

Lab1

Introduction

Adobe Illustrator is a versatile vector graphics editor developed by Adobe Inc. Renowned for its robust capabilities, Adobe Illustrator is widely utilized for creating a wide range of visual content, including logos, icons, illustrations, typography, and complex artwork. Its extensive feature set, which includes advanced drawing tools, precision typographic capabilities, powerful color and gradient tools, and seamless integration with other Adobe products, makes it an indispensable tool for both professionals and hobbyists in graphic design, digital art, and various creative industries.

The primary purpose of this lab is to familiarize oneself with the basic functionalities of Adobe Illustrator. This includes understanding its tools, creating and manipulating vector graphics, working with shapes, using pen tools for custom shapes, and editing paths and anchor points. Additionally, the application and editing of fill and stroke colors, working with gradients, and understanding color modes will be learned. The lab will also cover adding and formatting text, working with typography principles, organizing layers, grouping objects, applying effects, and using transparency and blending modes. By gaining a foundational knowledge of these core aspects, better equipment for utilizing Adobe Illustrator for various graphic design projects will be achieved.

Objectives

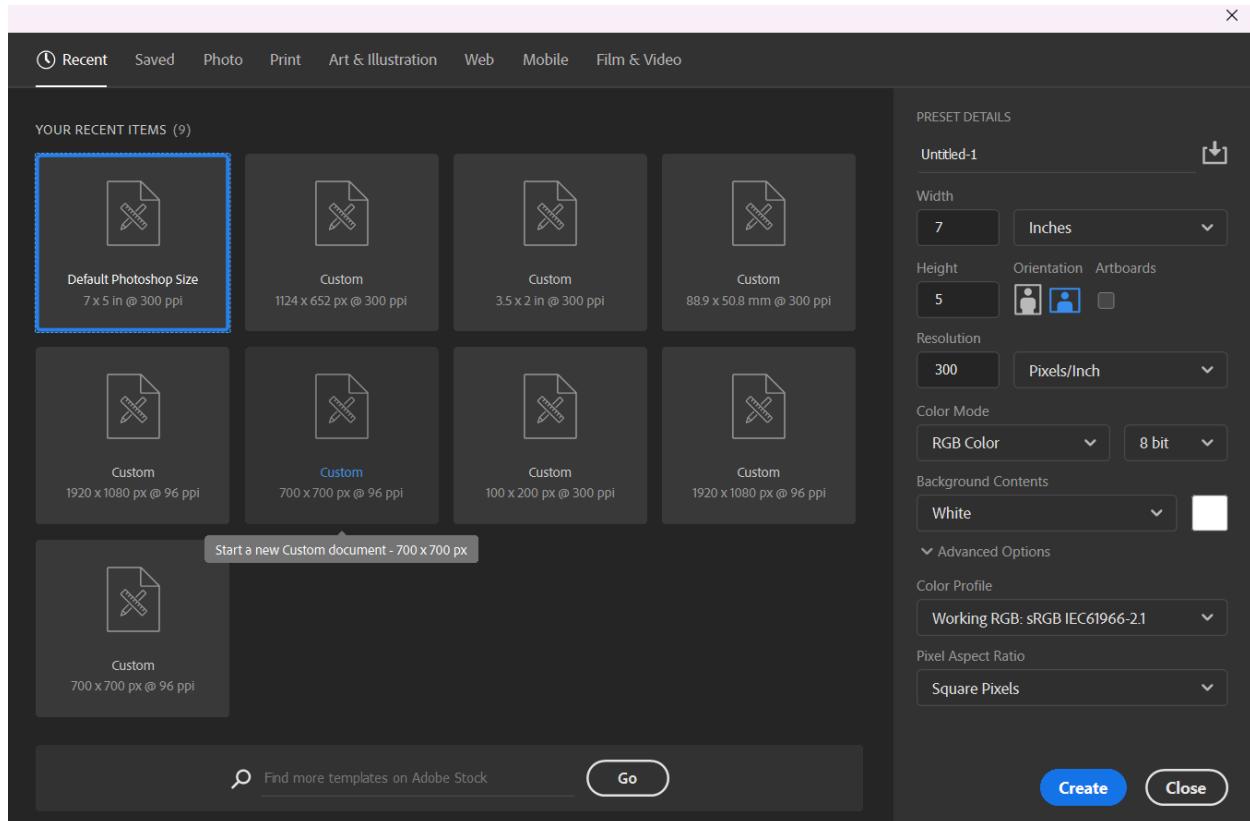
The main objectives of this lab work are:

1. Brief Overview of Adobe Illustrator
2. Tools and Techniques
 - Basic Tools and Their Functions
 - Creating and Manipulating Basic Shapes
 - Using Pen Tools for Creating Custom Shapes
3. Color and Gradients
 - Applying and Editing Fill and Stroke Colors
 - Working with Gradients
 - Understanding Color Modes
4. Text and Typography
 - Adding and Formatting Text
5. Layers

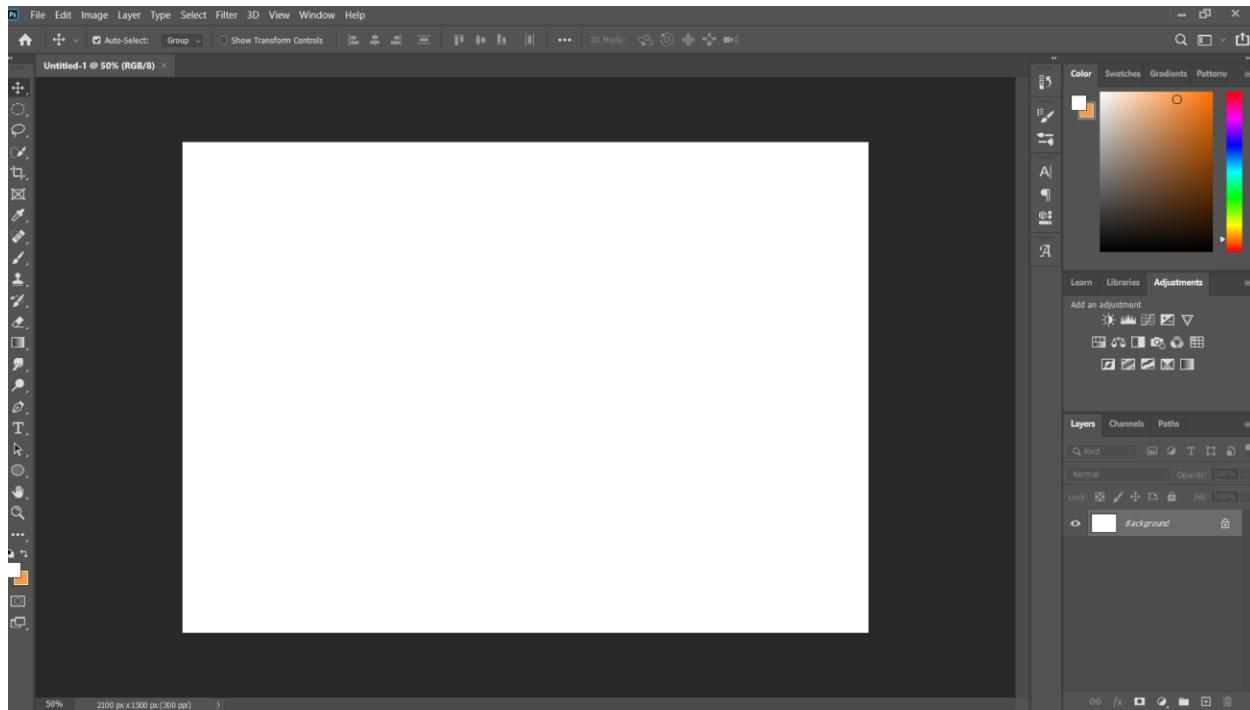
- Understanding and Organizing Layers
 - Grouping and Ungrouping Objects
6. Effects and Appearance
- Applying and Customizing Effects
 - Working with Transparency and Blending Modes
 - Using Pathfinding Tool
7. Saving and Exporting Your Work

1. Brief Overview of Adobe Illustrator

- Installing Adobe Illustrator:
 - Visit the Adobe Creative Cloud website and download Adobe Illustrator.
 - Follow the installation instructions provided by Adobe.
 - Launch Illustrator once the installation is complete.



- Understanding the Workspace:



- Toolbar: Located on the left side of the screen, it contains tools for drawing, selecting, and editing.
- Properties Panel: On the right side, it shows options related to the selected tool or object.
- Stage: The central canvas area where you create your artwork.

1. Tools and Techniques

- a. Basic tools and their functions
 - Selection Tool
 - Function: Selects entire objects for moving, resizing, or transforming.
 - How to Use: Click on an object to select it. You can then drag to move, or use the handles on the bounding box to resize or rotate the object.
 - Direct Selection Tool

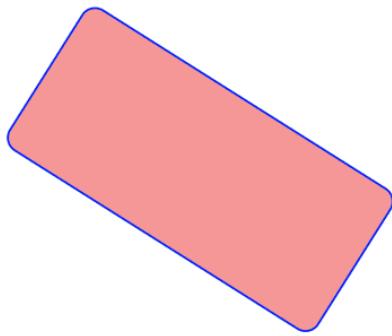
- Function: Selects and modifies individual anchor points and path segments within an object.
- How to Use: Click on an anchor point or path segment to select it. Drag anchor points or path segments to adjust the shape of the object.
- Pen Tool
- Function: Creates custom shapes and paths by placing anchor points and creating curves.
- How to Use: Click to place anchor points for straight segments. Click and drag to create curves. Close the path by connecting back to the starting point or double-clicking.
- Curvature Tool
- Function: Creates and edits smooth curves more intuitively than the Pen Tool.
- How to Use: Click to place points and create curves. Adjust the shape of the curves by dragging the points to change the curve direction.
- Rectangle Tool
- Function: Draws rectangles and squares.
- How to Use: Click and drag on the canvas to create a rectangle. Hold Shift while dragging to create a perfect square.
- Paint Brush Tool
- Function: Paints freeform strokes and textures with various brush styles.
- How to Use: Select a brush from the Brush panel. Click and drag on the canvas to draw with the selected brush. Adjust brush size and style in the Brush panel.
- Type Tool
- Function: Adds text to your artwork.
- How to Use: Click on the canvas to create a text box and start typing. Adjust font, size, and other text properties in the Character panel.

- Rotate Tool
 - Function: Rotates objects around a fixed point.
 - How to Use: Select an object and click the Rotate Tool. Click and drag to rotate the object around its center or specified anchor point. Hold Shift to constrain rotation to 45-degree increments.
- Eraser Tool
 - Function: Removes parts of objects or artwork.
 - How to Use: Click and drag over the area you want to erase. Adjust the size and shape of the eraser in the options bar.
- Shape Builder Tool
 - Function: Combines, subtracts, and merges overlapping shapes.
 - How to Use: Select multiple overlapping shapes. Click and drag across areas you want to combine or subtract. Hold Alt (Option) while dragging to subtract from the selection.
- Gradient Tool
 - Function: Applies and adjusts gradients on objects.
 - How to Use: Select an object and then click and drag with the Gradient Tool to apply a gradient. Adjust gradient stops and direction in the Gradient panel.
- Eyedropper Tool
 - Function: Samples colors from objects and applies them to other objects.
 - How to Use: Click on a color in your artwork to sample it. The sampled color will become the current fill or stroke color.
- Width Tool
 - Function: Adjusts the width of paths along their length.
 - How to Use: Click on a path to create width points. Drag these points to adjust the width of the path at different locations.
- Blend Tool

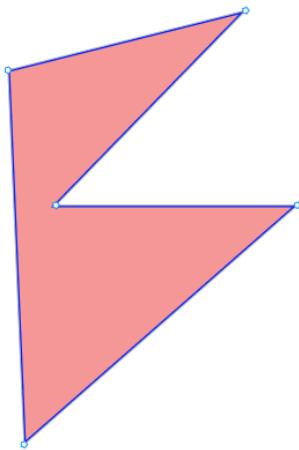
- Function: Creates smooth transitions between objects.
- How to Use: Select two objects and use the Blend Tool to create a blend between them. Adjust the number of steps or the spacing in the Blend Options dialog.
- Fill and Stroke
- Function: Controls the color and appearance of the inside (fill) and the outline (stroke) of objects.
- How to Use:
 - Fill: Click the Fill color box in the toolbar or Properties panel to choose a color or gradient for the interior of the object.
 - Stroke: Click the Stroke color box to choose a color for the outline. Adjust the stroke width and style in the Stroke panel.
- b. Creating and manipulating basic shapes
- Draw Shapes:



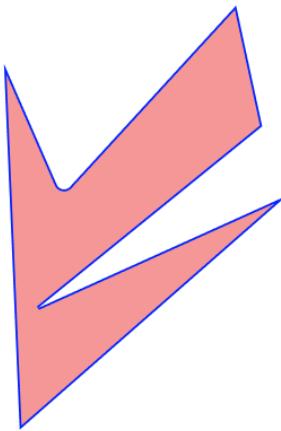
- Select a shape tool from the toolbar.
- Click and drag on the canvas to create the shape.
- Transform Shapes:



- Resize: Click and drag the corners of the bounding box around the shape.
 - Rotate: Hover near the corners of the bounding box until a rotate icon appears, then drag to rotate.
 - Skew: Hold Shift while dragging to skew the shape.
- c. Using pen tools for creating custom shapes
- Draw with the Pen Tool:



- Click to create straight segments. Click and drag to create curves.
- To close a path, click on the initial anchor point.
- Modify Paths:



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- Use the Direct Selection Tool to adjust individual anchor points and curve handles.

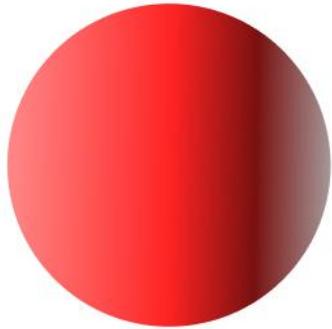
2. Color and Gradients

a. Applying and editing fill and stroke color

- Fill Color:
 - Select the Fill color box in the toolbar or Properties Panel.
 - Choose a color from the Color Picker or Swatches panel.
- Stroke Color:
 - Select the Stroke color box in the toolbar or Properties Panel.
 - Choose a color similarly to the Fill color.

b. Working with gradient

- Apply a Gradient:



- Select an object.
- Choose the Gradient Tool (G) from the toolbar or use the Gradient panel to apply and adjust the gradient.
- Edit Gradients:



- Adjust gradient stops and colors in the Gradient panel.
- Change the gradient direction and type (linear or radial).
- c. Understanding color modes
- RGB:

- Used for digital screens. Colors are created by mixing Red, Green, and Blue.
- CMYK:
- Used for print. Colors are created by mixing Cyan, Magenta, Yellow, and Black.

Setting Color Mode:

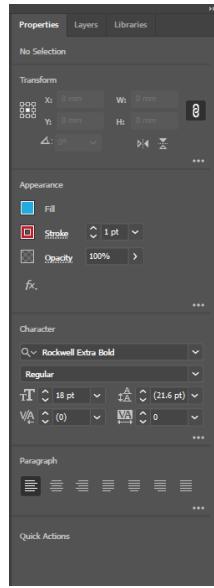
- Go to File > Document Color Mode and select either RGB or CMYK based on your project needs.

3. **Text and Typography**

- Adding and formatting text
- Add Text:



- Select the Type Tool (T) and click on the canvas to create a text box.
- Type your text.
- Format Text:

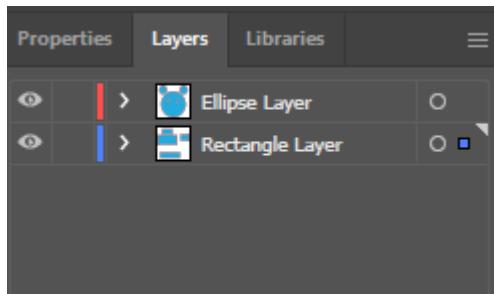


- Use the Properties panel to change font, size, color, and other typographic settings.

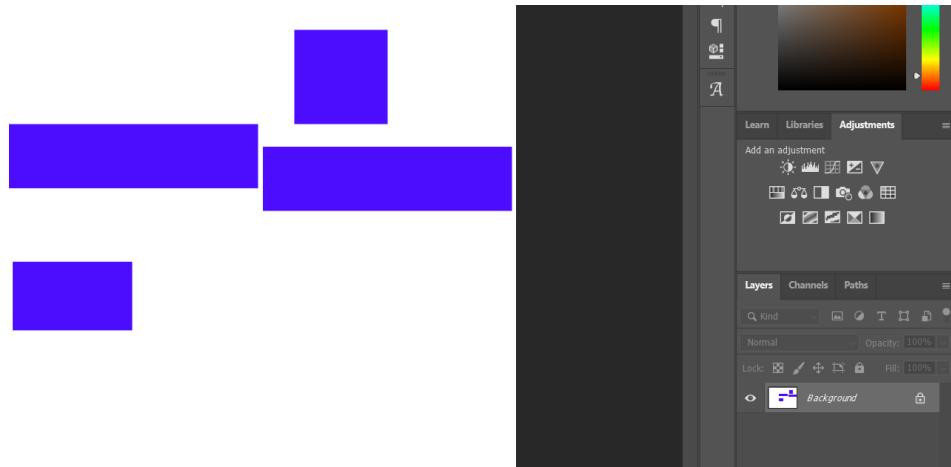
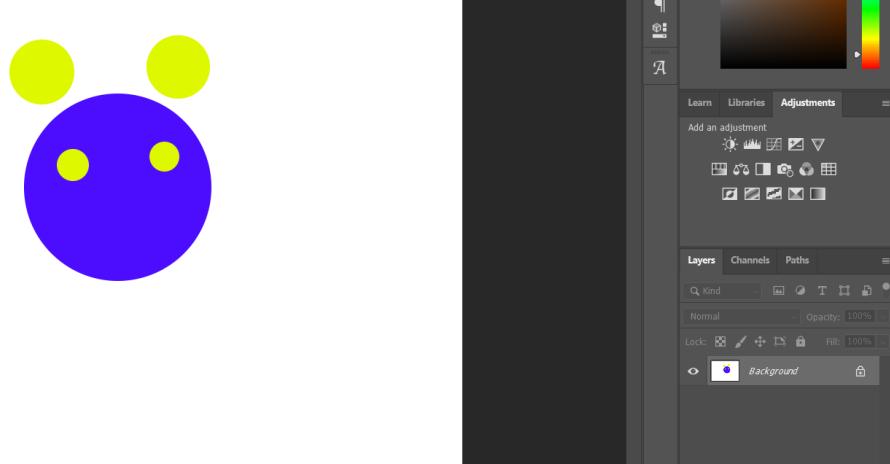
4. Layers

a. Understanding and Organizing Layers

- Layers Panel:



- Open the Layers panel to view and manage layers.
- Use the panel to add, delete, or reorder layers.
- Organize Layers:

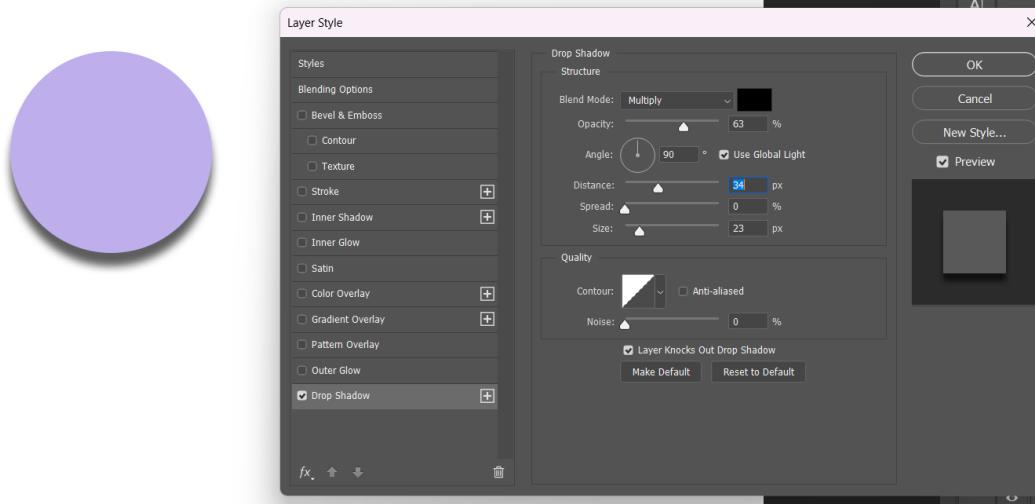


- Group related objects into layers for better management.
 - Lock or hide layers to work on specific parts of your artwork.
- b. Grouping and Ungrouping Objects
- Group Objects:
 - Select multiple objects and press Ctrl + G (Cmd + G) to group them.
 - Ungroup Objects:
 - Select a grouped object and press Ctrl + Shift + G (Cmd + Shift + G) to ungroup.

