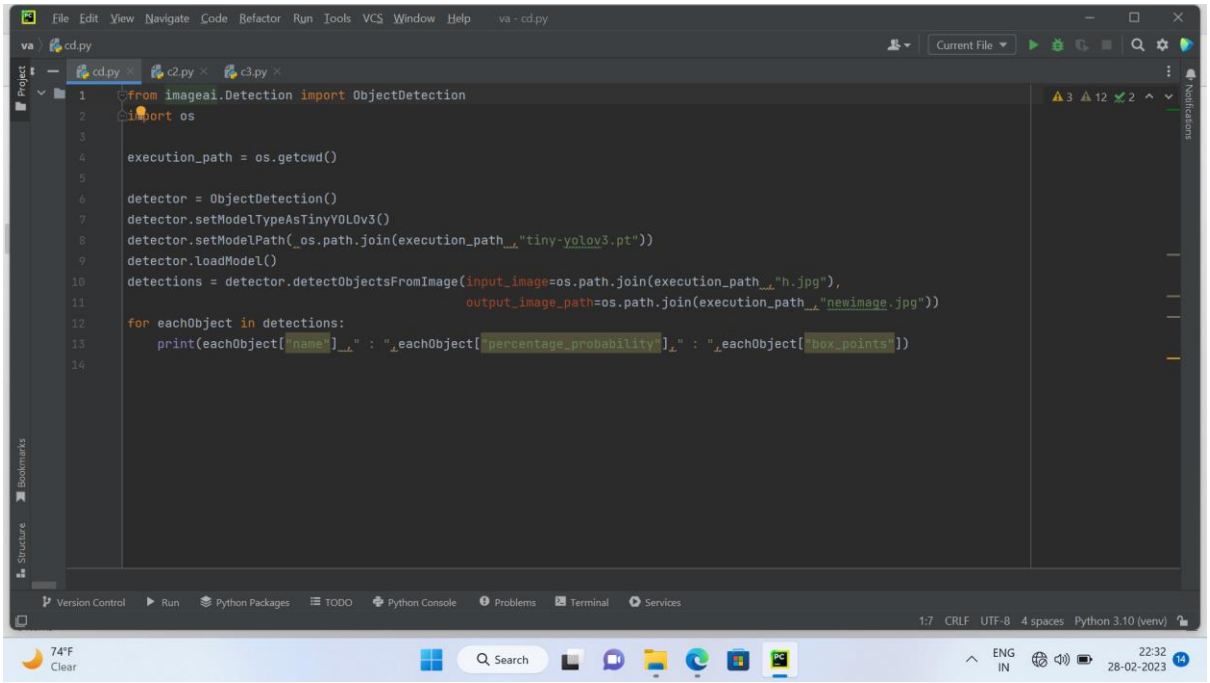
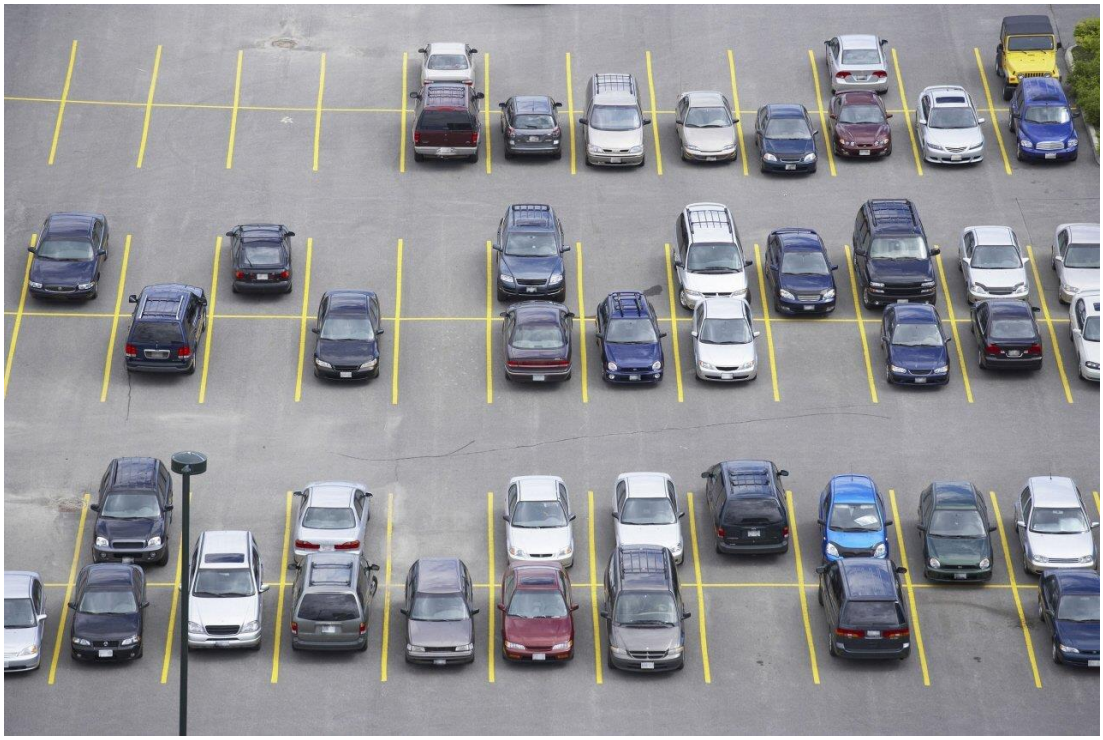
Program1



