

Walchand College of Engineering, Sangli

Computer Science & Engineering

Third Year

Course: Image Processing

PRN NO : 2020BTECS00207

Name : Kshirsagar Mayuri Manojkumar

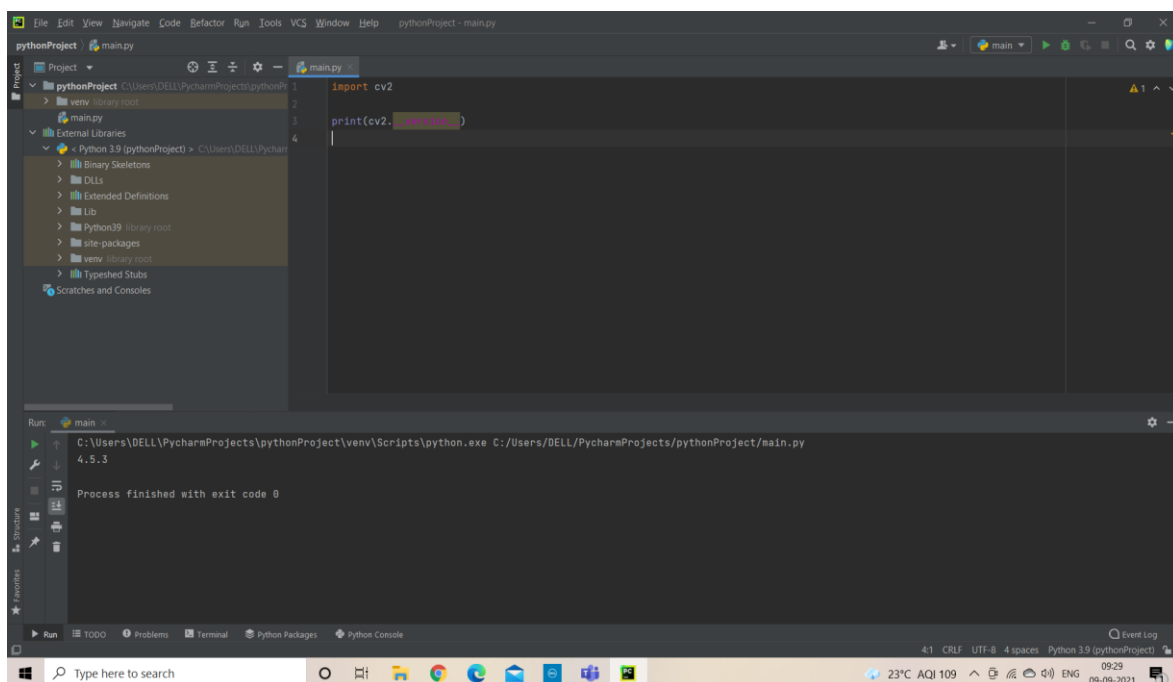
Lab course coordinator : Ms. P.D.Mundada

