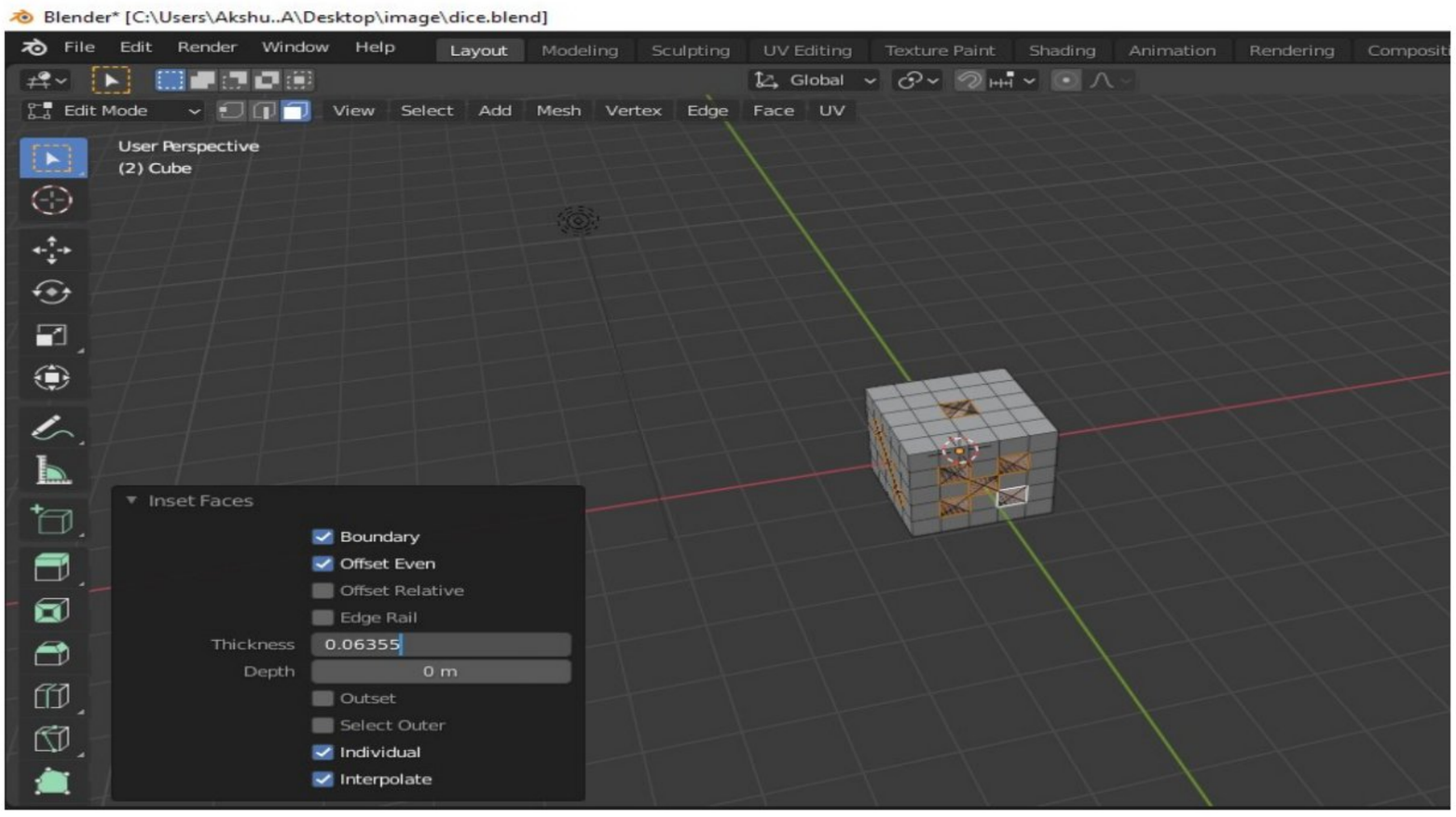


Step 4: Inset each of selected face(make sure to click "I" twice so you are insetting the faces indidually. Set the thickness of dice.



Step 5: Extrude each of selected faces back toward the centeer of the die. And set offset.

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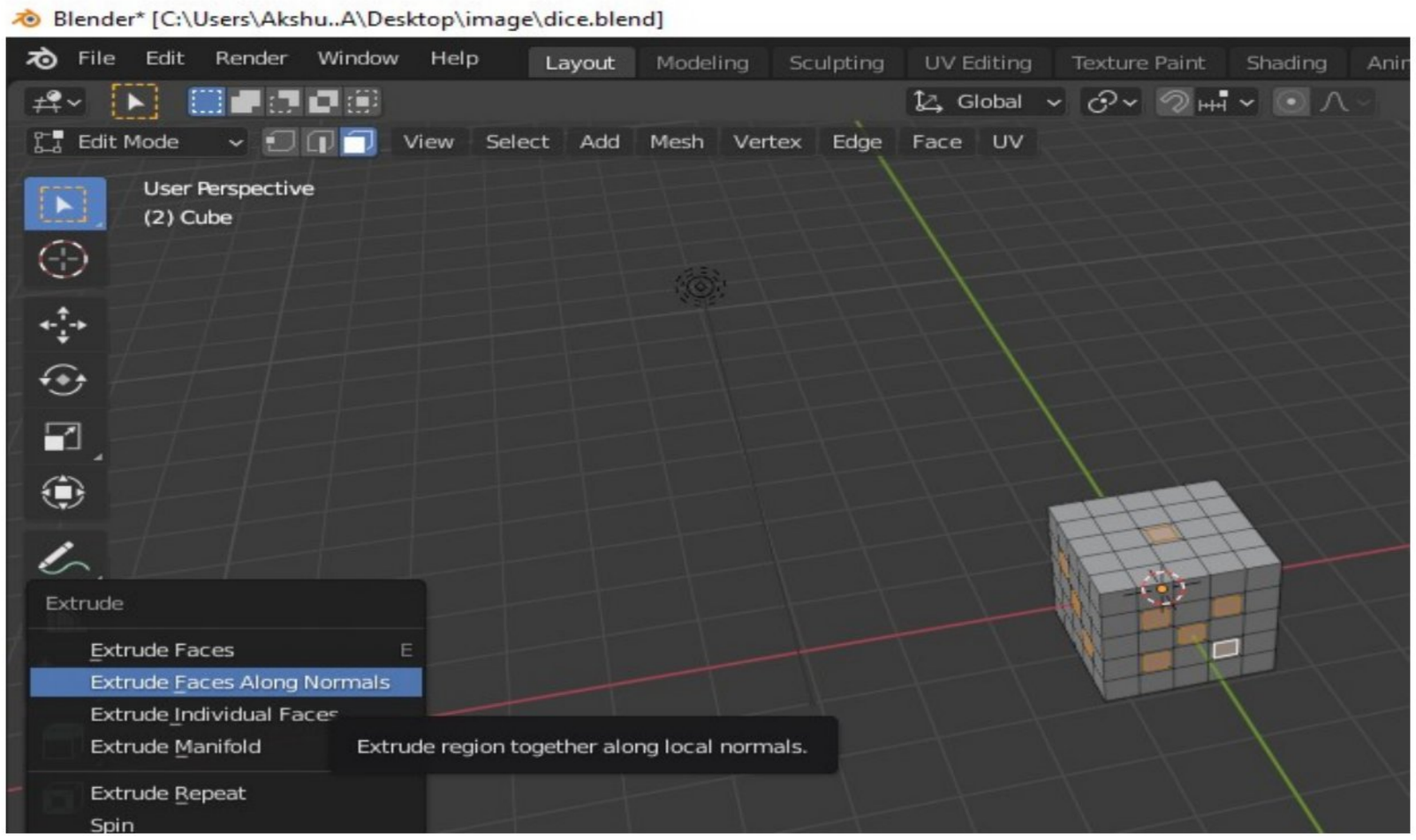
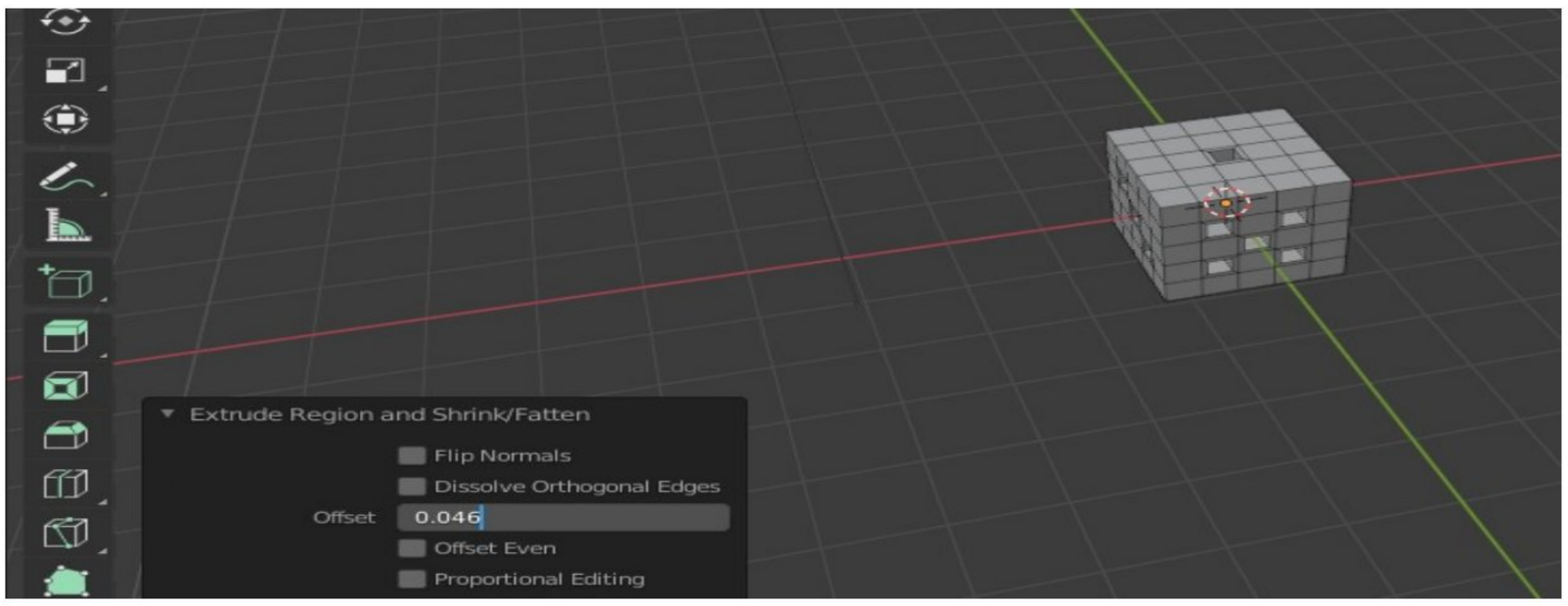
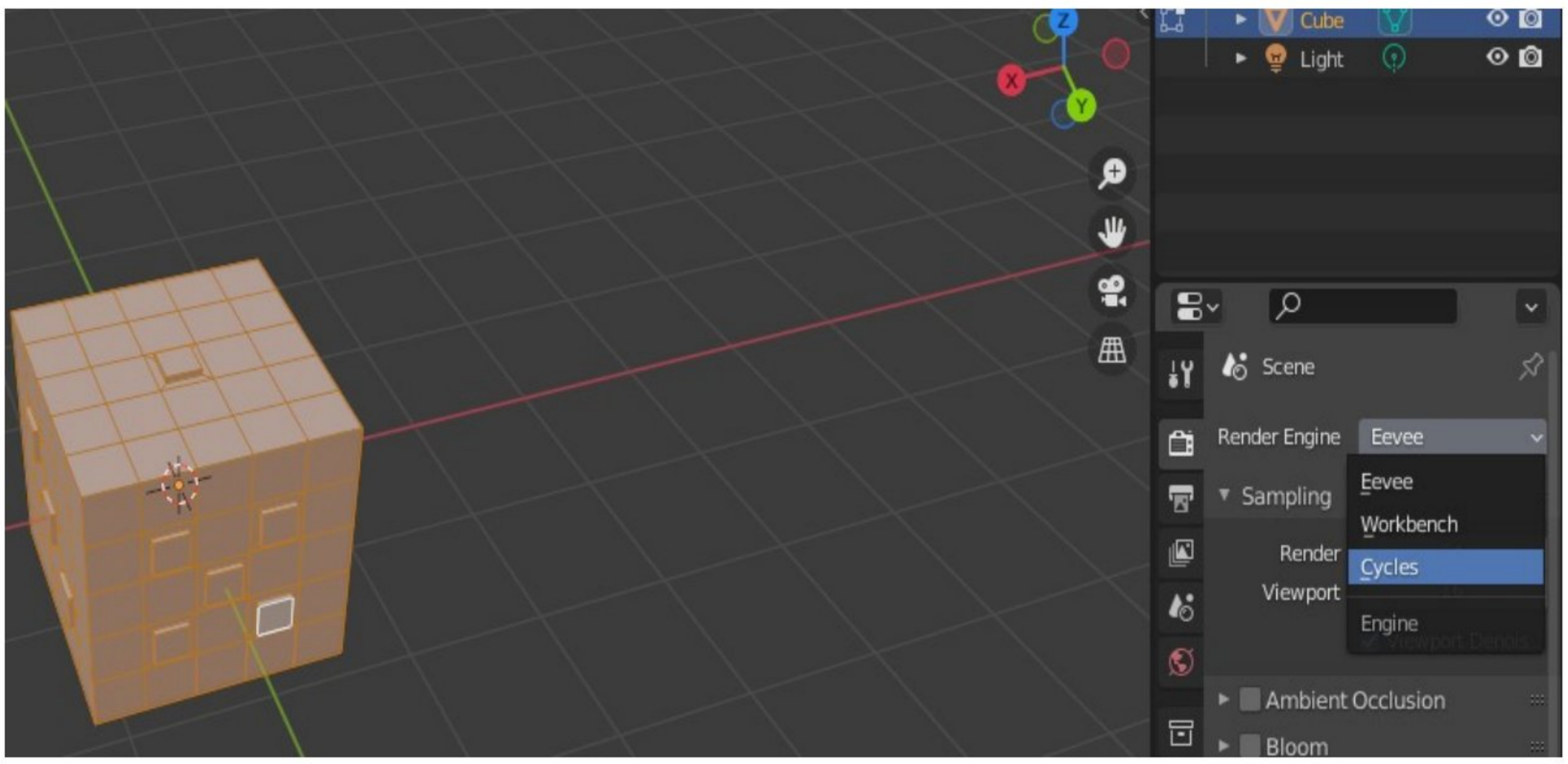