5. Effects and Appearances

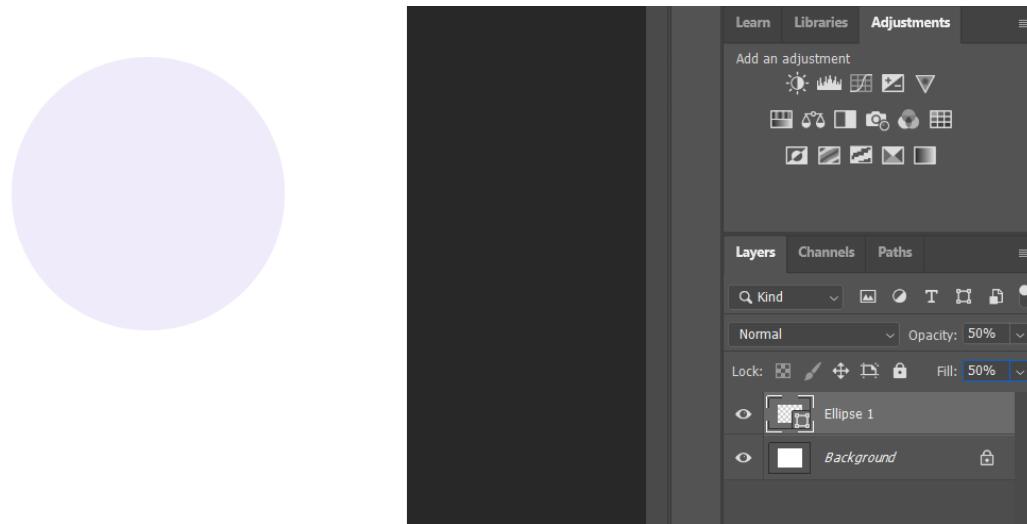
a. Applying and customizing effects

- Apply Effects:



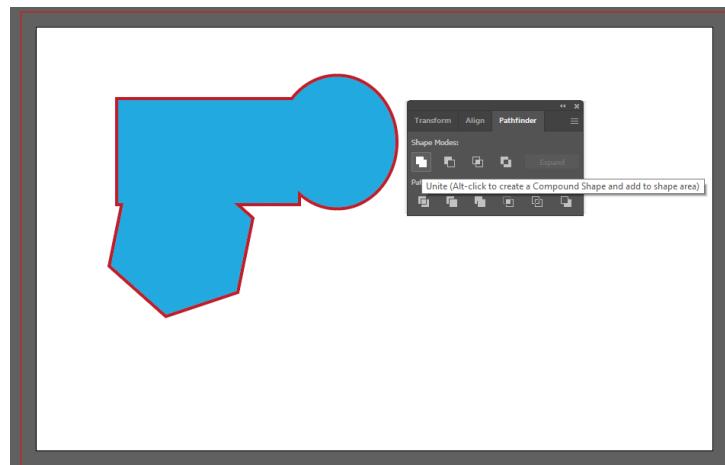
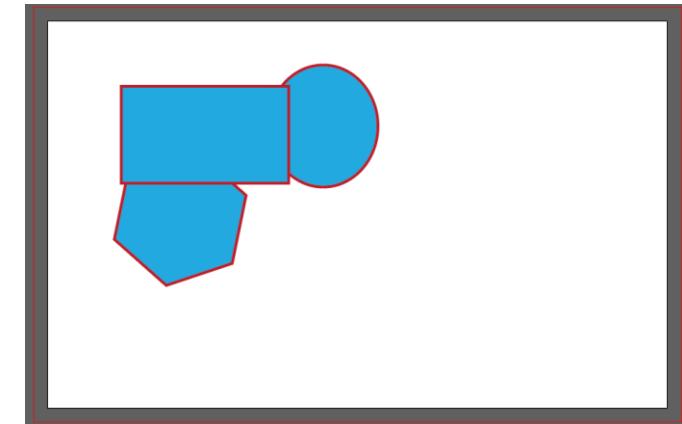
- Select an object and go to Effect in the menu to apply effects like Drop Shadow, Glow, etc.
- Customize Effects:
 - Use the Appearance panel to adjust the settings of applied effects.

b. Working with transparency and blending mode



- Transparency:
 - Select an object and adjust its opacity in the Transparency panel.
- Blending Modes:

- Experiment with different blending modes in the Transparency panel to see how colors blend with underlying layers.
- c. Using pathfinding tool
- Pathfinder Panel:
 - Open the Pathfinder panel to use options like Unite, Minus Front, Intersect, and Exclude to combine or modify shapes.



6. Saving and Exporting

- a. Save

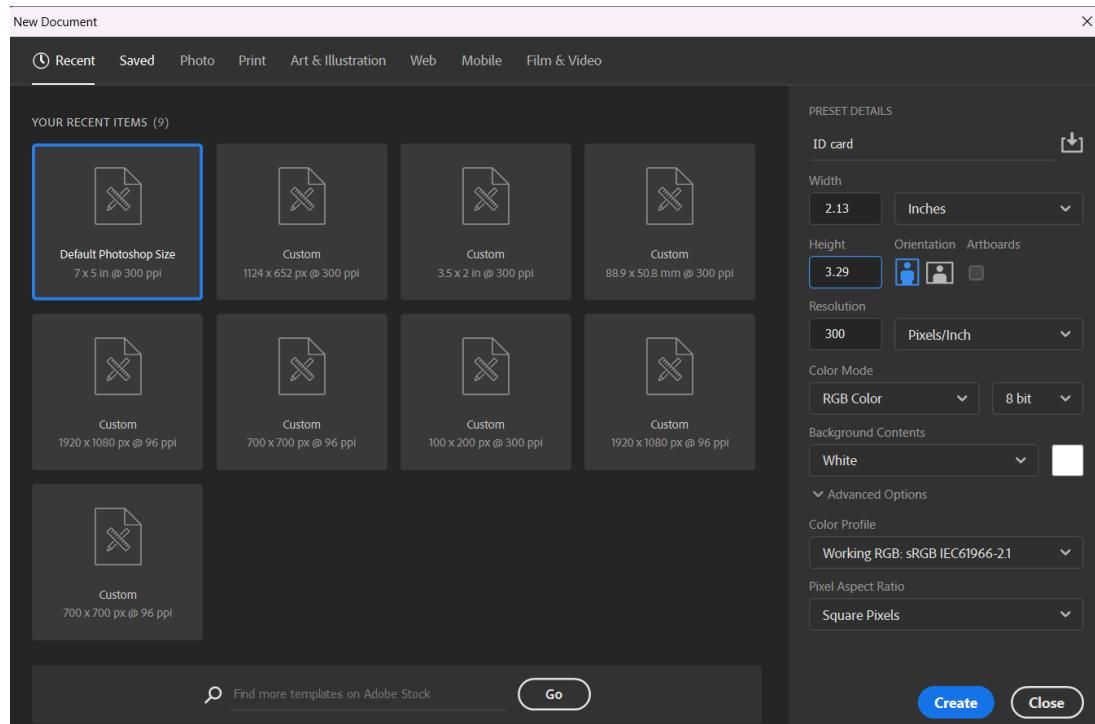
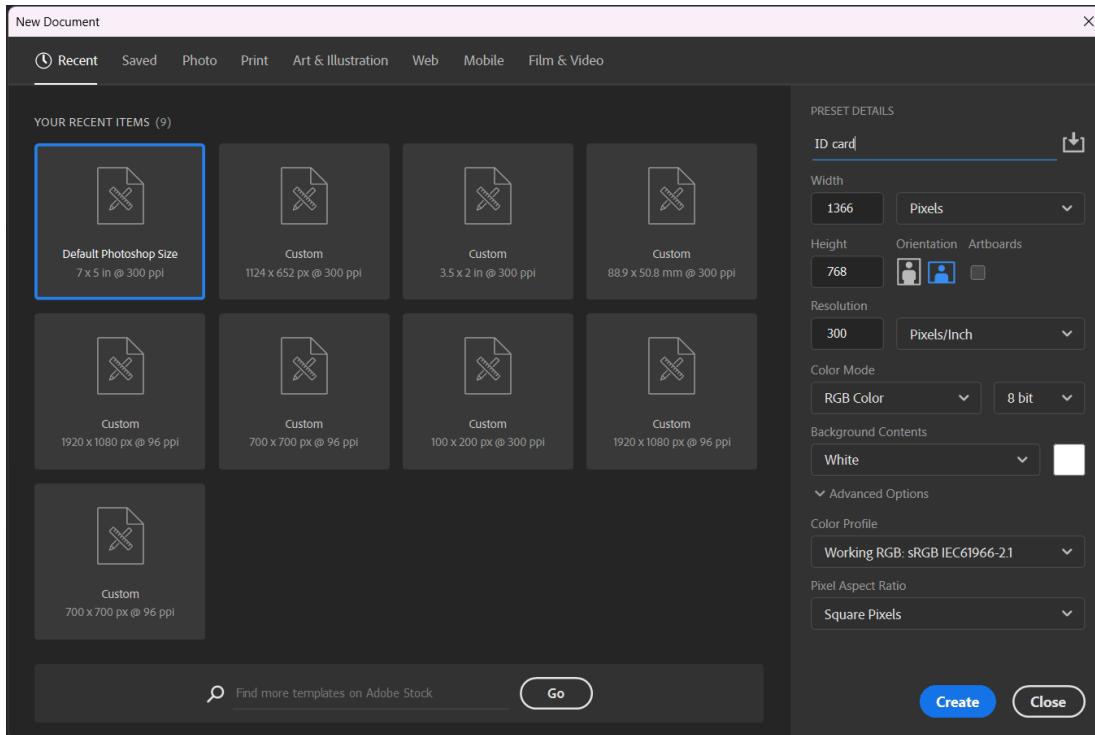
- Save the project in the .ai format to preserve all editing capabilities. Go to File > Save As and choose Adobe Illustrator (AI) format.
- b. Export Options
- To export the artwork for web or print, go to File > Export and choose the format (e.g., PNG, JPEG, SVG, PDF).
- c. Export Settings
- Configure export settings based on the needs (resolution, color profile, etc.) for optimal results.

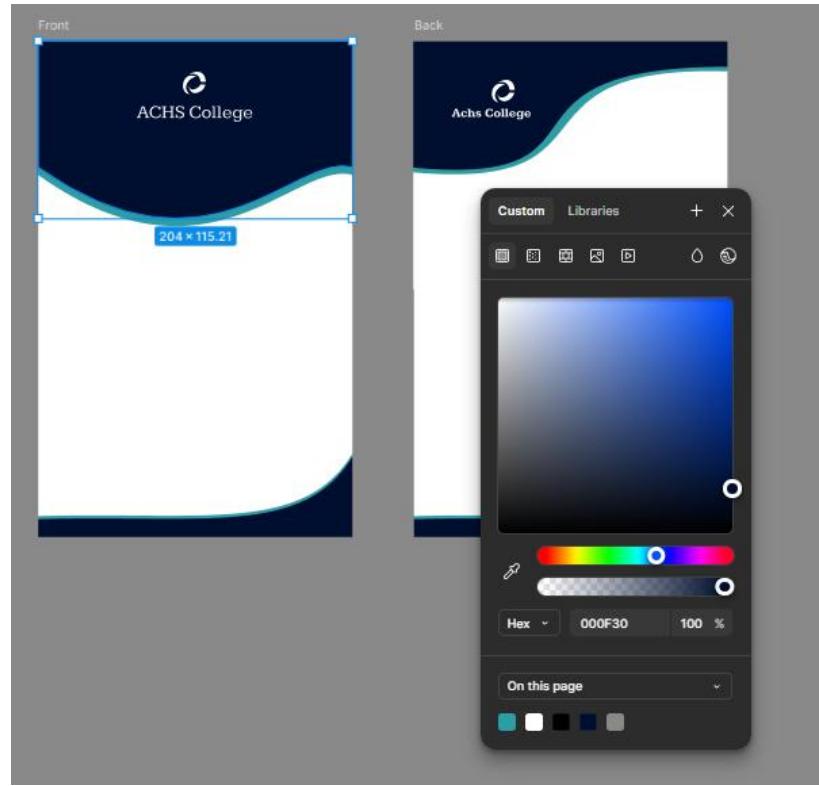
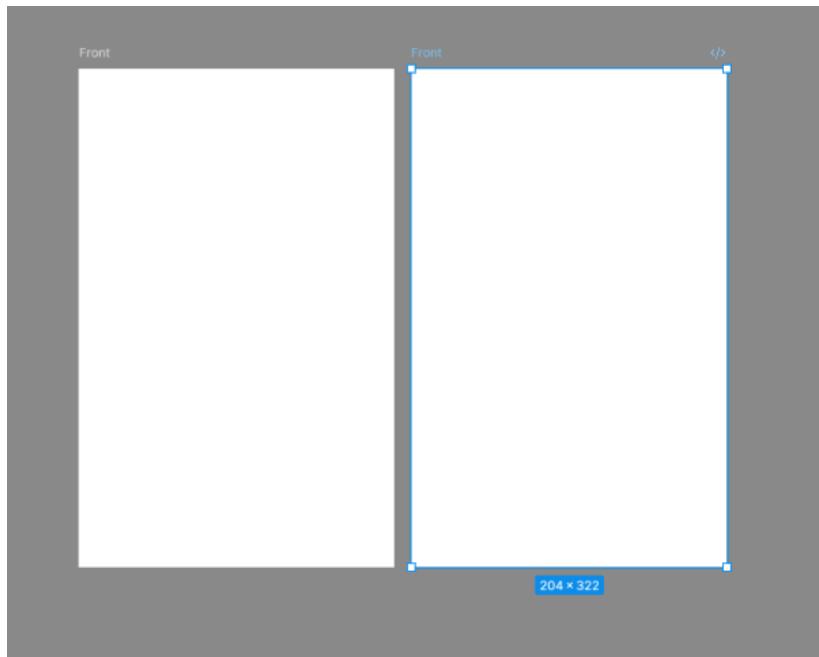
Conclusion

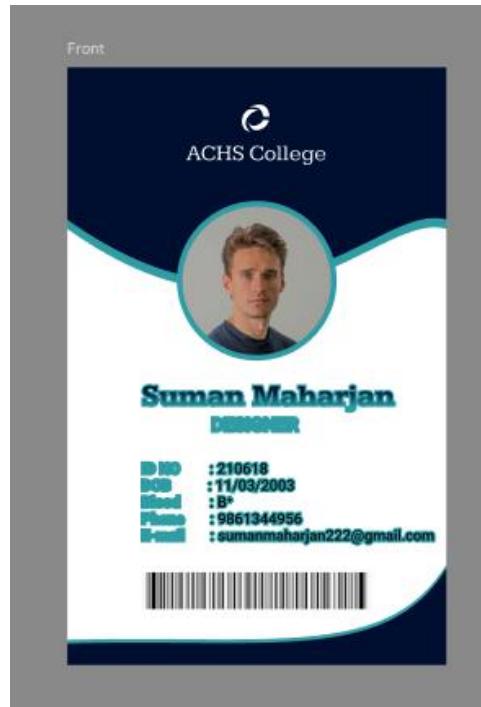
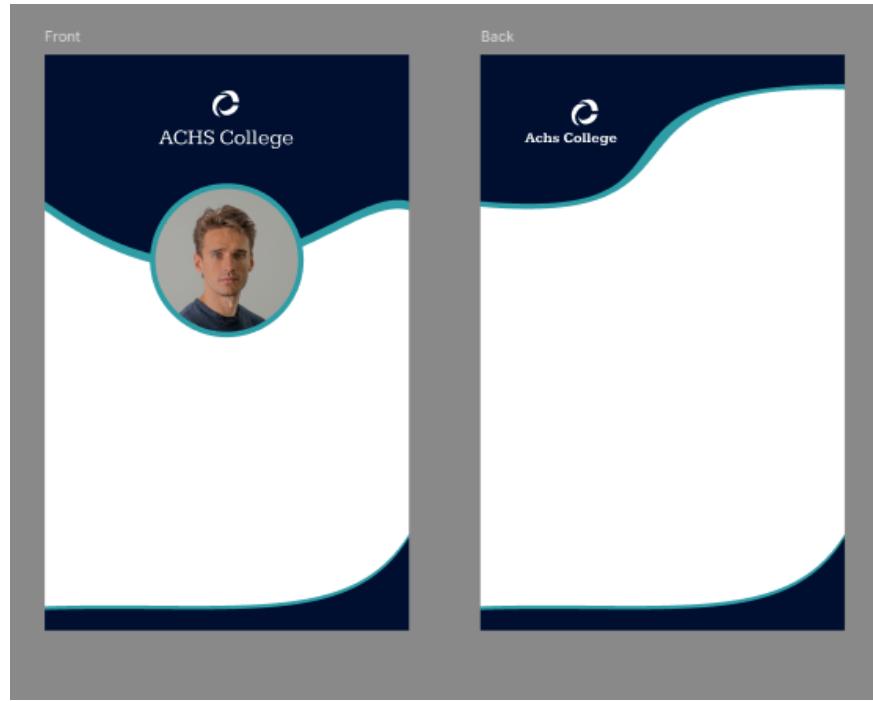
The fundamental features of Adobe Illustrator were introduced in this lab, including software setup, workspace navigation, and essential tools. The creation and manipulation of basic shapes were learned, along with the use of the Pen and Curvature tools for custom designs. Colors and gradients were applied and edited, text and typography were worked with, layers were organized, and artwork was exported.

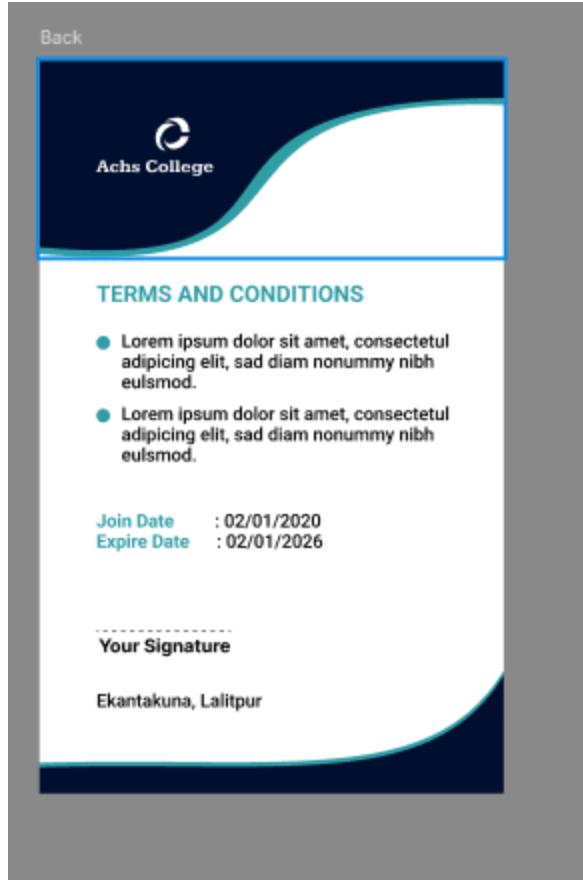
Lab 2

1. Create a id card using illustrator









Lab 5

ADOBE PREMIER PRO

Introduction:

Adobe Premiere Pro is professional video editing software created by Adobe Inc. It is widely used by filmmakers, video editors, and content creators to edit videos, make movies, and create high-quality content. Premiere Pro has a number of features, including support for various video formats, advanced editing tools, color correction, audio editing, and integration with other Adobe Creative Cloud applications such as After Effects, Photoshop, and Audition.

The software's flexibility and powerful performance enable users to work on complex video projects with multiple layers, effects, and transitions. It also supports collaborative workflows, which make it easier for teams to work on the same project. Premiere Pro is available for both Windows and macOS. It is commonly used in the television, film, and digital media industries.

Premiere Pro can be used for all common video editing tasks necessary for producing broadcast quality, high-definition video. It can be used to import video, audio and graphics, and is used to create new, edited versions of video which can be exported to the medium and format necessary for distribution. When creating videos using Premiere Pro, various video and still images can be edited together. Titles can be added to videos, and filters can be applied along with other effects.

Objectives:

The main objectives of this lab are:

1. Introduction to Adobe Premiere Pro: Installing Adobe Premiere Pro and understanding its basic setup.
2. Getting Familiar with the Workspace: Understanding the toolbar, project panel, timeline, and program/source monitors.
3. Importing Media Files: Importing and organizing media in the project panel.
4. Using the Timeline and Sequence: Trimming and cutting clips, working with multiple tracks, and basic audio editing and mixing.
5. Applying Video Effects: Using transition effects and text masking.
6. Exporting the Project: Exporting the completed project in various formats for different platforms.

1. Setting up Abode Premier Pro:

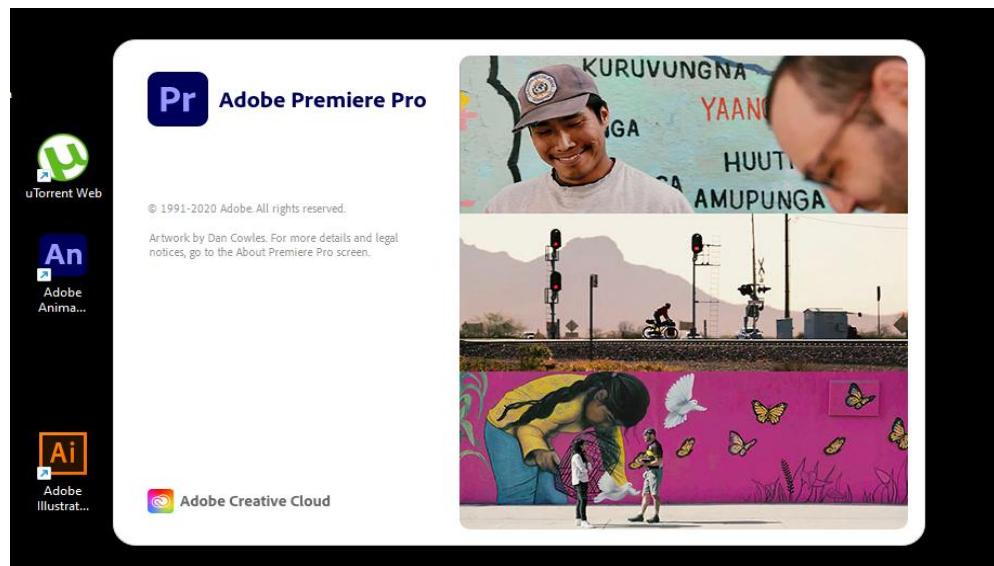
1.1 Installation:

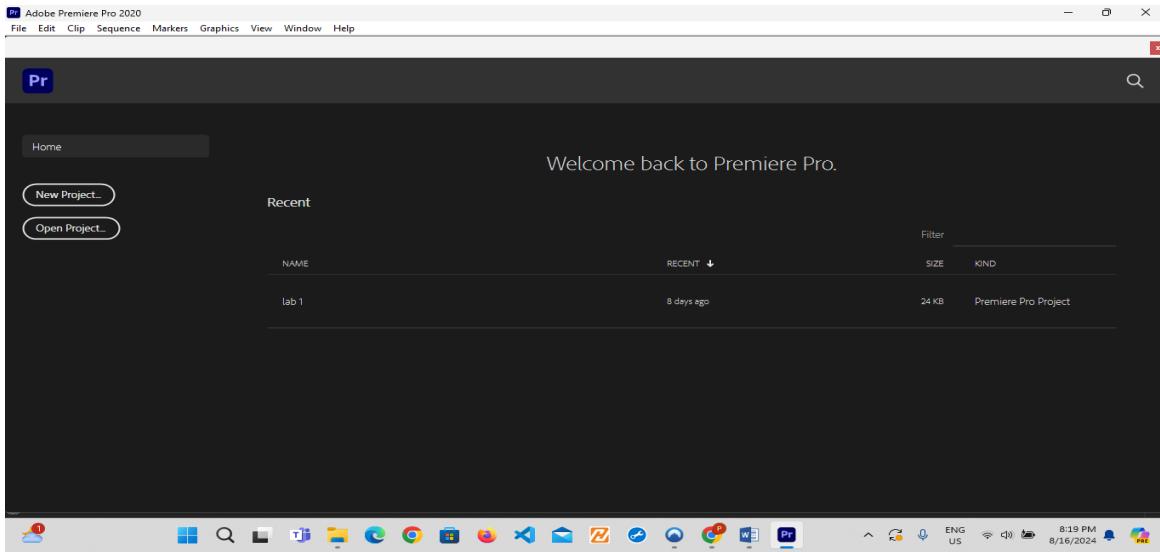
- ✓ Go to abode website.
- ✓ Download the latest version of abode Premier Pro.
- ✓ Sign in with your Adobe ID or create a new one if needed Run the installer and follow the on-screen instructions to complete the installation.

