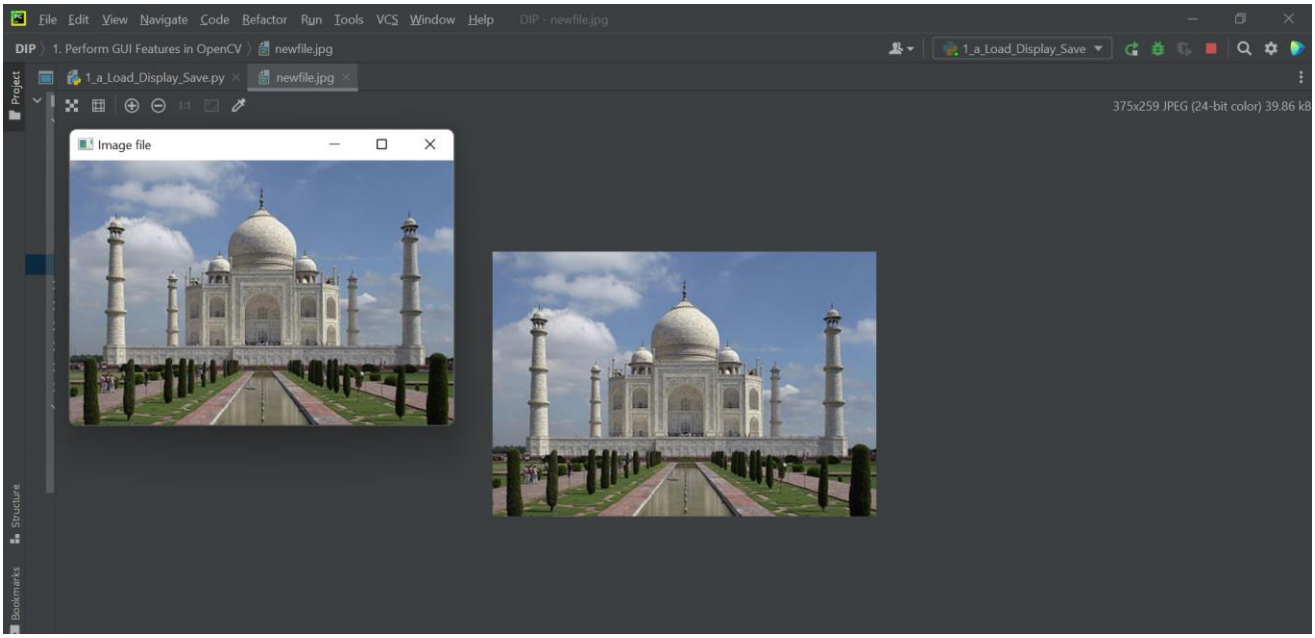
Name: **Shibu Mohapatra** Branch: **MSC AI** Roll No: **02**

ASSIGNMENT DIP OUTPUT

Perform the Following Assignment questions: (Any Six but Q1, Q2, Q3 Compulsory.)

1) Perform GUI Features in OpenCV –

a. Load an image, display it and save it back



b. play videos, capture videos from Camera and write it as a video

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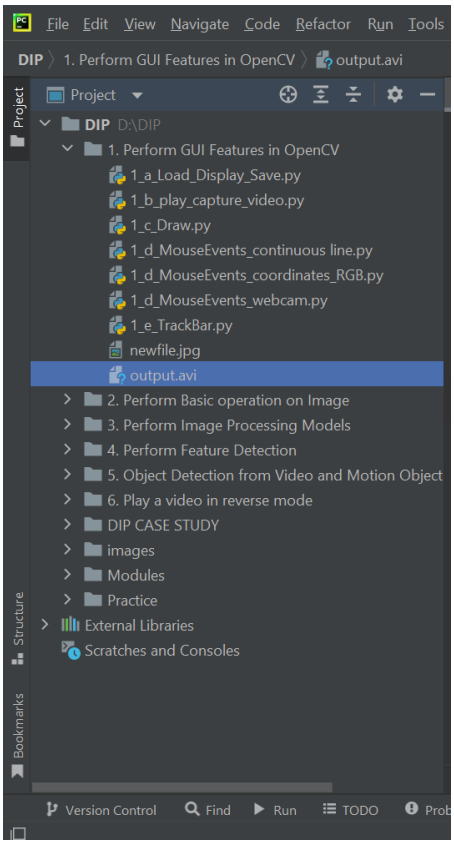

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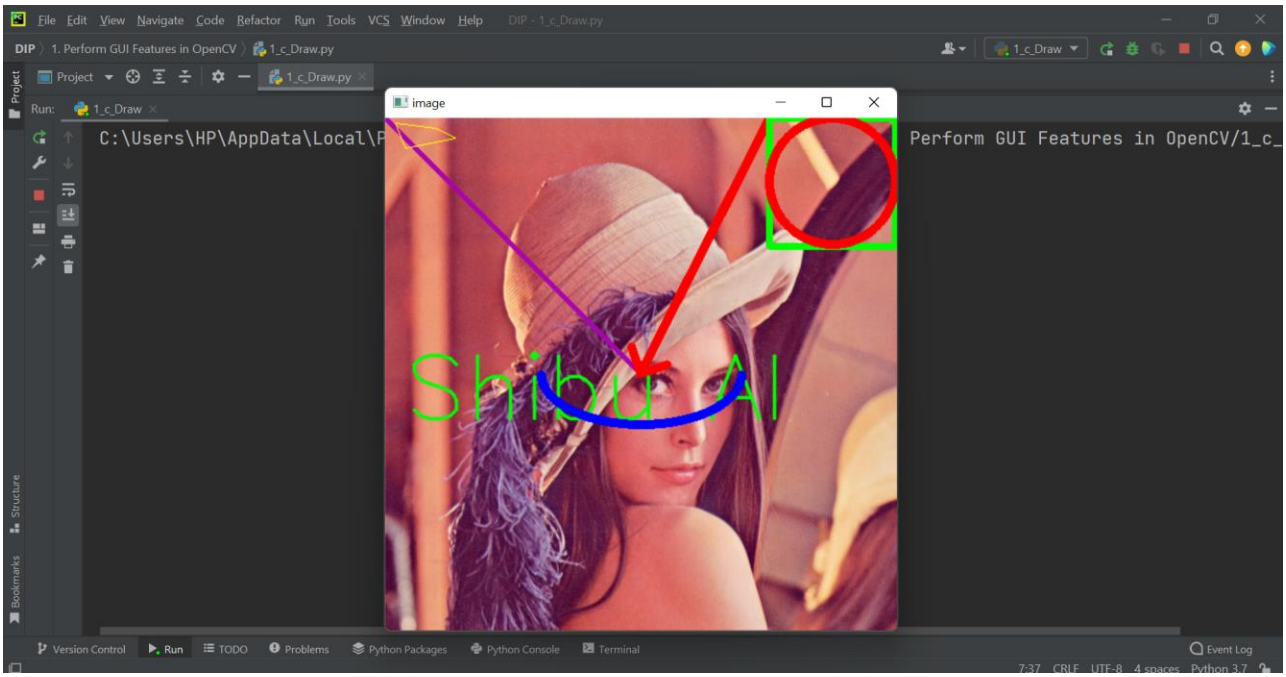
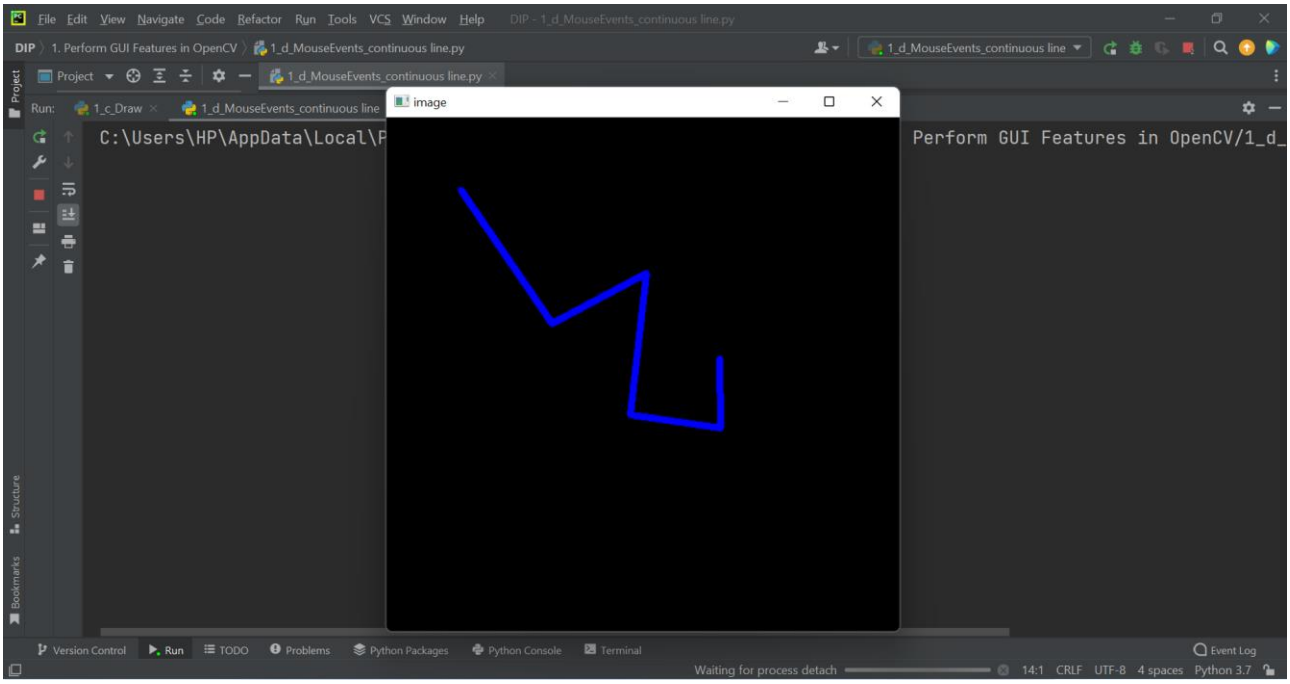
c. draw lines, rectangles, ellipses, circles, arrow segment line, put text



d. Perform mouse Events (examples such as continuous line, display coordinates while left mouse click, right mouse click display RGB Values, Display date and time while webcam is open on current video.

Continuous line:



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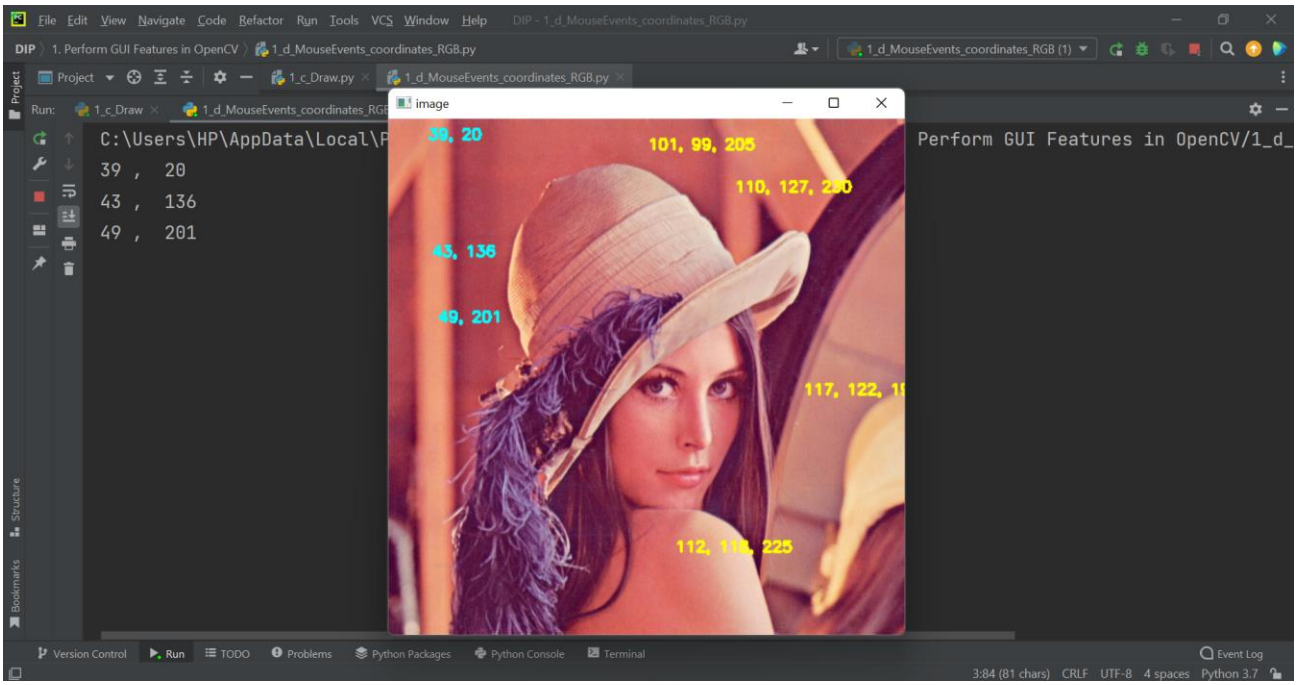
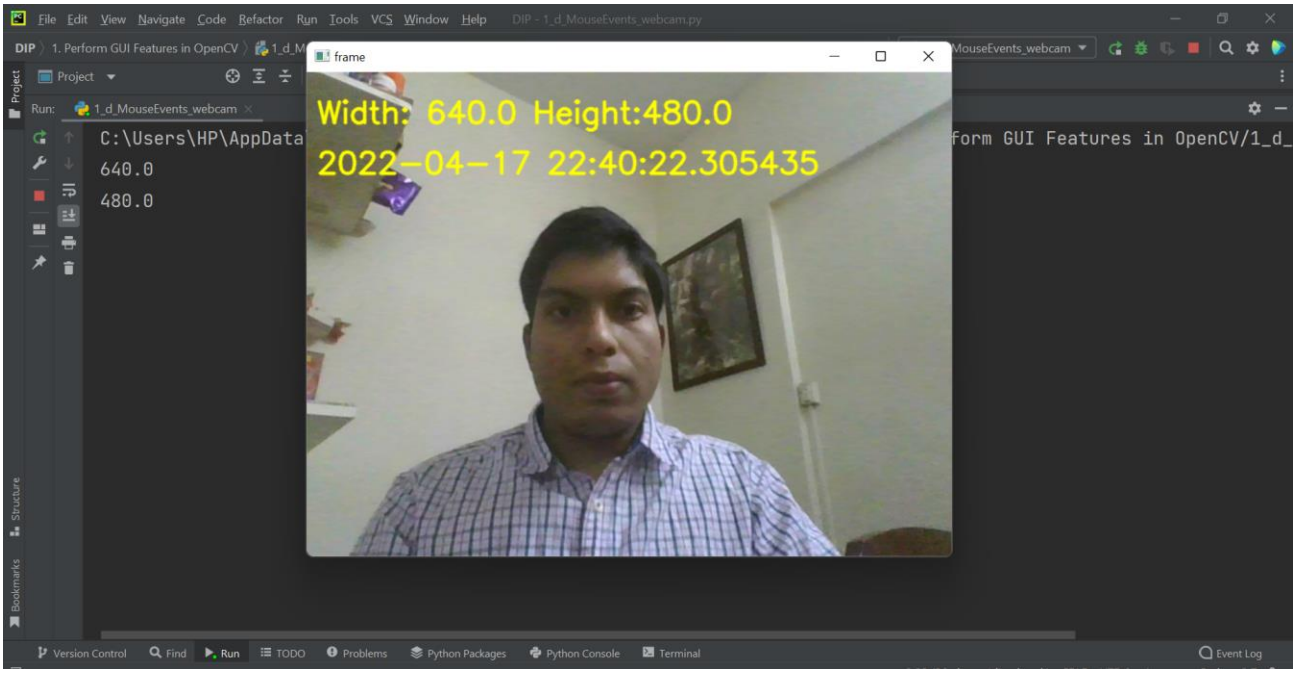
Display coordinates while left mouse click, right mouse click display RGB Values:



Display date and time while webcam is open on current video:



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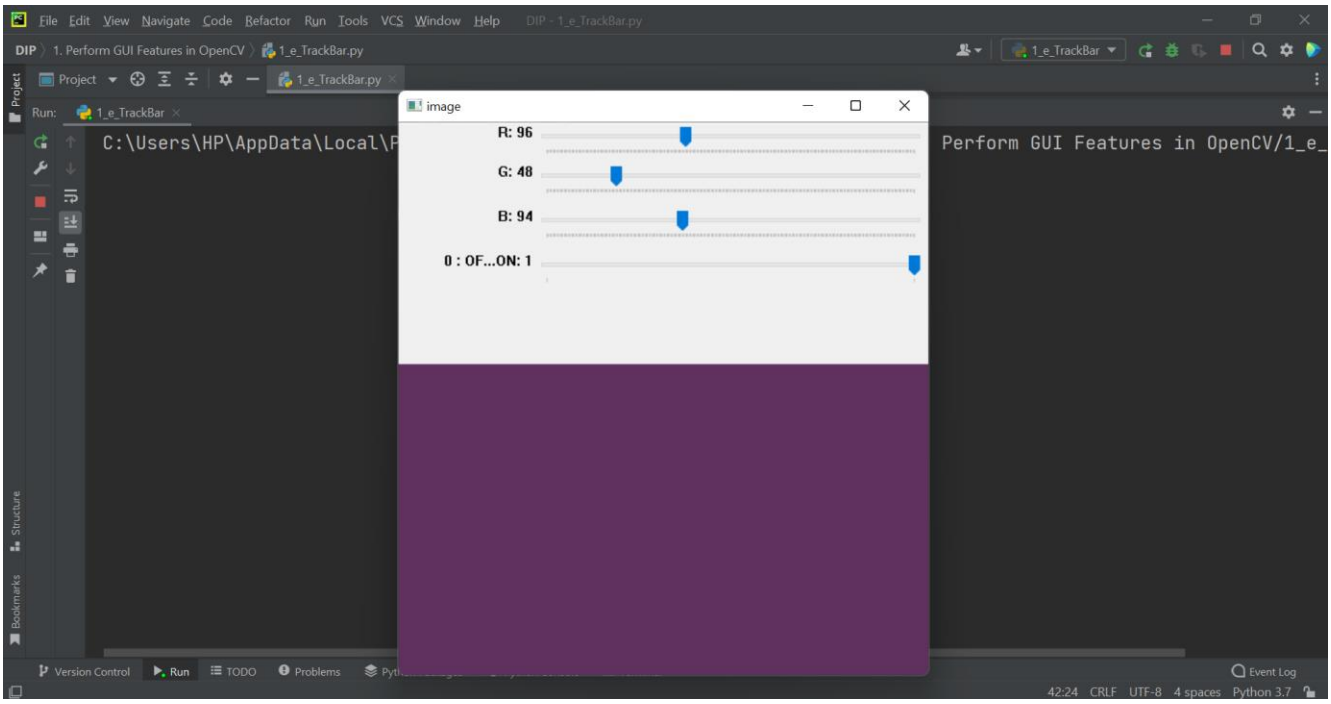
e. Create a Track Bar