Step 6: click on "Rendering" option then changes to "Cycles" Render.



Step 7: Choose "Properties" then change the default material to the desired color(#699FE7).

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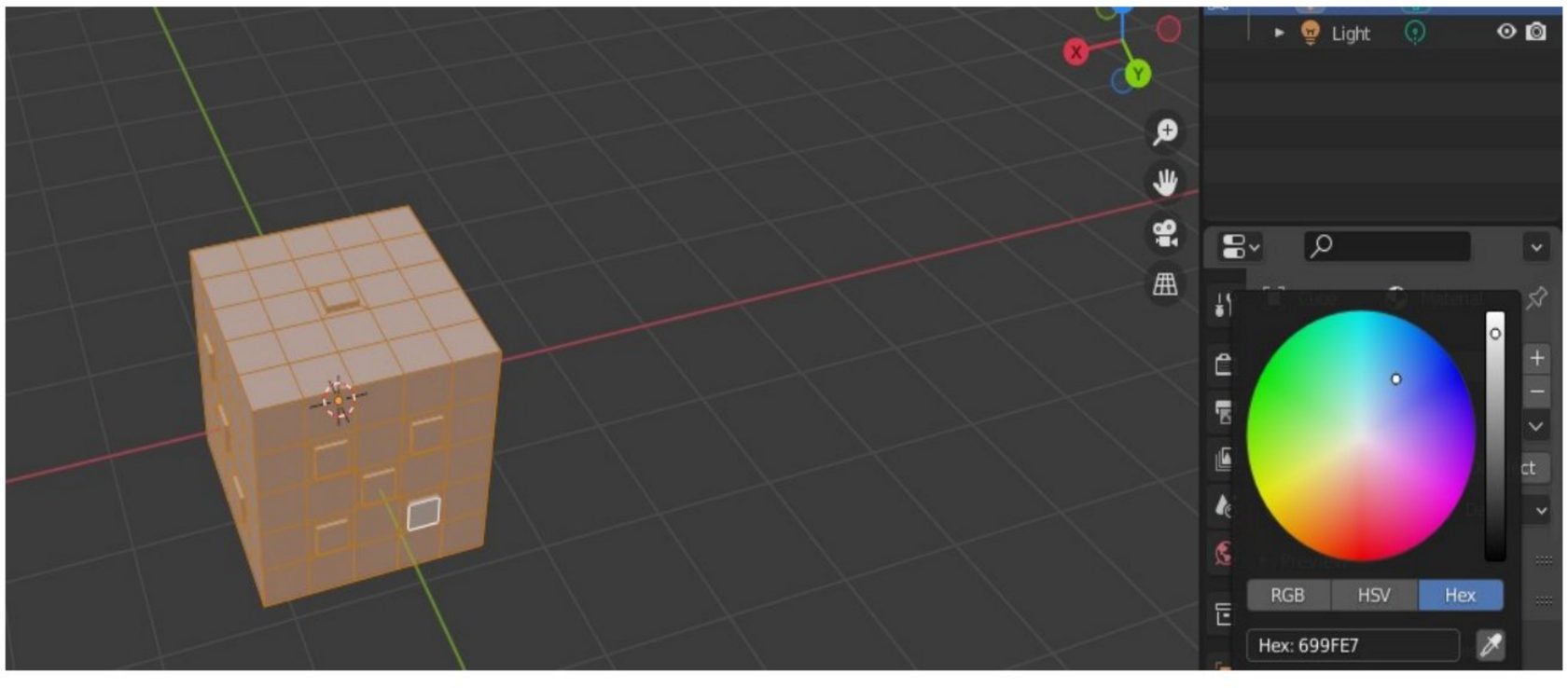
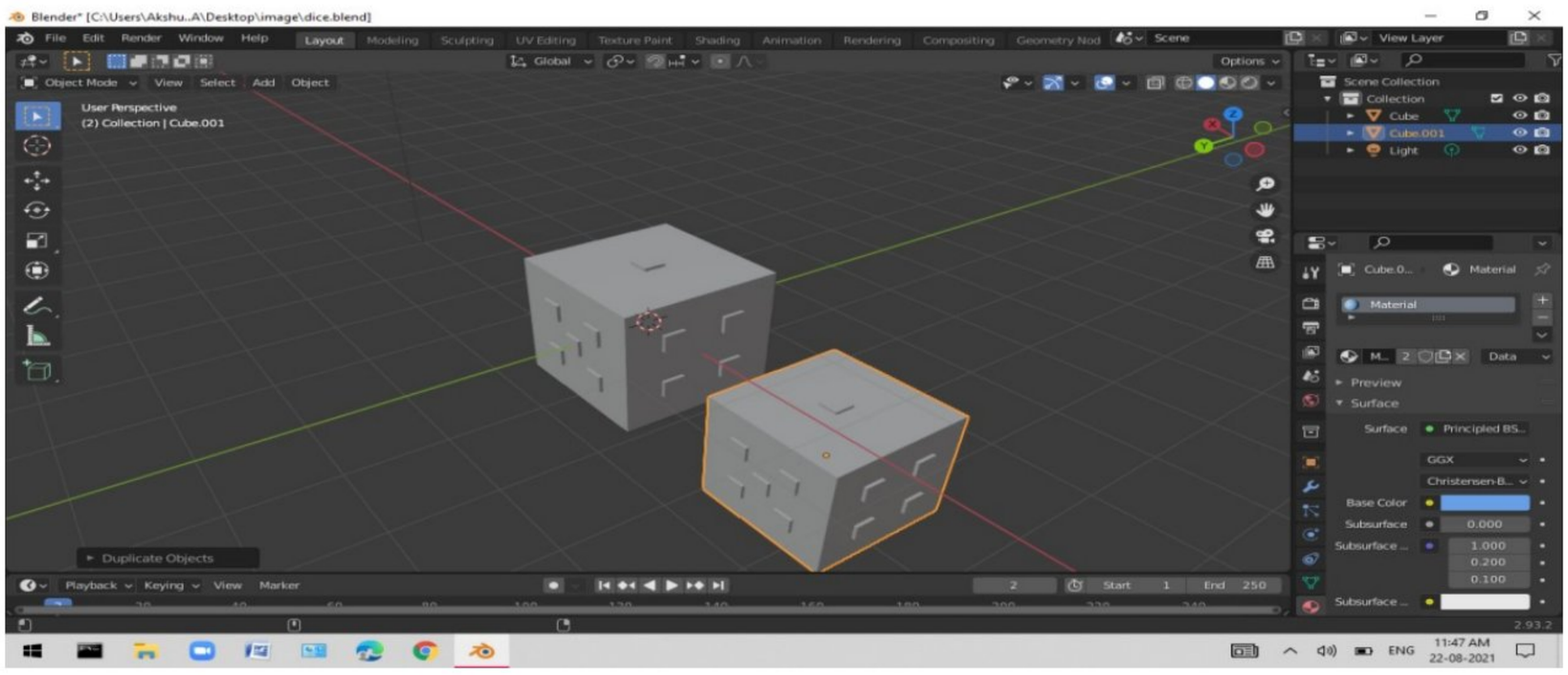


Step 8: Tab into object mode and duplicate a die ,move the new die to the side of old die.



Step 9: Add plane and move it below the dice. Scale the plane by 25 and a material to the plane(#5A974B).