1.2 Launch and sign-in:

- ✓ Once installed, launch Abode Premier Pro.
- ✓ Sign in with your adobe id when prompted.
- ✓ You're now ready to start creating animations with Abode Premier Pro.

This page will pop up as soon as you open Abode Premier Pro.

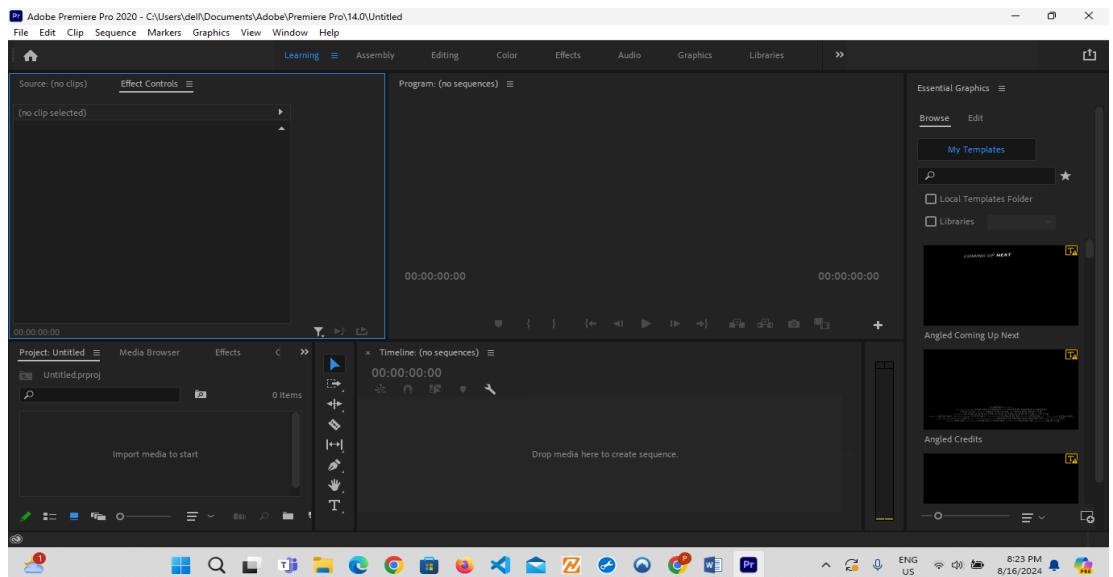




2. Getting familiar with the workspace:

2.1 Creating a new project:

- ✓ Go to file >>New or go directly to new project.



2.2 Understanding the tool bar, source monitor, project panel, timeline and program monitor:

a) Toolbar:

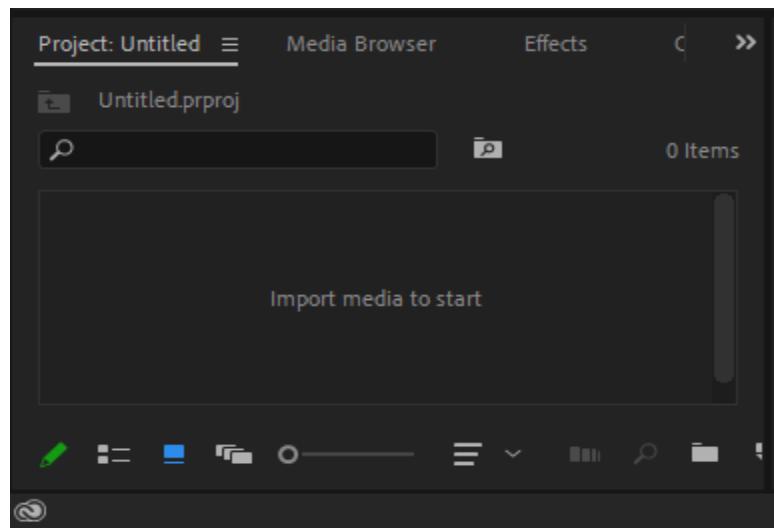
- ✓ Location: The toolbar is typically located on the left side of the interface, between the Project Panel and the Timeline.

- ✓ Tools Available: Selection Tool (V), Razor Tool (C), Pen Tool (P), Hand Tool (H), and Zoom Tool (Z), among others.



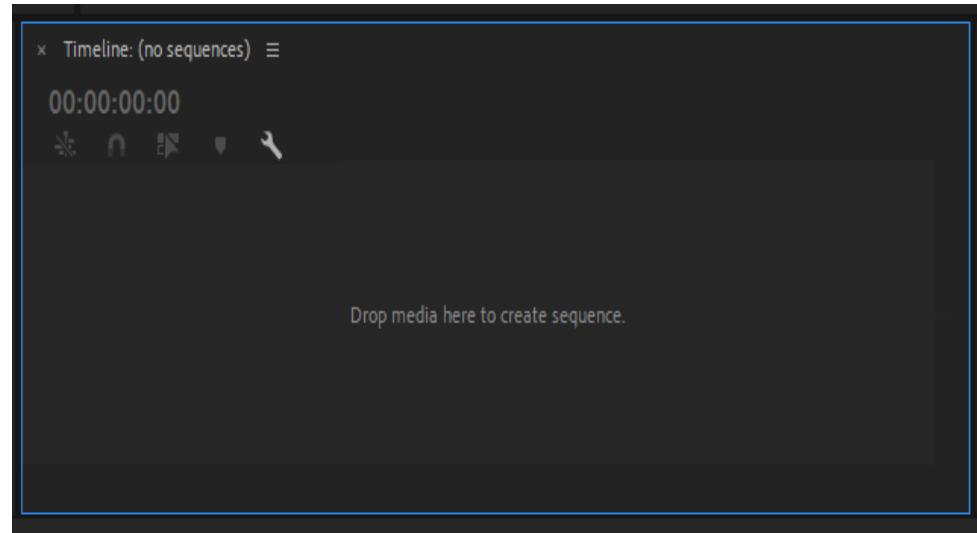
b) Project Panel:

- ✓ Location: This panel is usually found in the lower left corner of the interface.
- ✓ Functionality: It is where you import, organize, and access all your media files, sequences, and other project assets. You can create bins(folders) here to organize your files.



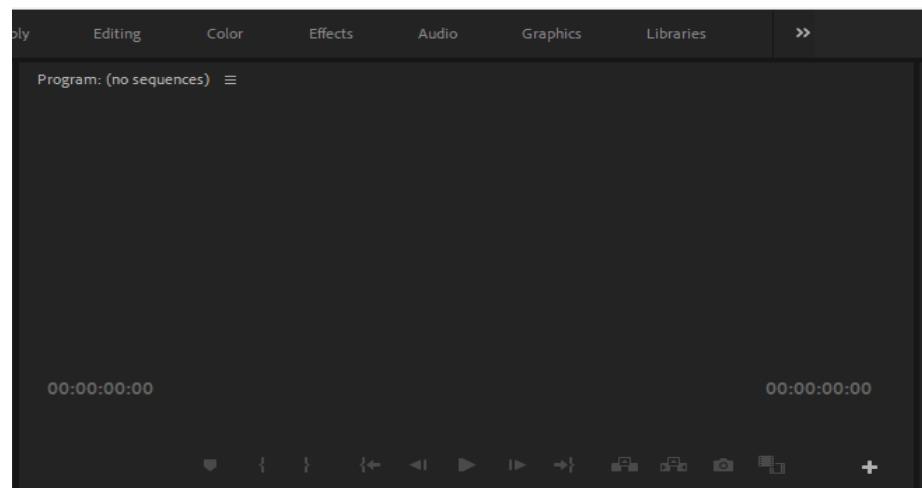
c) Timeline:

- ✓ Location: The Timeline is centrally located at the bottom of the interface.
- ✓ Functionality: This is where you assemble and edit your video and audio clips. You can add, trim, cut, and arrange your clips on multiple tracks.



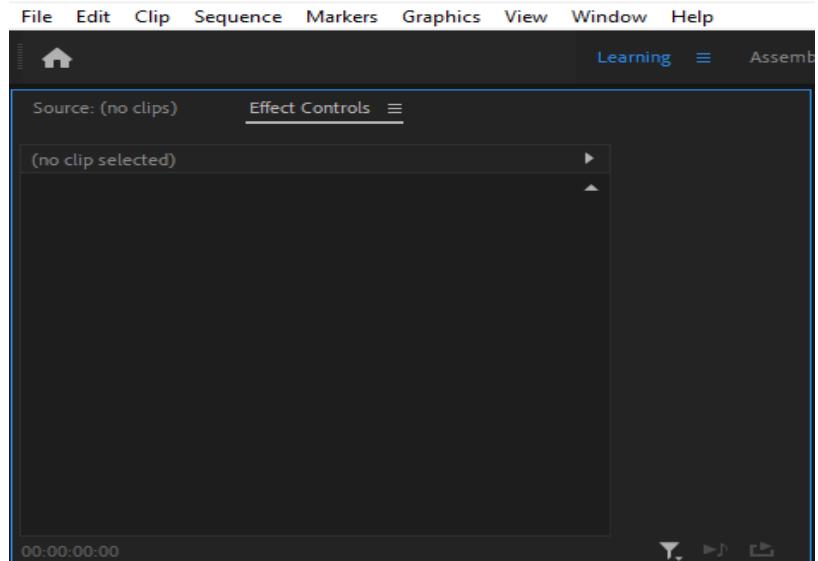
d) Program Monitor:

- ✓ Location: The Program Monitor is located in the top center of the interface.
- ✓ Functionality: It displays the sequence currently being edited in the Timeline. It allows you to preview your work as you edit.



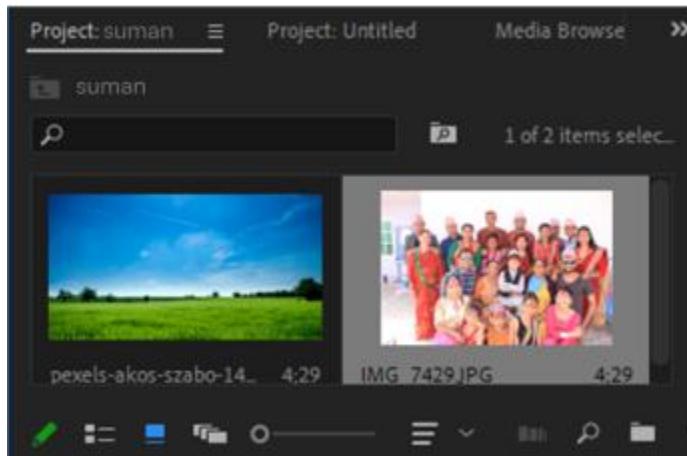
e) Source Monitor:

- ✓ Location: The Source Monitor is located in the top left corner of the interface, adjacent to the Project Panel.
- ✓ Functionality: This monitor is used to preview and trim raw clips before adding them to the Timeline. It helps you select the in and out points of your clips.

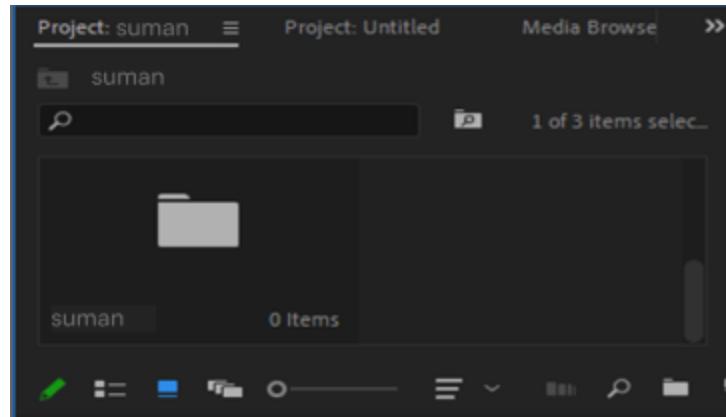


3. Importing Media Files:

- ✓ Click “File” > “Import” or drag and drop media files into the project panel.



- ✓ Create bins (folders) to organize your assets. Right-click in the project panel and select “New Bin”.
- ✓ Name and categorize your bins to keep your project organized.

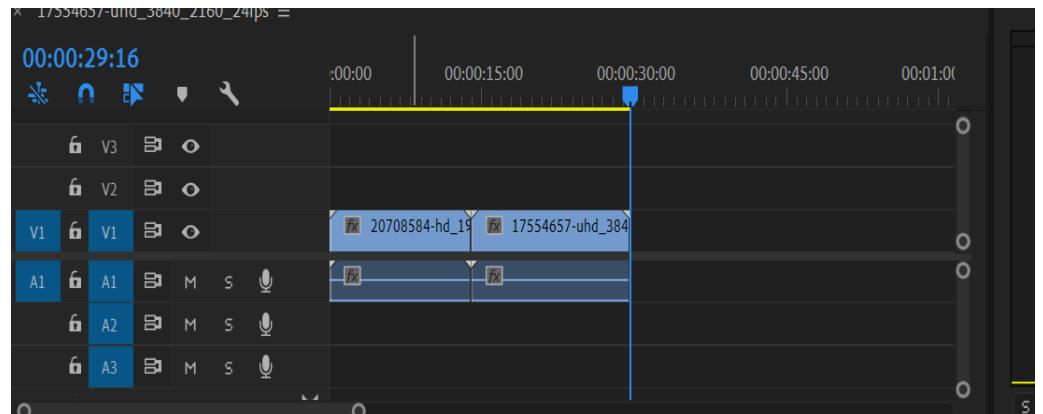


4. Using the Timeline and Sequence:

a) Trimming and Cutting clips:

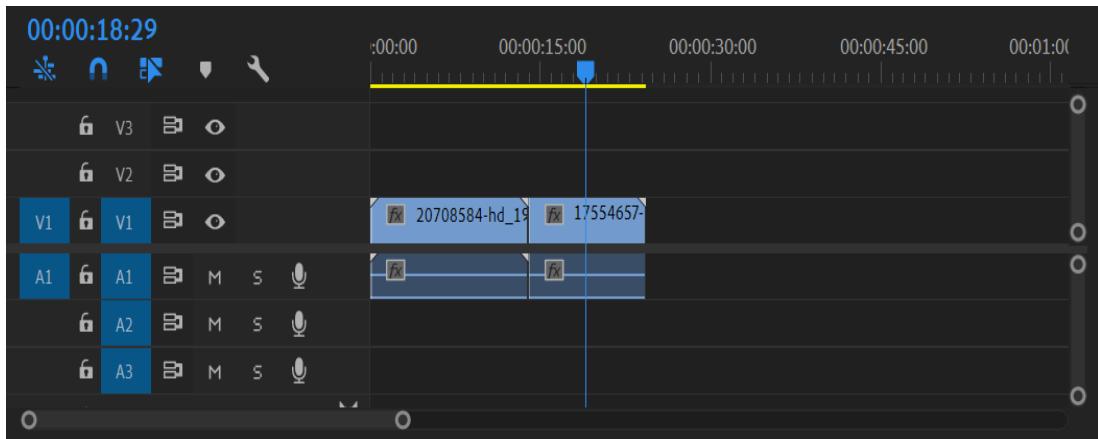
❖ Trimming clips:

- Drag a video clip from the Project Panel (bottom left) to the Timeline.
- Use the Selection Tool (V) to select the clip.
- To trim the beginning or end, hover over the edge of the clip until you see a red bracket. Drag the edge inward to shorten the clip.



❖ Cutting clips:

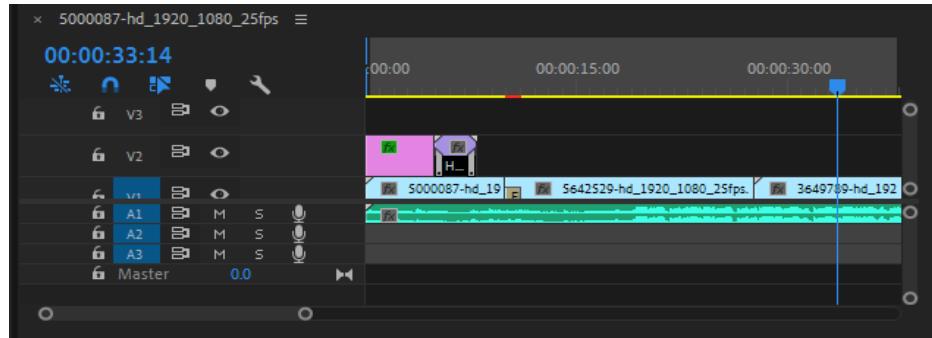
- Drag a video clip from the Project Panel to the Timeline.
- Select the Razor Tool (C) from the Toolbar (left side of the interface).
- Click on the clip at the point where you want to make a cut. The clip will be divided into two separate segments.



b) Working with Multiple Tracks

❖ Adding and Managing Tracks:

- To add more audio or video clips to the Timeline, drag and drop them onto separate tracks from the Project Panel.
- To create a new track, select "Add Track" or "Add Audio Track" from the menu that appears when you right-click in the empty space of the track header on the left side of the timeline.
- Track Selection Tool (A) can be used to arrange clips on separate tracks. The Toolbar is where you can find this utility.



❖ Synchronizing and Layering Clips:

- To produce composite views, overlays, or picture-in-picture effects, layer separate video clips on top of one other.
- Drag and align audio and video on the timeline to synchronize them. Make accurate alignments easier by utilizing the snap feature, which is enabled by default.

c) Basic Audio Editing and Mixing

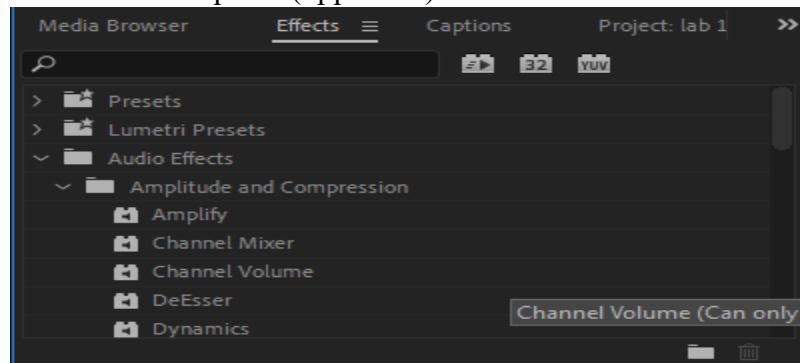
❖ Adjusting Audio Levels:

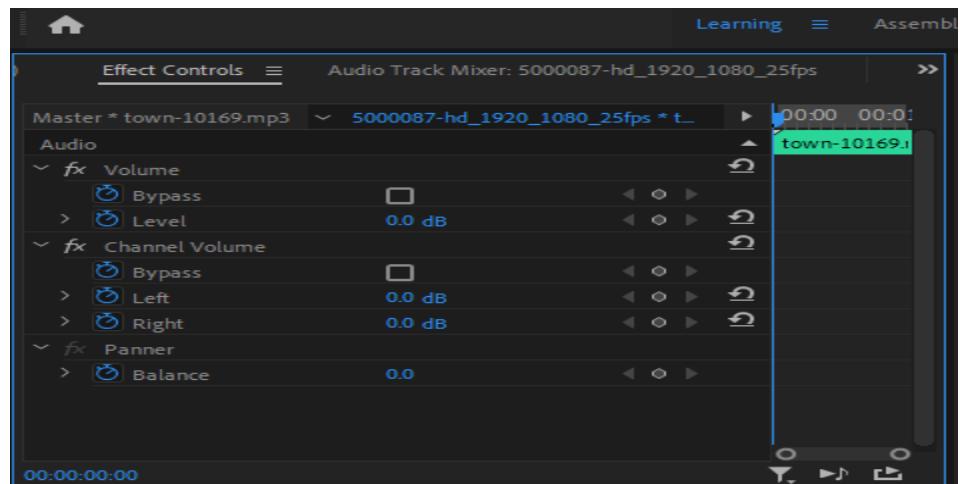
- Choose a sound clip from the Timeline.
- To adjust the volume, drag the horizontal volume line up or down.
- Navigate to the Window > Audio Clip Mixer panel to make finer adjustments. Each track's volume slider should be adjusted.



❖ Adding Audio Effects:

- Search for the required audio effect (such as "Reverb" or "DeNoise") by opening the Effects panel.
- Drag the effect to the audio clip on the Timeline from the Effects panel.
- To get the desired sound, play about with the effect parameters in the Effect Controls panel (upper left).