Batch: - T5

Experiment No:1

Q 1) Study of Open CV:-

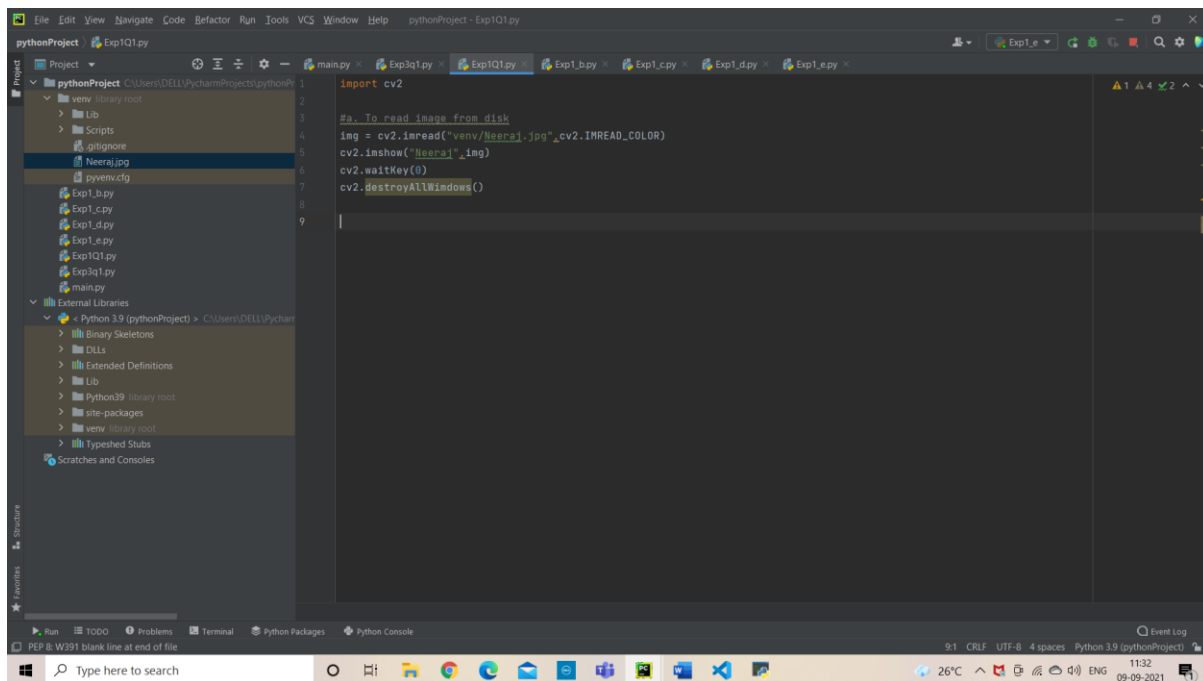
OpenCV (Open Source Computer Vision Library) is an open source computer vision and machine learning software library. OpenCV was built to provide a common infrastructure for computer vision applications and to accelerate the use of machine perception in the commercial products. Being a BSD-licensed product, OpenCV makes it easy for businesses to utilize and modify the code.



Q 2) Implement using python:

a) Read image

CODE:

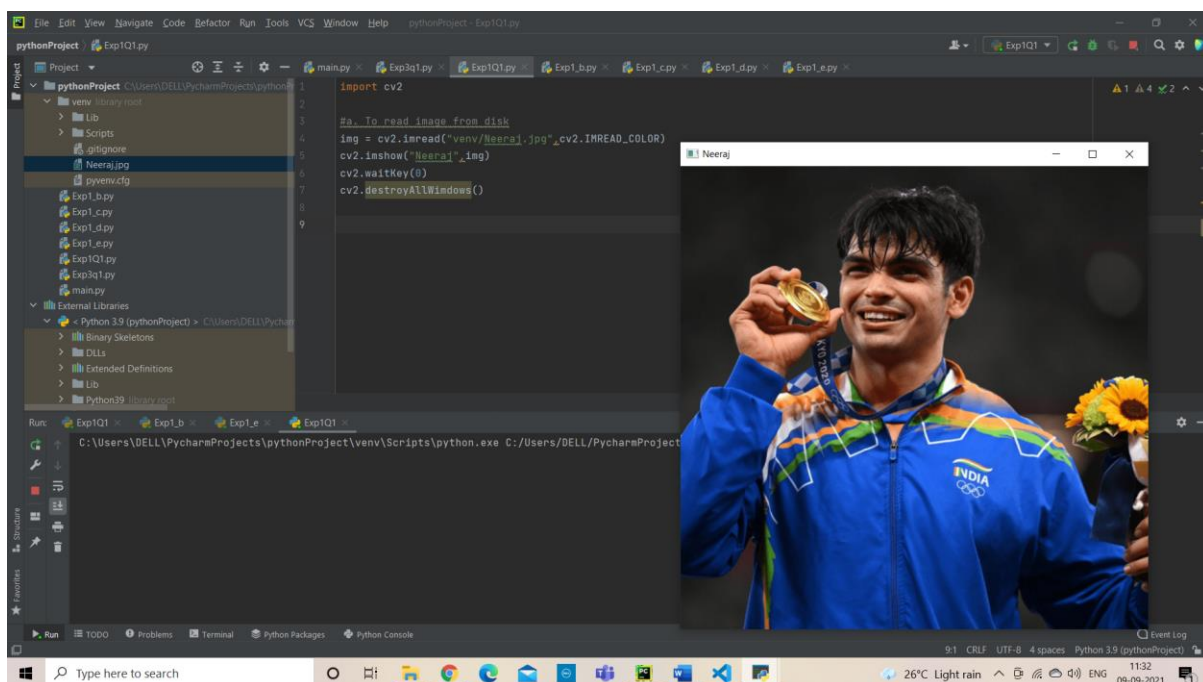


The screenshot shows a Python IDE with a project named 'pythonProject'. The file explorer on the left shows a directory structure with files like 'Neeraj.jpg', 'pyvenv.cfg', and several 'Exp1' files. The main editor window displays the following Python code:

```
1 import cv2
2
3 #. To read image from disk
4 img = cv2.imread("venv/Neeraj.jpg",cv2.IMREAD_COLOR)
5 cv2.imshow("Neeraj",img)
6 cv2.waitKey(0)
7 cv2.destroyAllWindows()
8
9
```

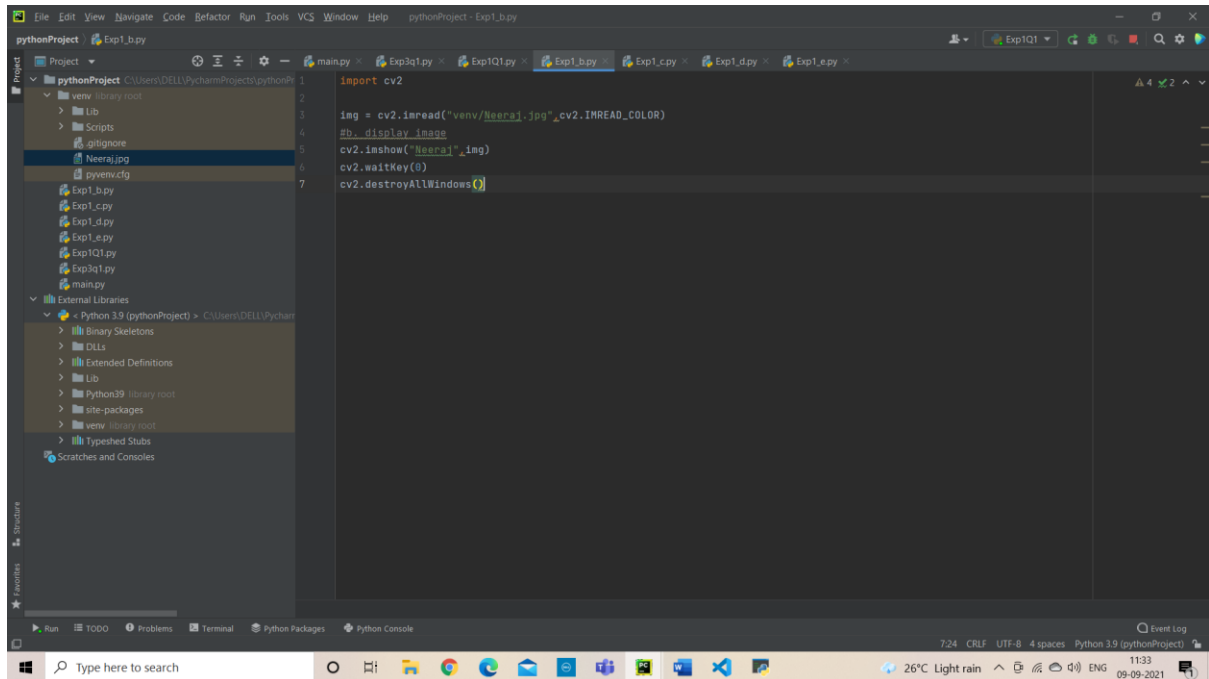
The bottom status bar indicates the file encoding is UTF-8, the editor is using Python 3.9, and the system clock shows 11:32 on 09-09-2021.