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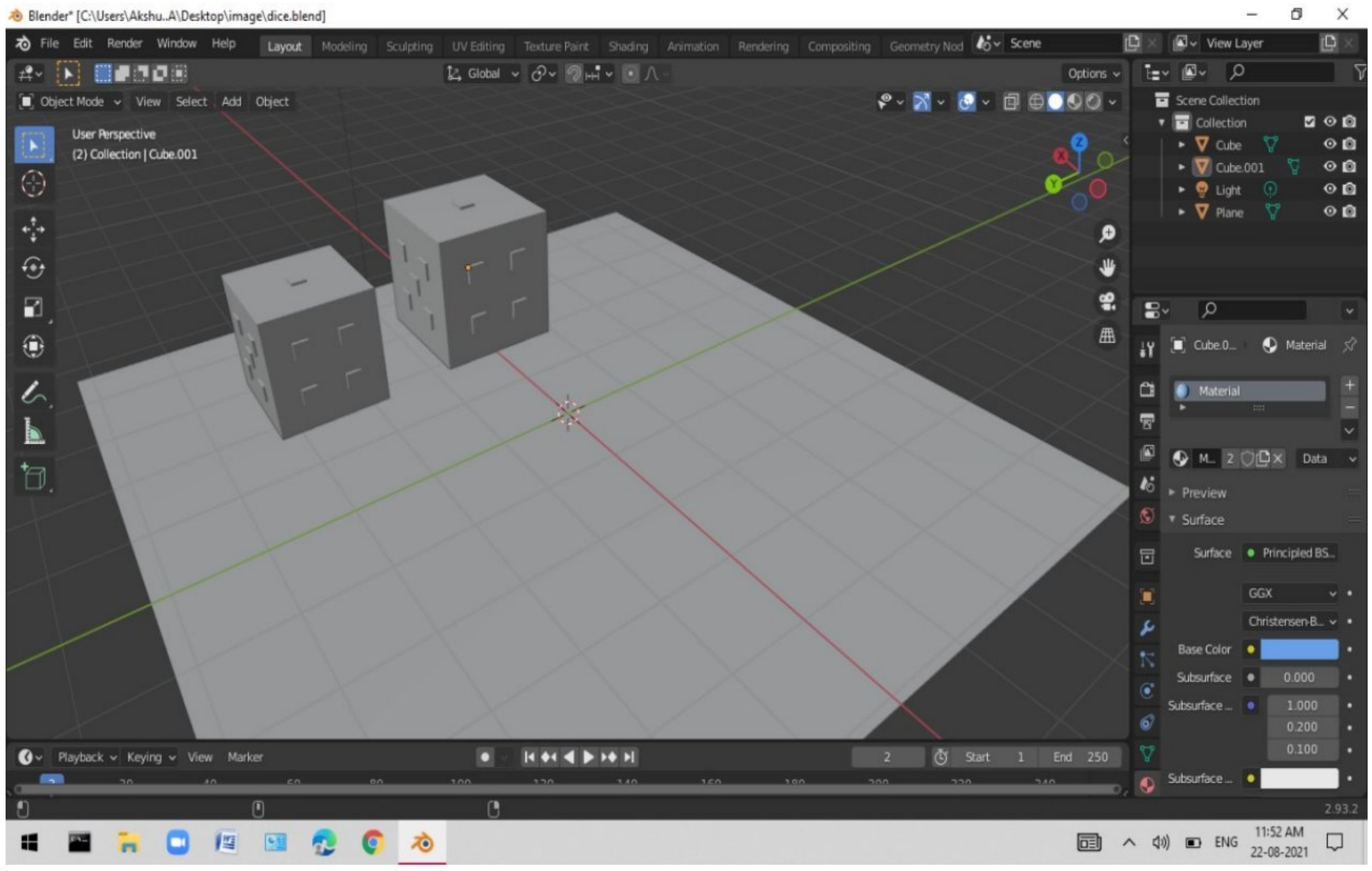
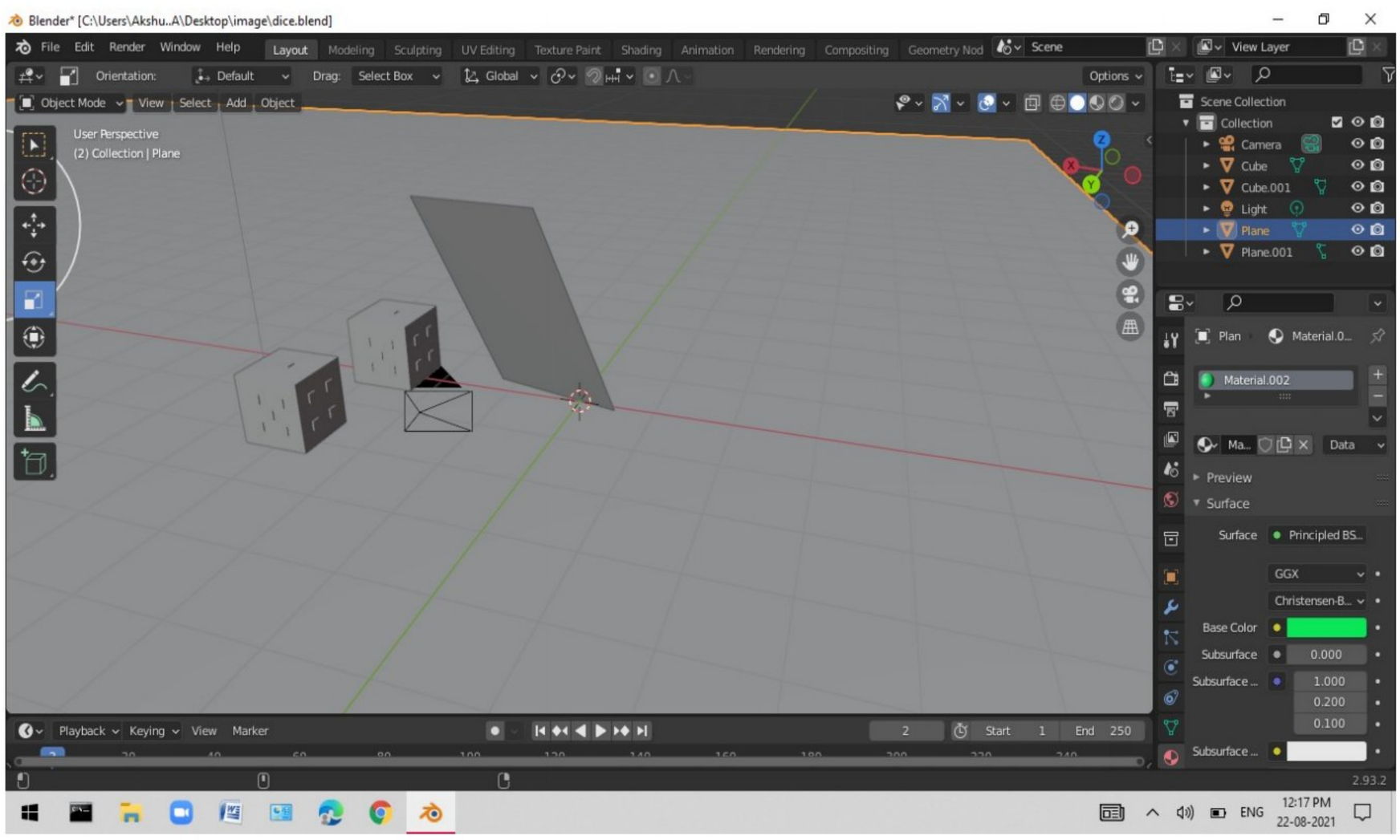


Step 10: Add other plane and move it behind the dice.Rotate the plane around x-axis by 45 degree and scale plane along Z-axis by 2 and X-Axis by 5.



Step 11: Select plane.Under the “Physics Tab”,click “Rigid Body” and change the type to “Passive” and repeat this step same for other plane also. Select Die. Under the “Physics Tab”,click “Rigid Body” and change the type to “Active” and repeat this step same for other die also.

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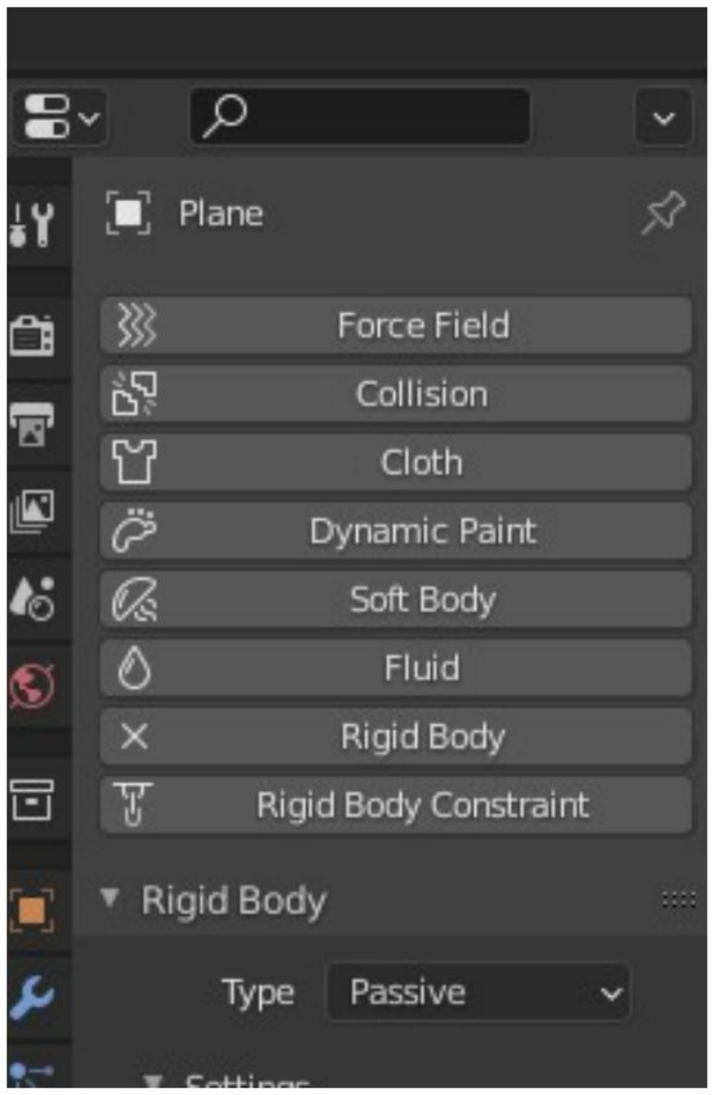
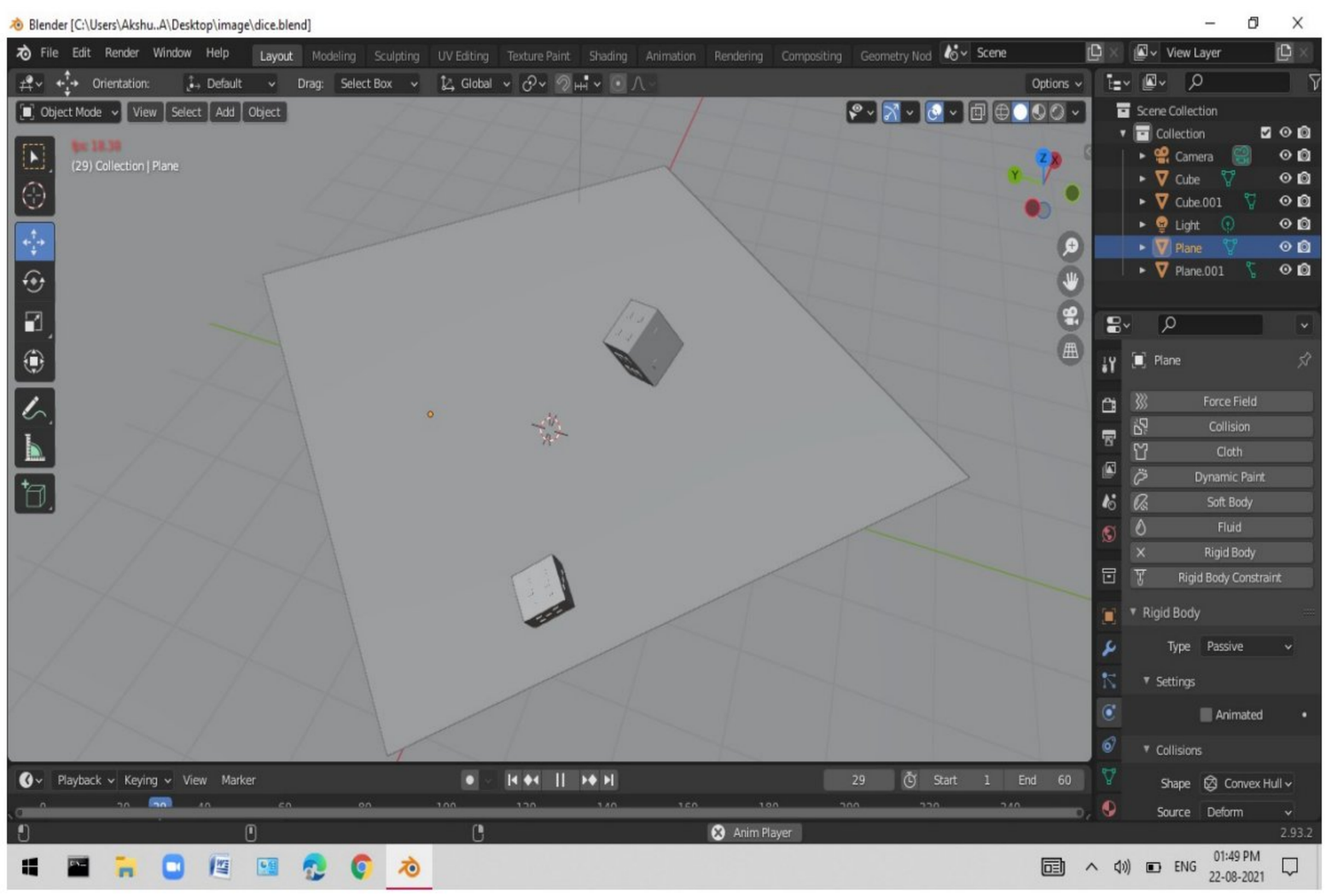