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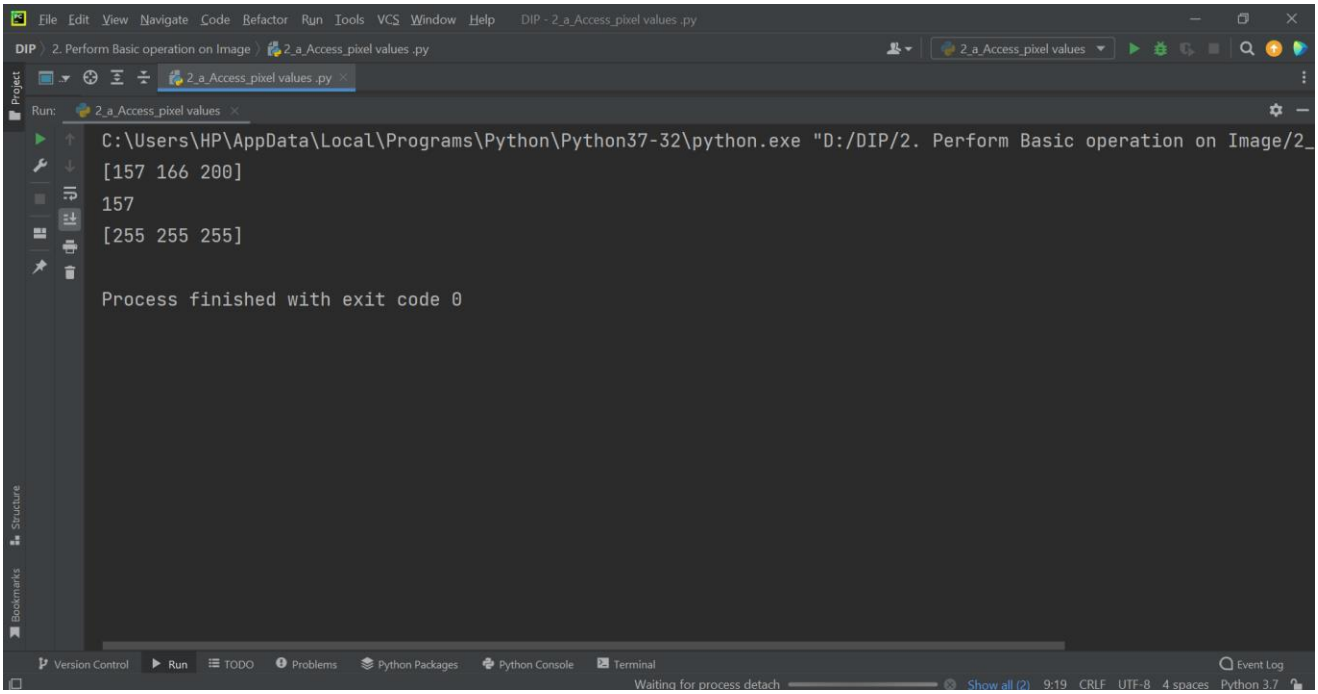
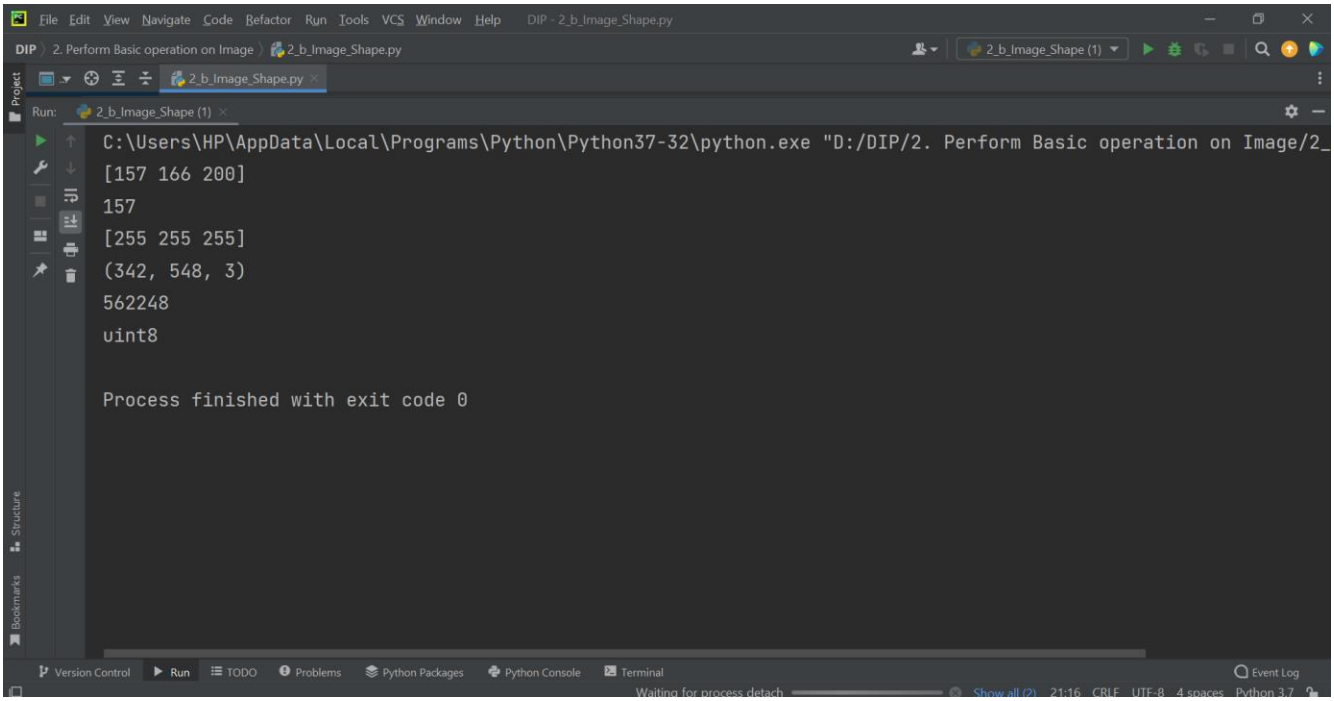
2) Perform Basic operation on Image

a. Access pixel values and modify them



b. Access image properties i.e., Shape



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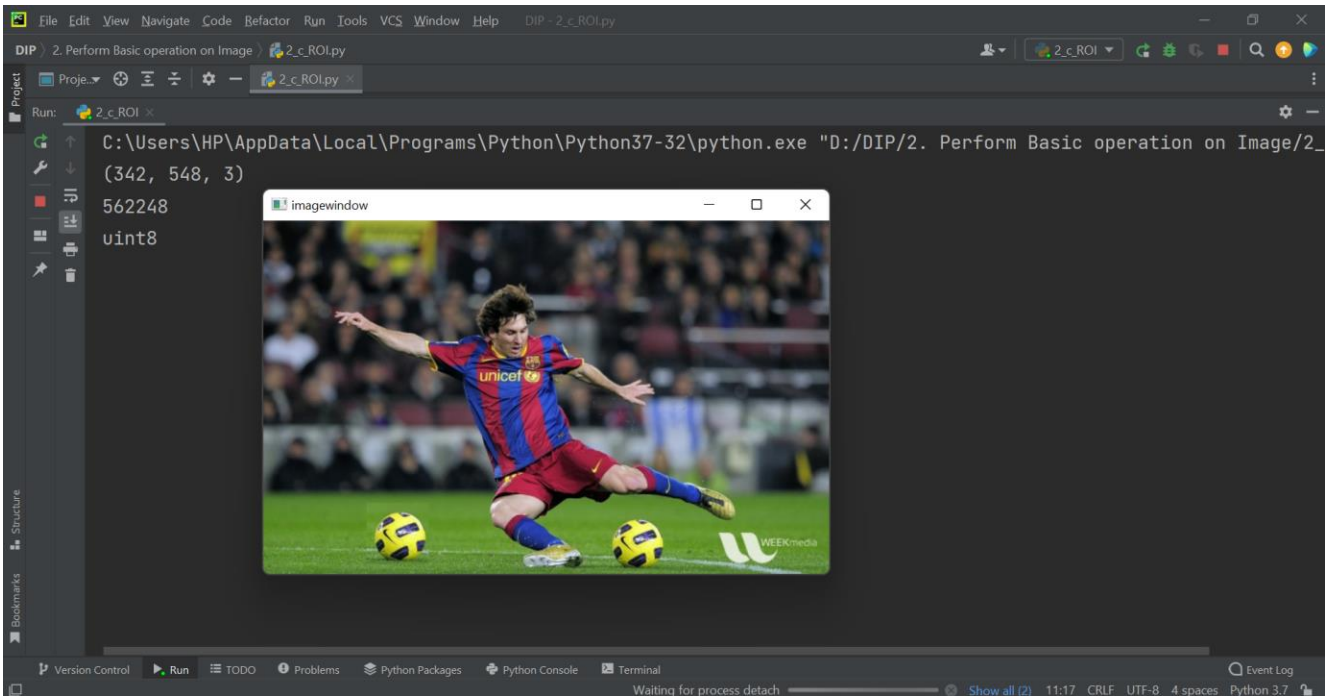
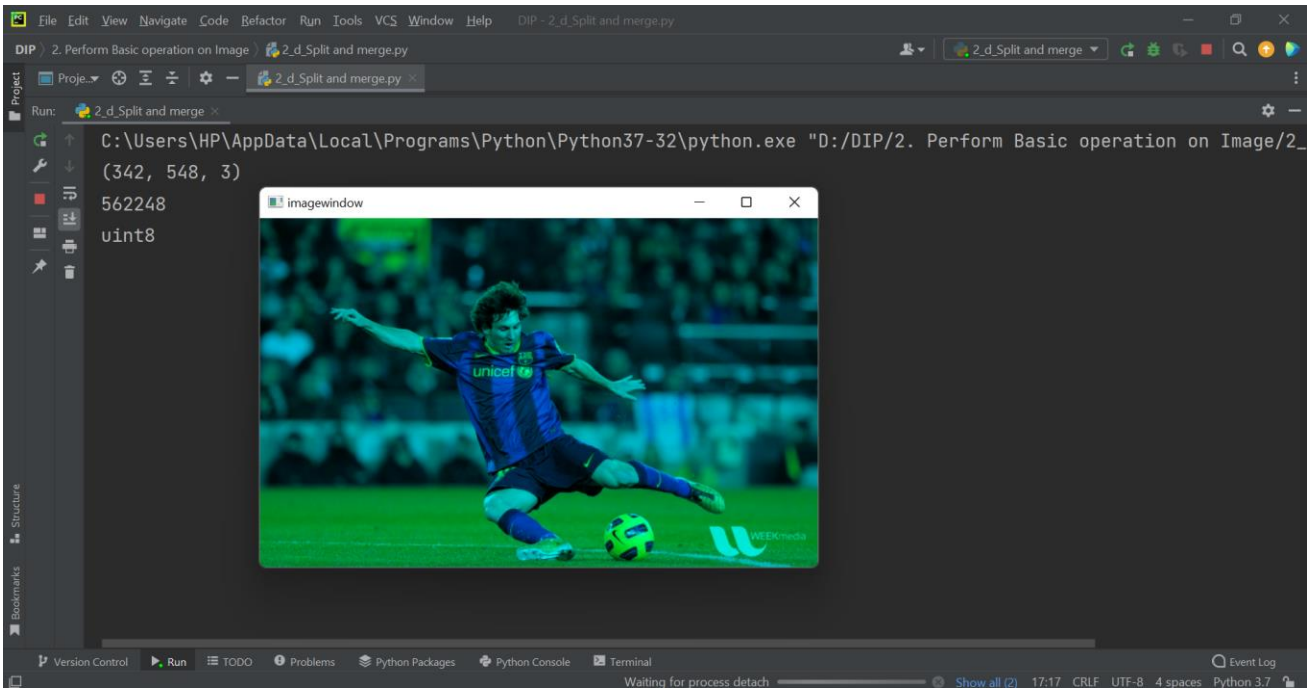
c. Setting Region of Image (ROI)



d. Splitting and Merging images



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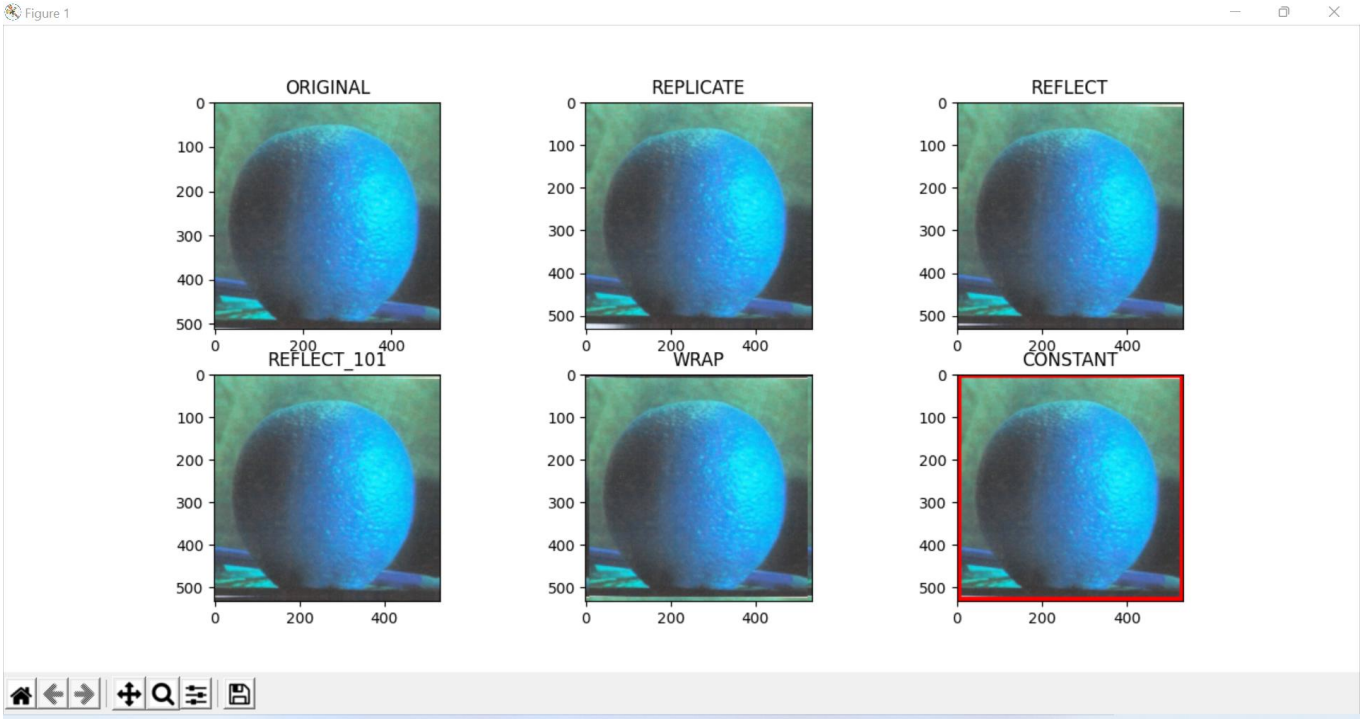
e. Making Borders for Images