OUTPUT:



b) Display image

CODE:

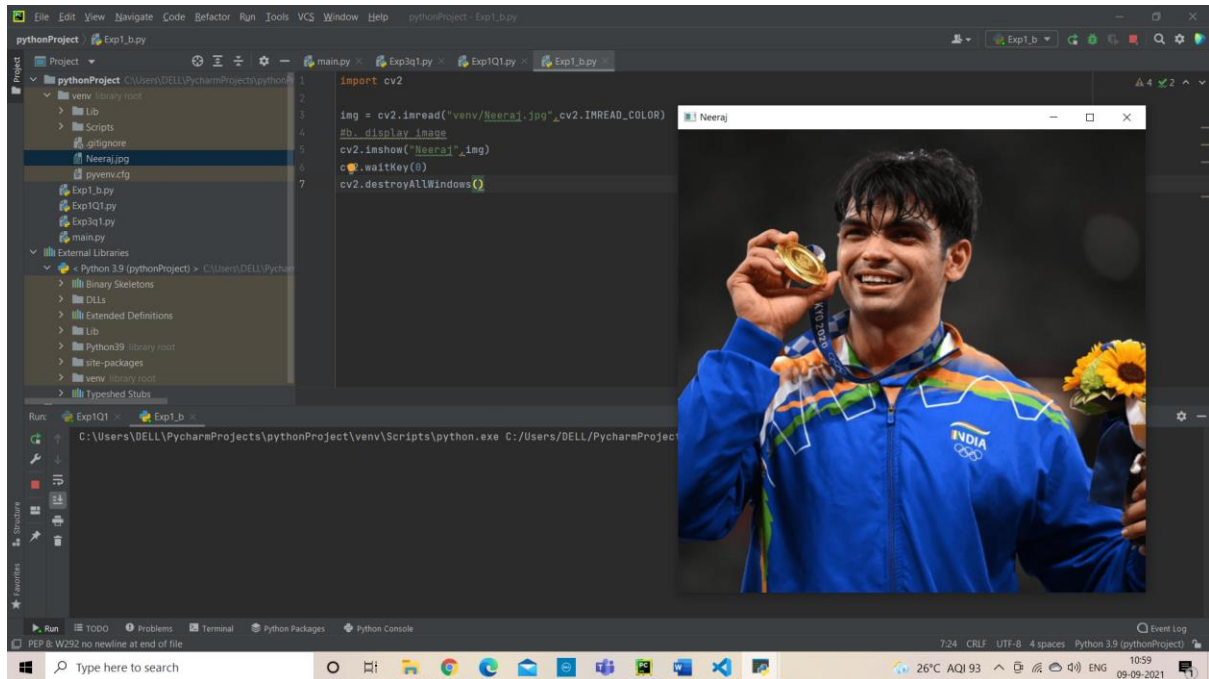


The screenshot shows the PyCharm IDE interface. The left sidebar displays the project structure for 'pythonProject', including a 'venv' directory and a 'Scripts' folder containing 'Neeraj.jpg'. The main editor window shows the following Python code in 'Exp1_b.py':

```
1 import cv2
2
3
4 img = cv2.imread("venv/Neeraj.jpg", cv2.IMREAD_COLOR)
5 #_display_image
6 cv2.imshow("Neeraj", img)
7 cv2.waitKey(0)
8 cv2.destroyAllWindows()
```