Step 12: move the dice above plane.Click on “play button” and dice will roll off the plane and onto the plane.



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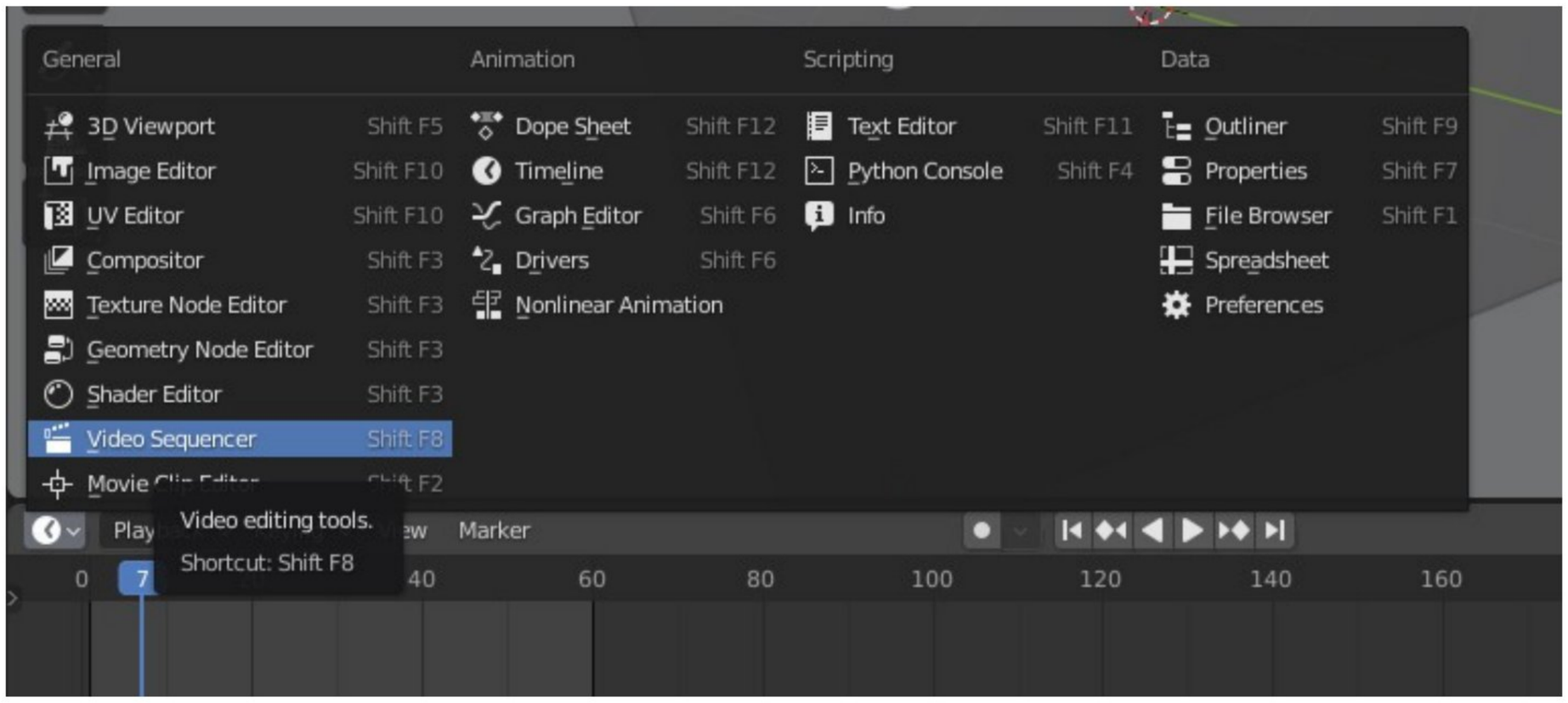
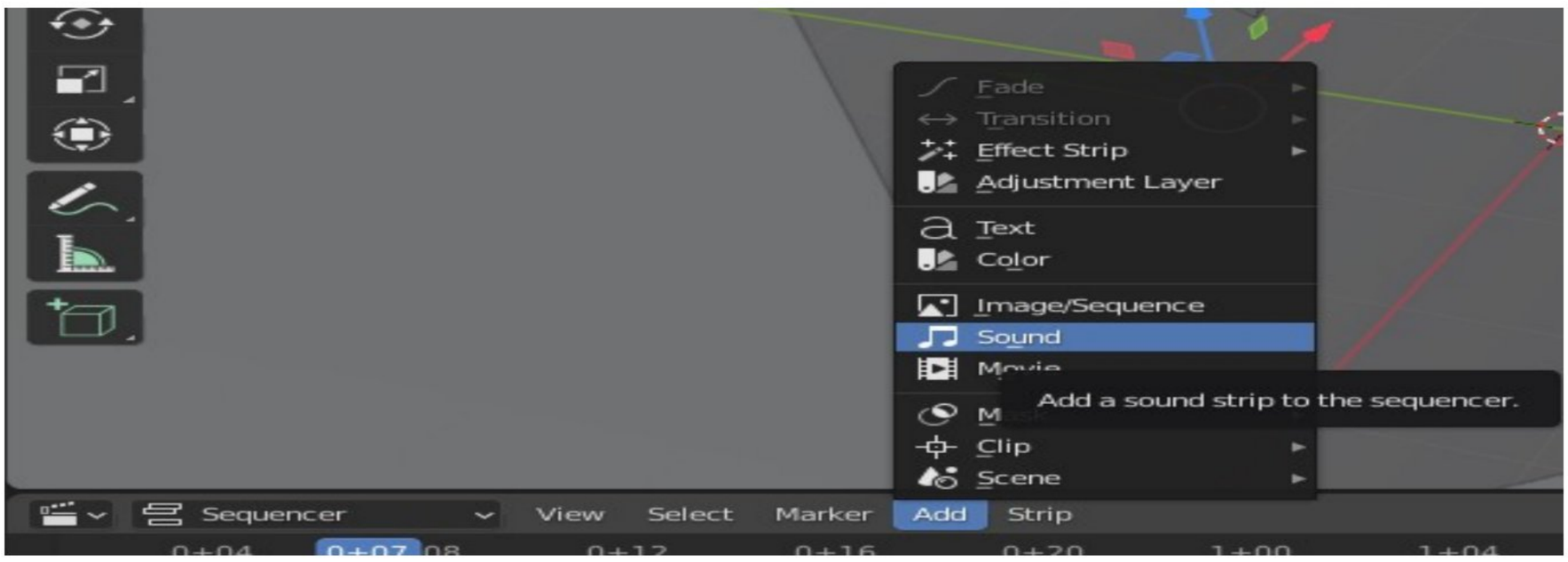
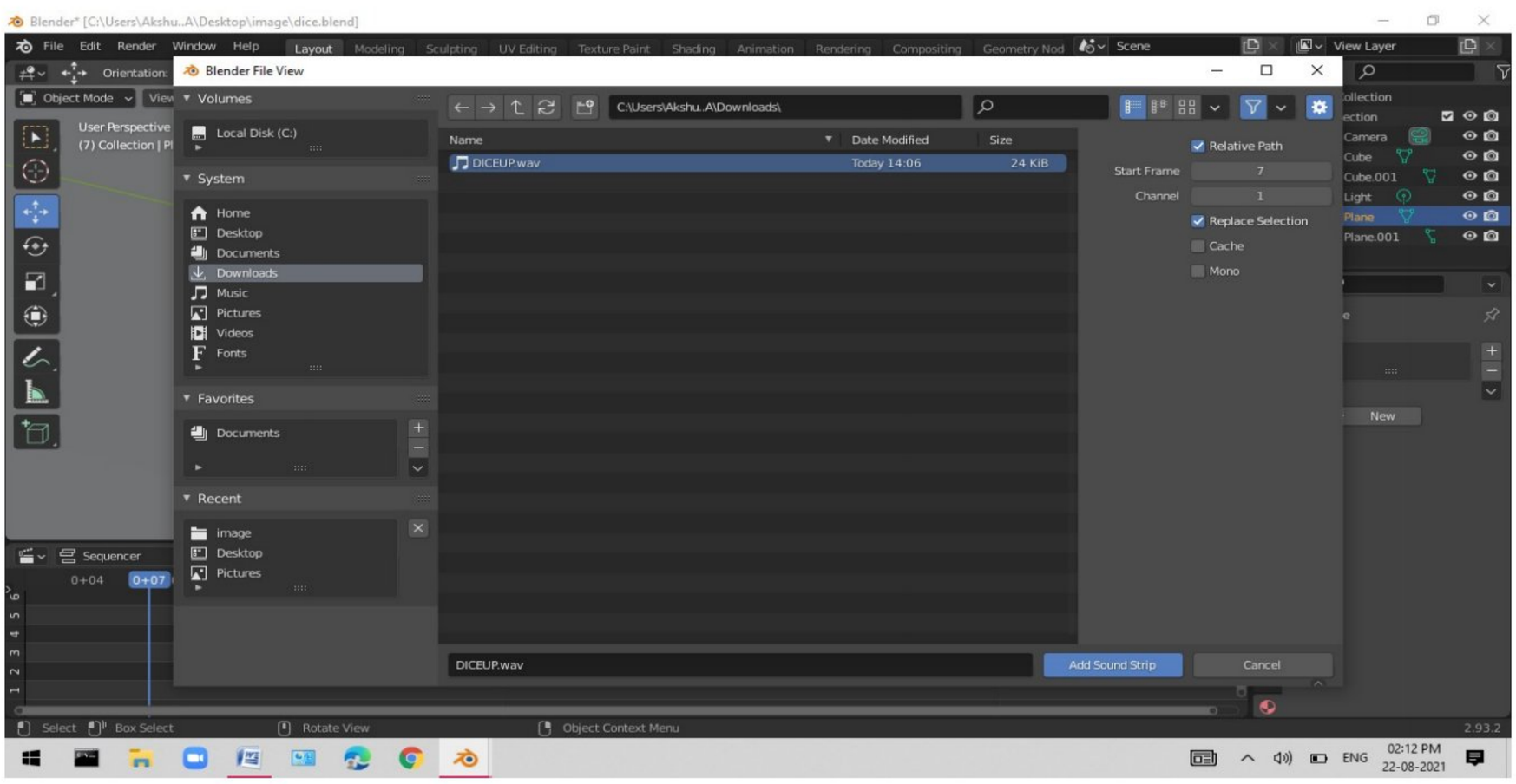
Step 13: you can add sound for dice fall by switchong timeline into video sequene.