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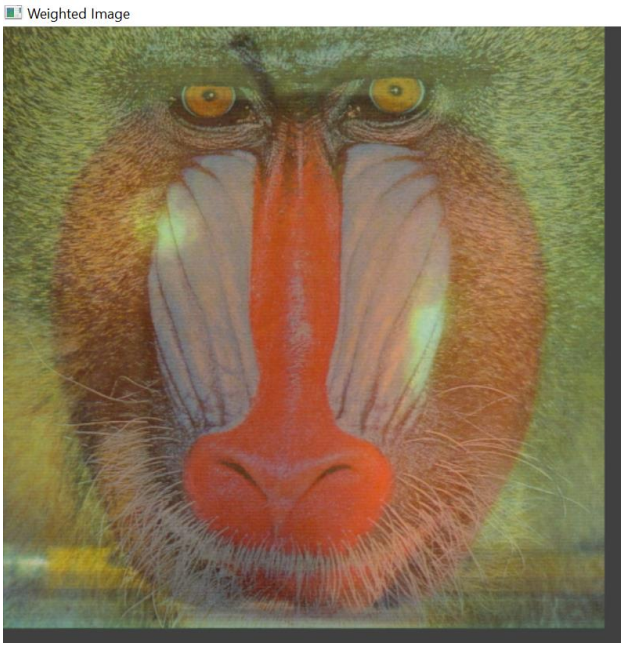
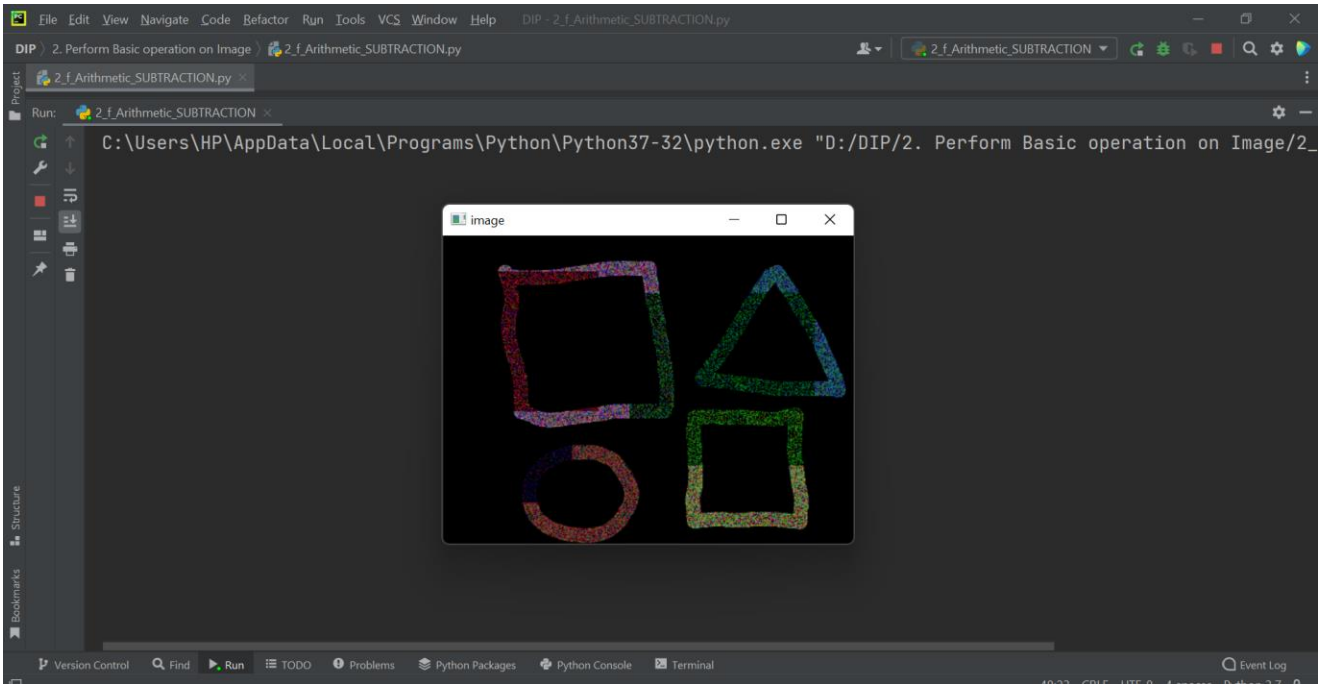
f. Arithmetic Operation (ADDITION, SUBSTRACTION, AND OR XOR XOR NOT)

ADDITION:



SUBTRACTION:



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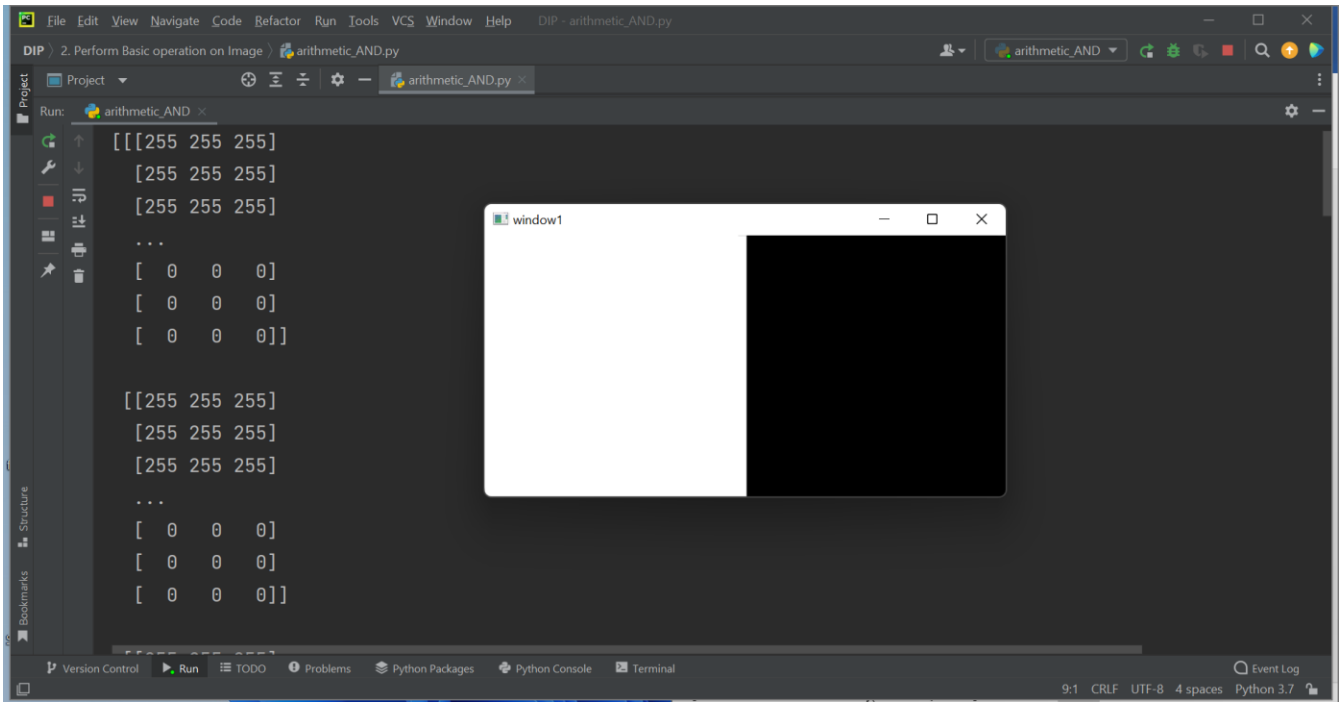
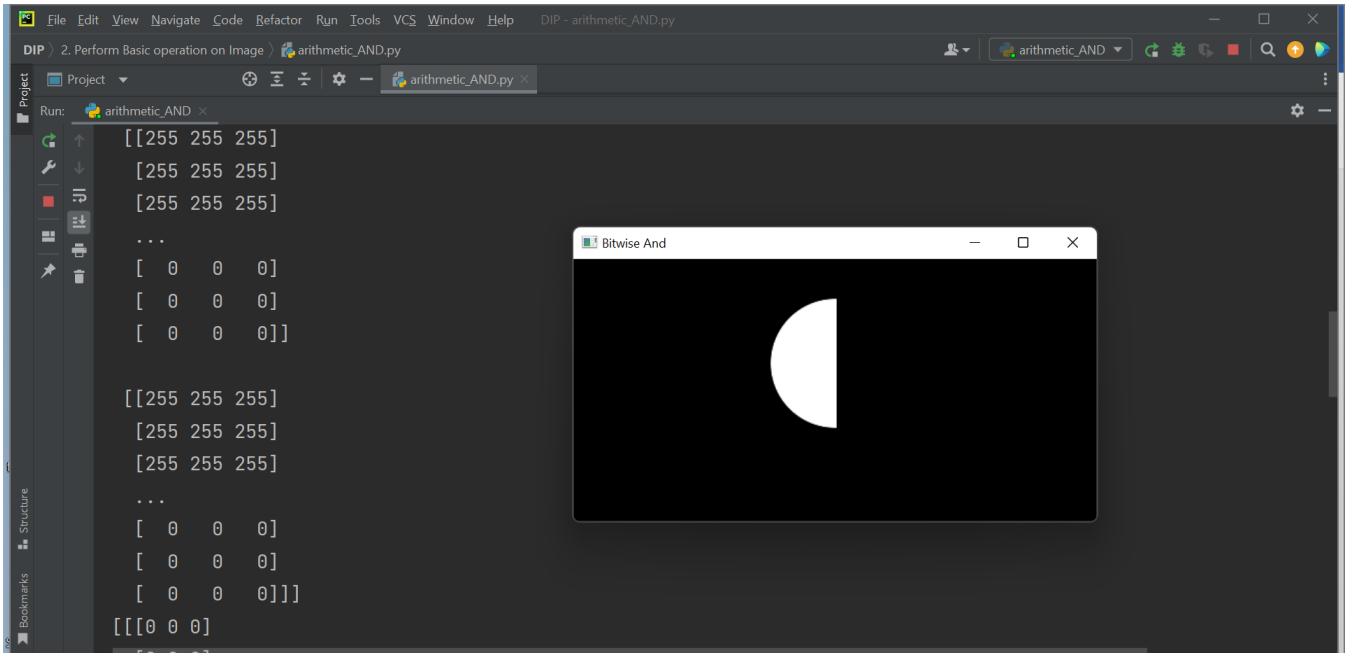
AND:





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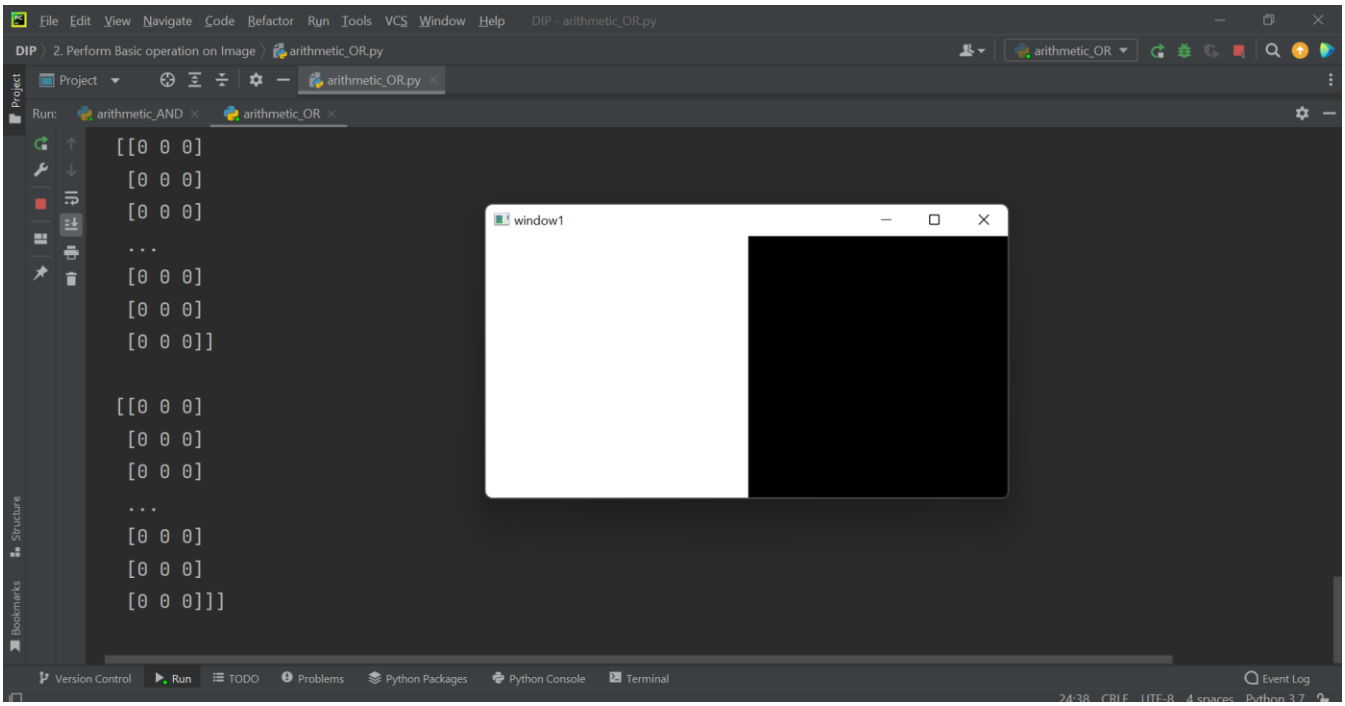
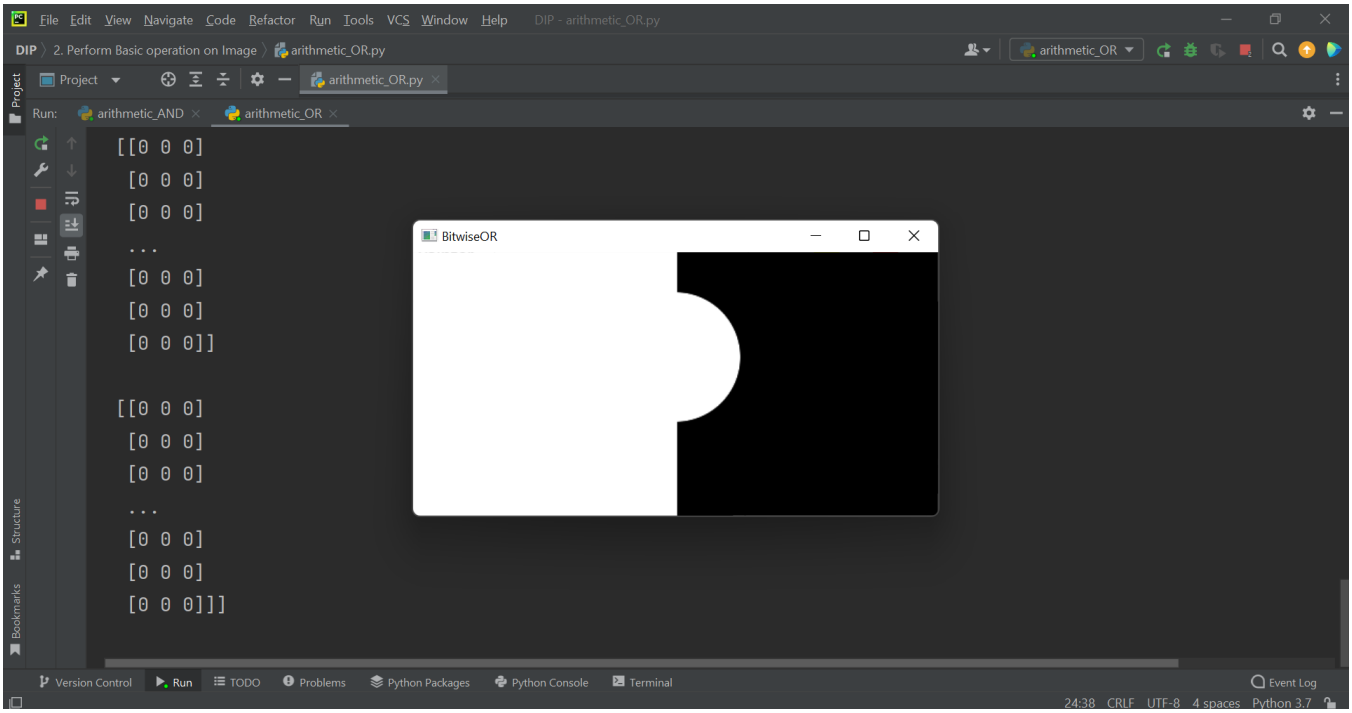
OR:





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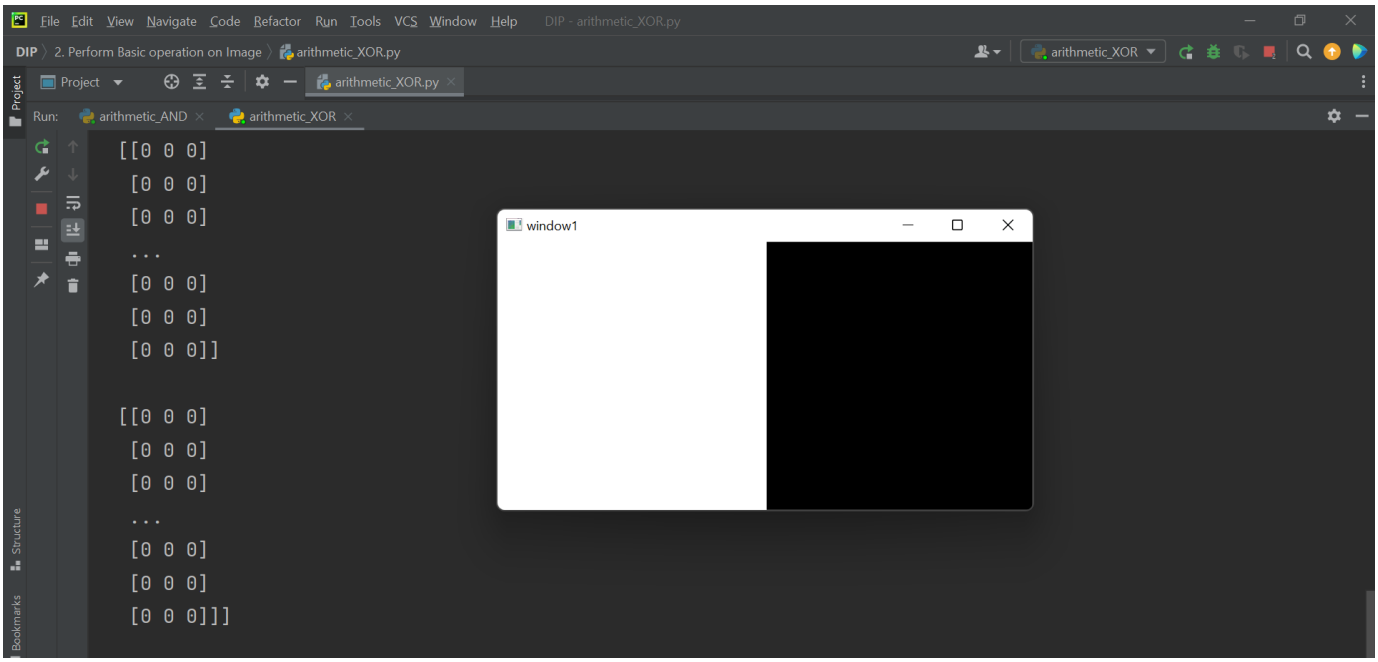
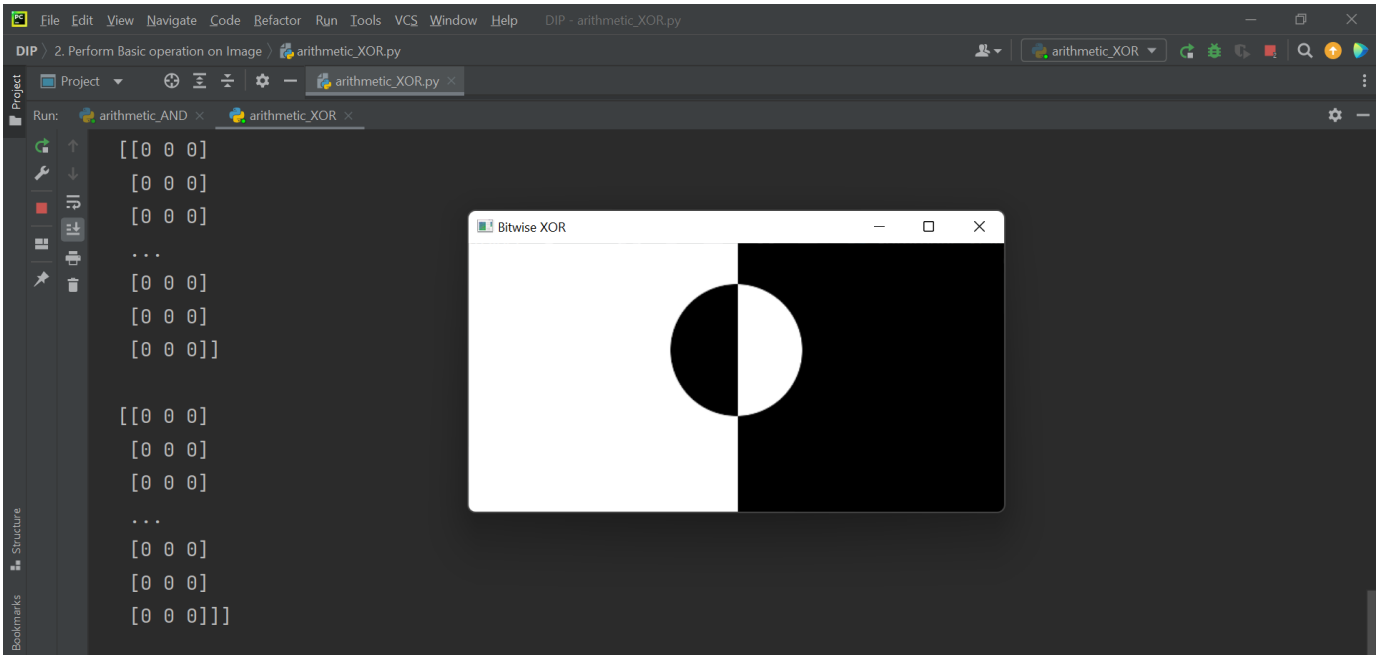
XOR:





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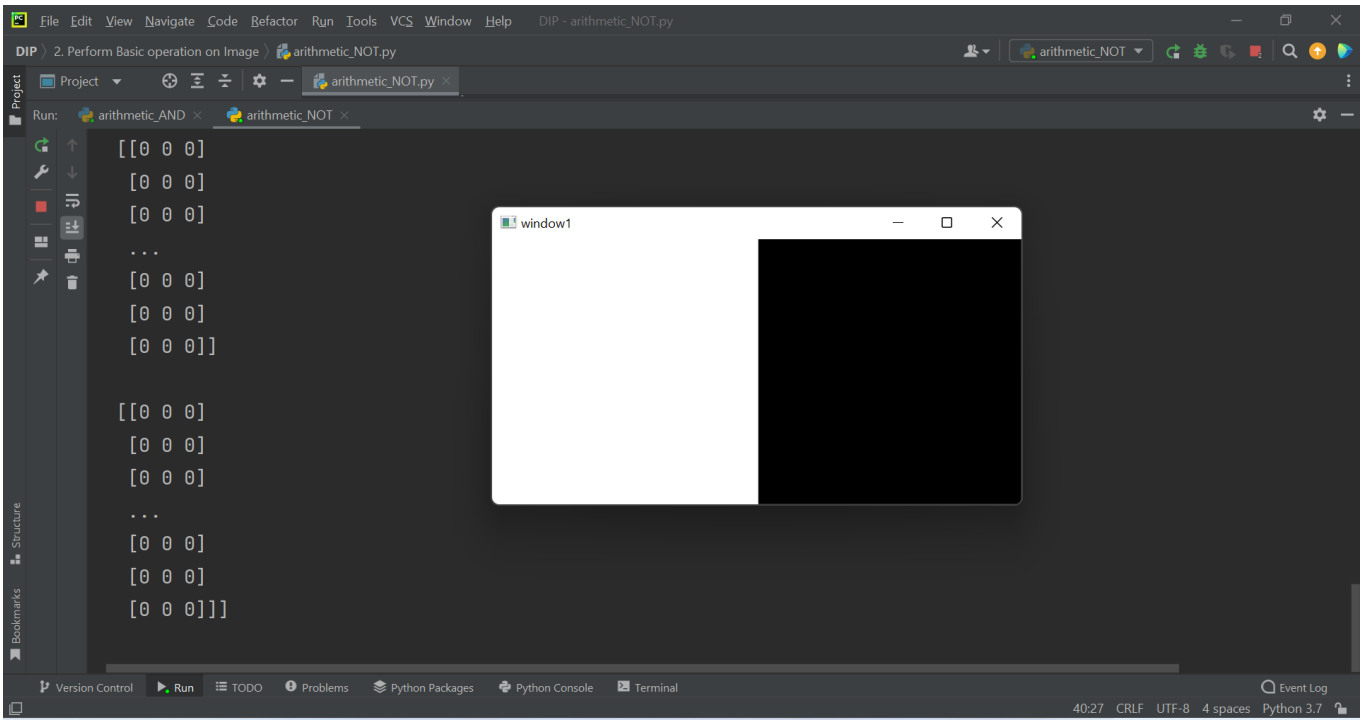
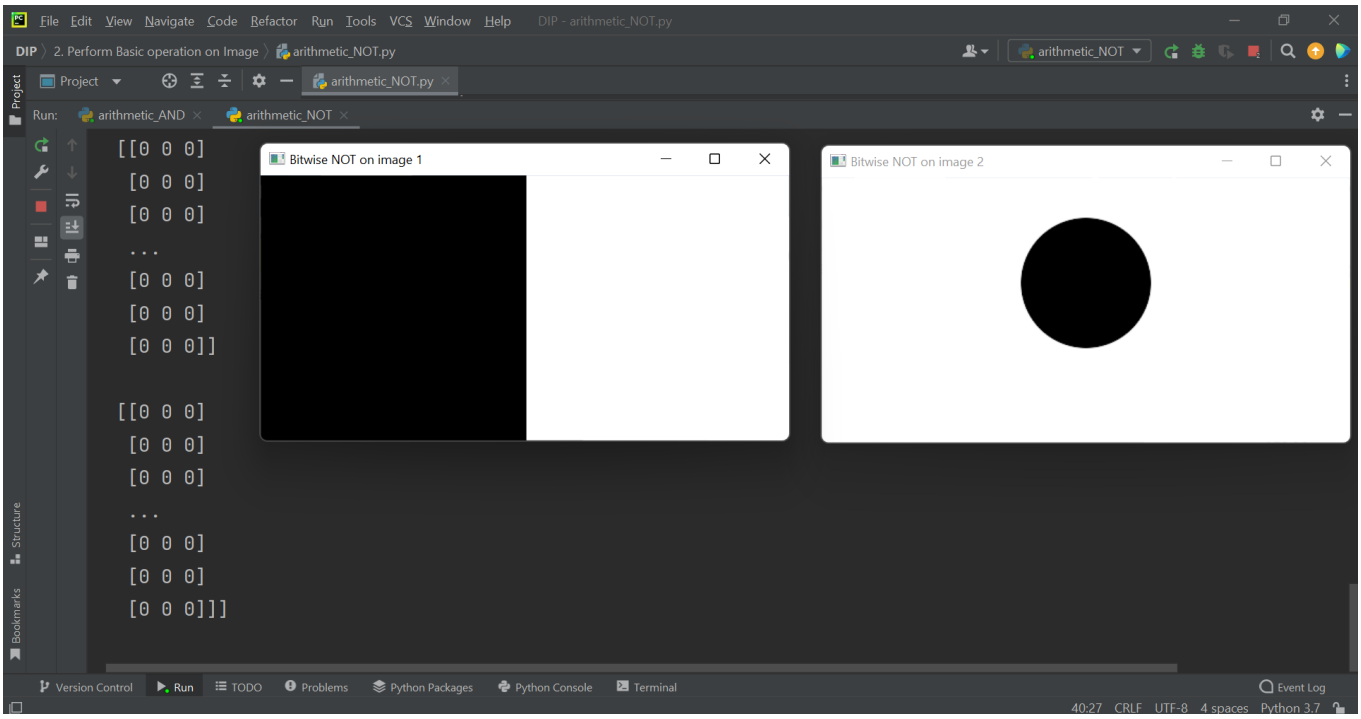
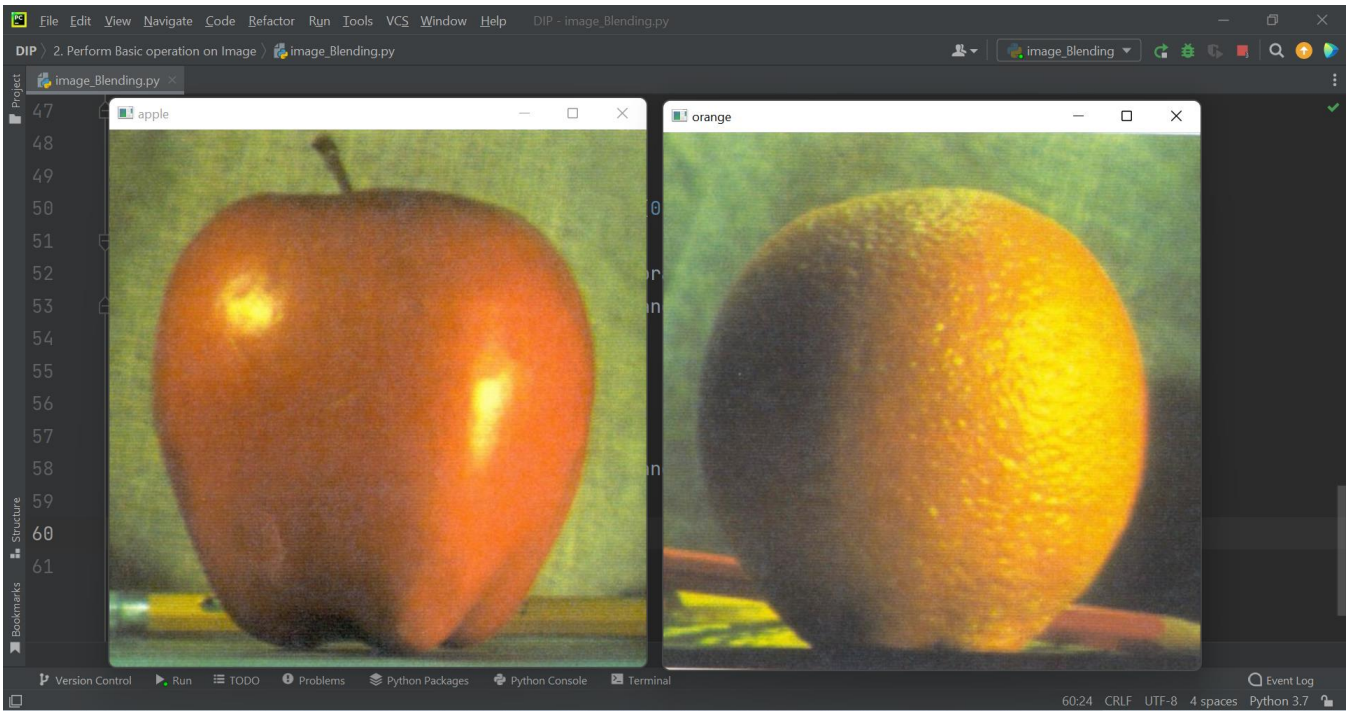
NOT:

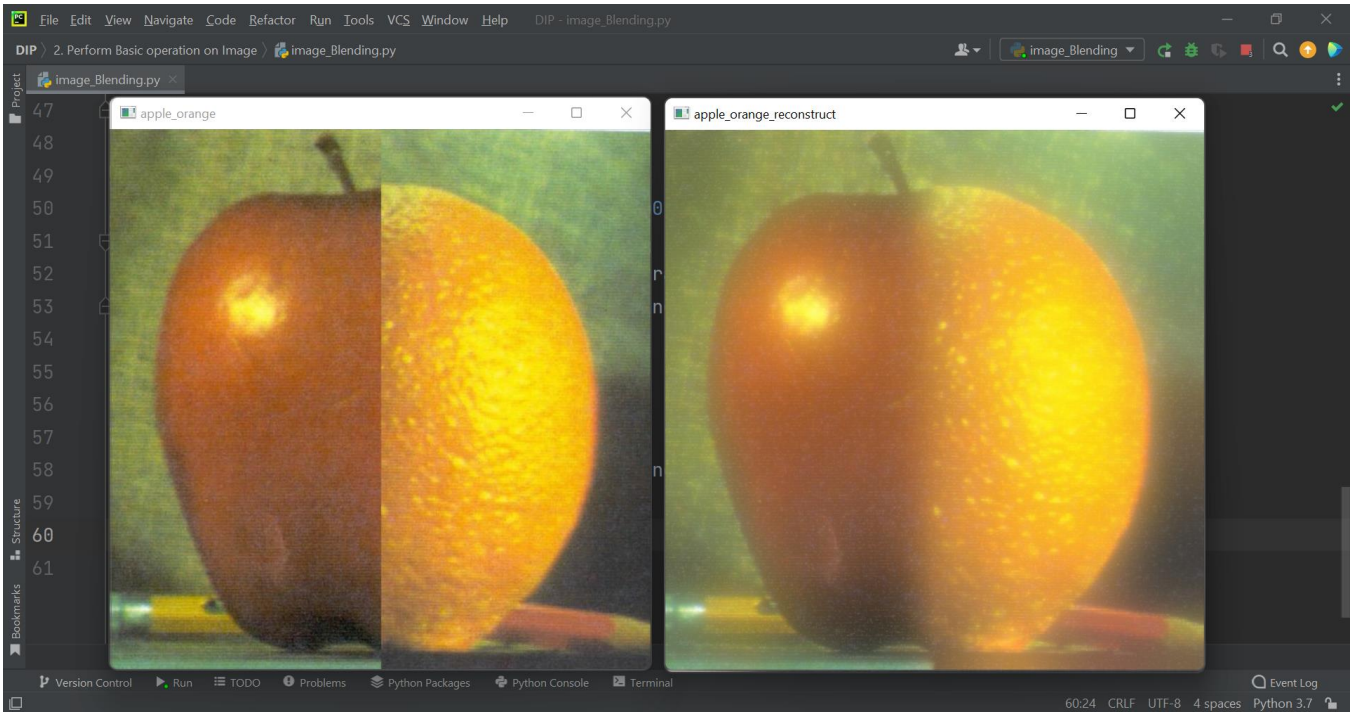




Name: **Shibu Mohapatra** Branch: **MSC AI** Roll No: **02**

g. Image Blending

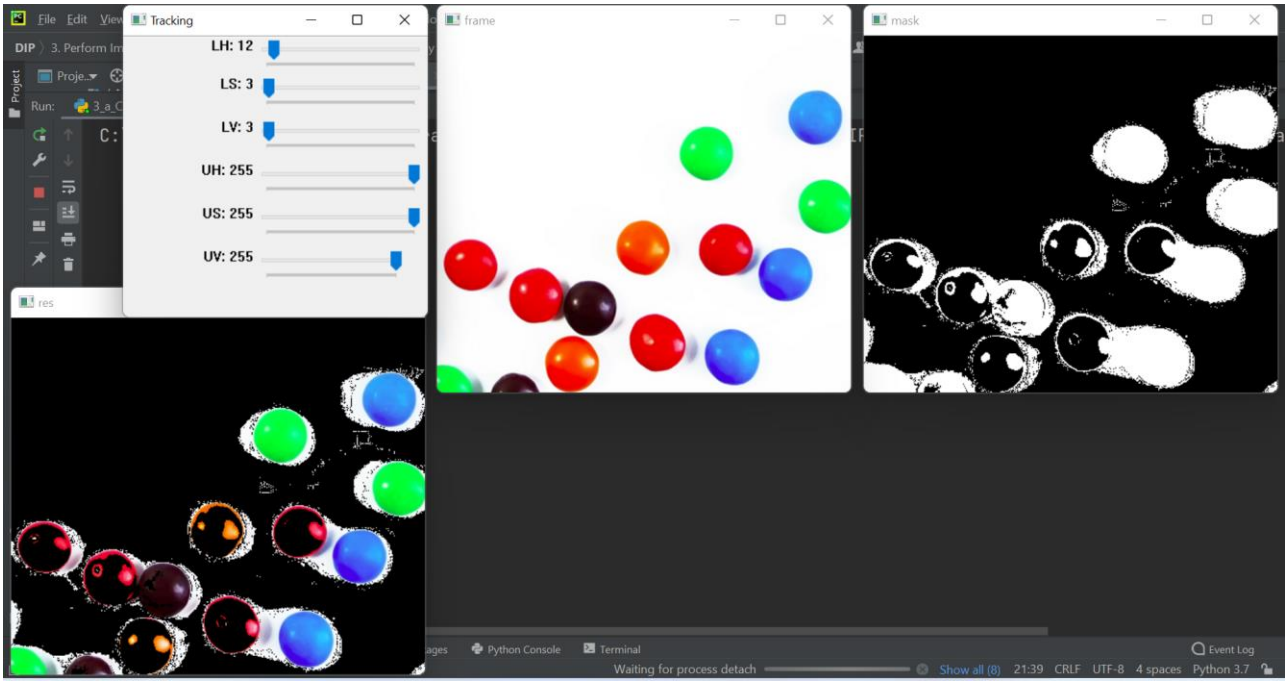




Name: **Shibu Mohapatra** Branch: **MSC AI** Roll No: **02**

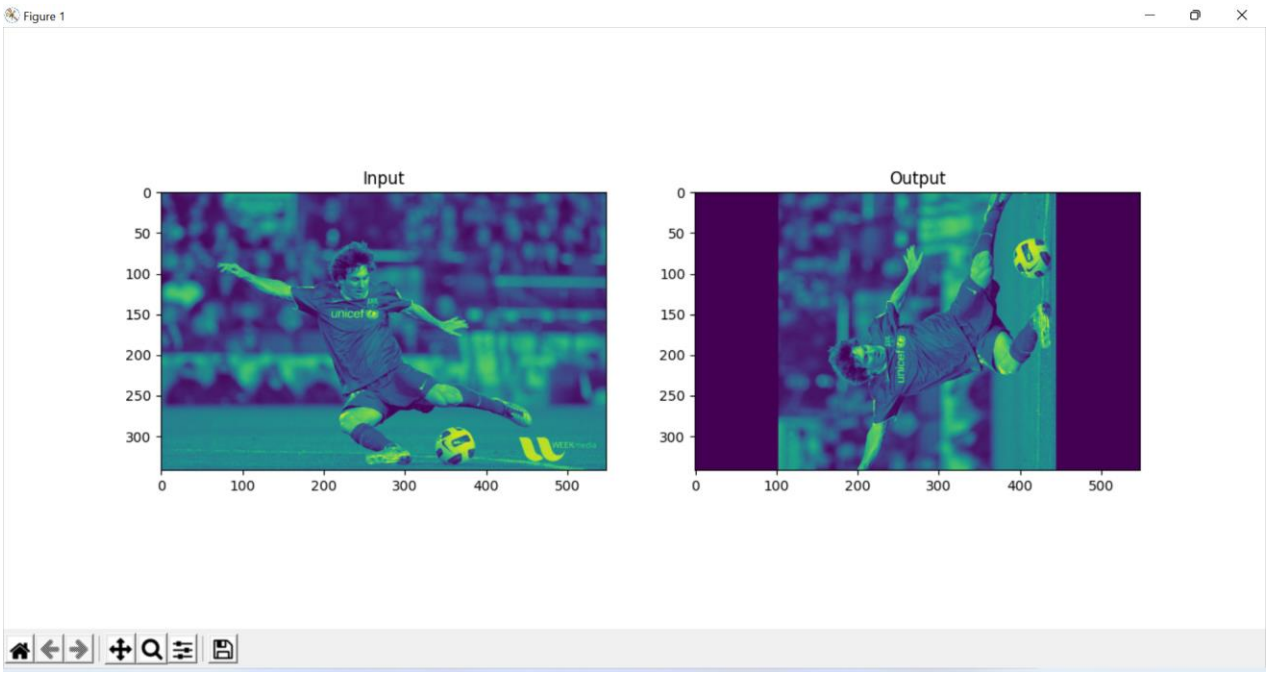
3) Perform Image Processing Models such as follows:

a. Changing Color Space (BGR-HSV-GRAY, Masking on images)



b. Geometric Transformations of Images (Rotation, Affine Transformation, Perspective Transformation)

Rotation:



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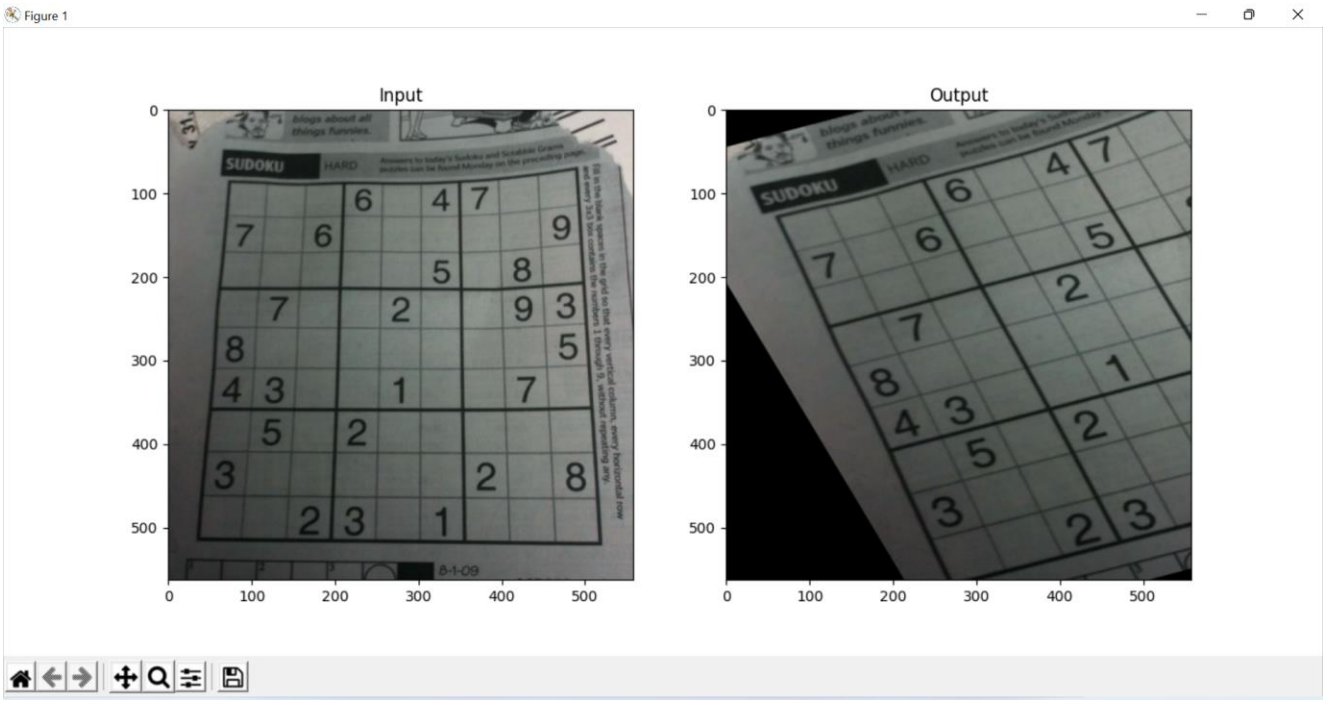
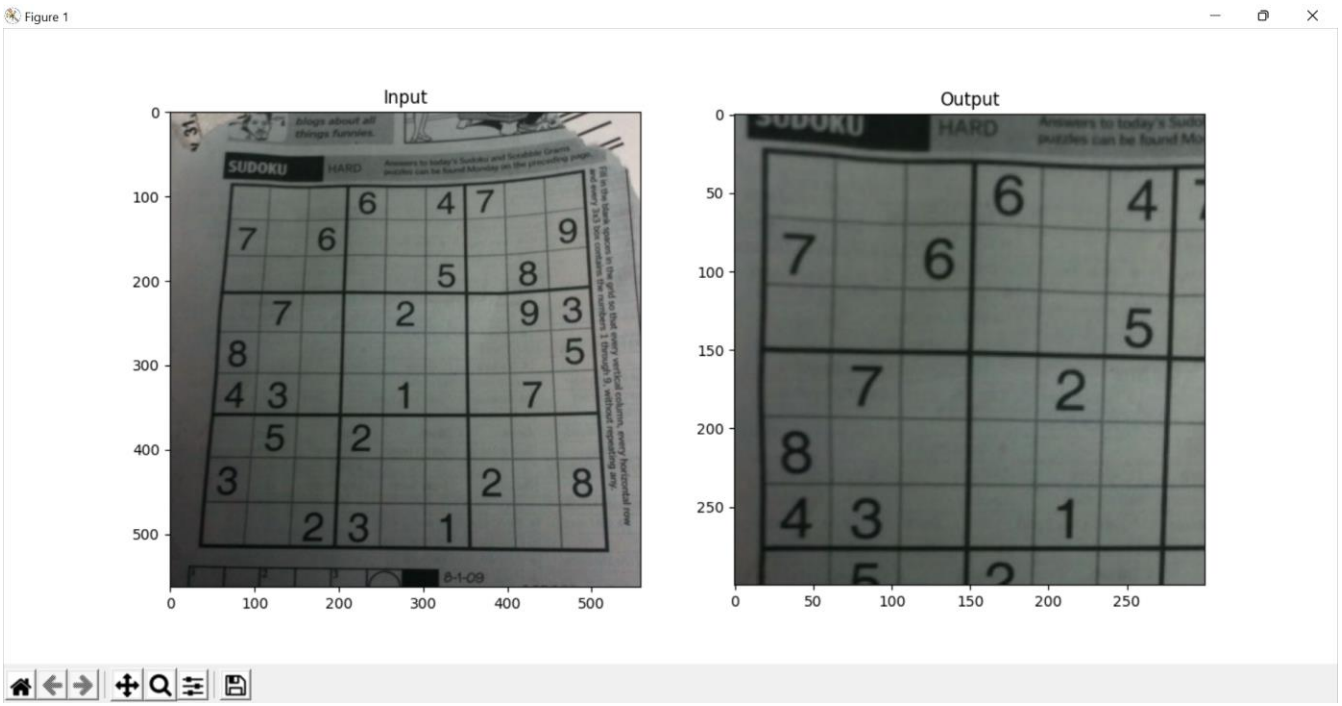
Affine Transformation:



Perspective Transformation:



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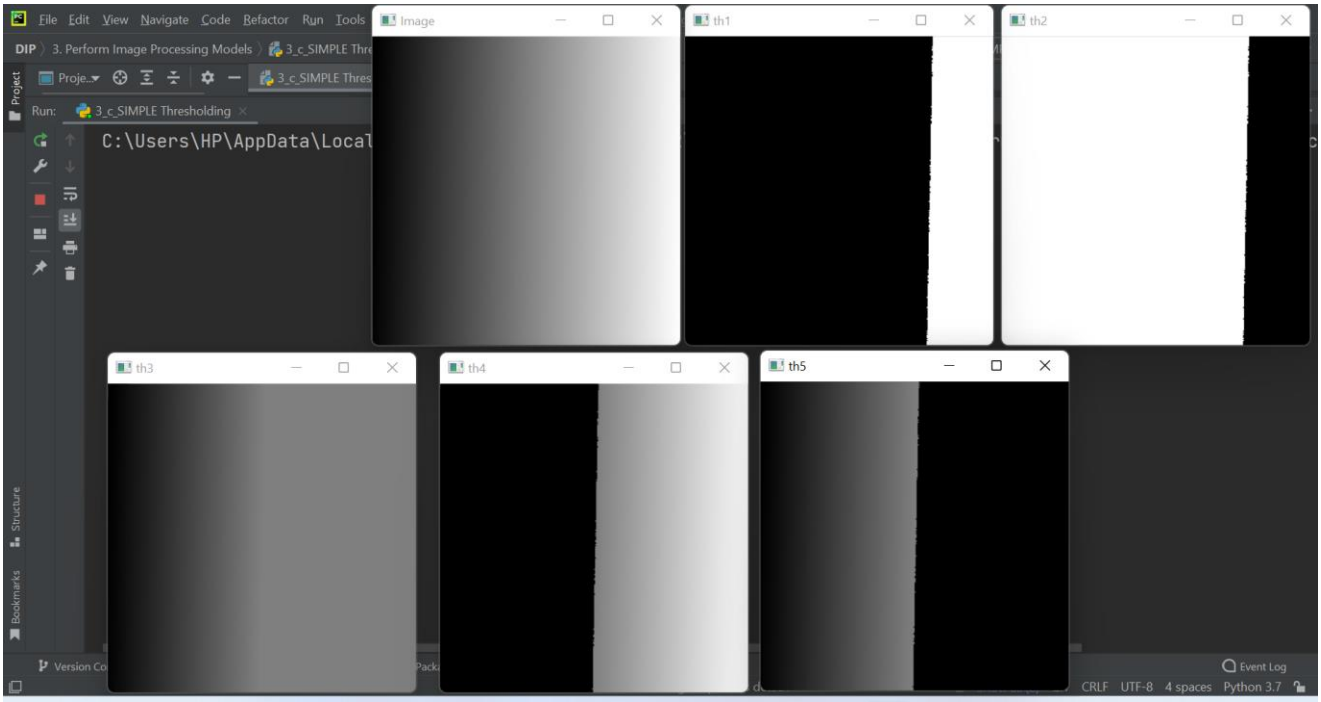
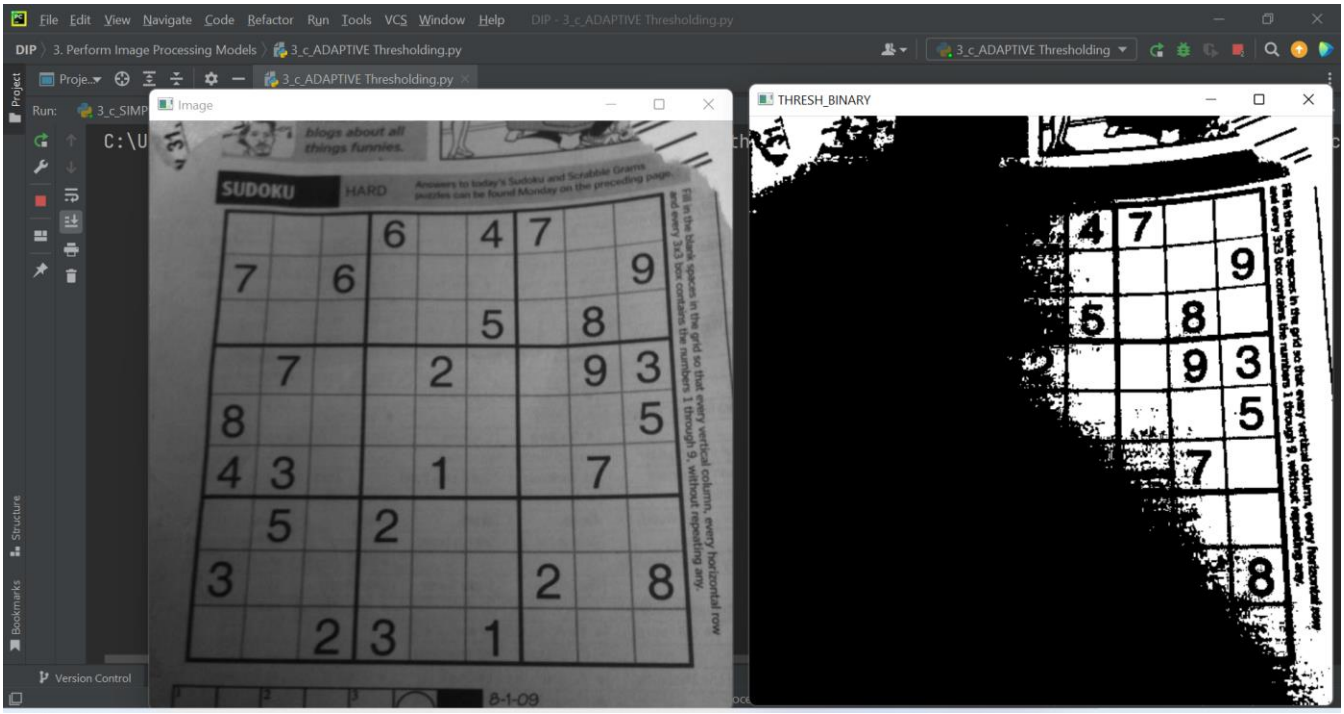
c. Image Thresholding (SIMPLE Thresholding, ADAPTIVE Thresholding)

SIMPLE Thresholding:



ADAPTIVE Thresholding:



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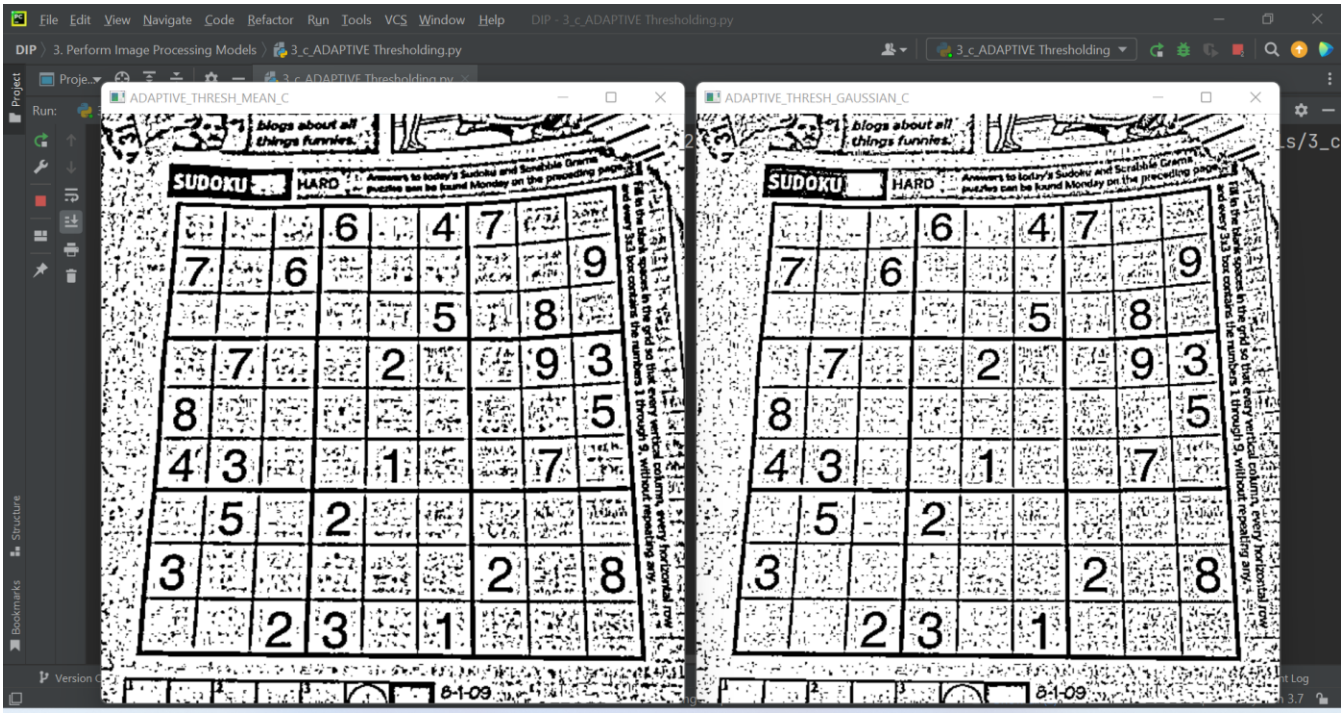
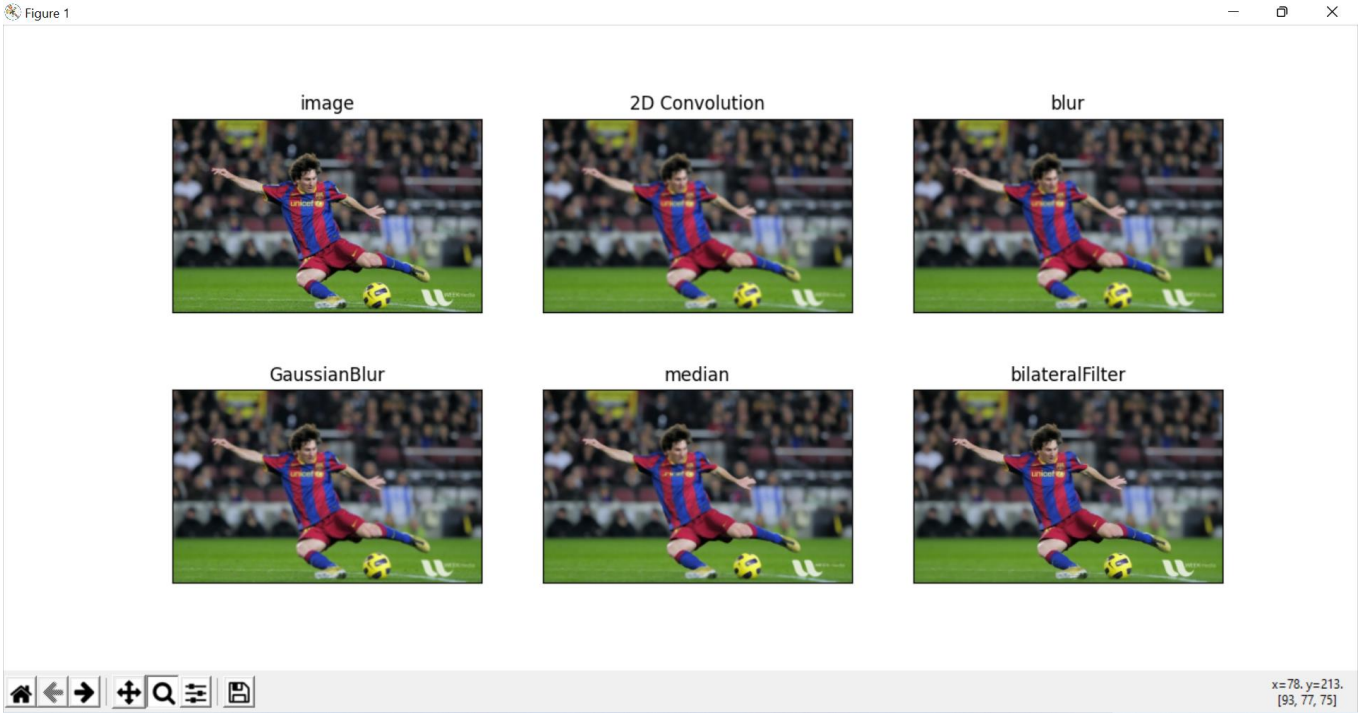


d. Smoothing Images (Blur images with various low pass filters, Apply custom-made filters to images (2D convolution))



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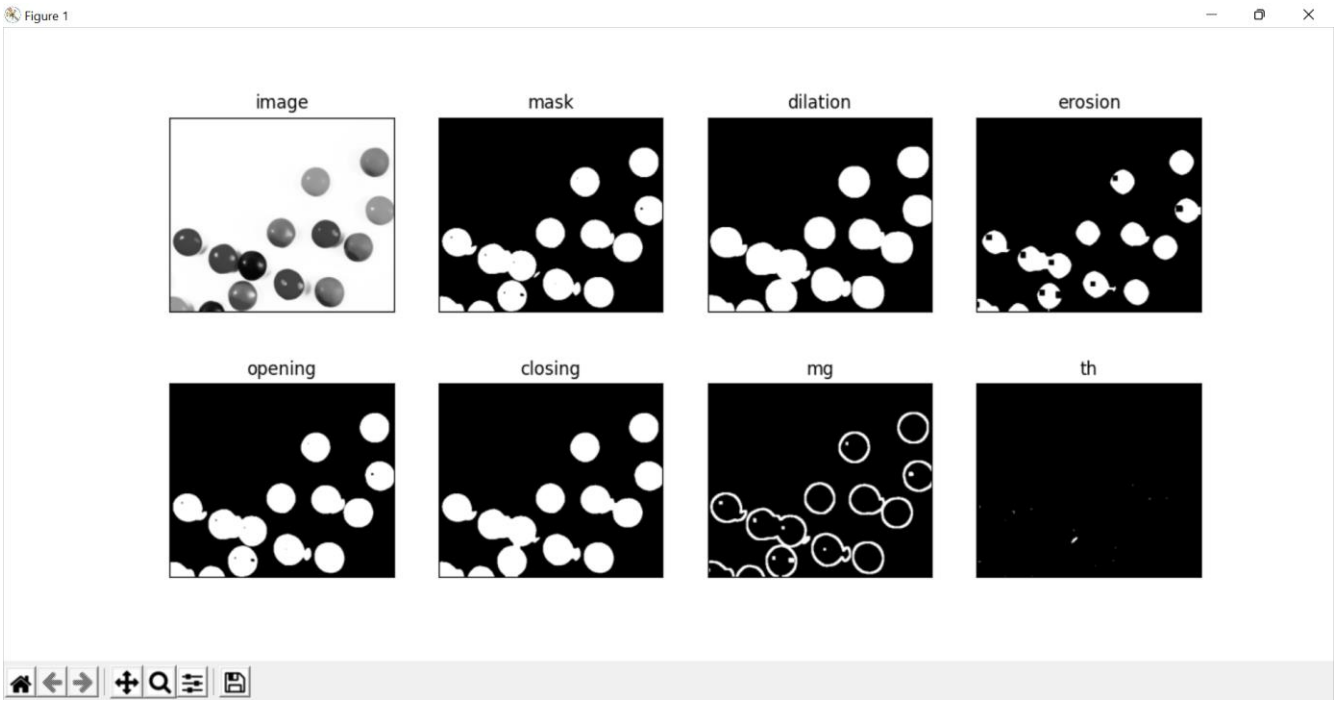
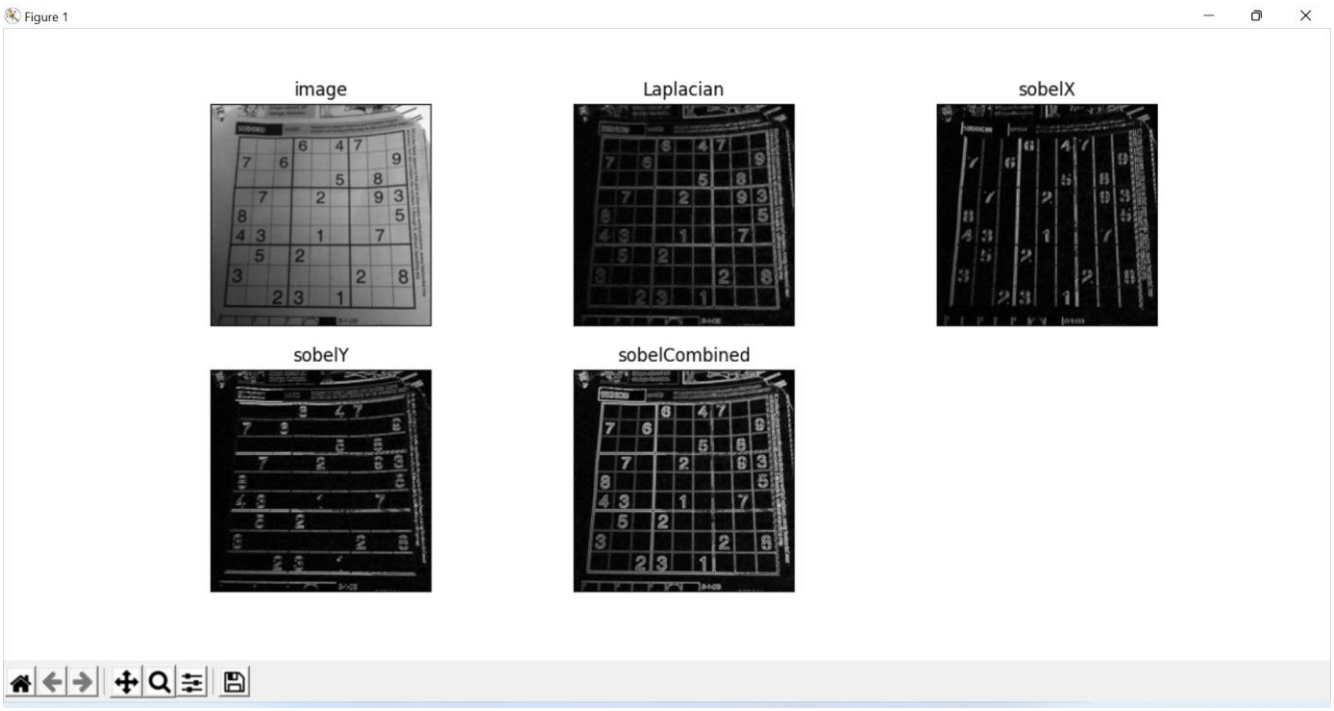
e. Morphological Transformations (Erosion, Dilation, Opening, Closing etc.)



f. Image Gradients (Sobel, Laplacian)



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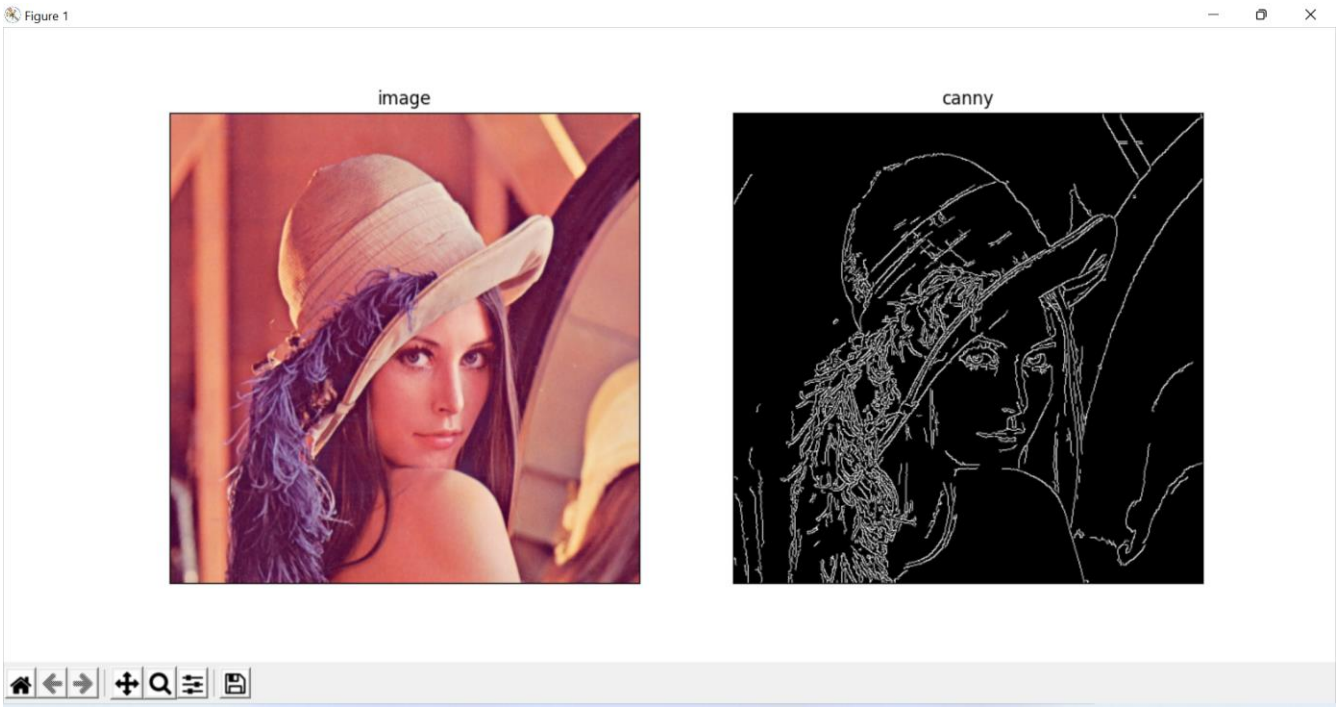
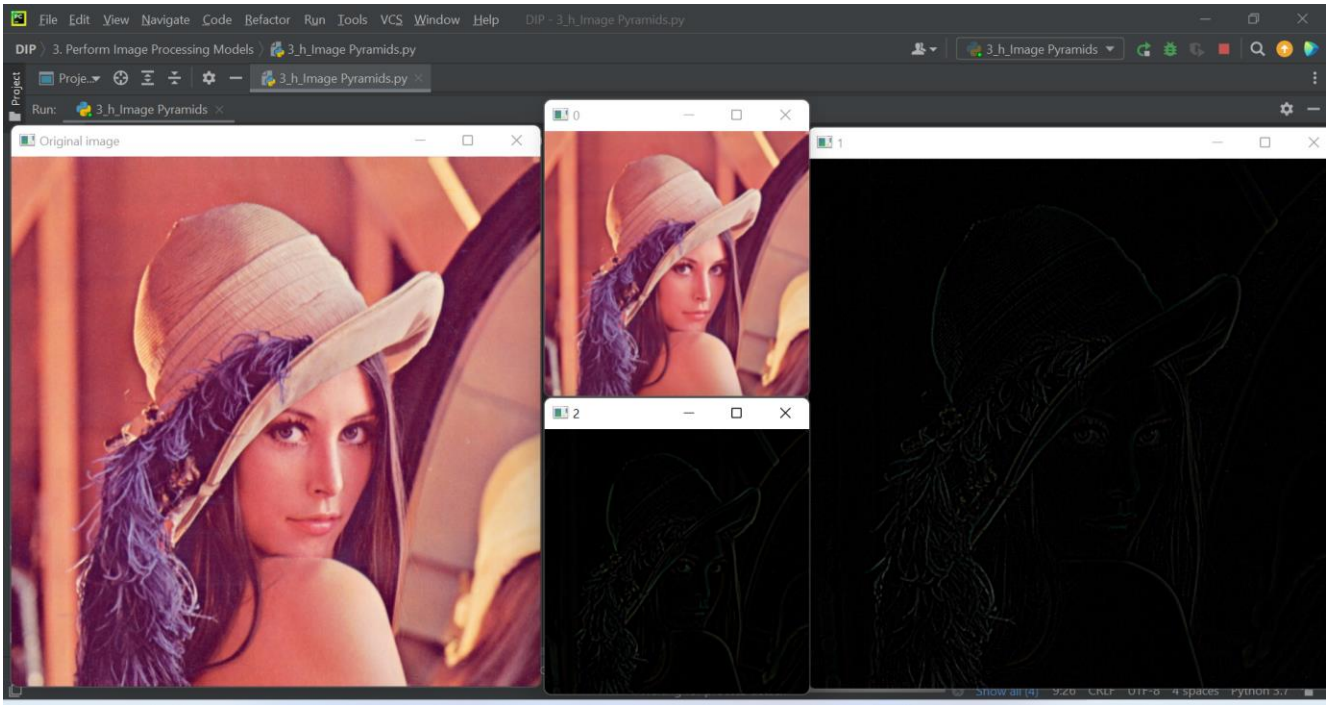
g. Canny Edge Detection