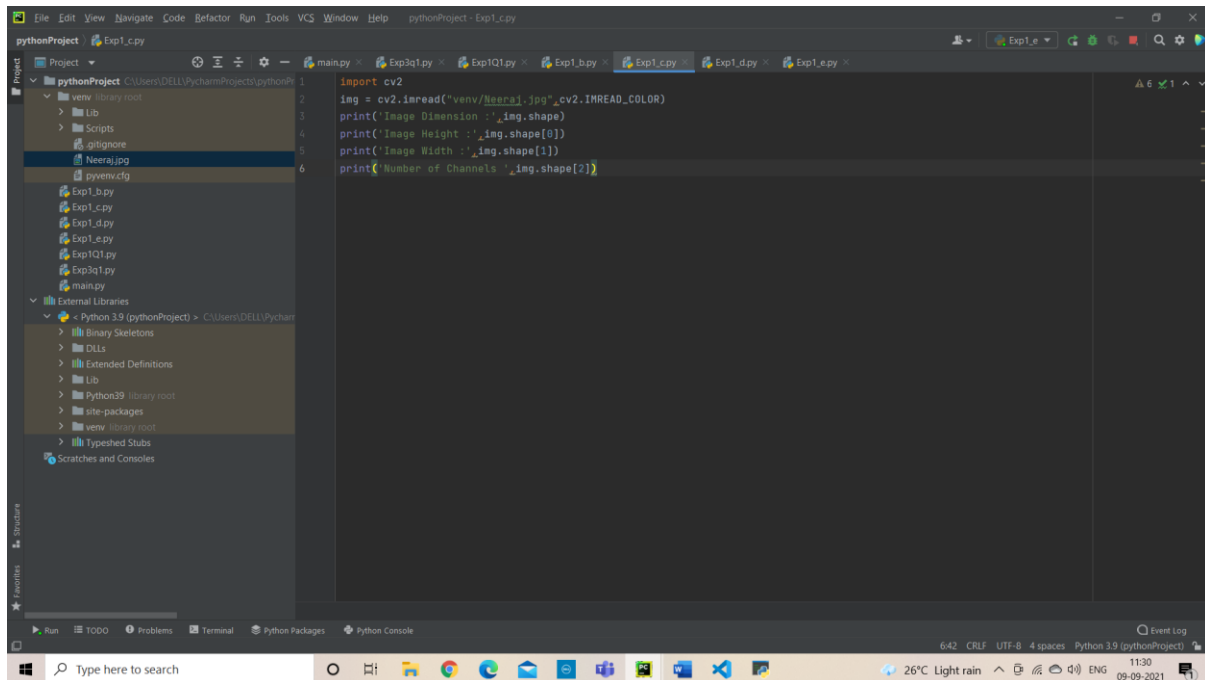
The bottom status bar indicates the file encoding is UTF-8, the line ending is CRLF, and the Python interpreter is Python 3.9 (pythonProject).

OUTPUT:



c) Display size of image

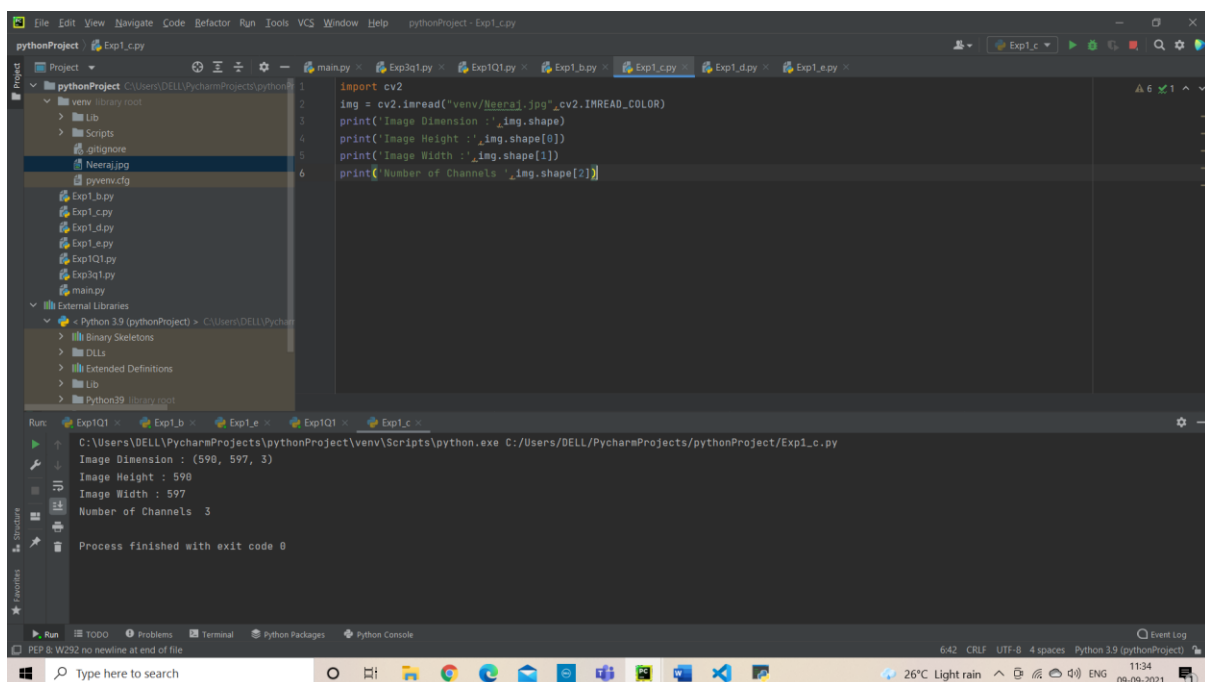
CODE:



```
1 import cv2
2 img = cv2.imread("venv/Neeraj.jpg",cv2.IMREAD_COLOR)
3 print('Image Dimension :',img.shape)
4 print('Image Height :',img.shape[0])
5 print('Image Width :',img.shape[1])
6 print('Number of Channels :',img.shape[2])
```