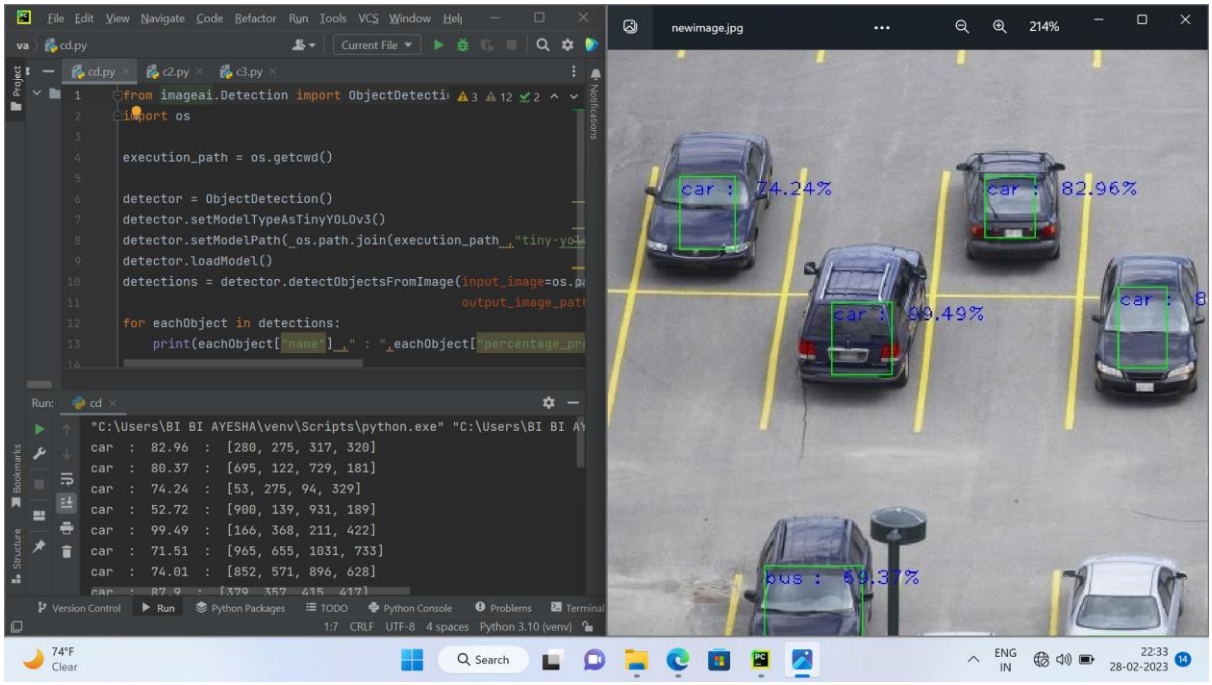

# Code :-

```
from imageai.Detection import ObjectDetection
import os

execution_path = os.getcwd()

detector = ObjectDetection()
detector.setModelTypeAsTinyYOLOv3()
detector.setModelPath( os.path.join(execution_path ,"tiny-yolov3.pt"))
detector.loadModel()
detections = detector.detectObjectsFromImage(input_image=os.path.join(execution_path ,"h.jpg"),
                                             output_image_path=os.path.join(execution_path ,"newimage.jpg"))
for eachObject in detections:
    print(eachObject["name"] ," : ",eachObject["percentage_probability"]," : ",eachObject["box_points"])
```