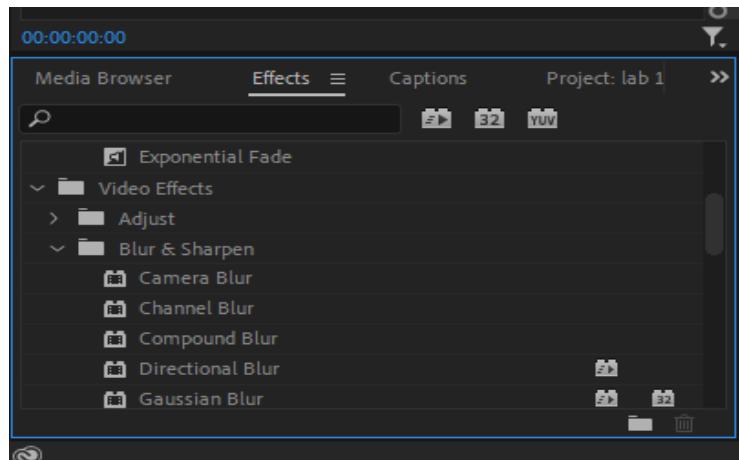




5. Applying Video Effect

a) Using transition effects:

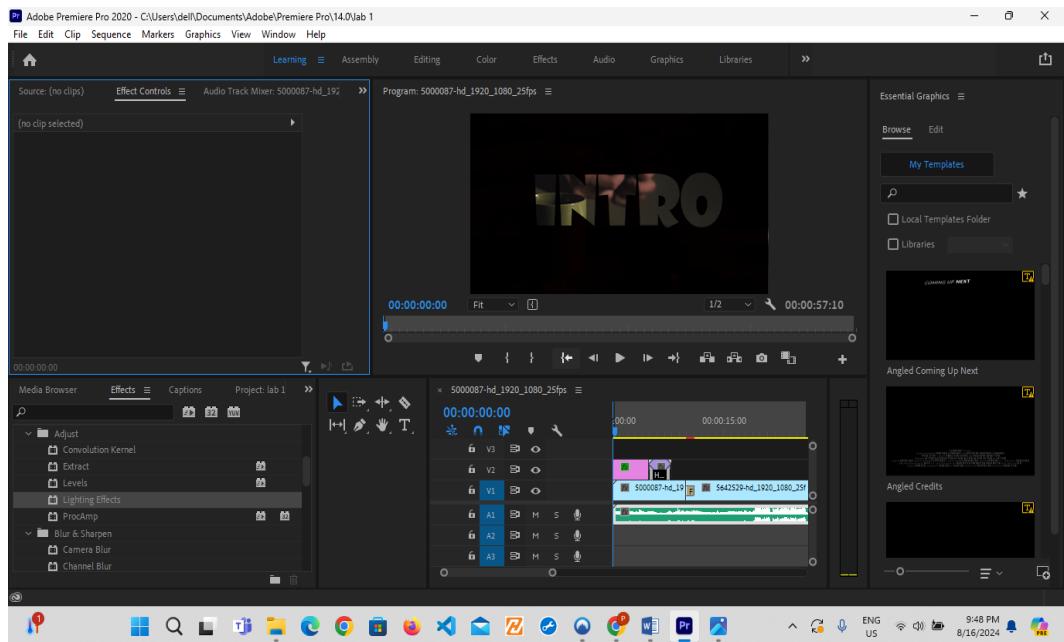
- Go to the Effects panel and look for transitions that have the name "Cross Dissolve."
- To add a transition effect between two clips in the timeline, drag it over.
- Drag the edges of the transition to change its length and alignment.



b) Text masking

- Navigate to Window > Essential Graphics to access the Essential Graphics panel.
- Select "New Layer" then "Rectangle."
- To fill the frame or the desired region, resize and reposition the rectangle.
- Position this layer, which is a rectangle, above the V2 track video clip on the timeline.
- From the Toolbar, choose the Type Tool (T).

- Press the Program Monitor button to begin entering text. Utilizing the Essential Graphics panel, change the text's font, size, and colour.
- If you want the video to appear inside the text, place the text over the rectangle in that location.
- Position this text layer above the rectangle layer (V3 track) on the timeline.
- On the timeline, choose the text layer.
- Open the panel labelled Effect Controls (upper left).
- Change the Blend Mode under Opacity to Multiply.
- Adjust the position and scale of the text, rectangle, and video as needed to achieve the desired effect.
- Preview the effect by playing the sequence in the Program Monitor.



6. Exporting the project

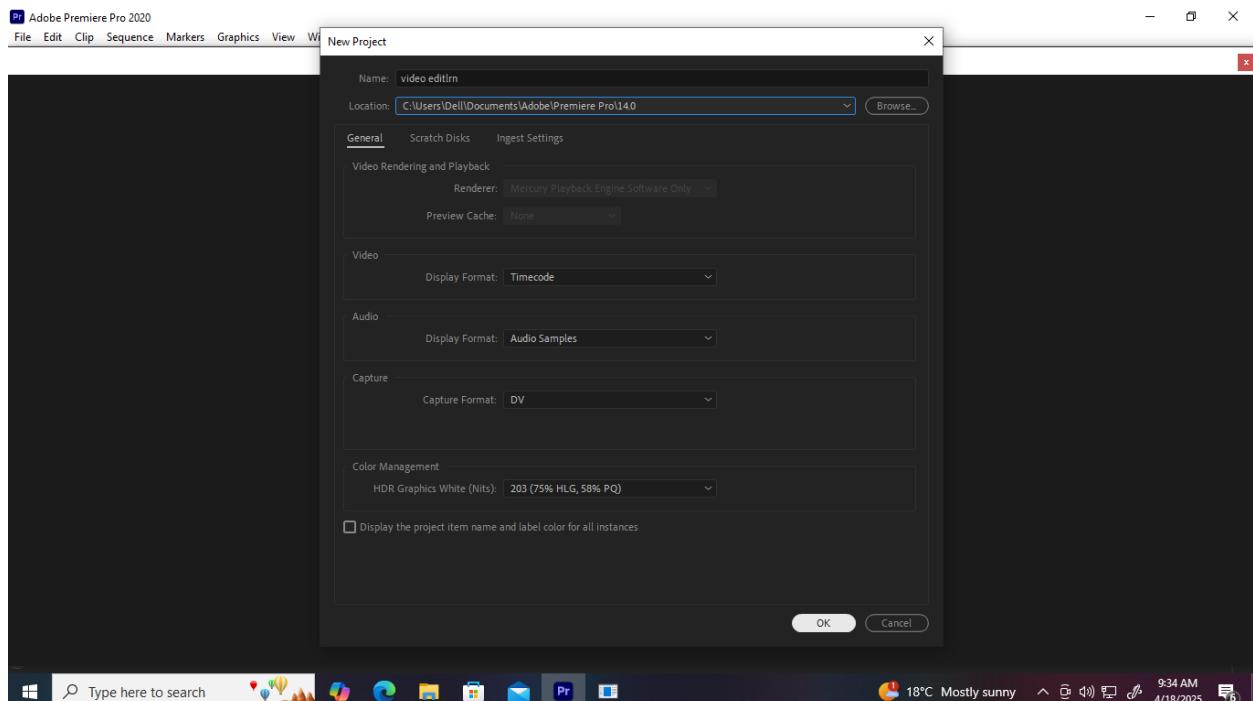
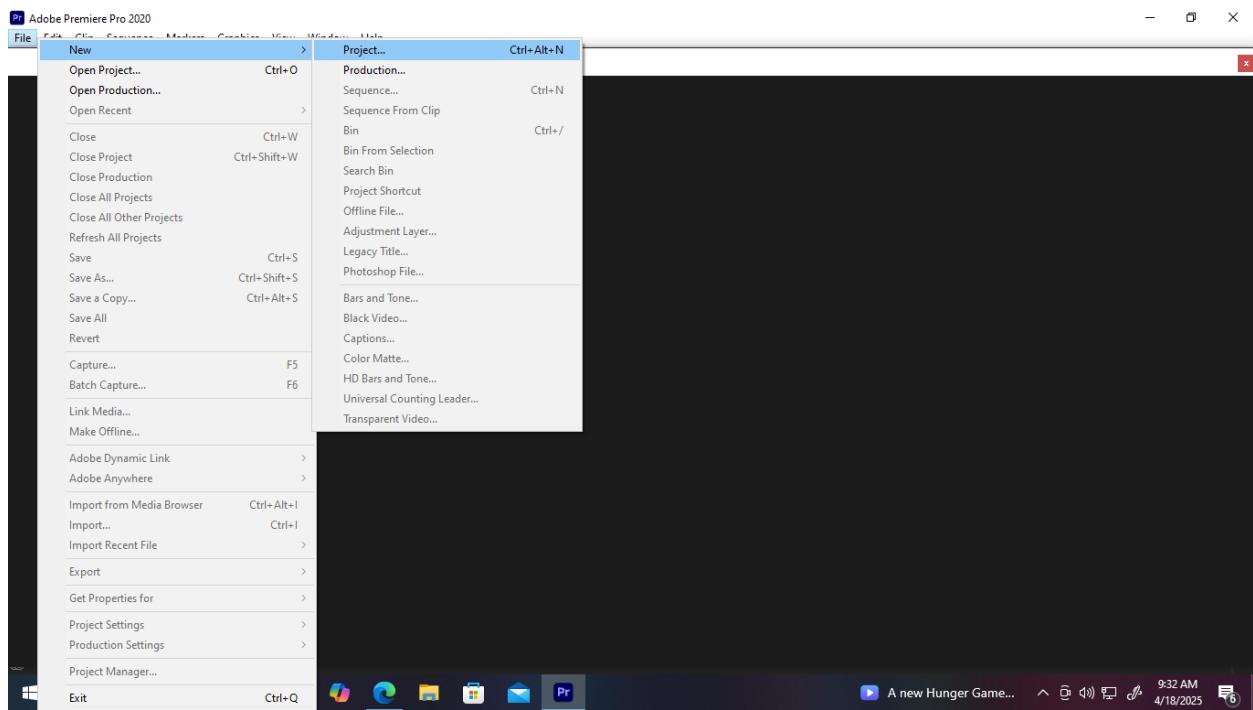
- ❖ Prepare Sequence:
 - Ensure your sequence is fully rendered: Sequence > Render In to Out.
- ❖ Open Export Settings:
 - Go to File > Export > Media.
- ❖ Choose Export Settings:
 - Format: Select format (e.g., H.264).
 - Preset: Choose a preset (e.g., YouTube 1080p Full HD).

- Output Name: Set the name and save location.
- ❖ Customize Settings (if needed):
 - Adjust video and audio settings as necessary.
- ❖ Set Source Range:
 - Choose Entire Sequence or set In and Out points.
- ❖ Export or Queue:
 - Queue: Send to Adobe Media Encoder for batch processing.
 - Export: Export directly within Premiere Pro.
- ❖ Review Exported:
 - Check the file in the save location to ensure quality.

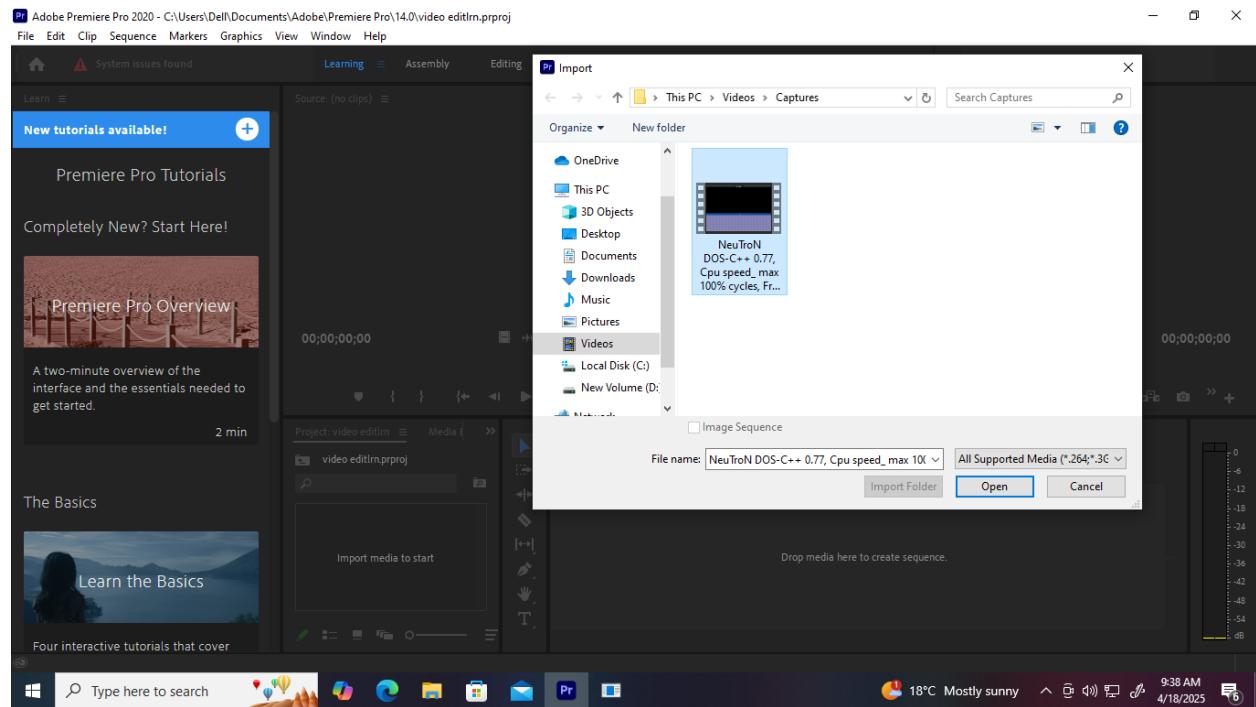
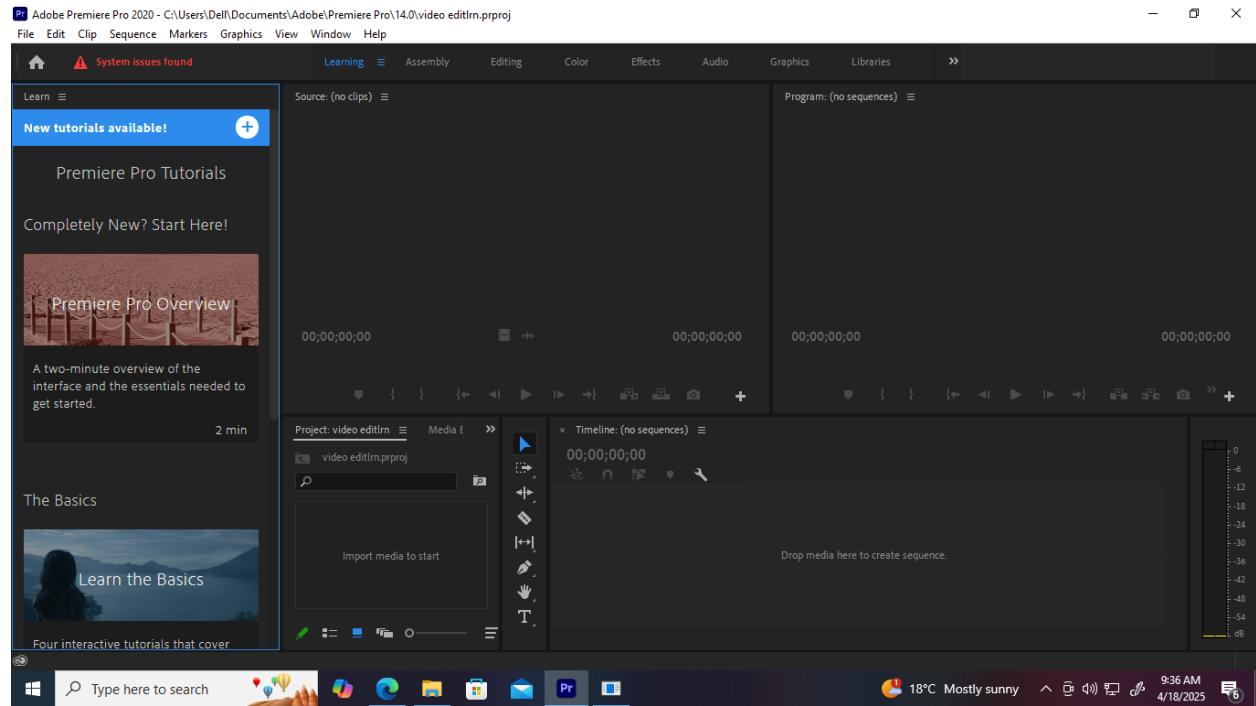
Conclusion

In this lab, essential Adobe Premiere Pro features were successfully explored, including importing and organizing media, editing videos using the timeline and sequence, applying effects, and performing basic audio editing and mixing. Mastery of these fundamental skills, along with the ability to export projects in various formats, has provided a strong foundation for creating industry-standard video projects, which will greatly enhance future multimedia work.

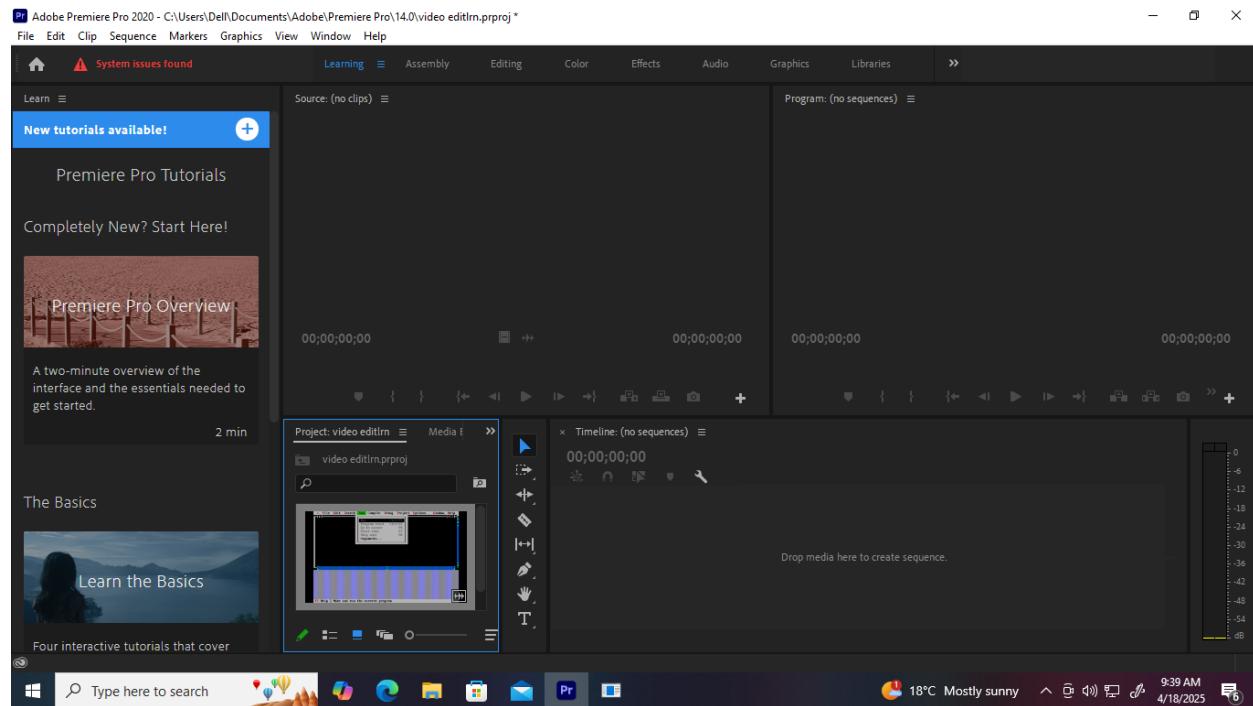
Lab 6



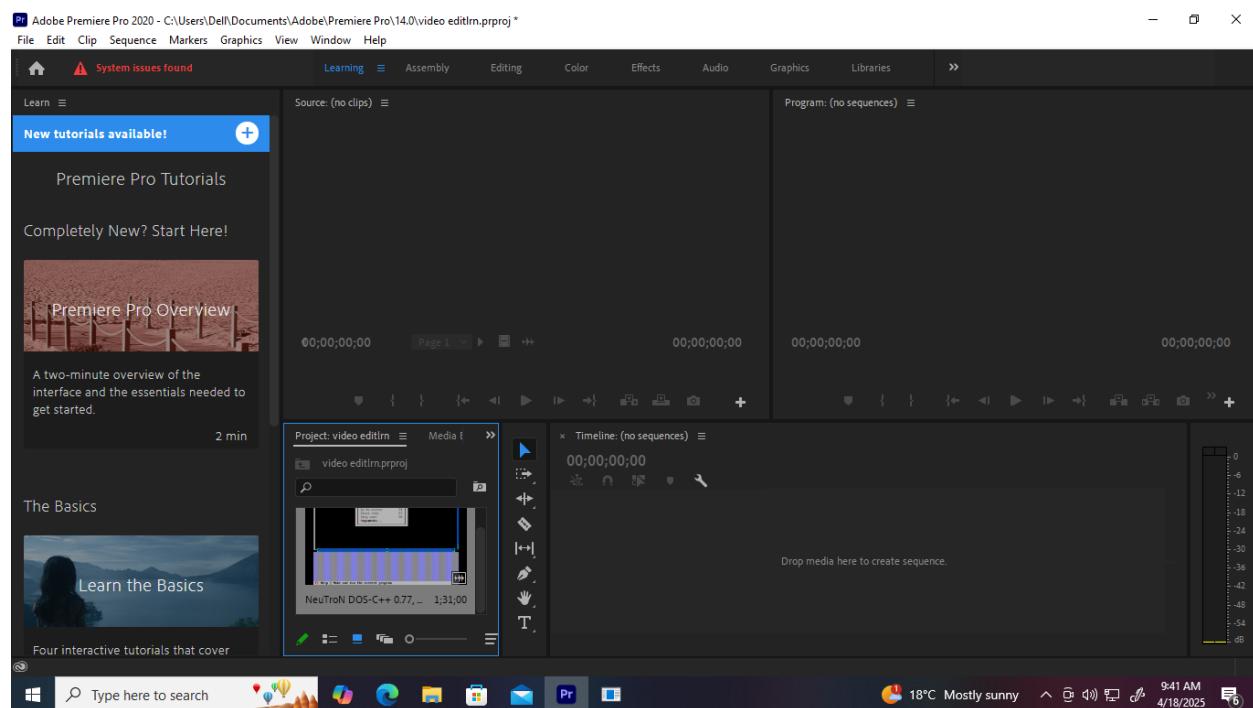
Double click in the region where import media is written