Step 14: click "Add" and choose "Sound"&locate sound file that you want into your animation.Click "Add sound strip" button.





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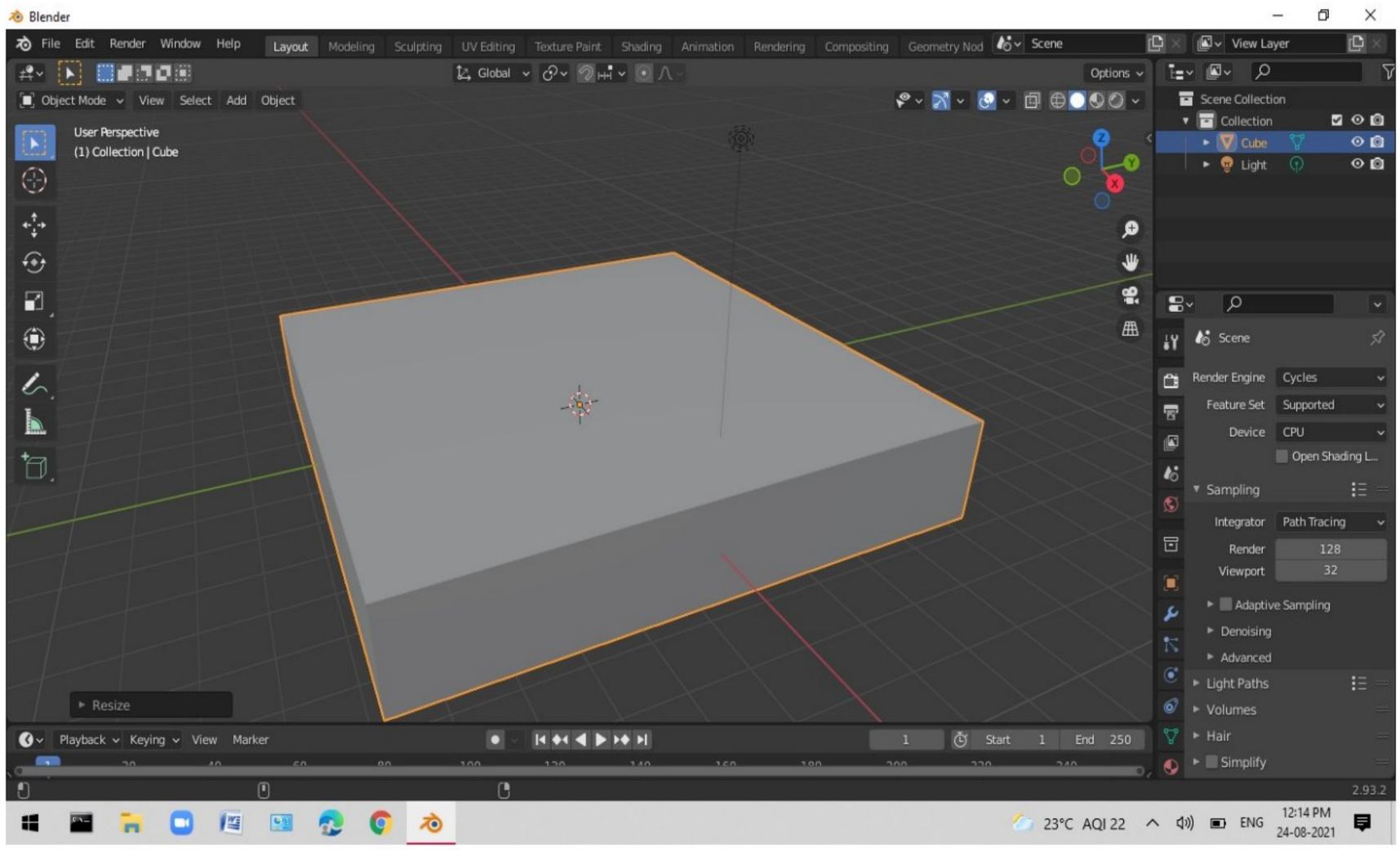
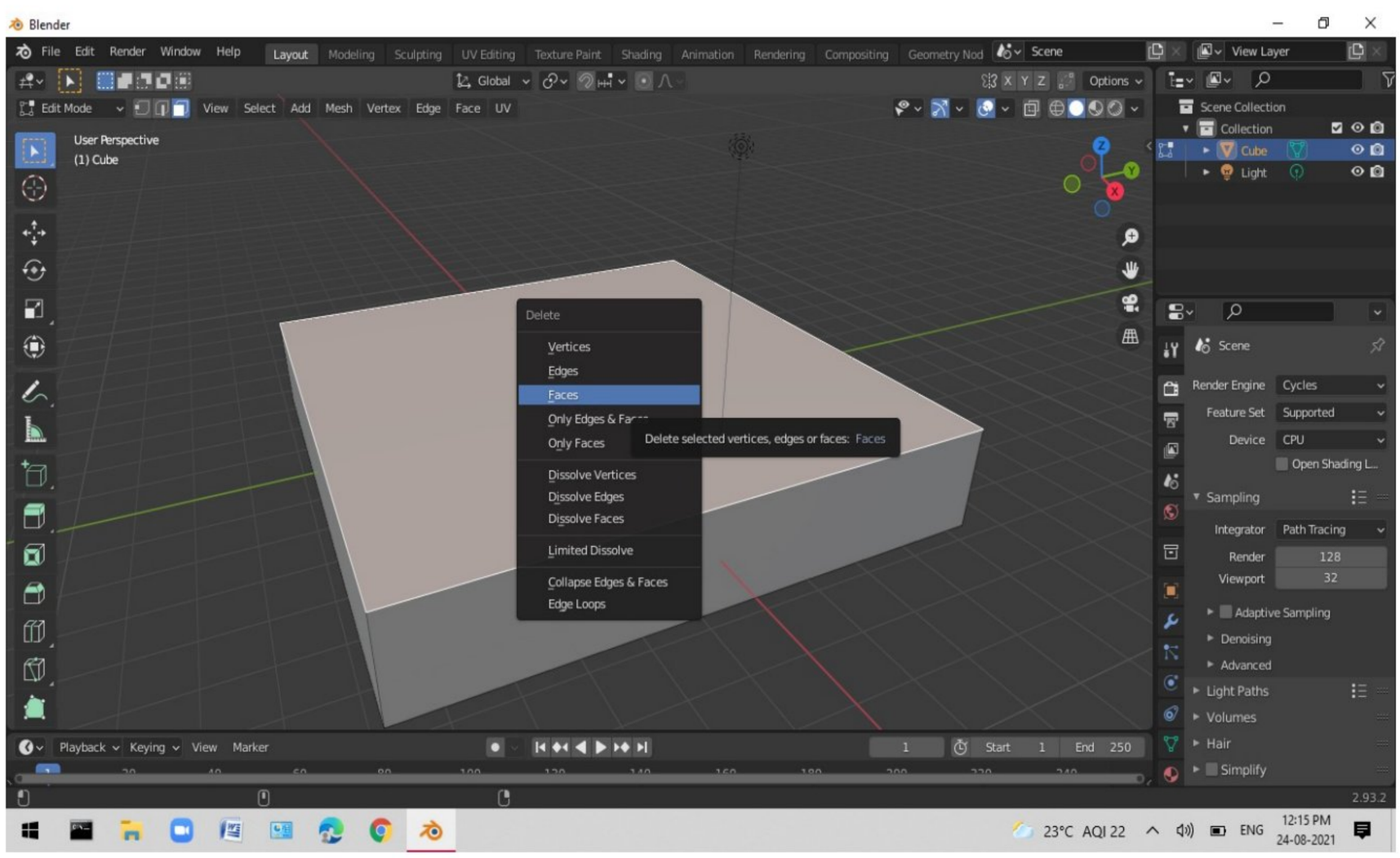
19. Show the animation of water flowing out from a pipe around a suitable environment.

Step 1: Add cube ,scale it using “S” then Click “Shift+Z” to scale the cube on x and y axis..



Step 2: Switch to edit mode,choose “Face mode” then select top face. Click “X” then choose “Face”.