The screenshot shows a code editor with the above Python code. The file explorer on the left shows a project named 'pythonProject' with a subdirectory 'venv' containing 'Neeraj.jpg'. The bottom status bar indicates 'Python 3.9 (pythonProject)'.

OUTPUT:

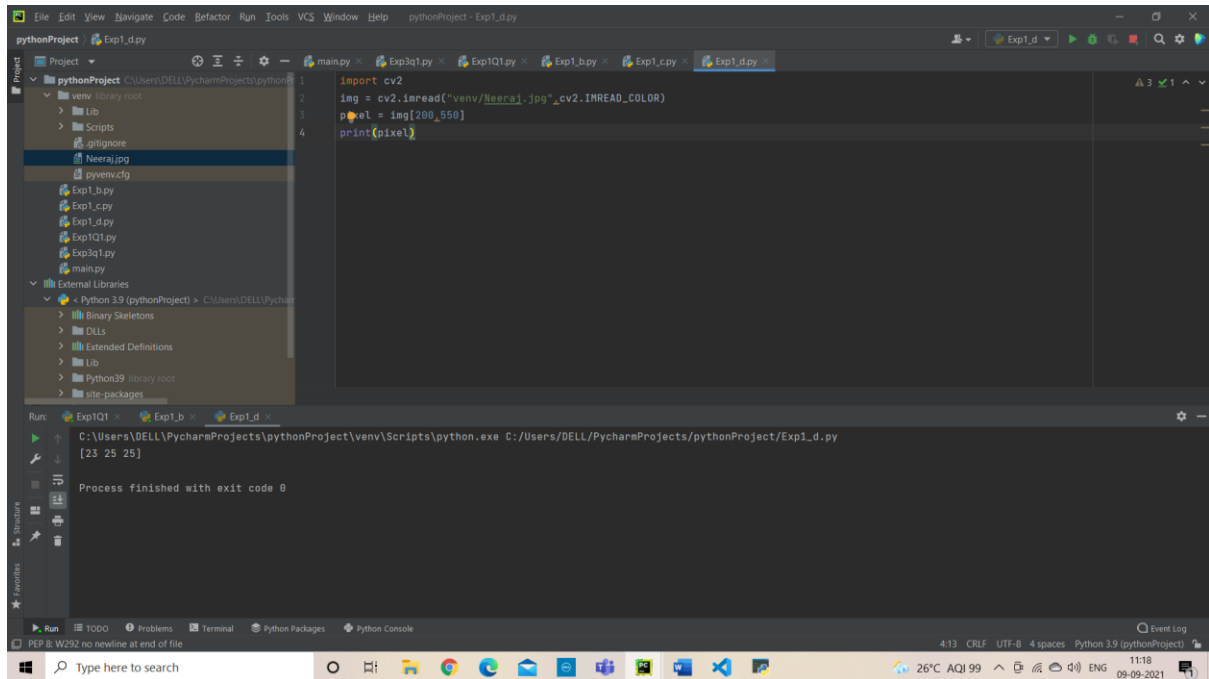


```
Image Dimension : (598, 597, 3)
Image Height : 598
Image Width : 597
Number of Channels : 3
```

The screenshot shows the same code editor as above, but with the output displayed in the console at the bottom. The output matches the print statements in the code. The status bar at the bottom shows 'Python 3.9 (pythonProject)' and the time '11:34'.