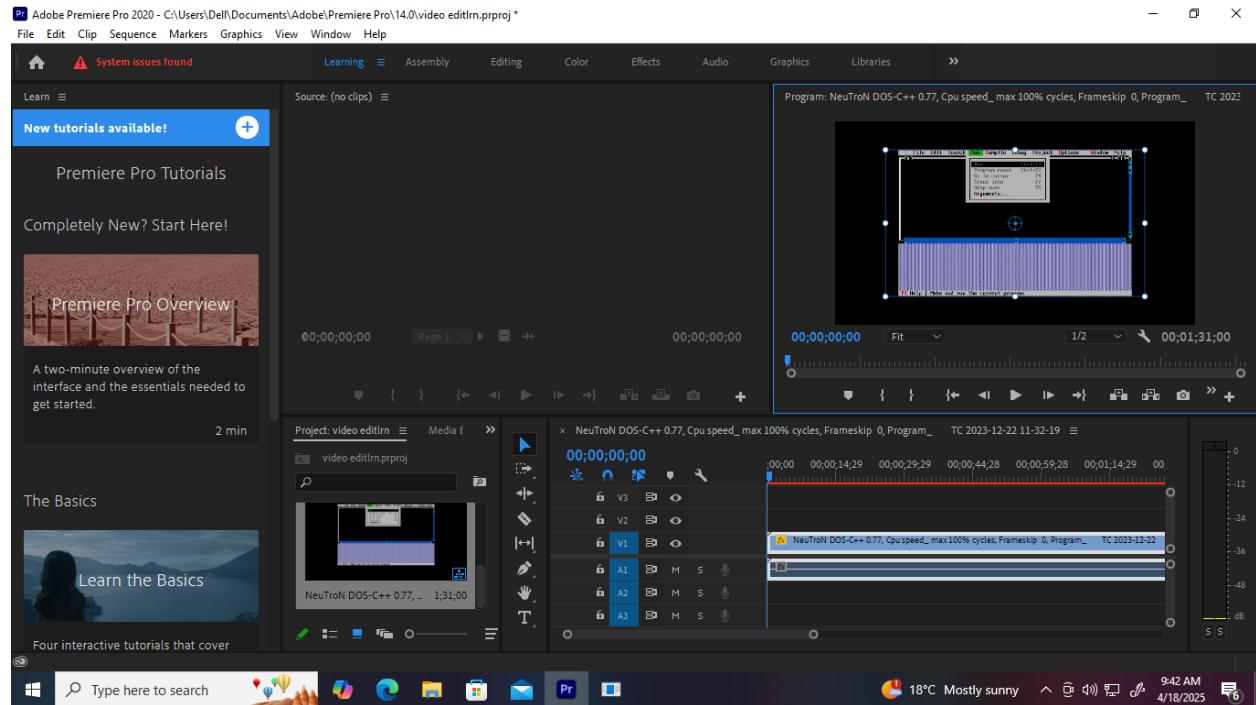
Video is imported



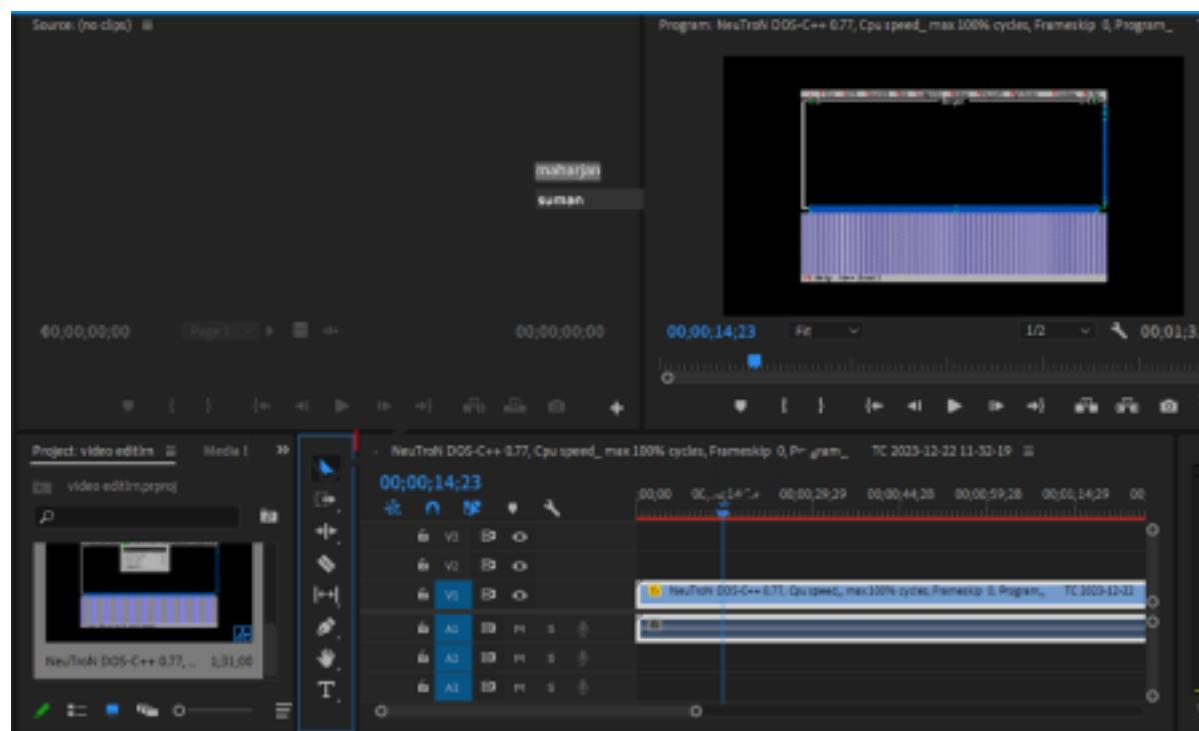
Drag that imported video on rt side to create a sequence



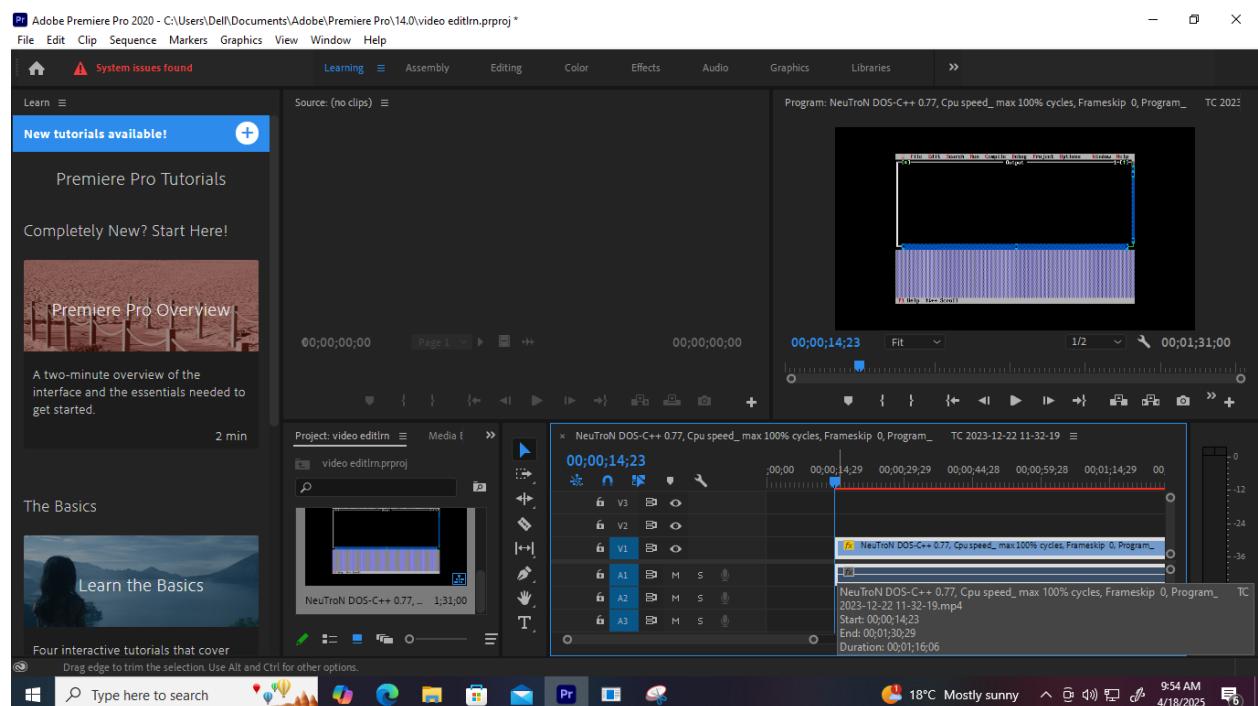
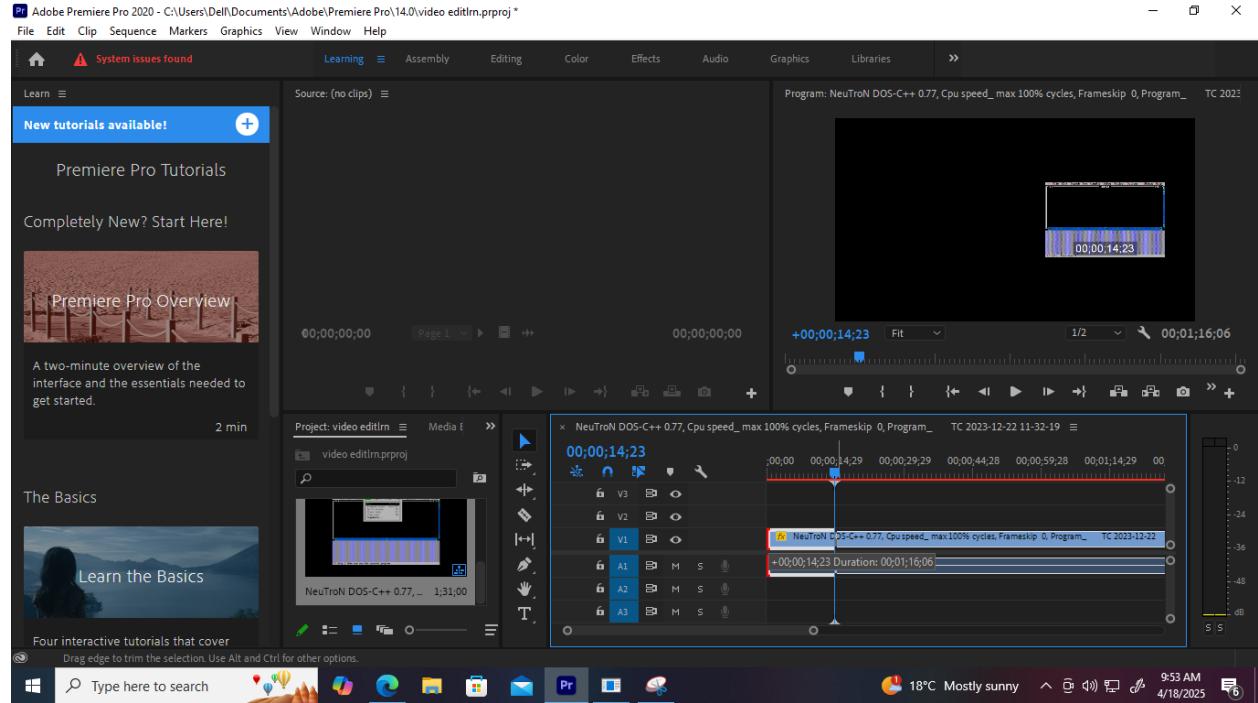
Change the video size as below by double clicking the corner point as below in upper right



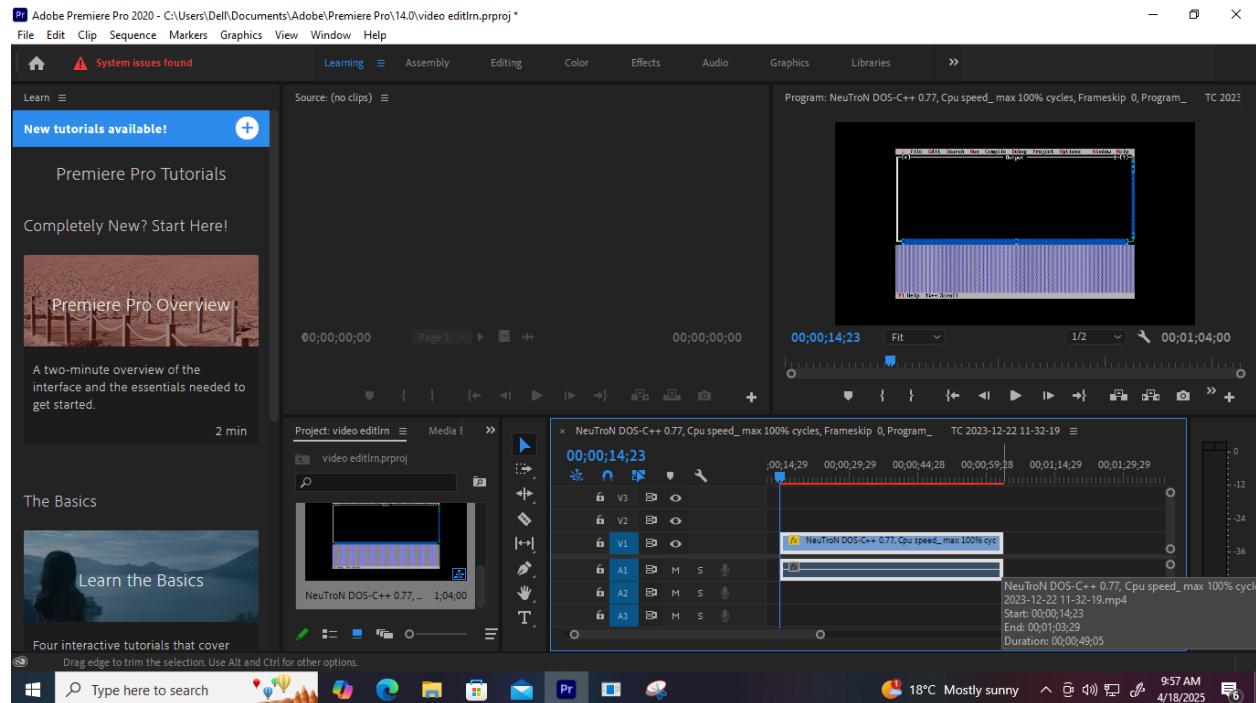
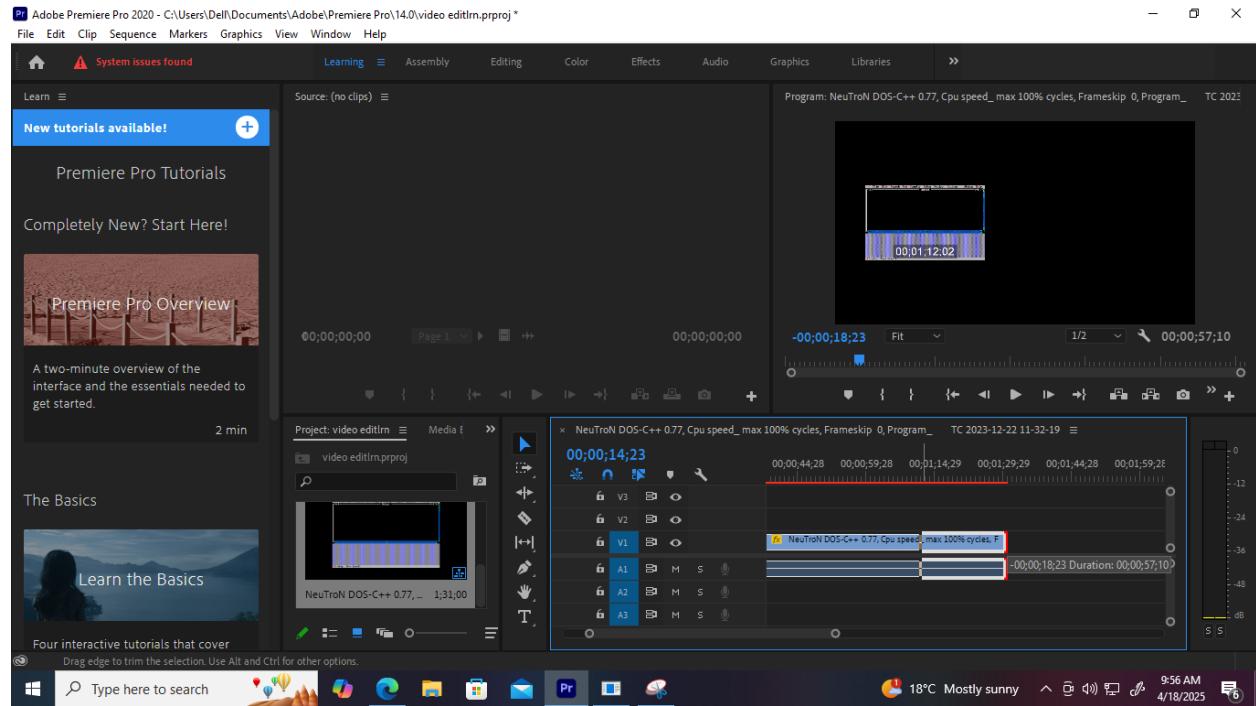
Lets trim from given time as below



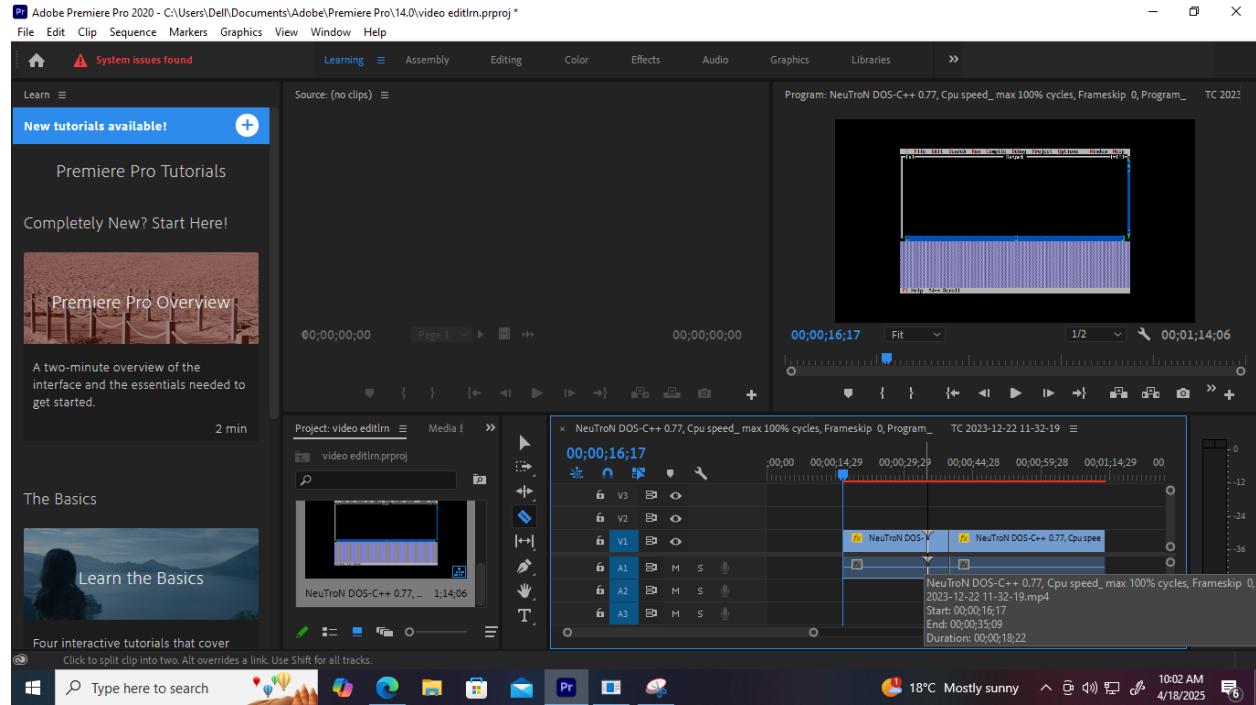
Drag that red to the start position of trimming then click and drag marker to the endf of your clip



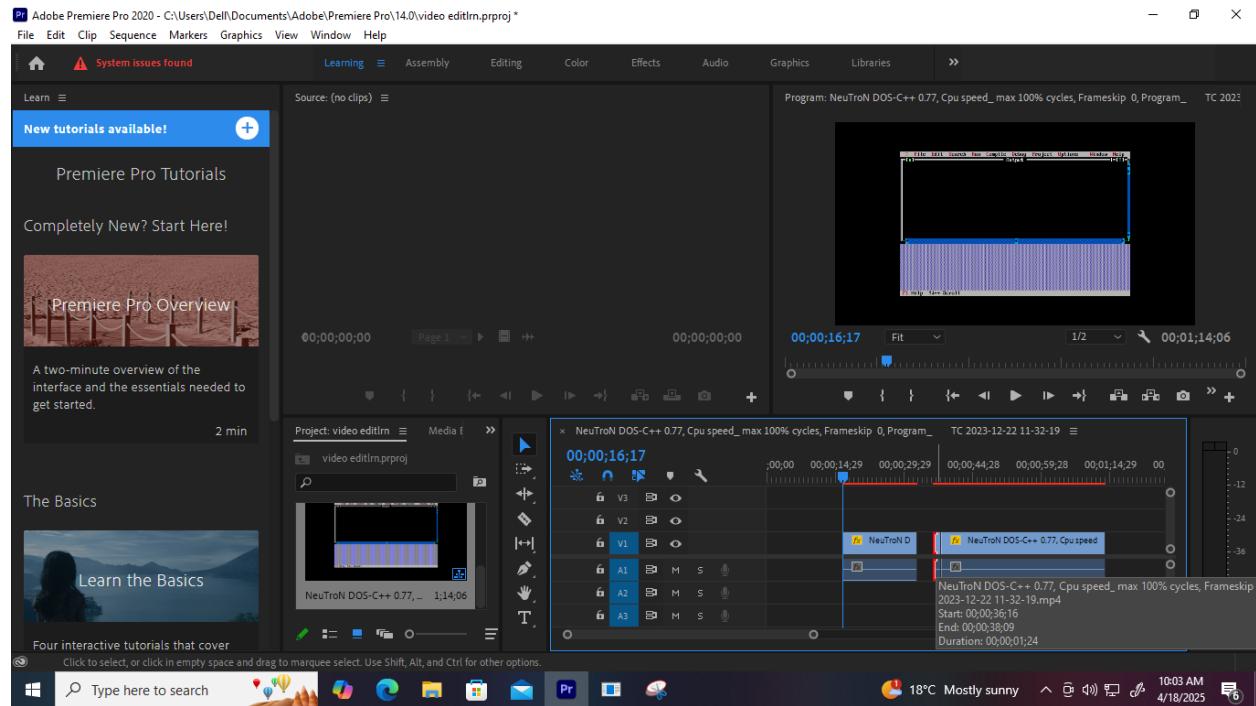
Do same to the same to end of your clip



Now to delete certain clip parts use razor tool and then do as follow till where you want to delete that clip part as



Use selection tool and drag that portion to delete that clip as



Lab 3

Describe what is image?