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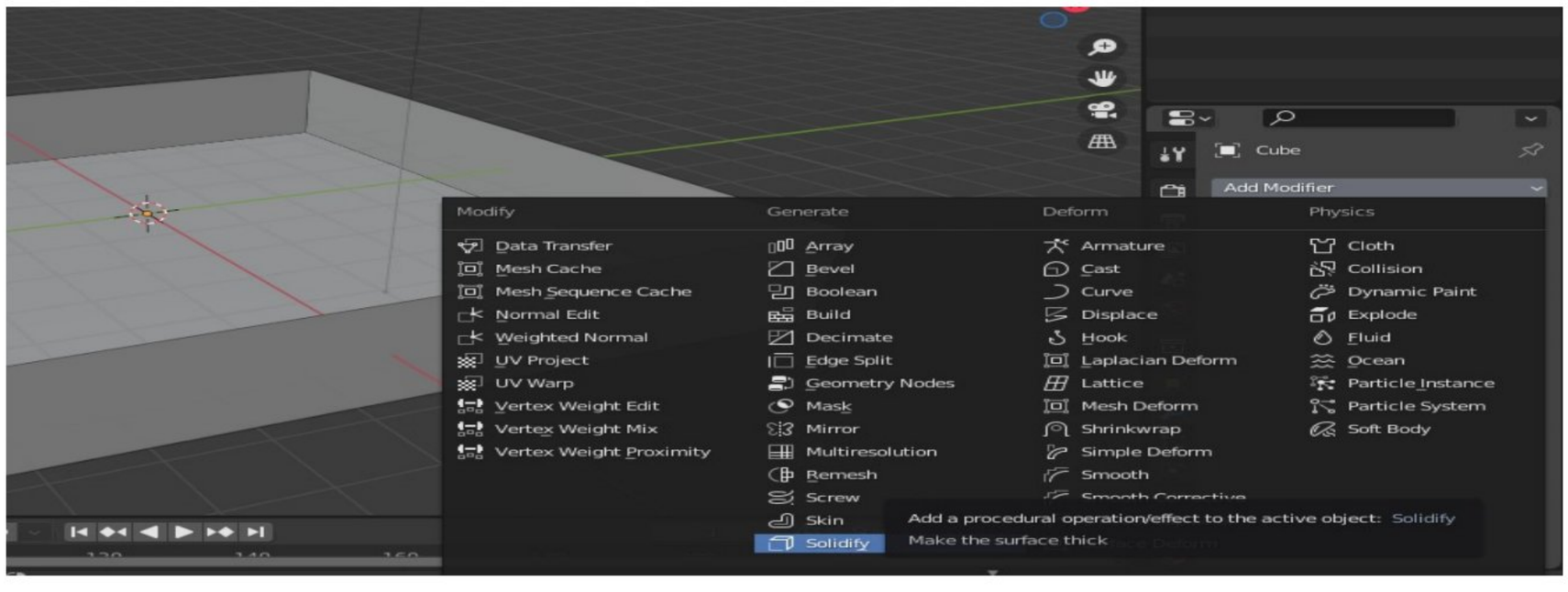
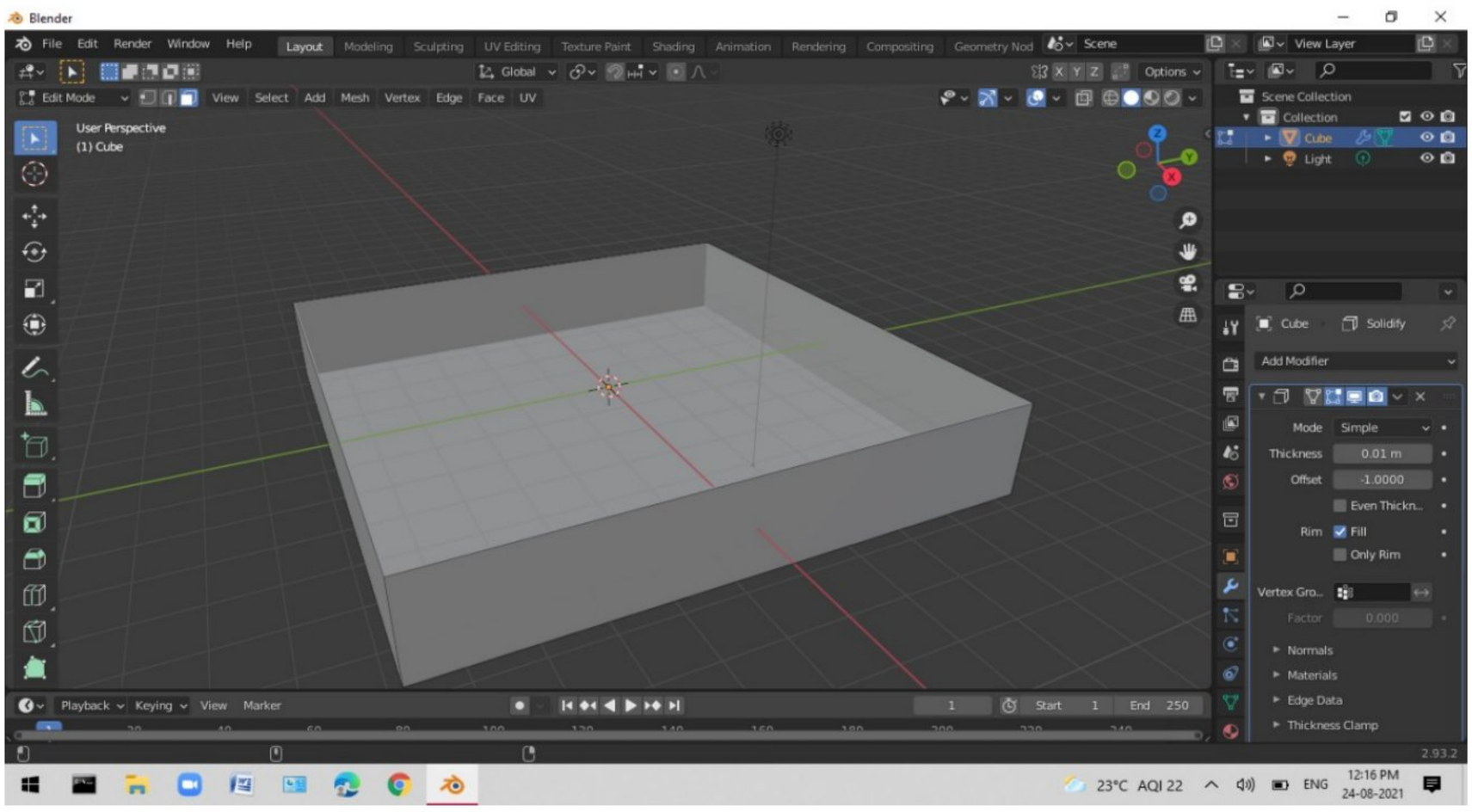
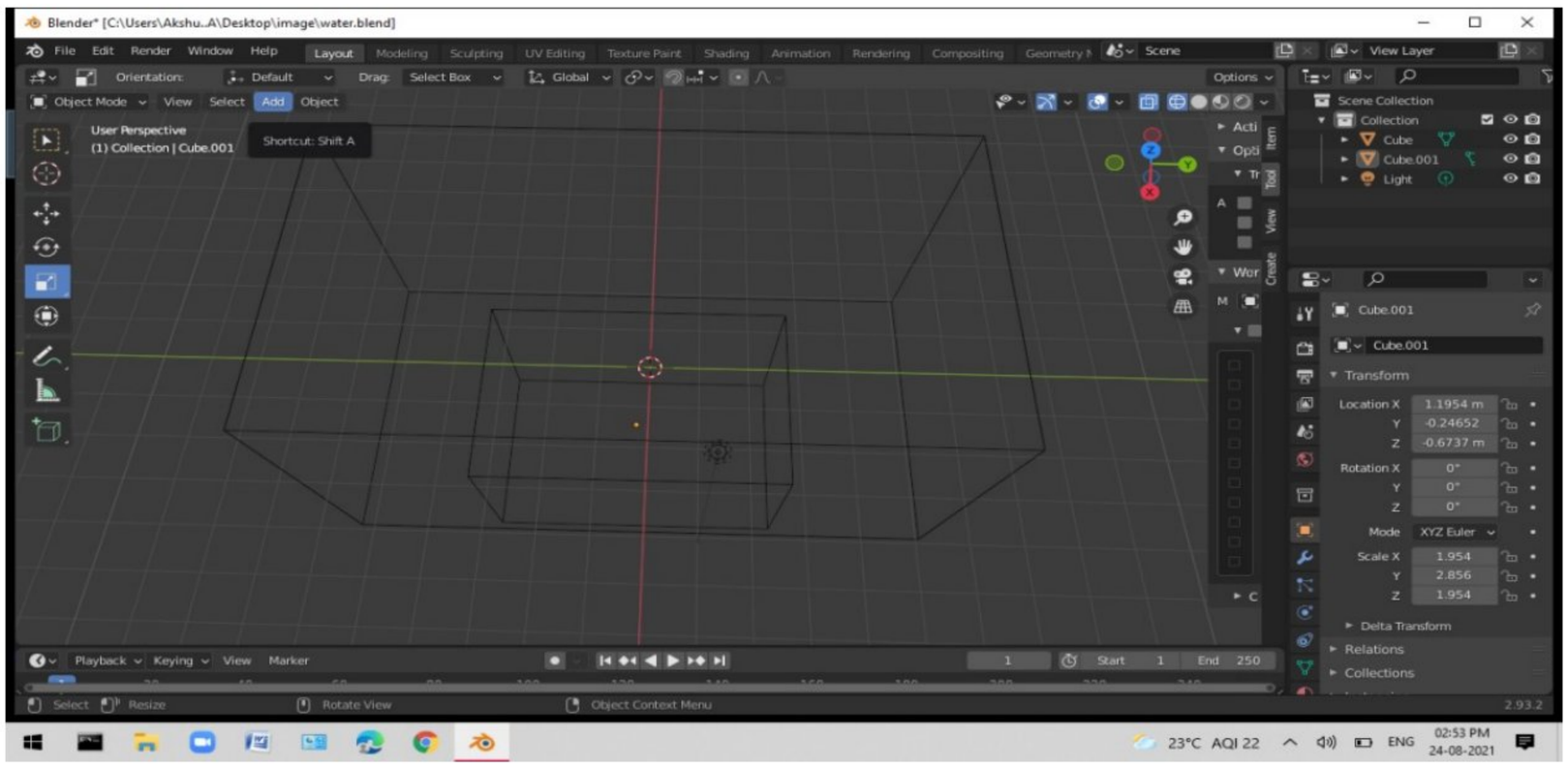
Step 3: Choose “Modifier” Tab,select “Solidify”.Adjust thickness.





Step 4: Add “Cube”,scale it using “S” then move it by “G”. Click “Shift+z”.



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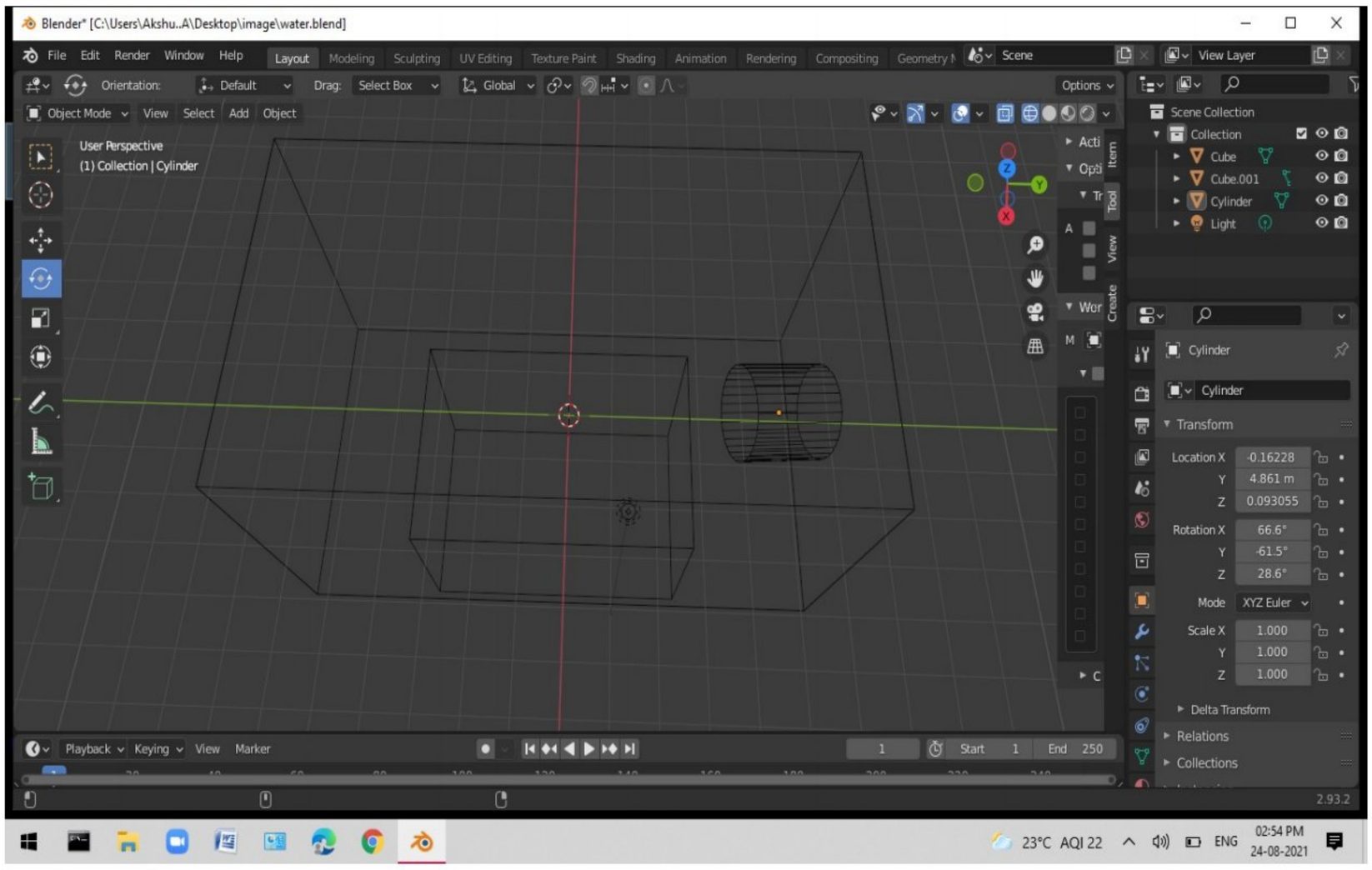
Step 5: Add “Cylinder” scale it by “s” and click “R” to x axis(90degree).switch to edit mode,click “F” to fill cylinder.