h. Image Pyramids



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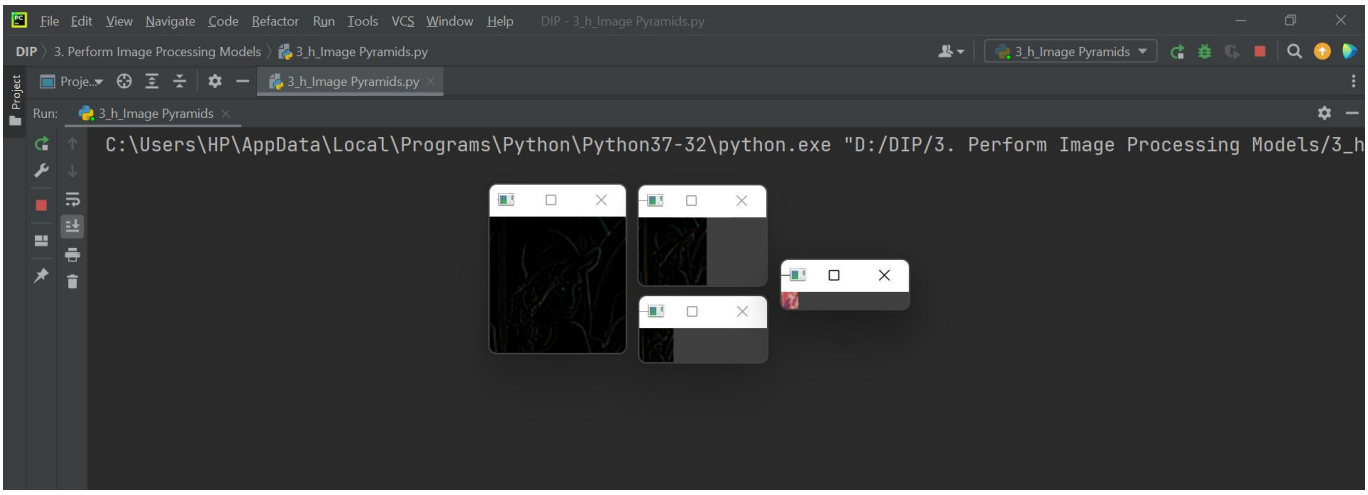
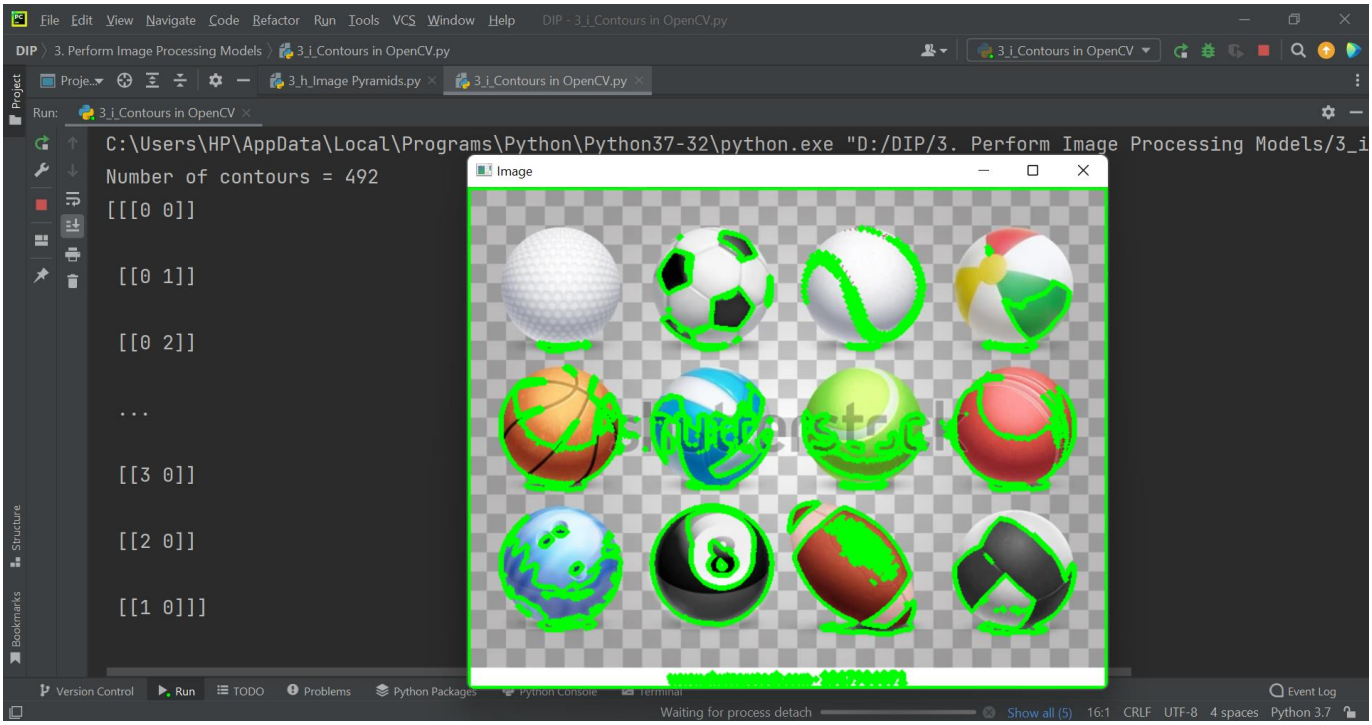


i. Contours in OpenCV



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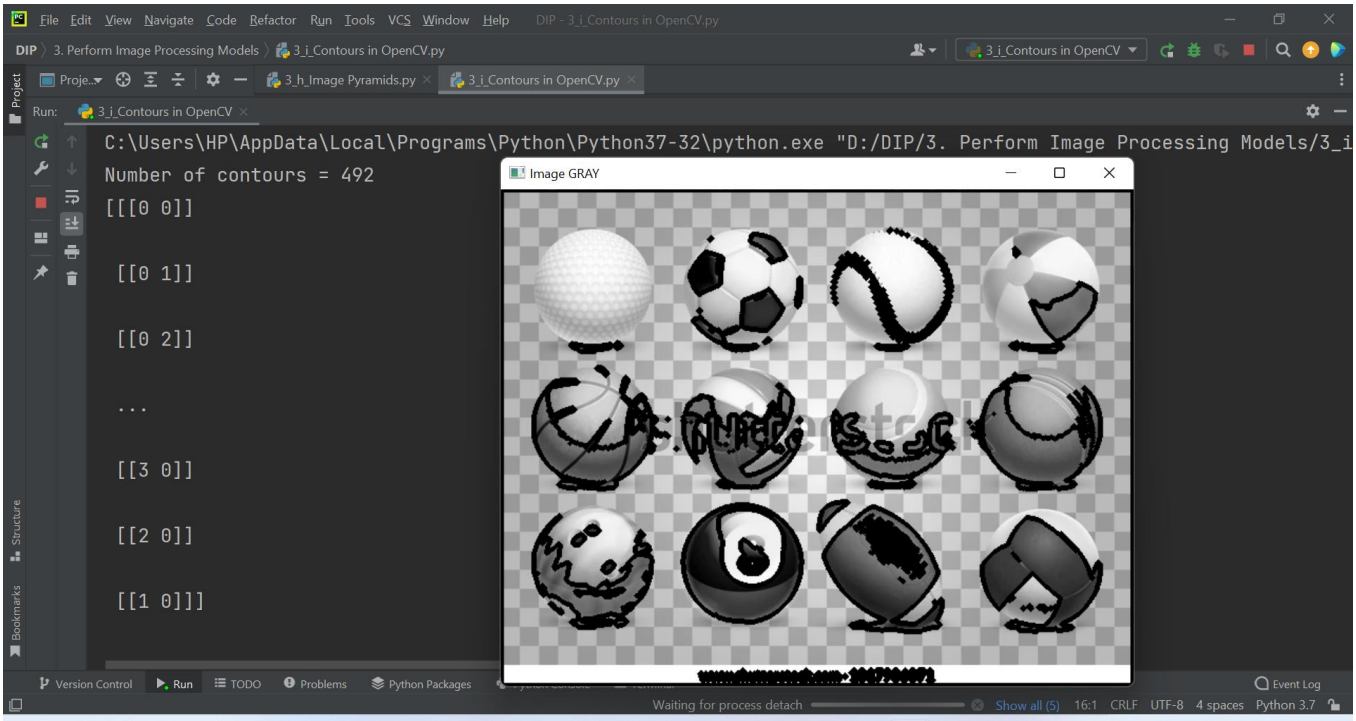
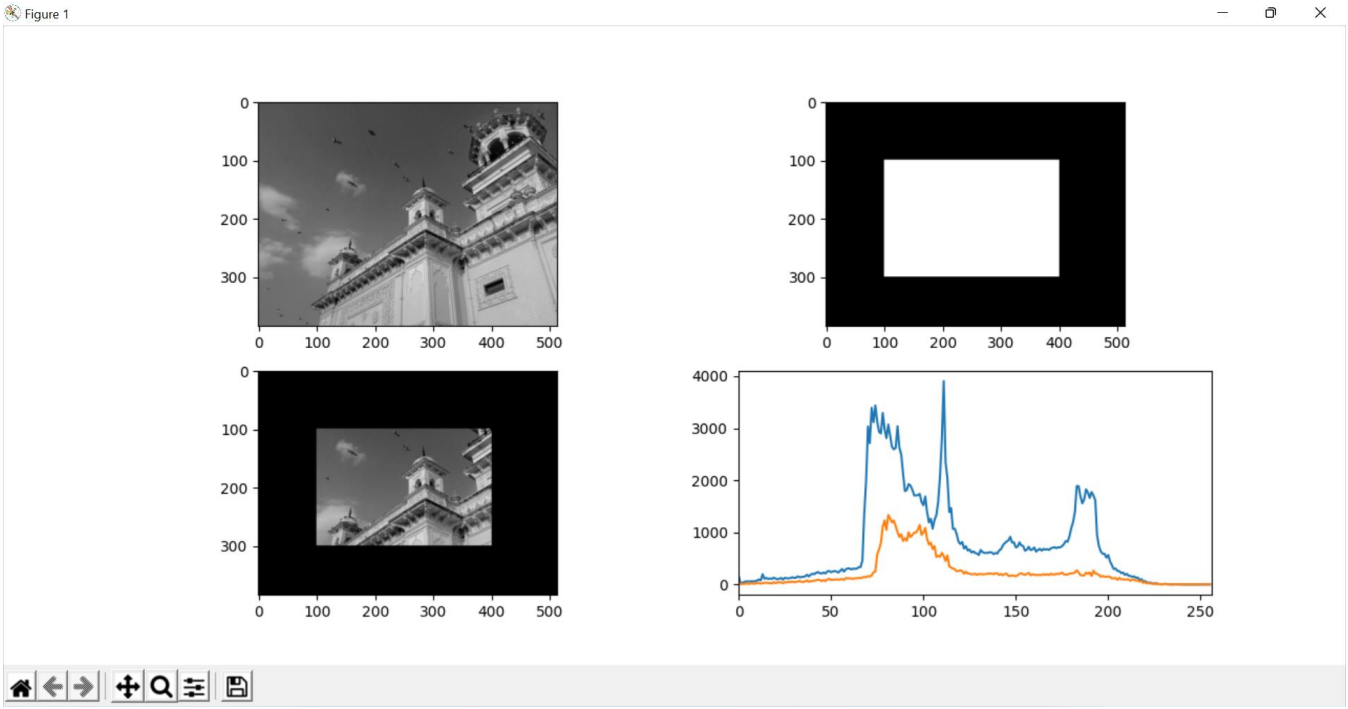


j. Histograms (2D Histogram, Find, Plot, analyze, Histogram Equalization)

2D Histogram, Find, Plot, analyze:



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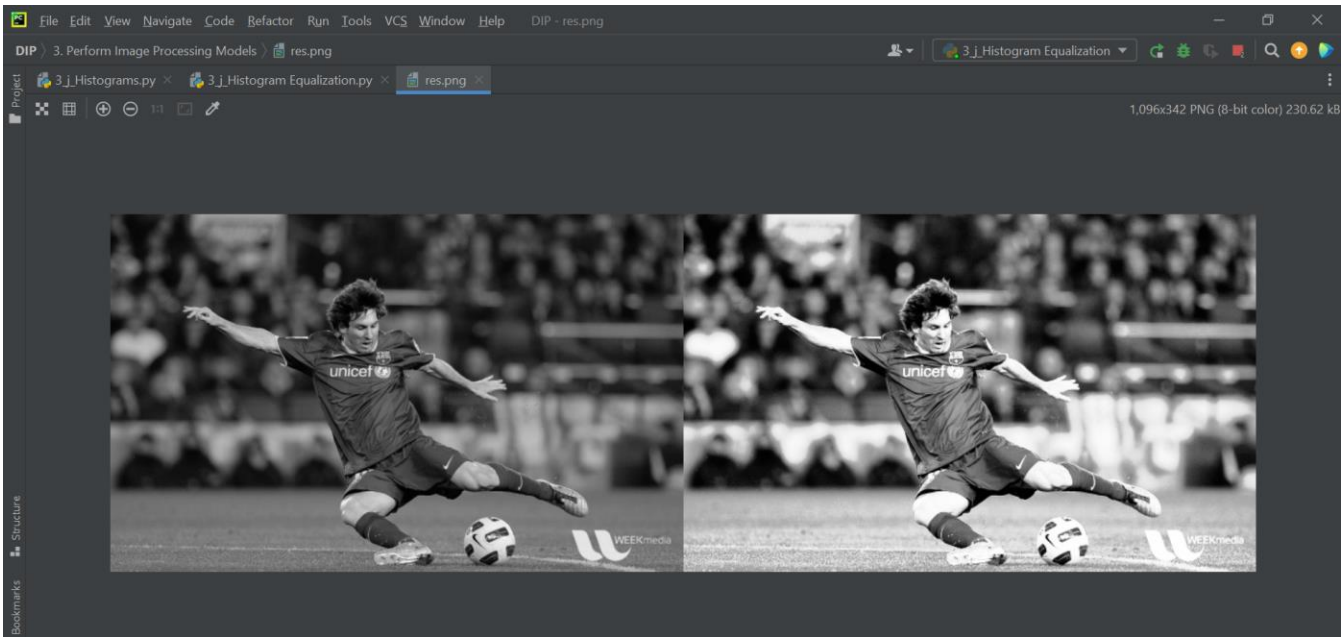
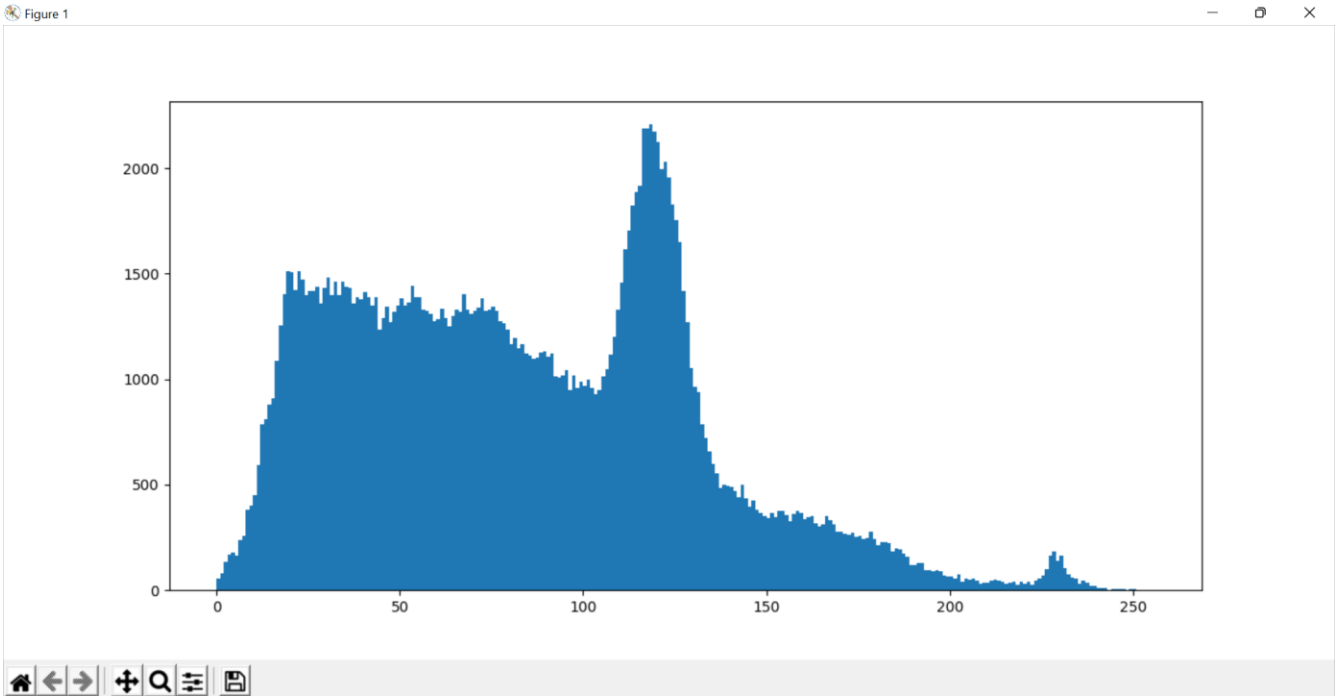
Histogram Equalization:





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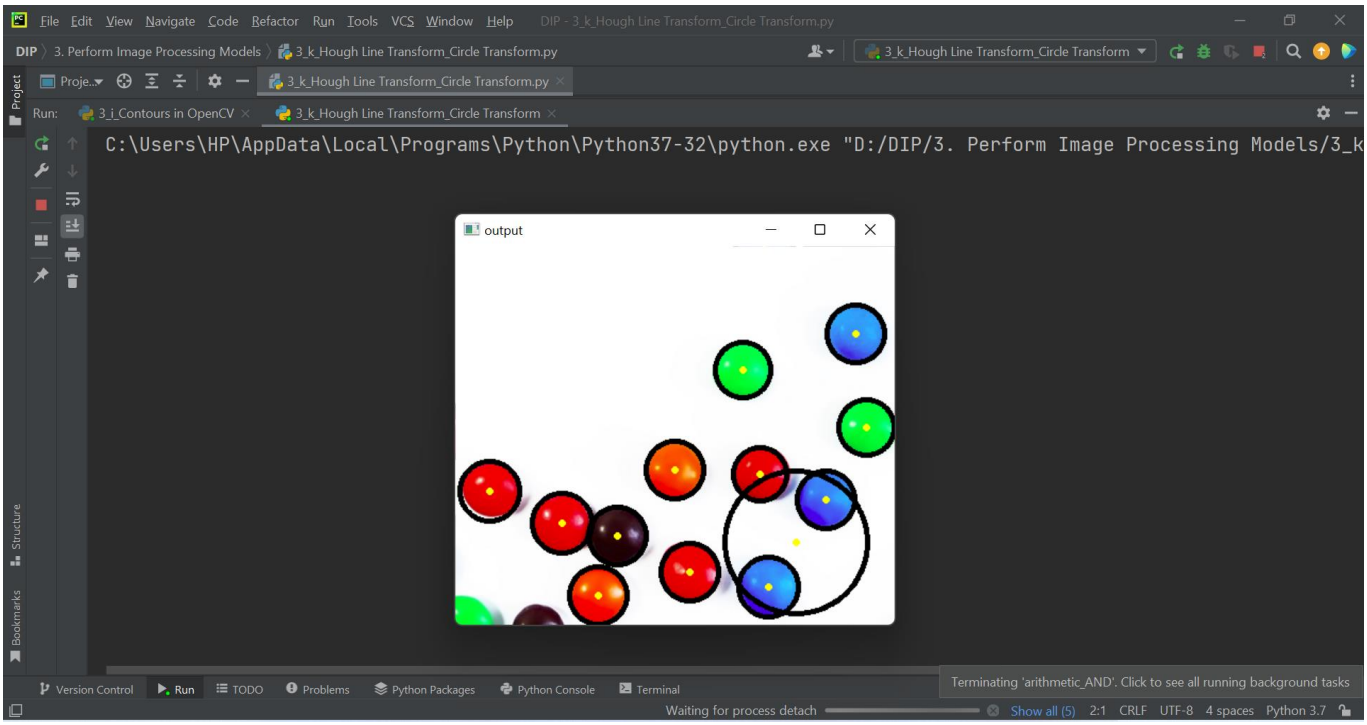
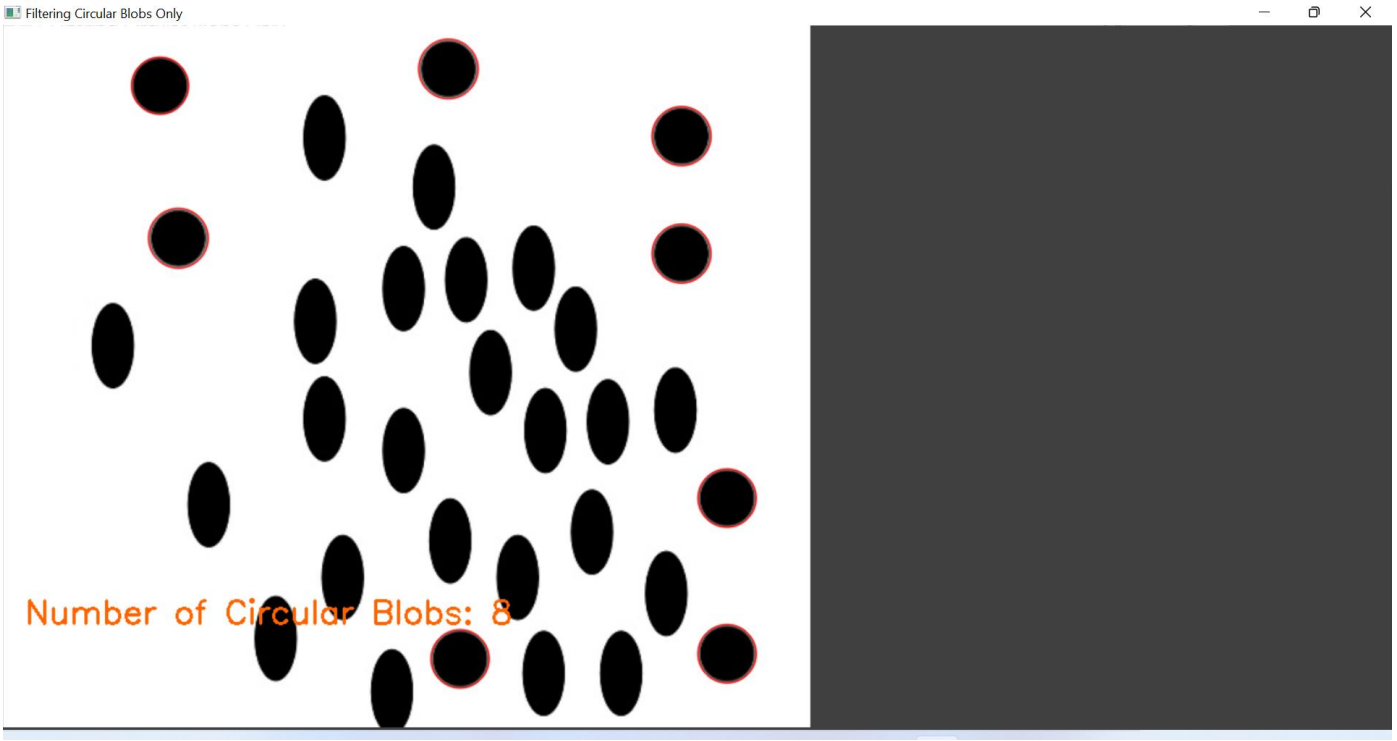
k. Hough Line Transform, Circle Transform



l. Blob detection



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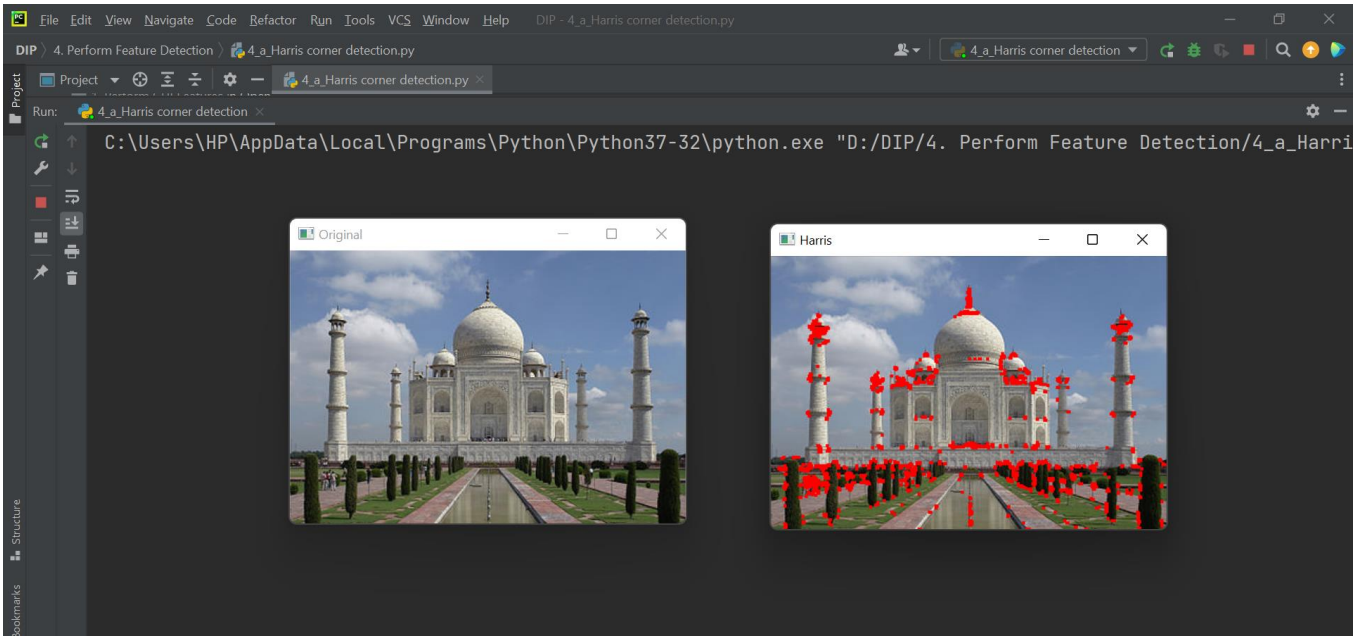
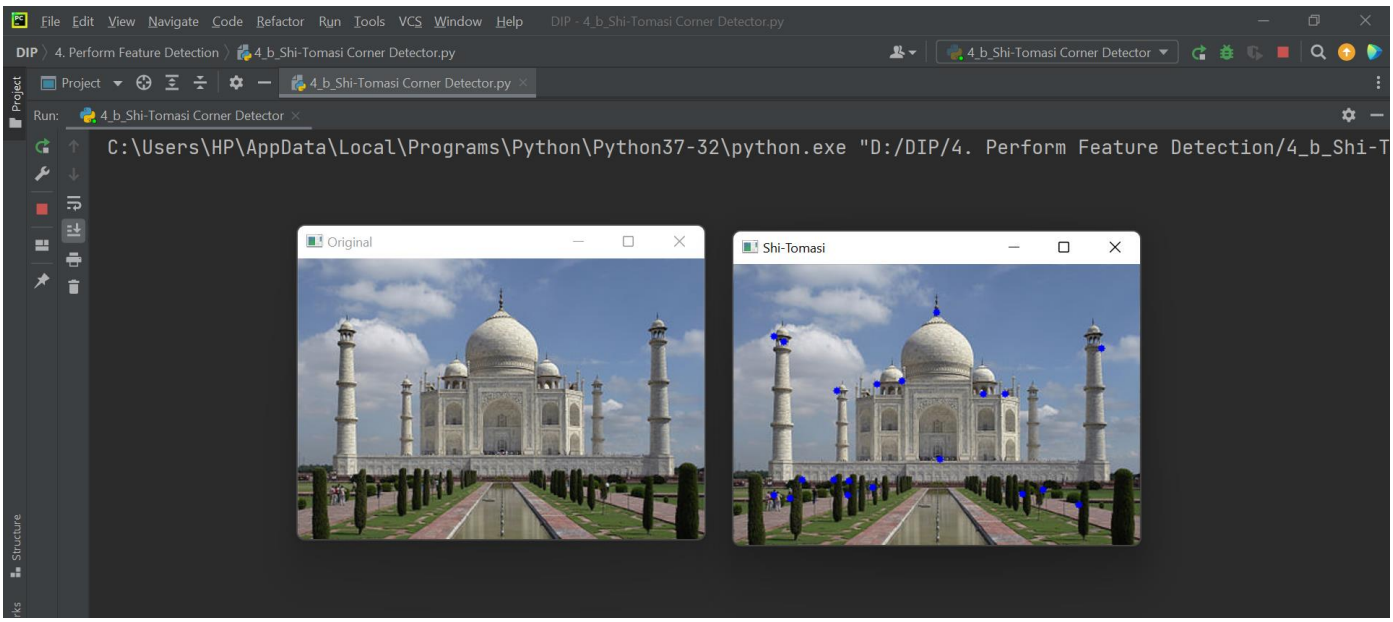
4) Perform Feature Detection

a. Harris Corner Detection:



b. Shi-Tomasi Corner Detector:



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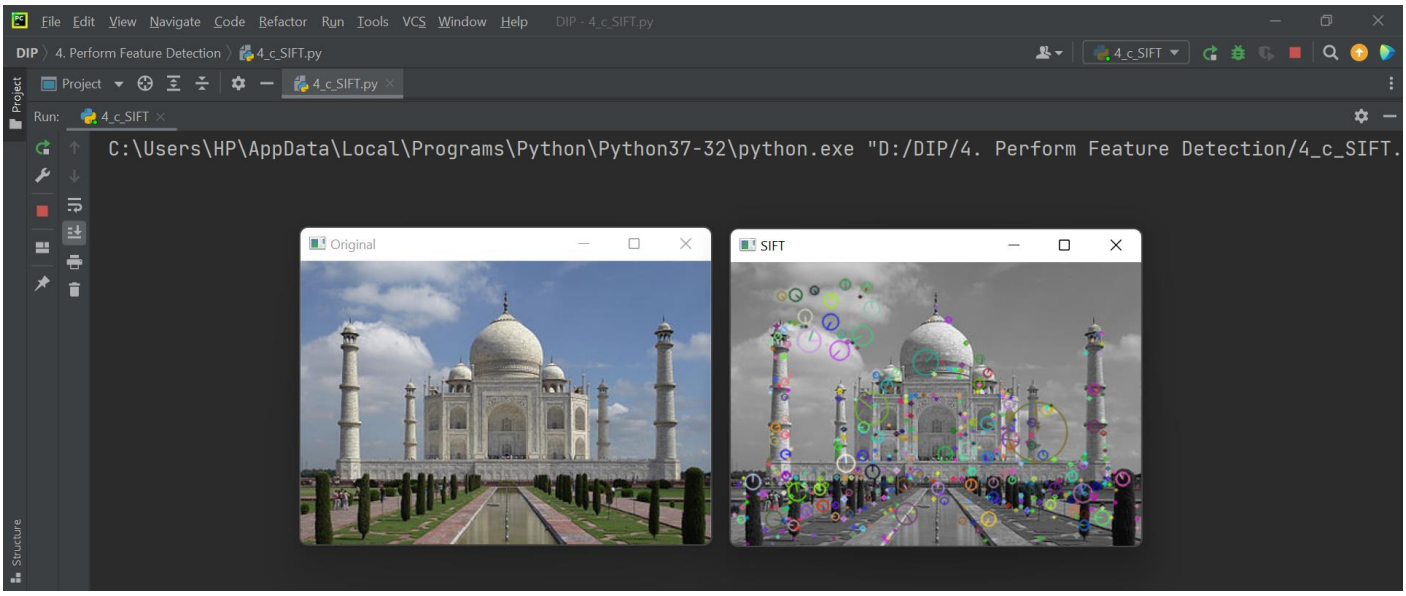
c. Scale-Invariant Feature Transform (SIFT):



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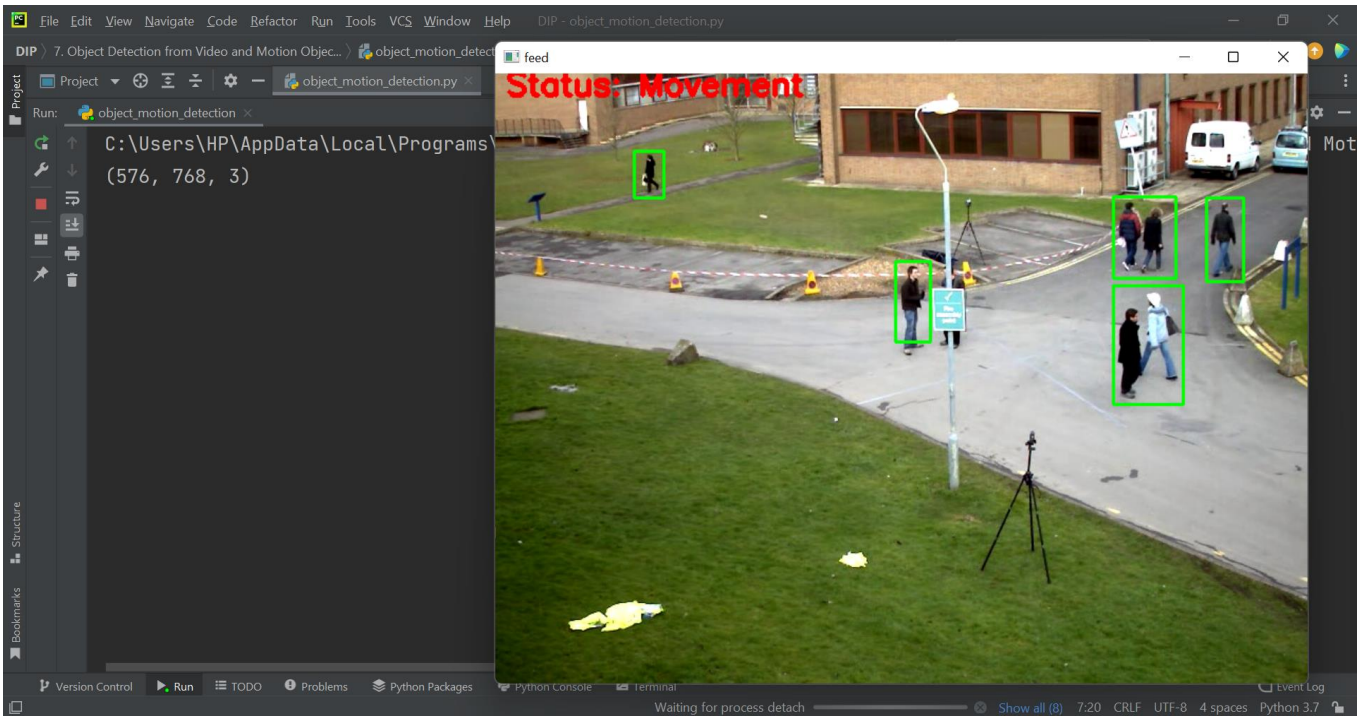
5) Object Detection from Video, Motion Object Detection from Video



6) Play a video in reverse mode