An image is a visual representation of objects, scenes, or ideas that conveys information through light, color, and intensity. In the digital world, an image is composed of tiny elements called pixels, which are arranged in a two-dimensional grid. Each pixel holds a numerical value that represents either its brightness in grayscale images or its color in colored images, typically defined by the combination of red, green, and blue (RGB) values. Unlike analog images, which are continuous and found in natural forms like photographs or paintings, digital images are stored as discrete numerical data that computers can process, analyze, and manipulate. This digital representation makes it possible to enhance, compress, transmit, and interpret images across various applications such as medical imaging, satellite observation, photography, and computer vision.

Perform the following steps:

1. Import an image of your choice and convert into a gray scale format
2. Resize into 250*250
3. Also show pixel values of an image to prove that image is represented using an array of numbers in certain dimension

Code:

```
import numpy as np  
import matplotlib.pyplot as plt  
import cv2  
  
### read image from the path located  
## imread("image location", image type=1/0) ---> read an image.  
## reads image as 1 = BGR, 0= grayscale  
img1 = cv2.imread('Ad-poster.png',0)
```

Resize the image into 250*250

```
img1 = cv2.resize(img1,(250,250))
```

```
print(img1.shape)
```

```
img1 = cv2.resize(img1,(250,250))  
print(img1.shape)
```

✓ 0.0s

```
(250, 250)
```

Image is represented as matrix of numbers i.e. each pixel in an image has some value associated with it.

```
● print(img1)
```

✓ 0.0s

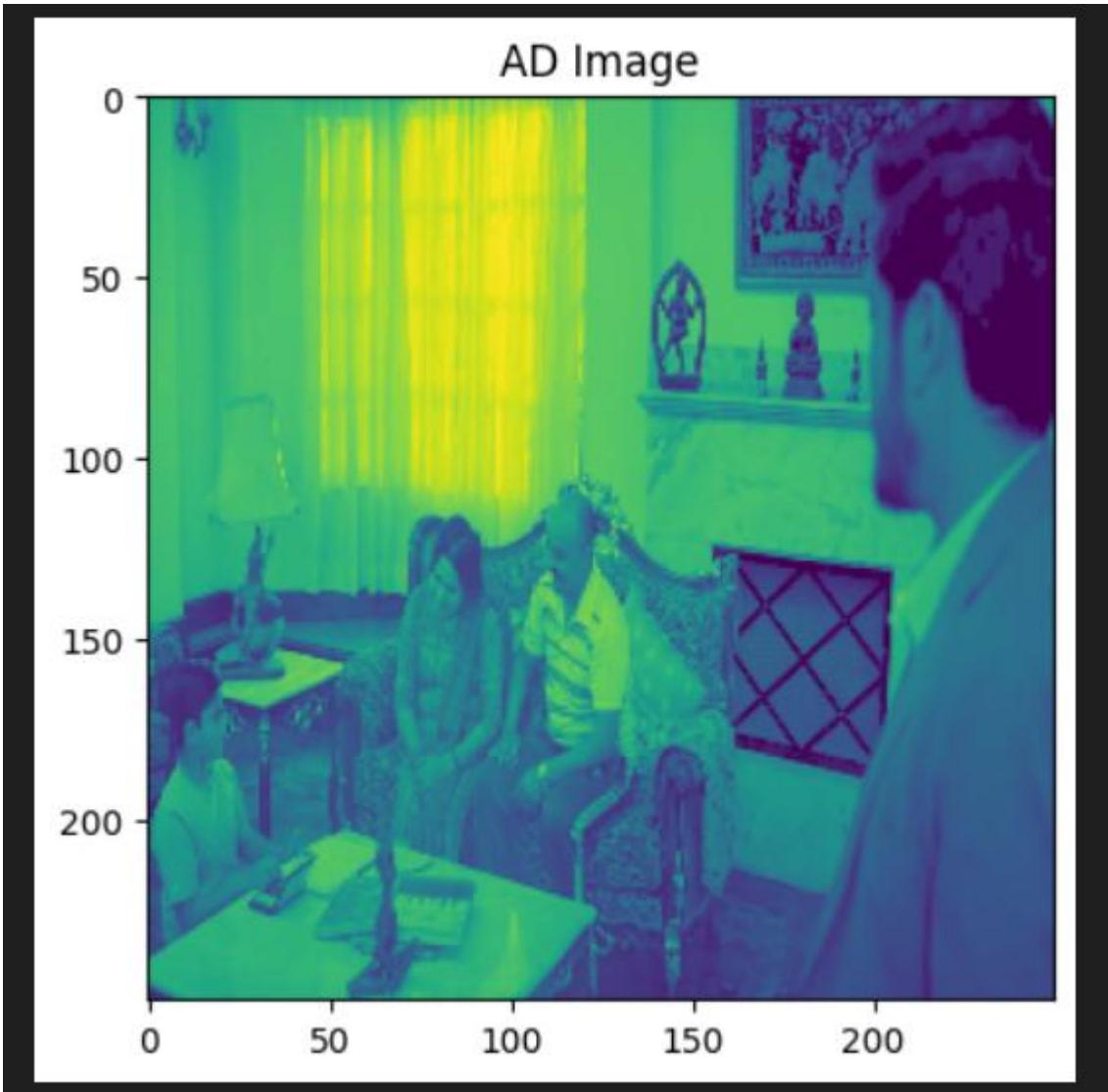
```
[[158 158 159 ... 138 140 138]  
 [158 159 159 ... 139 141 138]  
 [158 159 160 ... 131 142 140]  
 ...  
 [ 39  45  71 ...  56  56  56]  
 [ 34  34  40 ...  56  56  56]  
 [ 39  38  34 ...  53  56  56]]
```

Display the real image using matplotlib library

```
plt.imshow(img1)
```

```
plt.title('AD Image')
```

```
plt.show()
```



Add this image1 to next image 2 and show the final result.

i.e. add pixel values of image 1 to corresponding pixel values of image 2

i.e. final image[0][0] = image1[0][0]+image2[0][0]

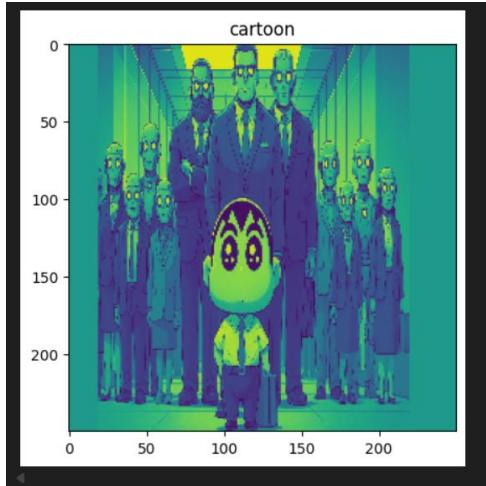
Read another image

```
img2 = cv2.imread('test2.jpg',0)  
img2 = cv2.resize(img2,(250,250))  
print(img2)  
print(img2.shape)
```

```
[[135 135 135 ... 135 135 135]  
 [135 135 135 ... 135 135 135]  
 [135 135 135 ... 135 135 135]  
 ...  
 [135 135 135 ... 135 135 135]  
 [135 135 135 ... 135 135 135]  
 [135 135 135 ... 135 135 135]]  
(250, 250)
```

Display Image2

```
plt.imshow(img2)  
plt.title('cartoon')  
plt.show()
```



Perform Addition of image using formula

$$I_3(r,c) = a \cdot I_1(r,c) + (1 - a) \cdot I_2(r,c)$$

where, (r,c) is the pixel coordinate, I_1 and I_2 are image 1 and 2
and a and (1-a) are the coefficients

```
img3 = cv2.addWeighted(img1,0.3,img2,0.7,0)
```

Display the new resulting image

```
cv2.imshow('addition',img3)
```

```
cv2.waitKey(0)
```

```
cv2.destroyAllWindows()
```



Conclusion

In this lab, I learned how to perform fundamental image processing tasks such as resizing and combining images using code. By implementing these operations in VS Code, I gained practical experience in handling images programmatically and developed a clearer understanding of how image manipulation works in digital environments. This lab enhanced both my coding skills and my knowledge of image processing techniques, which are essential for further exploration in the field of computer vision and related applications.

Lab 4

Image processing is a method of performing operations on an image to improve it, extract information, or transform it into a more useful form. It involves techniques that allow computers to analyze, modify, and interpret images. The main goal is to make images suitable for a specific application, such as medical imaging, satellite imagery, or computer vision.

Image enhancement is a key part of image processing that improves the visual appearance of an image or highlights certain features to make it more suitable for analysis.

An image filter is a technique or tool used in image processing to modify, enhance, or extract specific features from an image. It works by processing the pixels of an image, often using a mathematical operation called convolution with a small matrix called a kernel. Filters can either emphasize certain details or suppress unwanted parts of the image.

Types of Image Filters:

Low-pass filters (smoothing/blur): Reduce noise or smooth the image.

High-pass filters (sharpening): Enhance edges and fine details.

Median filters: Remove salt-and-pepper noise while preserving edges.

Image filters are needed because raw images often contain noise, poor contrast, or unwanted artifacts, which can make analysis or interpretation difficult. Filters help in:

Noise Reduction: Removing unwanted random variations in pixel intensity.

Feature Enhancement: Highlighting edges, lines, or textures for better analysis.

Image Restoration: Correcting distortions caused during image acquisition.

Preprocessing for Analysis: Making images suitable for tasks like object detection, segmentation, or recognition.

Take an image and use Box filter to blur the image then show both results. Also write when do we use blur filter.

$\$ \quad \text{Image} = \begin{bmatrix} a & b & c \\ d & e & f \\ g & h & i \end{bmatrix} * \text{filter} = \begin{bmatrix} r & s & t \\ u & v & w \\ x & y & z \end{bmatrix}$

Final pixel value of e at original image after applying the filter is

$\$ e_{\{\text{processed}\}} = v*e + r*a + s*b + t*c + u*d + w*f + x*g + y*h + z*i \$$

Hence, we apply the same formula for box filter of size (3,3) as

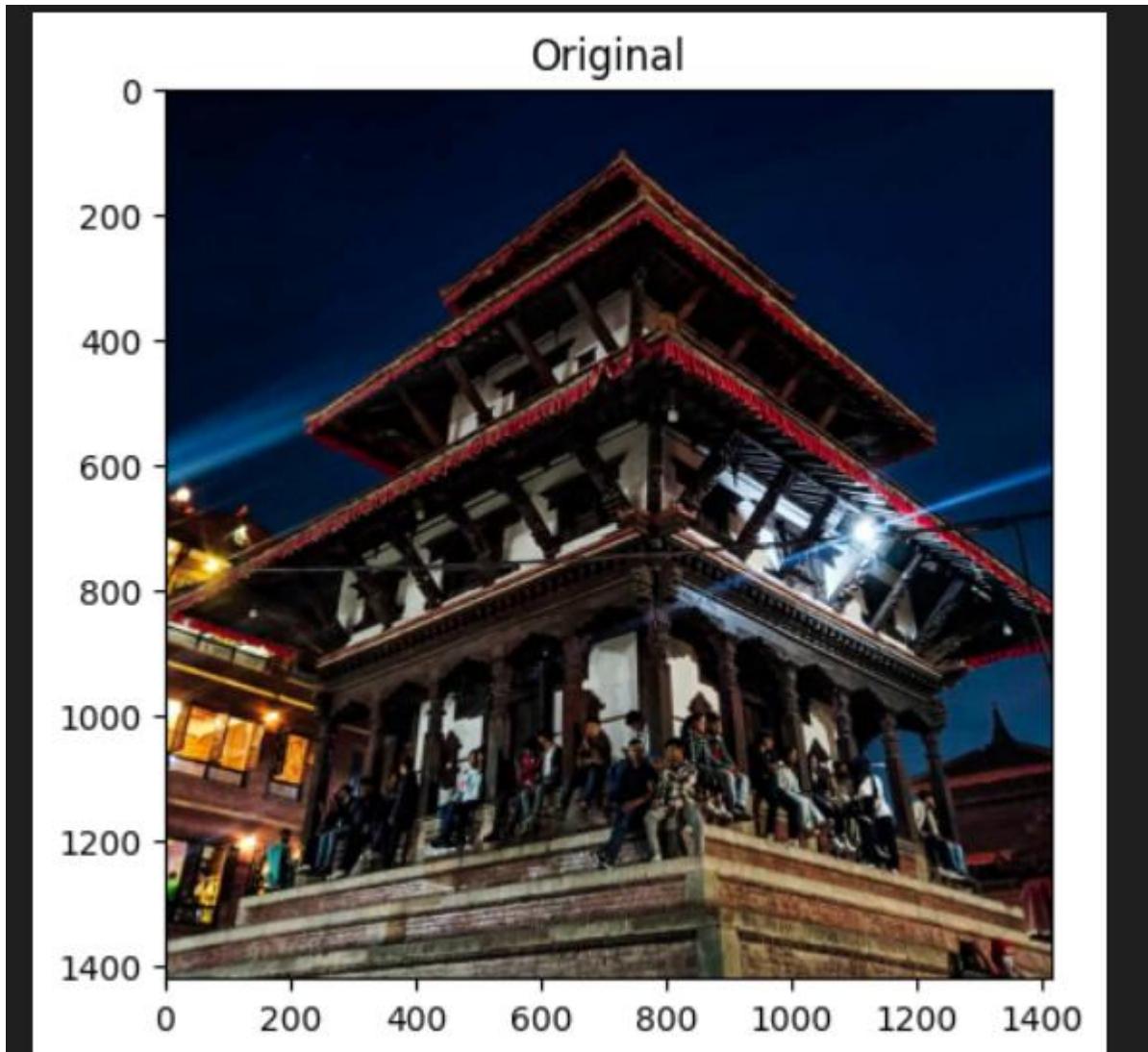
$\$ \quad \text{Image} = \begin{bmatrix} a & b & c \\ d & e & f \\ g & h & i \end{bmatrix} * \text{box filter} = 1/9 * \begin{bmatrix} 1 & 1 & 1 \\ 1 & 1 & 1 \\ 1 & 1 & 1 \end{bmatrix}$

Final pixel value of e at original image after applying the box filter (3,3) is

$\$ e_{\{\text{processed}\}} = 1/9 * [a*I + b*1 + c*I + d*1 + e*I + f*1 + g*I + h*1 + i*1] \$$

The above is repeated for every pixel in the original image to generate the final filtered image

```
import cv2
import numpy as np
from matplotlib import pyplot as plt
img = cv2.imread('basanta.jpg')
# Display the original image
plt.imshow(cv2.cvtColor(img, cv2.COLOR_BGR2RGB)) # Convert BGR to RGB for
matplotlib
plt.title('Original')
plt.show()
```



Apply a box filter (blur) of size 5*5 to the image

```
blur = cv2.blur(img, (5, 5))
```

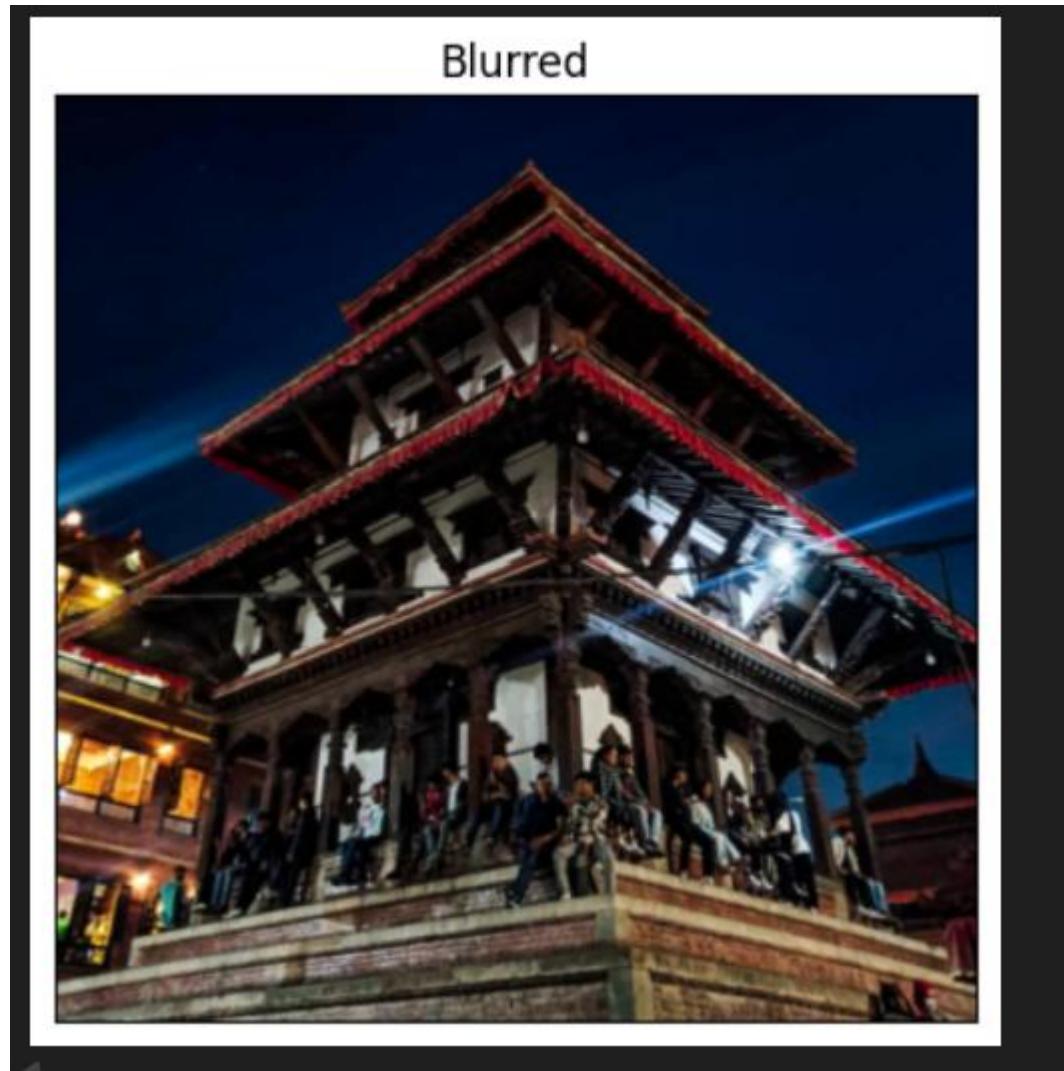
Display the blurred image

```
plt.imshow(cv2.cvtColor(blur, cv2.COLOR_BGR2RGB))
```

```
plt.title('Blurred')
```

```
plt.xticks([]), plt.yticks([])
```

```
plt.show()
```



```
# Save the original image  
cv2.imwrite('orig.png', img)  
  
# Save the blurred image with a new imagefile name  
cv2.imwrite('boxfil.png', blur)
```

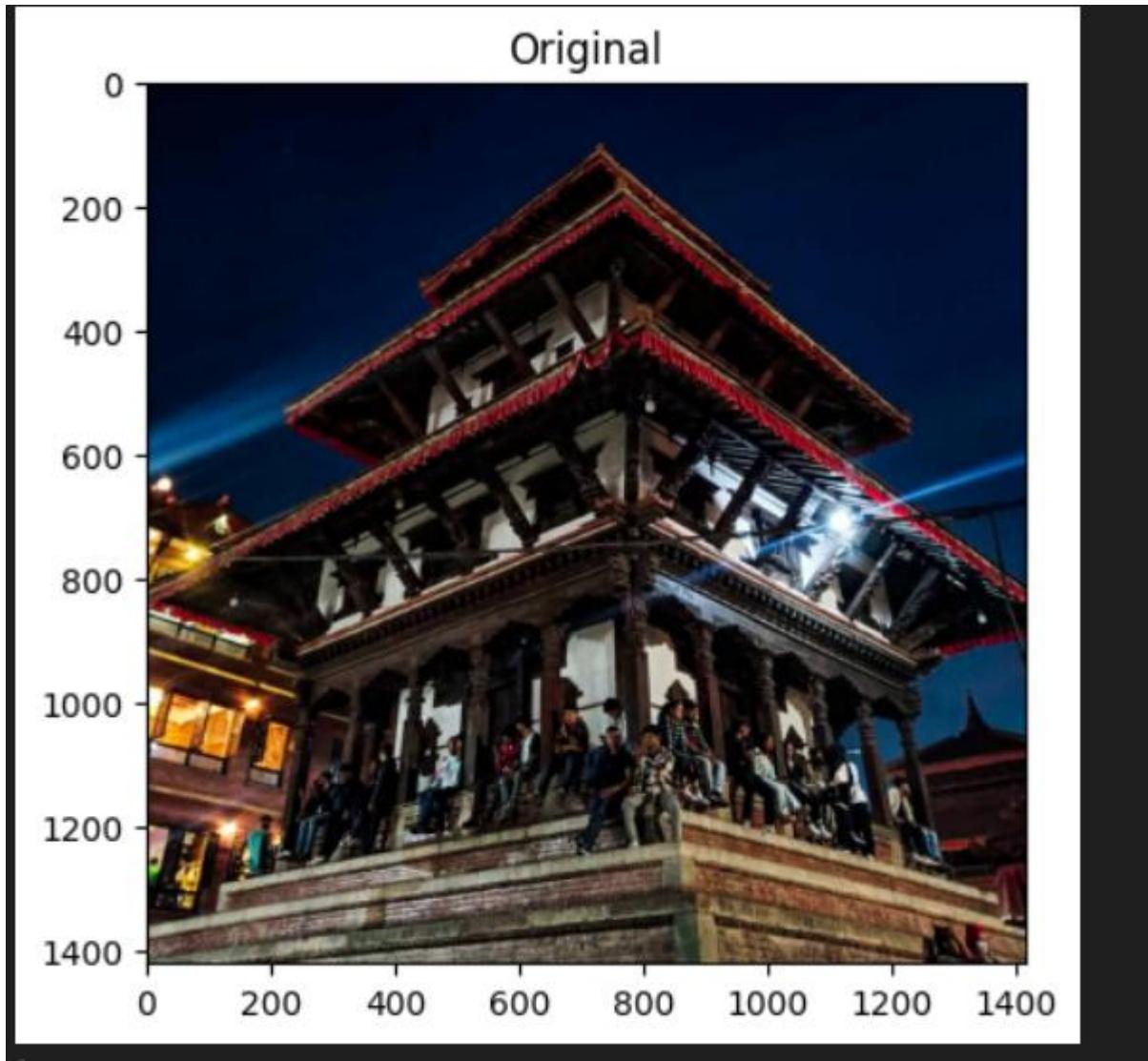
Now use median filter to blur the image and also using different filter size (3,3), (5,5) and (7,7) and see the difference

```
images = cv2.imread('orig.png')
```

```
mean_kernel = np.ones((3,3),dtype=np.float32)*(1/9)
filtered = cv2.filter2D(images, -1, mean_kernel)
```