d) Read the grey level value of a pixel at given co-ordinates

CODE & OUTPUT:



The screenshot displays the PyCharm IDE interface. The left sidebar shows the project structure with files like `main.py`, `Exp3q1.py`, `Exp1Q1.py`, `Exp1_b.py`, `Exp1_c.py`, `Exp1_d.py`, and `main.py`. The main editor window shows the code for `Exp1_d.py`:

```
1 import cv2
2 img = cv2.imread("venv/Neeraj.jpg", cv2.IMREAD_COLOR)
3 pixel = img[200, 550]
4 print(pixel)
```

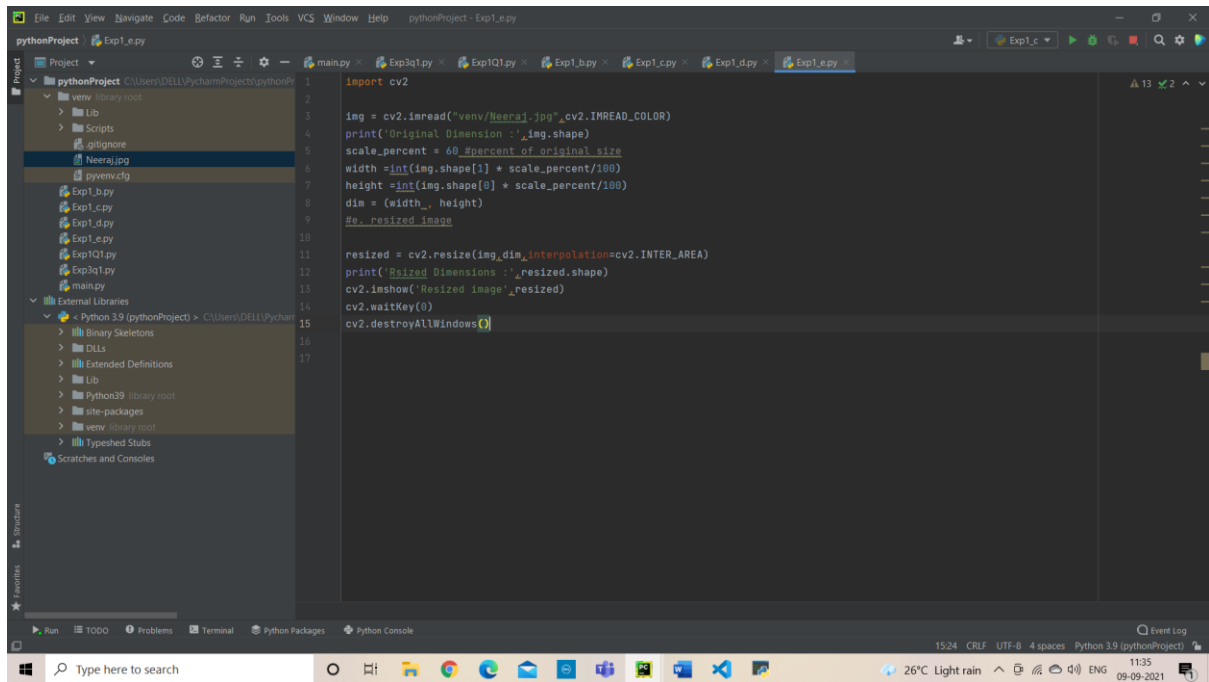
The Run window at the bottom shows the execution output:

```
C:\Users\DELL\PycharmProjects\pythonProject\venv\Scripts\python.exe C:/Users/DELL/PycharmProjects/pythonProject/Exp1_d.py
[23 25 25]
Process finished with exit code 0
```

The status bar at the bottom indicates the file encoding is UTF-8, the line length is 4 spaces, and the Python version is 3.9.