Step 6: Select “Cube1”,choose “Physics properties” and select “fluid”. Set fluid type as “Effector”,make checkbox on “Is Planar”.

Step 7:Choose “Cylinder”, choose “Physics properties” and select “fluid”. Set fluid type as “Flow” and set flowtype as “Liquid”. Change Flow behavior as “Inflow”.

Go to flow setting ,make checkbox on “Initial velocity”,set initial X as -5ms. Select Cube 2 and click on Baking all.

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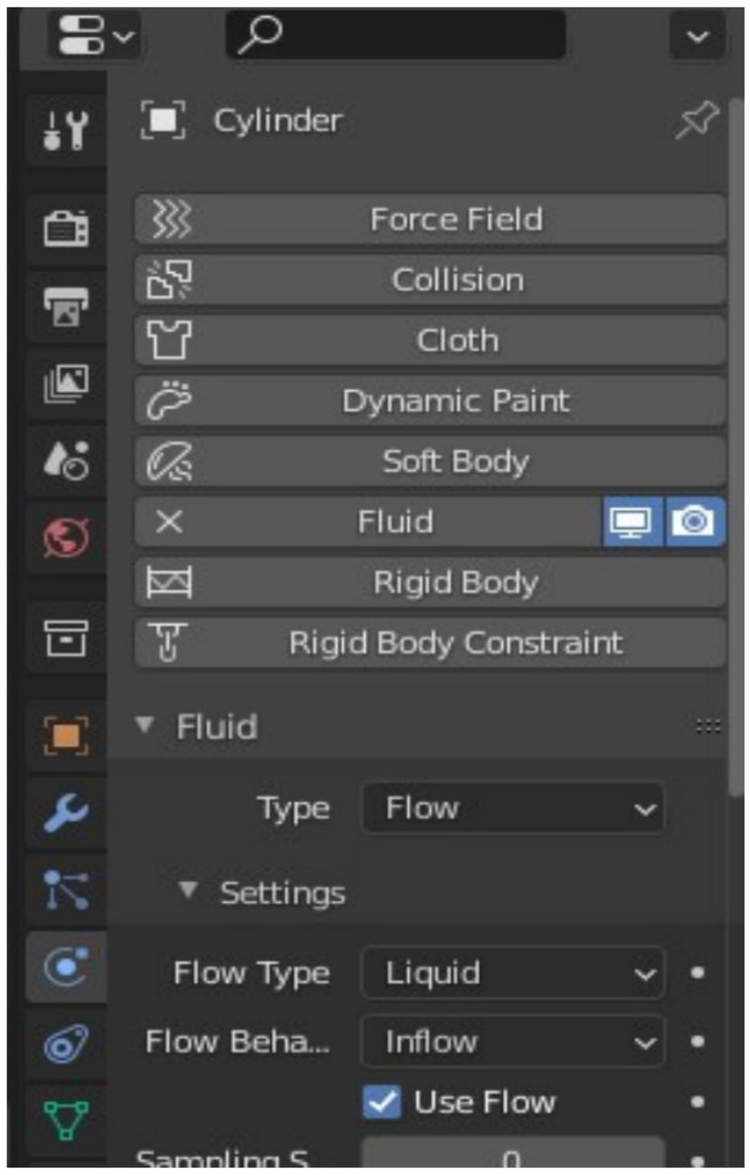

Step 8: choose “Cube2”, choose “Physics properties” and select “fluid”. Set fluid type as “Domain” and set Domain type as “Liquid”.scroll bottom you will find frame start and end option,set type as “All” and make checkbox “Is Resumable”.

Choose Cube2 and scroll down you will find “Bake All” option.click on it.After Baking ,select cube2 and click on free option and set “Resolution Division” as 64,click on Baking all one more time.

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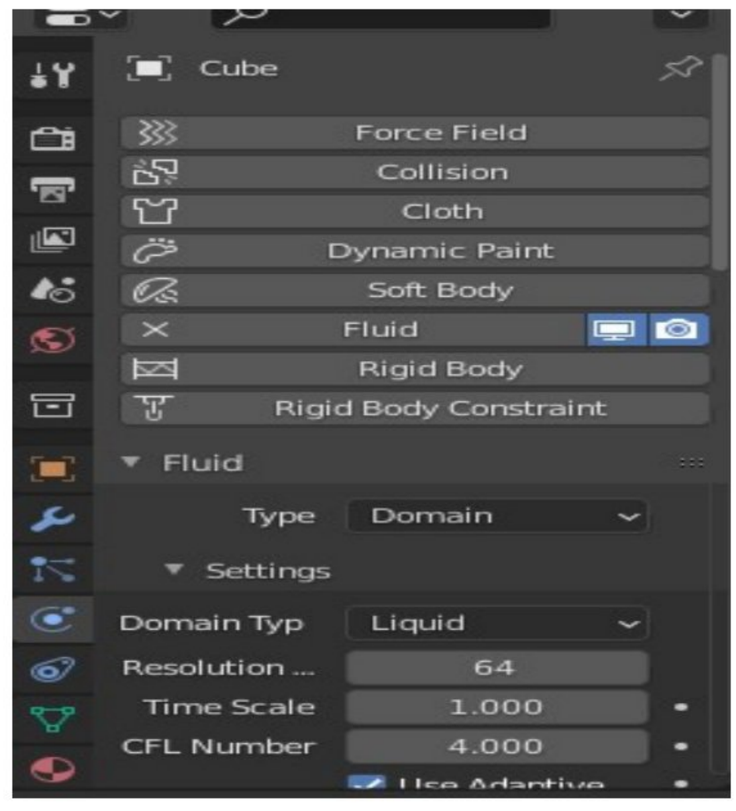
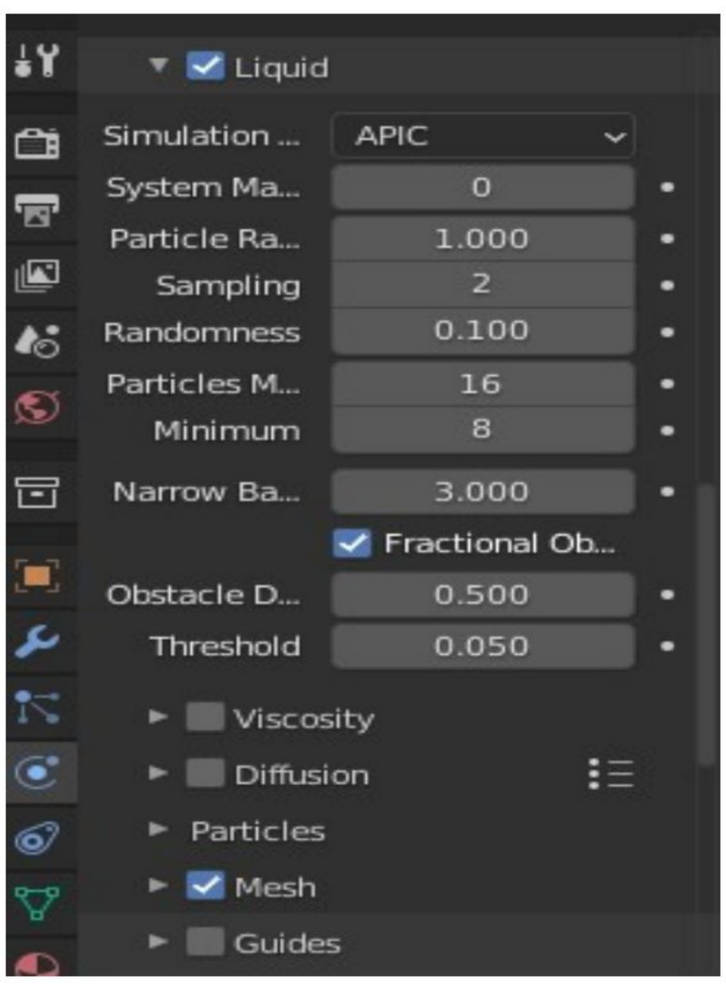
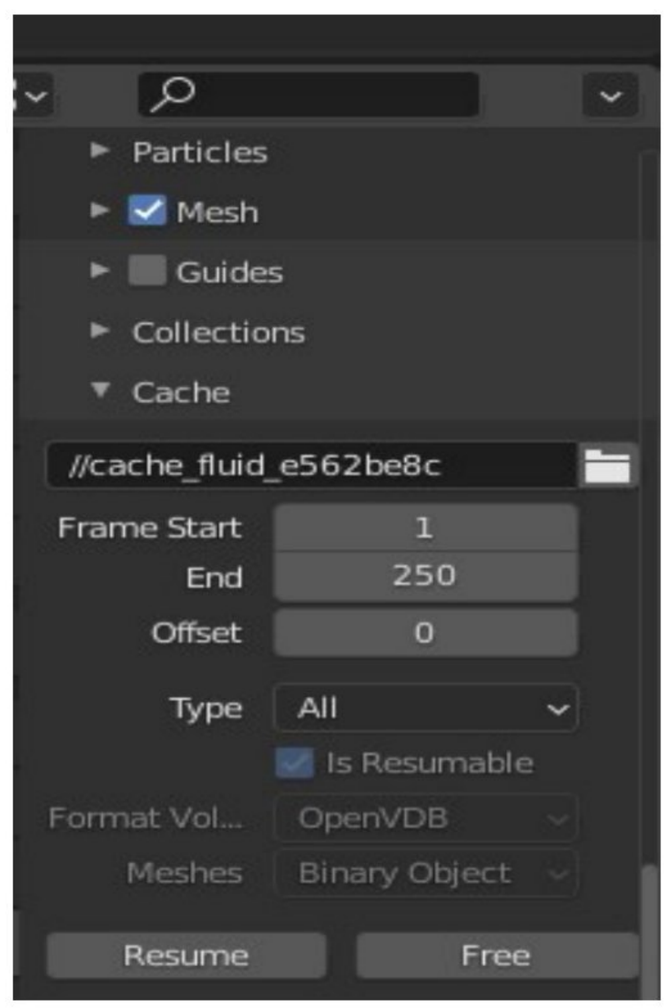


Step 9: Need to Bake Fluid into Mesh,scroll down aad click on “free”.Scroll it up make checkbox on “Mesh”,increase resolution as “128”.Set simulation method as “APIC” &make checkbox on “Fractional obstacles”.Click on “Bake all”.





Step 11: Start Animation by clicking “Spacebar”.