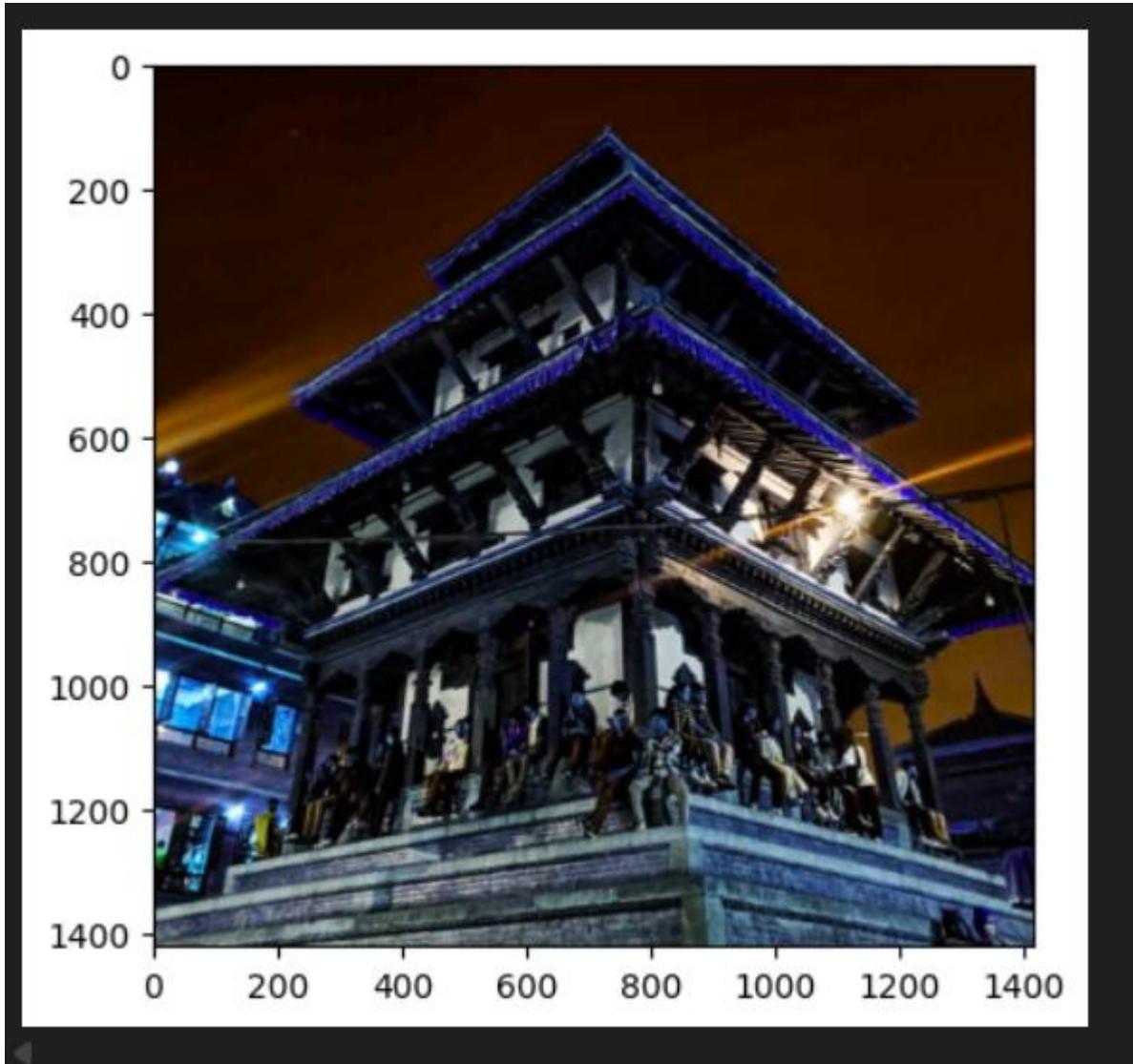
Display the original image

```
plt.imshow(cv2.cvtColor(images, cv2.COLOR_BGR2RGB))
plt.title('Original')
plt.show()
```



Now you see that the image will be blurred

```
plt.imshow(filtered)
```



now increase kernel size to \$ 5 * 5 \$ and \$ 9*9\$ then see the differences

```
mean_kernel5 = np.ones((5,5),dtype=np.float32)*(1/25)
```

```
mean_filter5 = cv2.filter2D(images, -1, mean_kernel5)
```

Mean filter/Box filter of 7*7

```
mean_kernel7 = np.ones((7,7),dtype=np.float32)*(1/49)
```

```
mean_filter7 = cv2.filter2D(images, -1, mean_kernel7)
```

Now dispaly the same image using different filter size

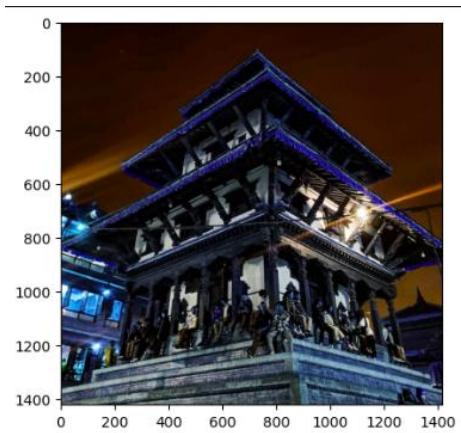
```
plt.imshow(cv2.cvtColor(images, cv2.COLOR_BGR2RGB)) # Convert BGR to RGB for  
matplotlib  
  
plt.title('original')  
  
plt.show()  
  
plt.imshow(cv2.cvtColor(filtered, cv2.COLOR_BGR2RGB)) # Convert BGR to RGB for  
matplotlib  
  
plt.title('Applied mean kernel of size 3*3')  
  
plt.show()  
  
plt.imshow(cv2.cvtColor(mean_filter5, cv2.COLOR_BGR2RGB)) # Convert BGR to RGB for  
matplotlib  
  
plt.title('Applied mean kernel of size 5*5')  
  
plt.show()  
  
plt.imshow(cv2.cvtColor(mean_filter7, cv2.COLOR_BGR2RGB)) # Convert BGR to RGB for  
matplotlib  
  
plt.title('Applied mean kernel of size 7*7')  
  
plt.show()
```



Median Blur for removing the salt and Pepper noise from the original image

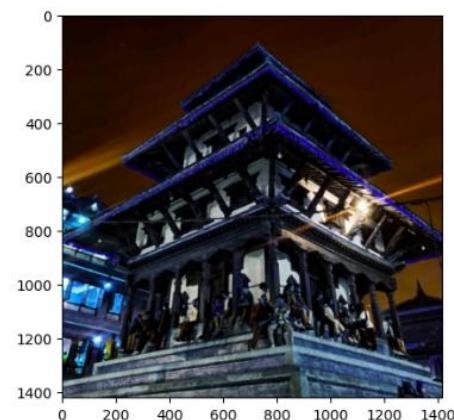
1. Import a noisy image then display it
2. Remove the noise in the final image

```
import cv2  
import numpy as np  
noisy_image = cv2.imread('orig.png')  
plt.imshow(noisy_image)
```



Apply Median Blur to remove the noise then display the final image

```
import matplotlib.pyplot as plt  
median_blur = cv2.medianBlur(noisy_image, 7)  
plt.imshow(median_blur)
```



Filter for edge detection

Use Sobel filter $\begin{bmatrix} -1, 0, 1 \\ -2, 0, 2 \\ -1, 0, 1 \end{bmatrix}$ for edge detection

Note that this Sobel kernel detects edges in the x-direction (left-right) by applying this filter over the image

Import the image of flag and show the edges detected by above sobel filter

```
kernel1 = np.array([[-1,0,1],
```

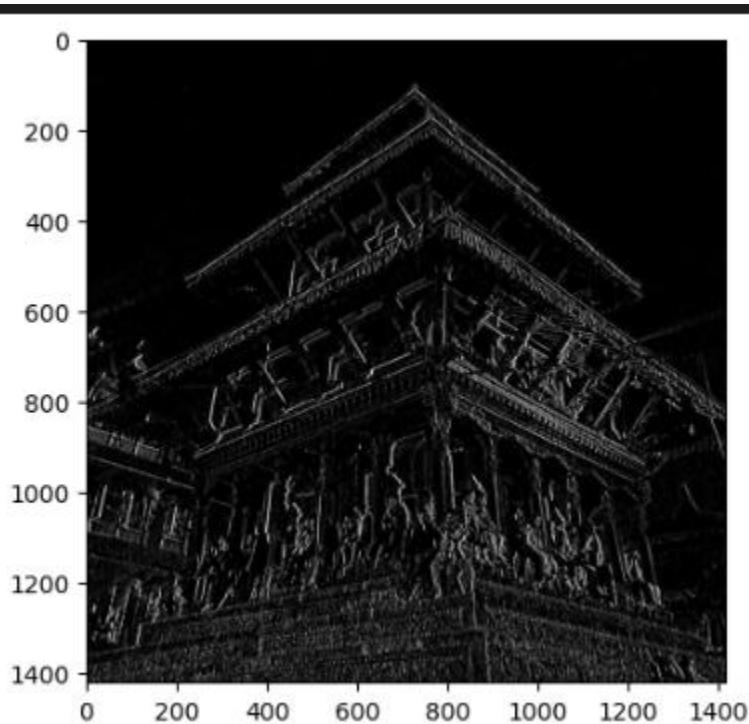
```
    [-2,0,2],
```

```
    [-1, 0, 1]])
```

```
flag = cv2.imread('C:/Users/Administrator/Image proc and yolo/Image  
processing/imges/flag.jpg', 0)
```

```
filtered1 = cv2.filter2D(flag, -1, kernel1)
```

```
plt.imshow(filtered1, cmap = 'gray')
```



Conclusion

Through this lab, I gained a clear understanding of the fundamentals of image processing, particularly image enhancement and the use of image filters. I learned how filters, such as low-pass, high-pass, and median filters, play an important role in improving image quality by reducing noise, enhancing features, and restoring distorted images. These techniques are essential in preparing images for advanced applications like object detection, segmentation, and computer vision tasks. Overall, this lab strengthened my knowledge of how digital images can be analyzed and manipulated to make them more useful for specific applications.

Lab 7

ABDODE ANIMATE

Introduction:

Adobe Animate is a powerful software used to design vector graphics and create animations for television programs, online videos, websites, web applications, and video games. It allows users to design interactive animations with ease, integrating sound, images, and other multimedia elements. Animate is widely used in the industry due to its versatility, enabling the creation of everything from simple frame-by-frame animations to complex interactive content.

Originally known as Adobe Flash Professional, Adobe Animate has evolved significantly since its inception, transitioning from a focus on Flash content to supporting various formats like HTML5 Canvas, WebGL, and SVG. This makes it an essential tool for animators, web designers, and developers aiming to create rich multimedia content for different platforms.

Objectives:

The main objectives of this lab are as follow:

- 1) Setting Up Adobe Animate: Installing Adobe Animate.
- 2) Getting Familiar with the Workspace: Understanding the toolbar, properties panel, timeline, and stage.
- 3) Learning Basic Tools and Functions: Mastering the selection, drawing, shape, and editing tools.
- 4) Exploring Shape Tween: Creating shape tweens and morphing objects into different shapes.
- 5) Working with Symbols: Understanding the creation and manipulation of symbols.
- 6) Creating Motion Tweens: Learning how to animate objects using motion tweens.
- 7) Managing Layers: Organizing and utilizing layers effectively in animation projects.
- 8) Exporting Animations: Exporting completed animations in various formats for different platforms.

7. Setting up Adobe Animate:

7.1 Installation:

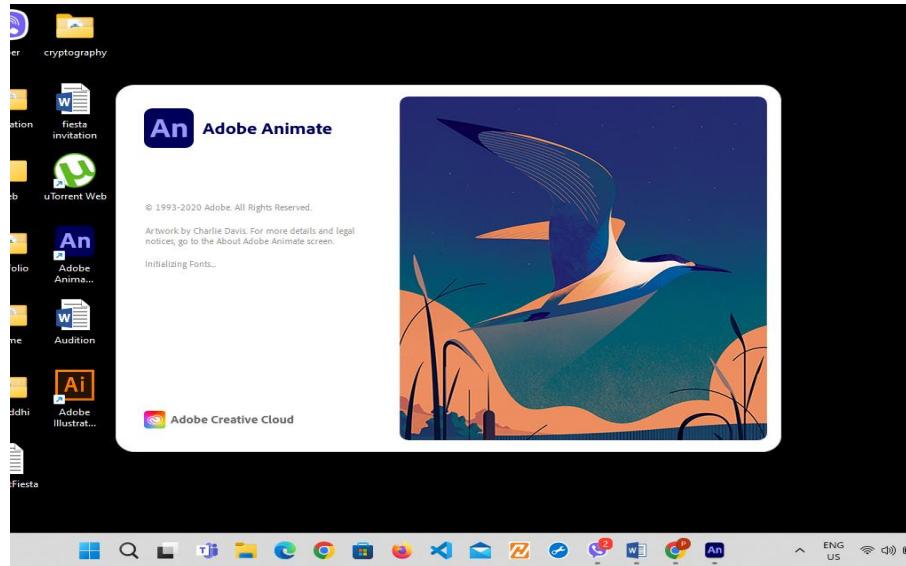
- ✓ Go to abode website.
- ✓ Download the latest version of abode animate.

- ✓ Sign in with your Adobe ID or create a new one if needed Run the installer and follow the on-screen instructions to complete the installation.

7.2 Launch and sign-in:

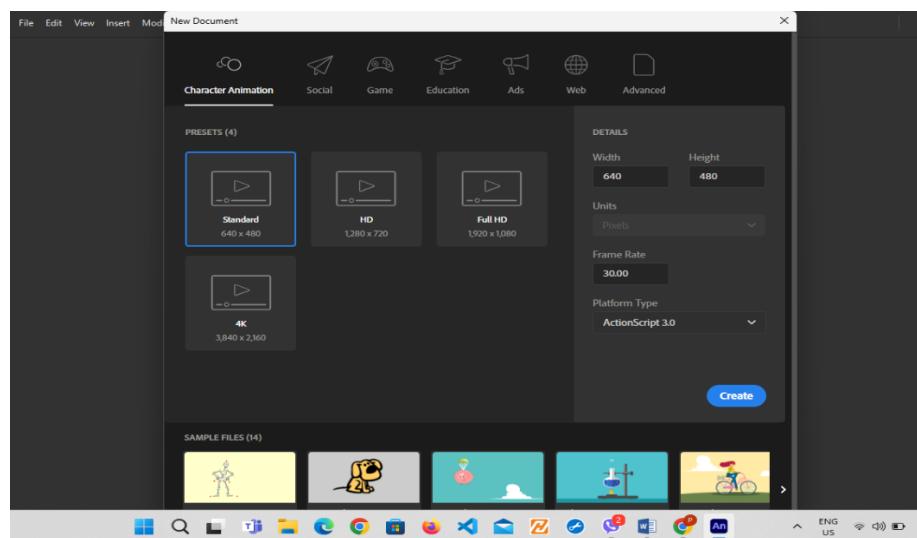
- ✓ Once installed, launch Abode Animate.
- ✓ Sign in with your adobe id when prompted.
- ✓ You're now ready to start creating animations with abode animate.

This page will pop up as soon as you open abode animate.



After that if you go to File>>New.

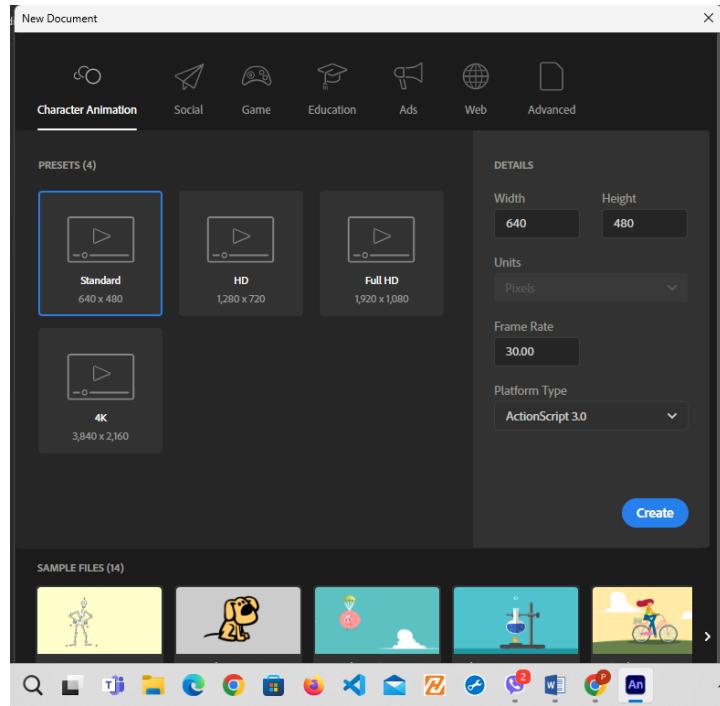
This page will appear from where you can start a new project.



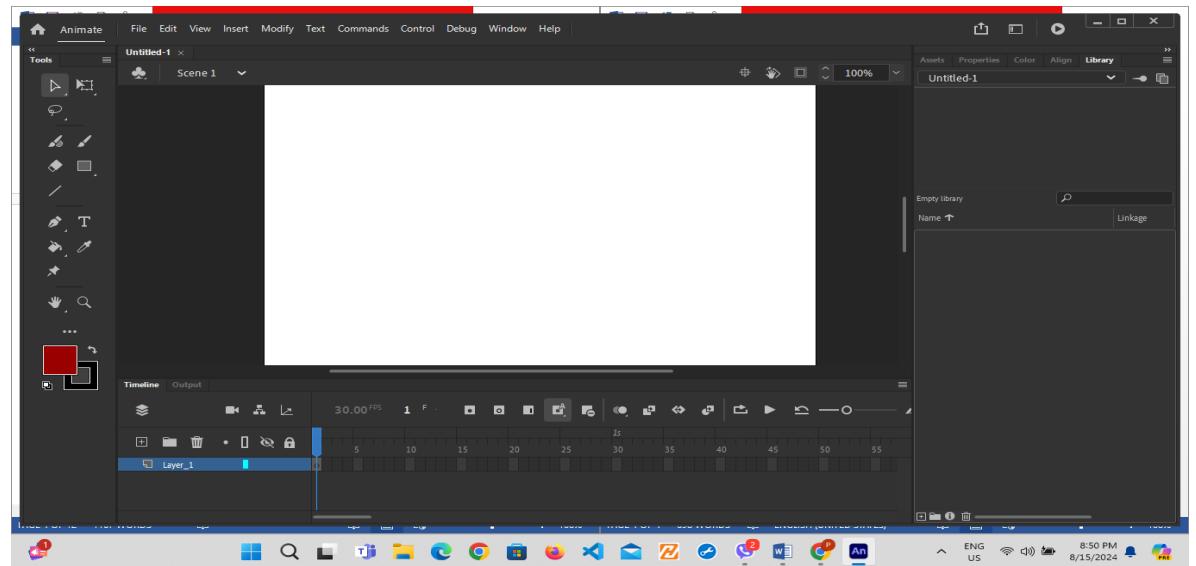
8. Getting Familiar with the Workspace:

8.1 Exploring the interface:

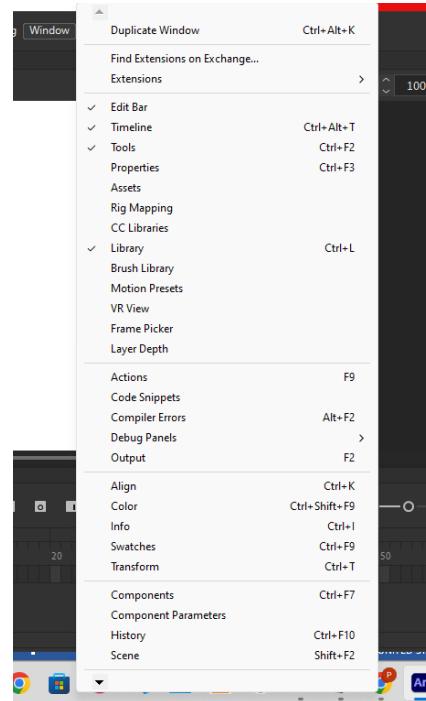
- Open adobe animate and create a new project.



- Take note of the various panels: Toolbar (left side), Properties Panel (right side), Timeline (bottom), and Stage (center).

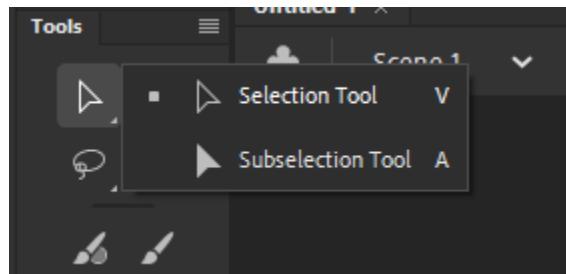


- Use the Window menu to show or hide different panels as needed.