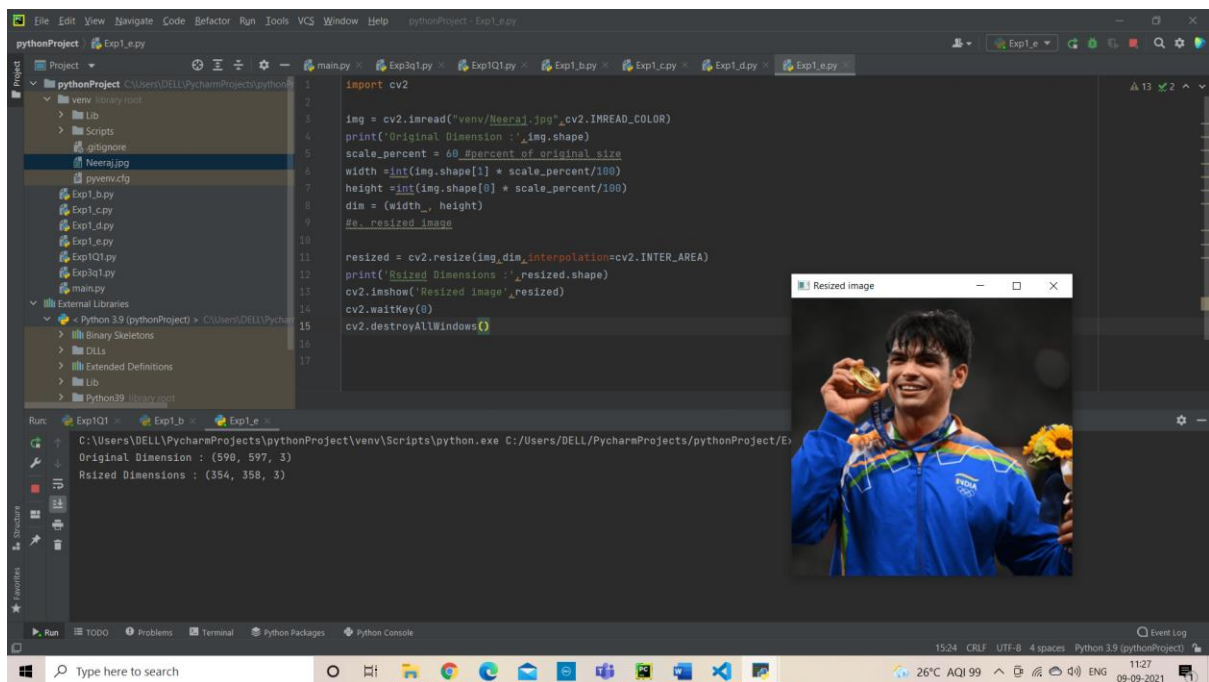
e) Resize image and save it

CODE:



```
1 import cv2
2
3 img = cv2.imread("venv\Neeraj.jpg", cv2.IMREAD_COLOR)
4 print('Original Dimension :', img.shape)
5 scale_percent = 60 #percent of original size
6 width = int(img.shape[1] * scale_percent/100)
7 height = int(img.shape[0] * scale_percent/100)
8 dim = (width, height)
9 #e. resized image
10
11 resized = cv2.resize(img, dim, interpolation=cv2.INTER_AREA)
12 print('Resized Dimensions :', resized.shape)
13 cv2.imshow('Resized image', resized)
14 cv2.waitKey(0)
15 cv2.destroyAllWindows()
```

OUTPUT:



```
1 import cv2
2
3 img = cv2.imread("venv\Neeraj.jpg", cv2.IMREAD_COLOR)
4 print('Original Dimension :', img.shape)
5 scale_percent = 60 #percent of original size
6 width = int(img.shape[1] * scale_percent/100)
7 height = int(img.shape[0] * scale_percent/100)
8 dim = (width, height)
9 #e. resized image
10
11 resized = cv2.resize(img, dim, interpolation=cv2.INTER_AREA)
12 print('Resized Dimensions :', resized.shape)
13 cv2.imshow('Resized image', resized)
14 cv2.waitKey(0)
15 cv2.destroyAllWindows()
```

Run: Exp1Q1 Exp1L Exp1E

C:\Users\DELL\PycharmProjects\pythonProject\venv\Scripts\python.exe C:\Users\DELL\PycharmProjects\pythonProject\Exp1E.py

Original Dimension : (598, 597, 3)

Resized Dimensions : (354, 358, 3)