Step 12: Obtain Animation images.

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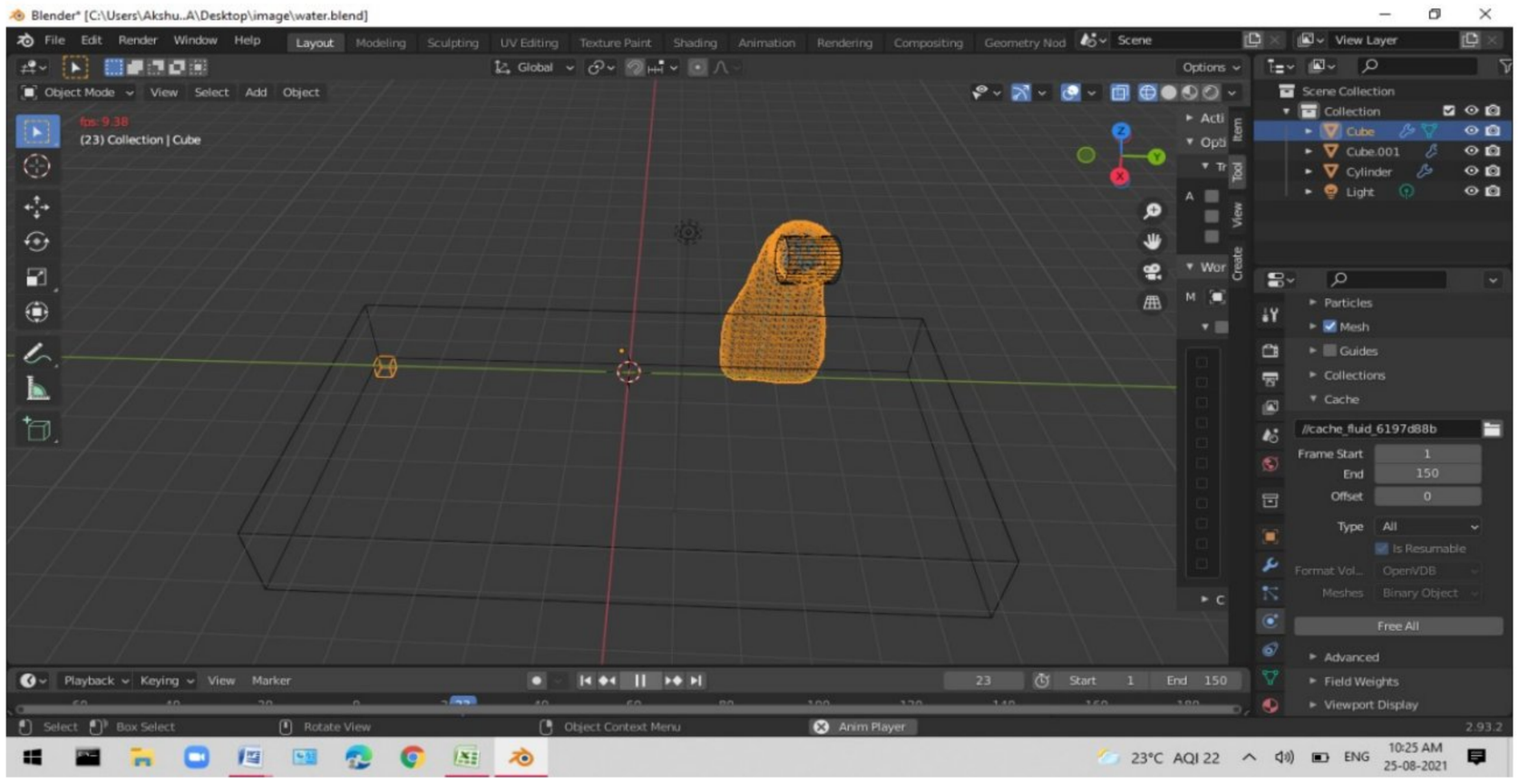

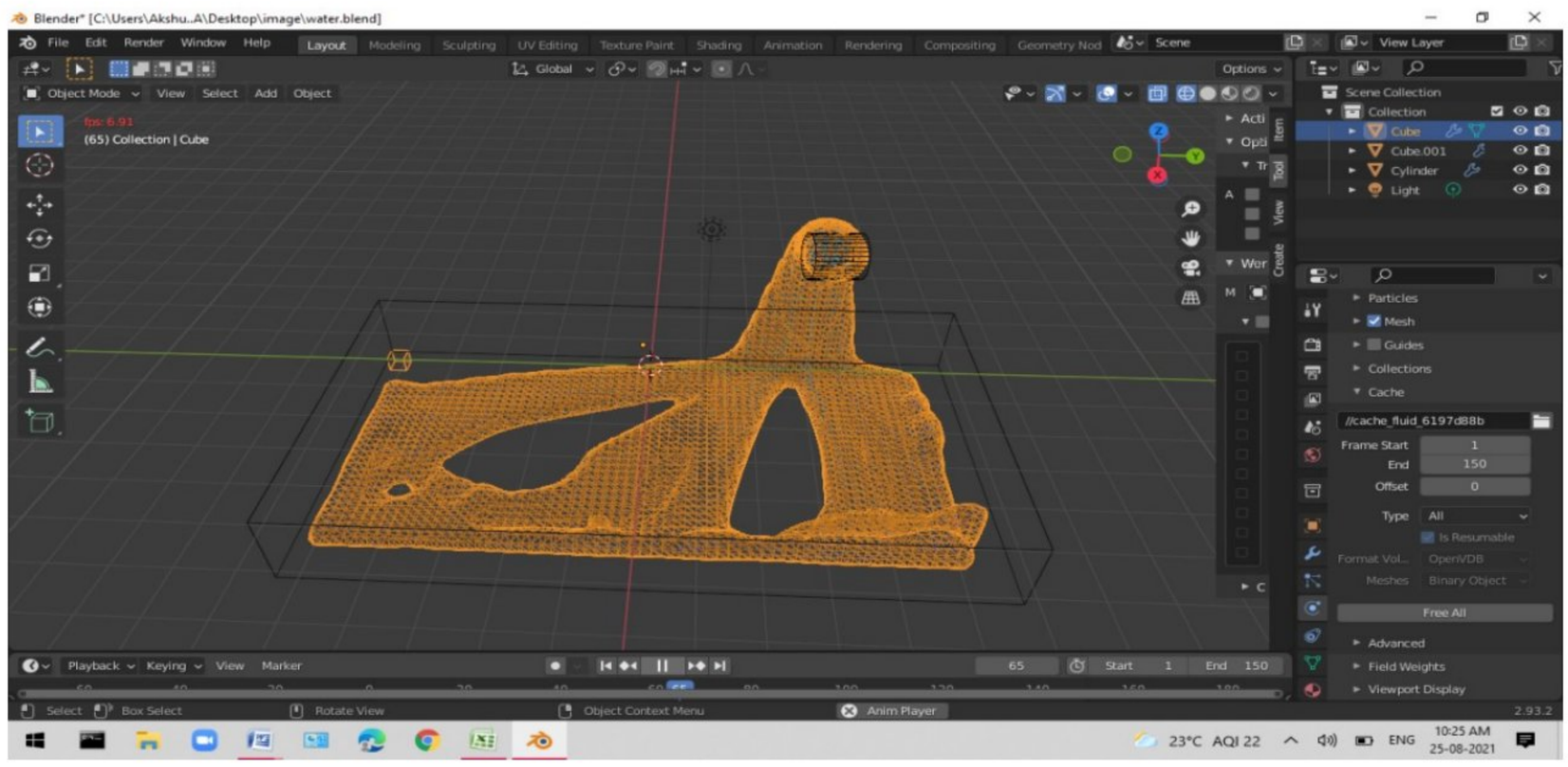

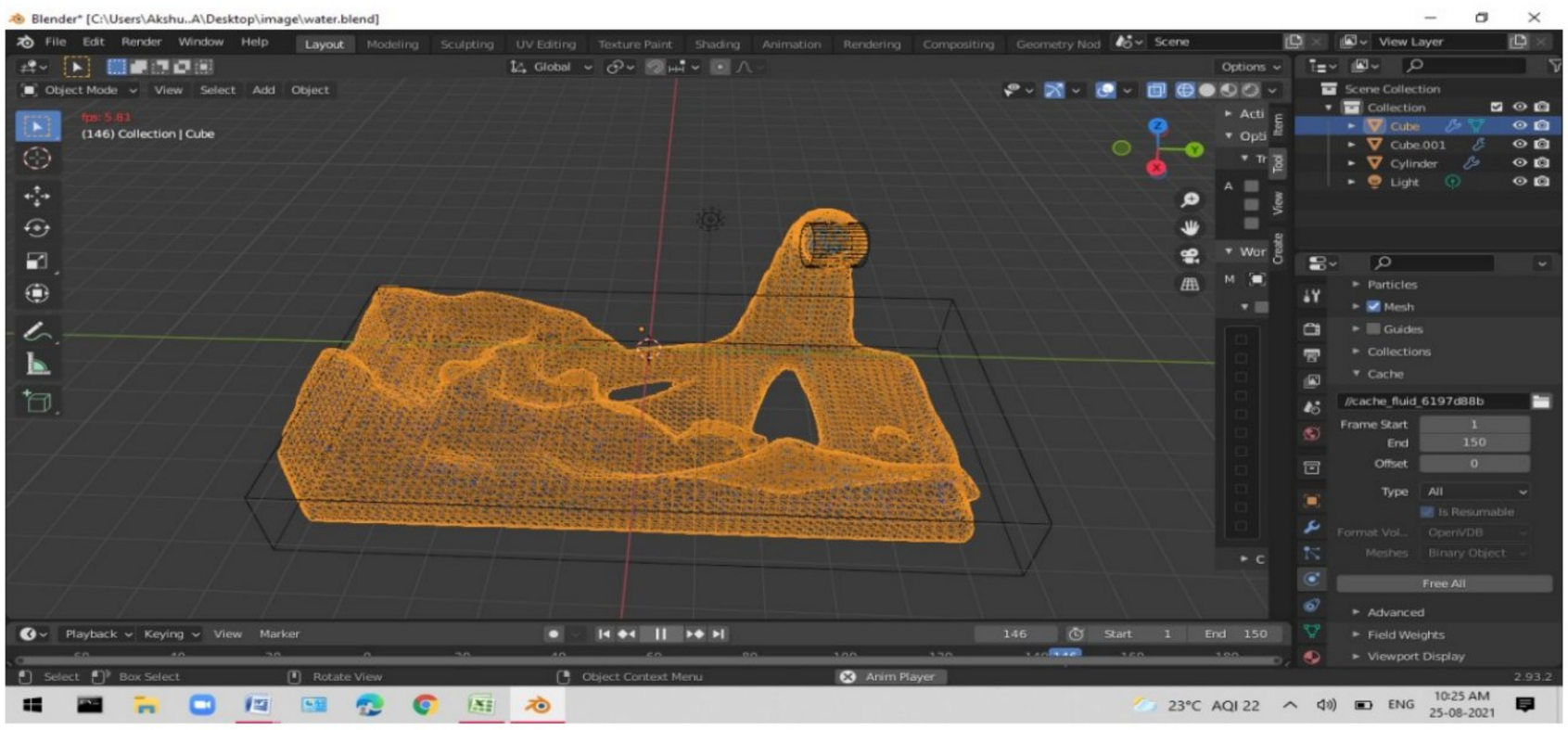

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