9. Learning basic tools and functions

9.1 Selection Tools



a) Selection Tool (Black Arrow):

The Selection Tool's purpose is to pick and move items about the level.

How to Apply:

- From the toolbar, choose the Selection Tool (shortcut: V).
- To choose an object, click on it. The selected object can then be moved, resized, or rotated by dragging it or by using the transform handles.

b) Sub selection Tool (White Arrow):

The Sub Selection Tool's purpose is to allow users to pick and modify particular points or routes on vector shapes.

How to Apply:

- From the toolbar, choose the Sub Selection Tool (shortcut: A).
- To see a vector shape's anchor points, click on it.
- To modify the shape, click and drag any individual handles or anchor points.

9.2 Drawing and Shape Tools

a) Brush Tool:

The Brush Tool's purpose is to facilitate freehand drawing.

How to Use:

- ✓ From the toolbar, choose the Brush Tool (shortcut: B).
- ✓ From the Properties panel, select the brush size and style.
- ✓ To draw freehand shapes on the stage, click and drag.

b) Rectangle Tool:

The Rectangle Tool is used for drawing rectangle Forms.

How to apply:

- ✓ From the toolbar, choose the Rectangle Tool (shortcut: R).
- ✓ To design a rectangle on the stage, click and drag.
- ✓ Press and hold the Shift key to draw an exact square.

c) Oval Tool:

The Oval Tool's purpose is to design circular or oval forms.

How to Use:

- ✓ From the toolbar, choose the Oval Tool (shortcut: O).
- ✓ To draw an ellipse on the stage, click and drag.
- ✓ Press and hold the Shift key to draw an exact circle.

9.3 Editing Tools:



a) Free Transform Tool:

The Free Transform Tool's purpose is to rotate, skew, and scale objects.

How to Apply:

- ✓ From the toolbar, choose the Free Transform Tool (shortcut: Q).
- ✓ To choose an object, click on it.
- ✓ You may skew, rotate, and resize the object by using the transform handles.

b) Eraser Tool:

The Eraser Tool's purpose is to remove portions of drawings or objects. You can select and move items or drawings on the stage to remove portions of them.

How to Apply:

- ✓ From the toolbar, choose the Eraser Tool (shortcut: E).
- ✓ From the Properties panel, select the eraser's size and form.
You can select and move items or drawings on the stage to remove portions of them.

c) Lasso Tool:

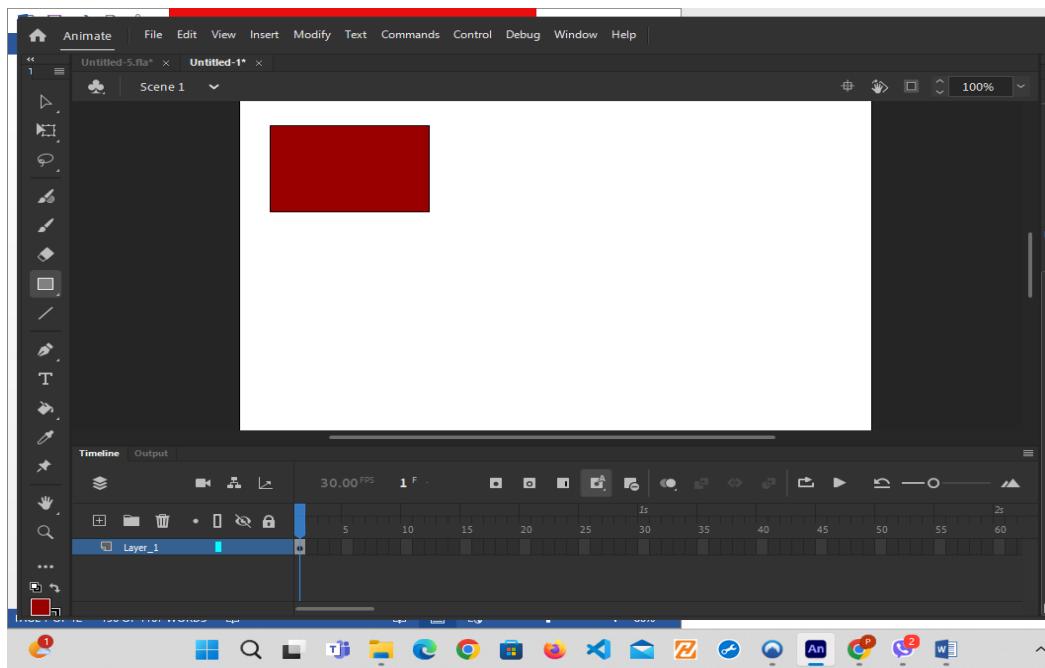
Objects or portions of objects can be freely selected with the Lasso Tool.

How to Apply:

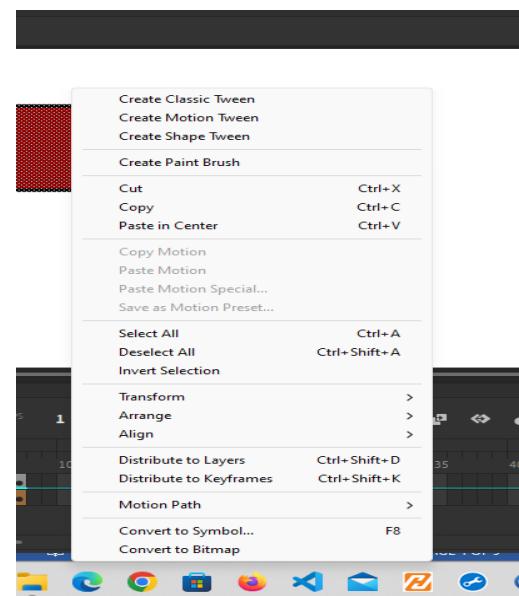
- ✓ From the toolbar, choose the Lasso Tool (shortcut: L).
- ✓ To create a freeform selection around the area you wish to pick, click and drag.
- ✓ To finish the selection, release the mouse button. The selection can then be moved or altered.

10. Exploring Shape Tween:

- Creating Shape Tweens:
 - Draw a shape on the first frame of the timeline.
 - Insert a key frame at a later point in the timeline.

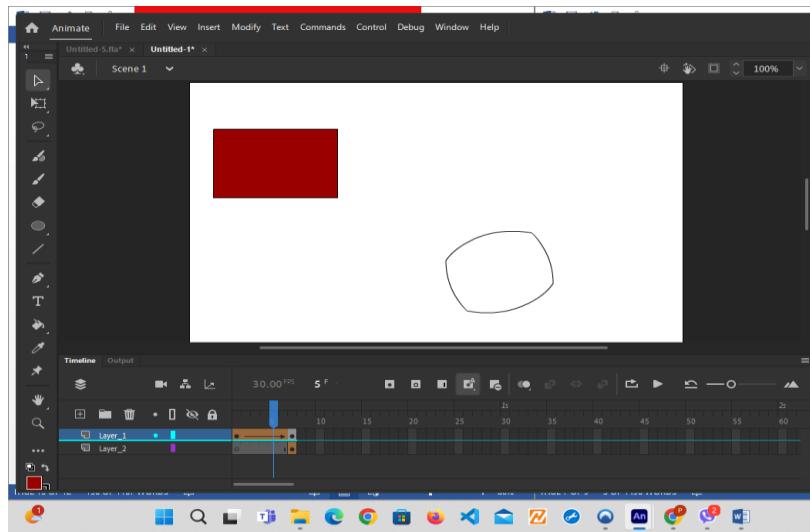
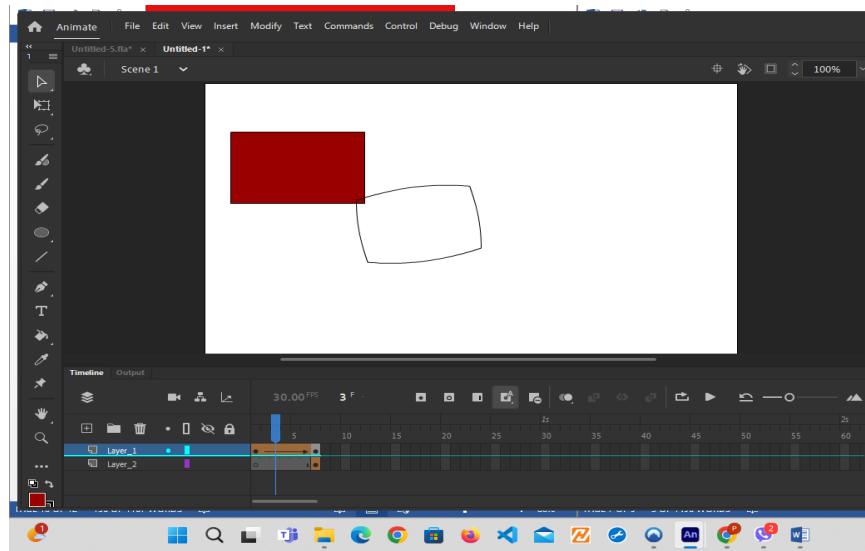


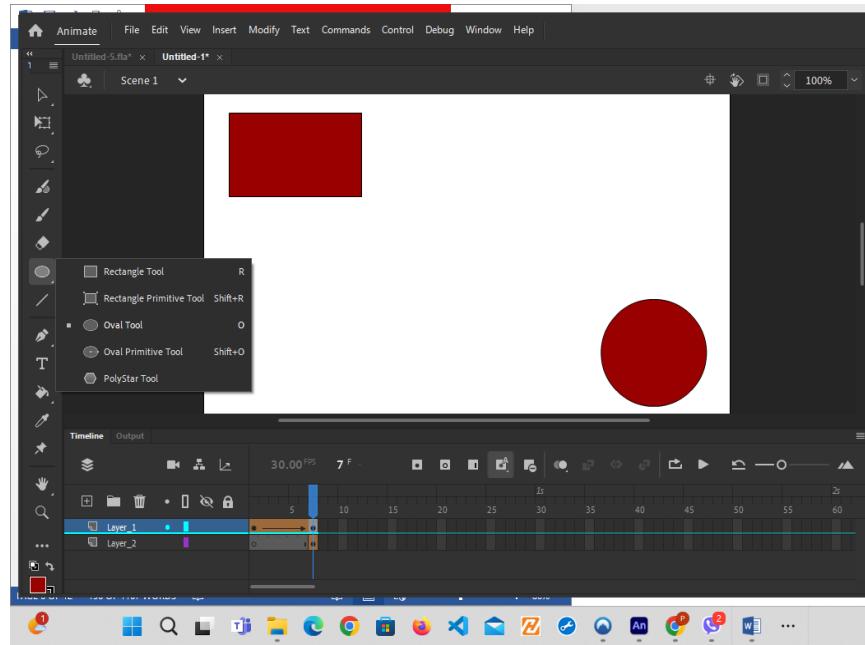
- Modify the shape in the new key frame.



- Right-click between the two key frames and select Create Shape Tween to animate the transformation.

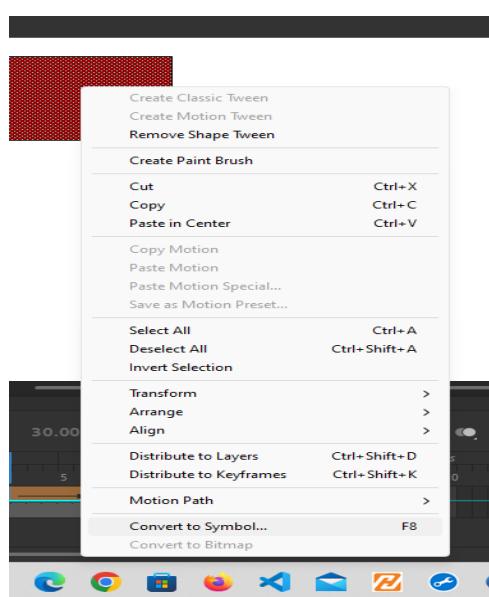
Result:

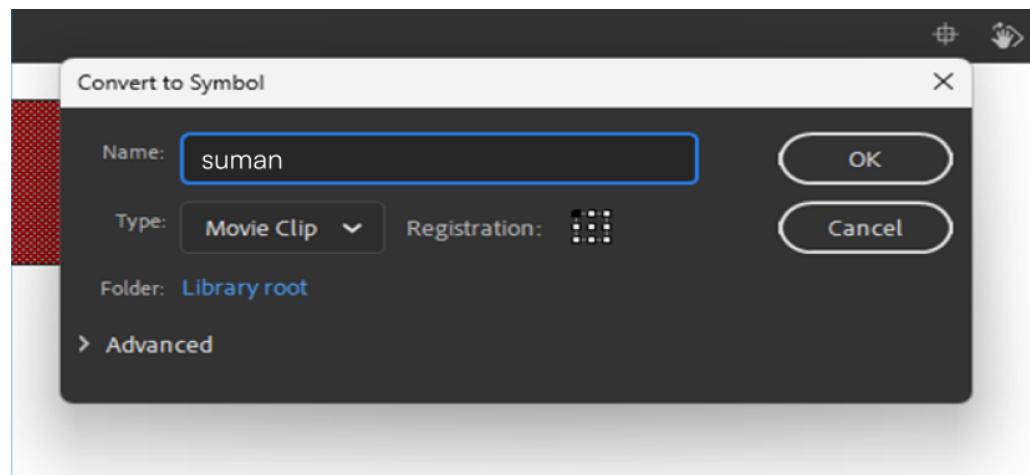




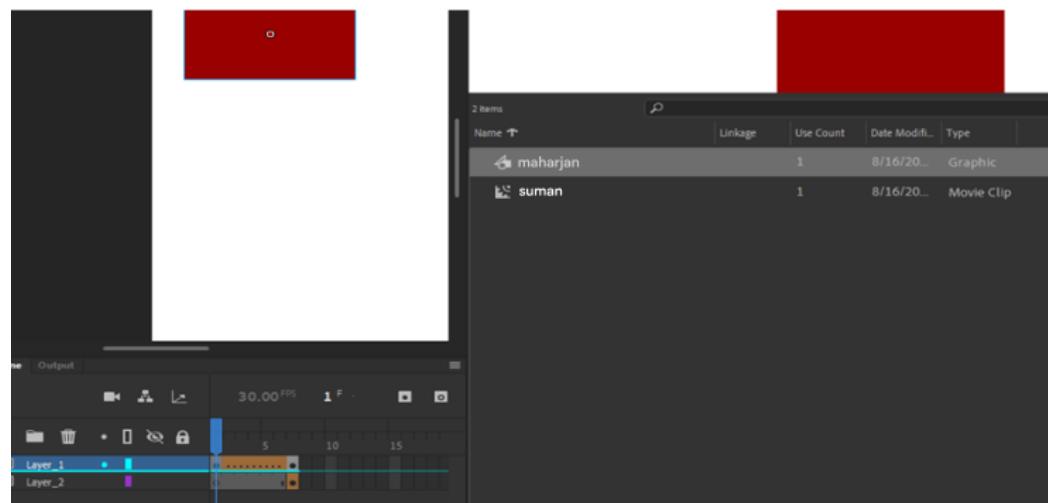
11. Working with Symbols:

- Creating Symbols:
- Select an object on the stage.
- Convert it to a symbol by right-clicking and selecting Convert to Symbol.



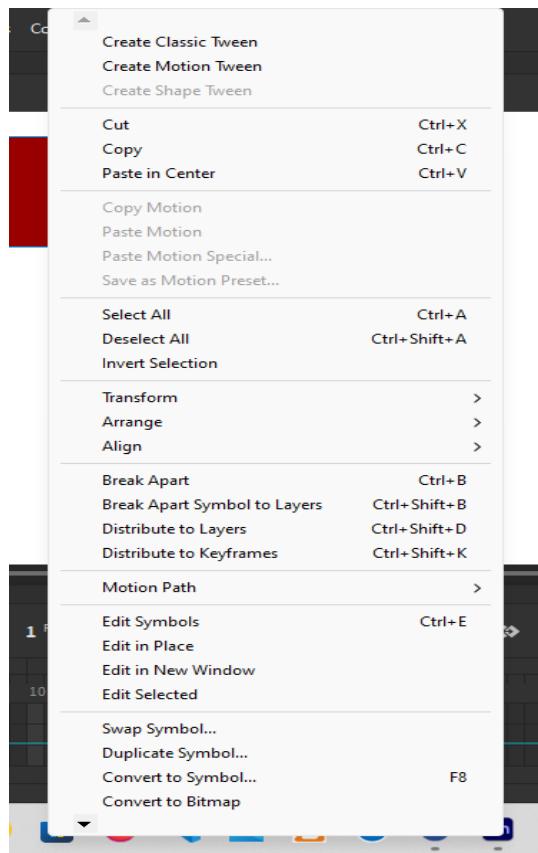


- Choose the symbol type (Graphic, Button, or Movie Clip) and give it a name.

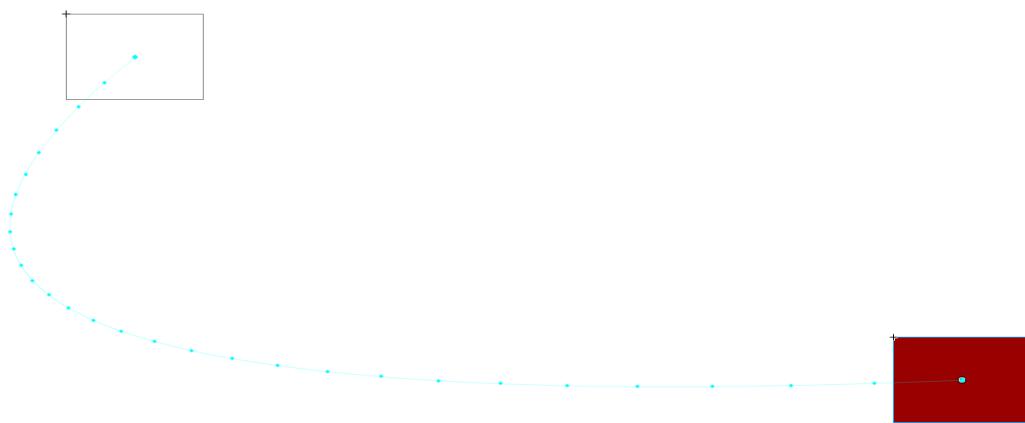


12. Creating Motion Tweens

- Motion Tween Basics:
- Create a symbol and place it on the stage.
- Right-click on the symbol's layer in the timeline and select Create Motion.



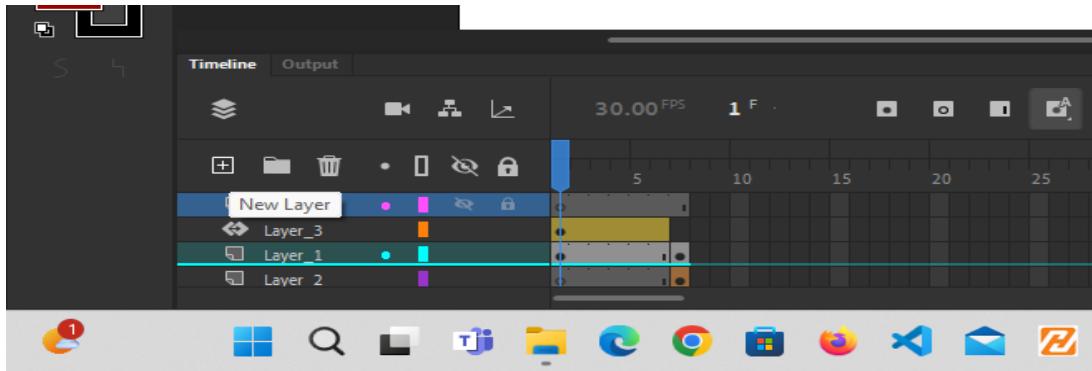
- Move the play head to a later point in the timeline and reposition the symbol to create an animation.



13. Managing Layers:

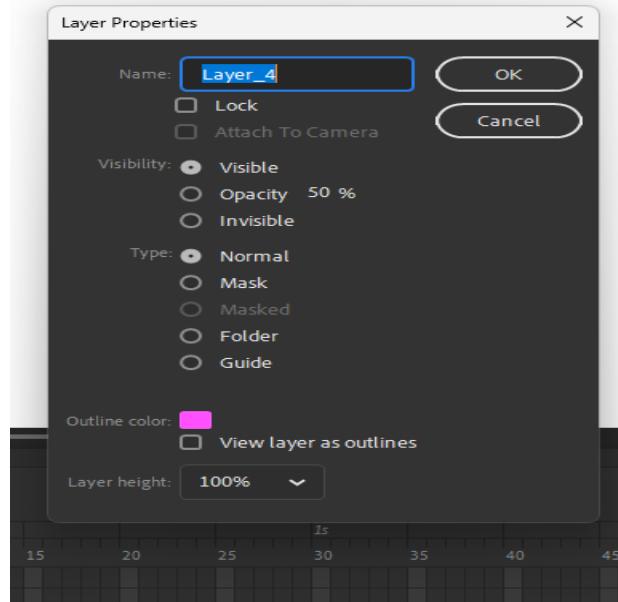
7.1 Layer Organization:

- Add new layers by clicking the New Layer button in the timeline panel.
- Name layers descriptively (e.g. “Background” & “Character”) for better organization.



7.2 Layer Properties:

- Use the visibility (eye) icon to show or hide layers.
- Use the lock (padlock) icon to lock layers and prevent accidental edits.



14. Exporting Animations:

Exporting Options:

For video formats, select File > Export > Export Video/Media.

For image sequences or static photos, select File > Export > Export Image.

For GIF format, select File > Export > Export Animated GIF.

To access other options such as HTML5 Canvas, WebGL, and Flash, select File > Publish Settings.

Complete Export:

Choose the preferred format and adjust parameters like quality and resolution.

To save the animation in the selected format, click Export.

Conclusion

This lab provided a comprehensive introduction to the core features of Adobe Animate, covering everything from software setup and workspace navigation to the use of essential tools. I gained hands-on experience in creating and modifying objects, applying shape and motion tweens, and effectively managing symbols and layers. Additionally, I learned how to export animations, laying the groundwork for more complex digital animation projects. These foundational skills have prepared me to confidently explore advanced techniques and continue developing my animation expertise.