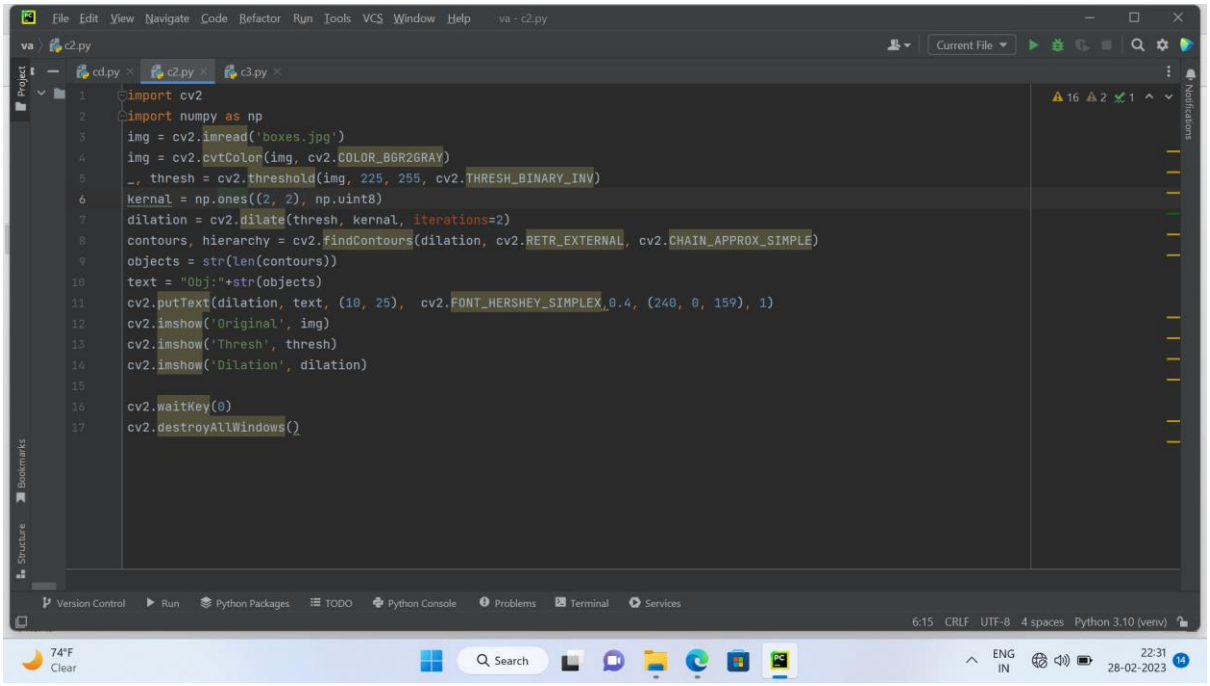
## Input image :-



## Output:-



Program 2

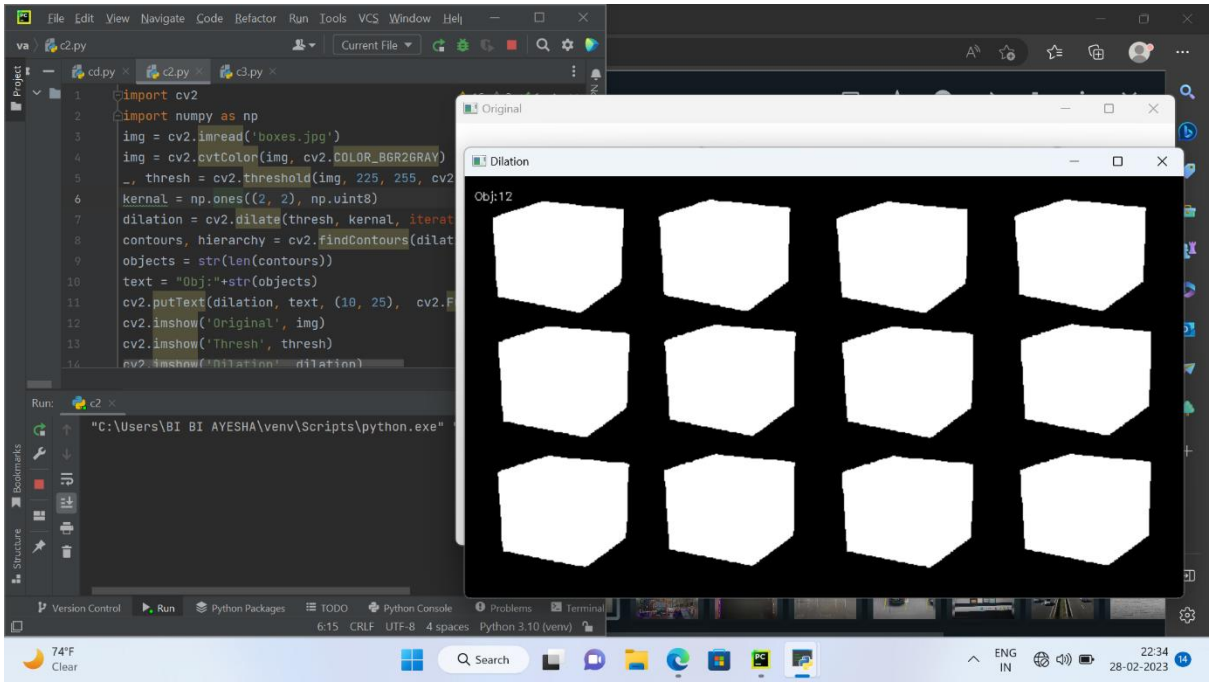



## Code :-

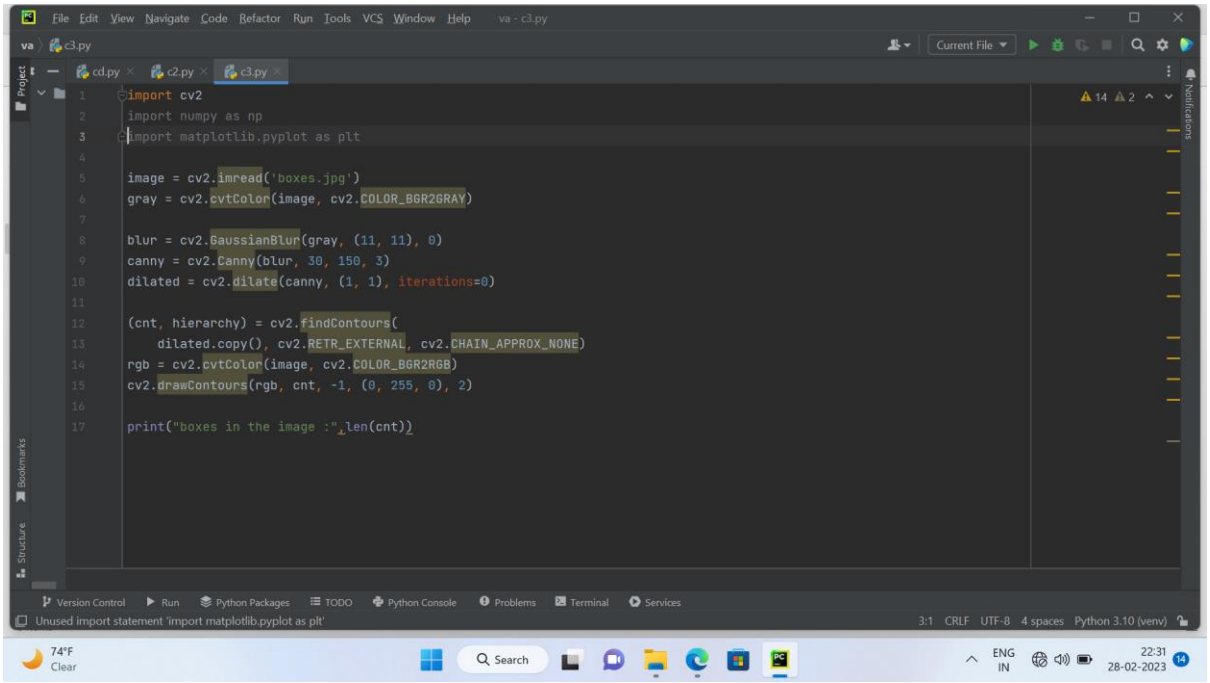
```
import cv2
import numpy as np
img = cv2.imread('boxes.jpg')
img = cv2.cvtColor(img, cv2.COLOR_BGR2GRAY)
_, thresh = cv2.threshold(img, 225, 255, cv2.THRESH_BINARY_INV)
kernal = np.ones((2, 2), np.uint8)
dilation = cv2.dilate(thresh, kernal, iterations=2)
contours, hierarchy = cv2.findContours(dilation, cv2.RETR_EXTERNAL, cv2.CHAIN_APPROX_SIMPLE)
objects = str(len(contours))
text = "Obj:"+str(objects)
cv2.putText(dilation, text, (10, 25),  cv2.FONT_HERSHEY_SIMPLEX,0.4, (240, 0, 159), 1)
cv2.imshow('Original', img)
cv2.imshow('Thresh', thresh)
cv2.imshow('Dilation', dilation)

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

## 1nput image :-

## Output:-



Program 3




## Code:-

```
import cv2
import numpy as np
import matplotlib.pyplot as plt

image = cv2.imread('boxes.jpg')
gray = cv2.cvtColor(image, cv2.COLOR_BGR2GRAY)

blur = cv2.GaussianBlur(gray, (11, 11), 0)
canny = cv2.Canny(blur, 30, 150, 3)
dilated = cv2.dilate(canny, (1, 1), iterations=0)

(cnt, hierarchy) = cv2.findContours(dilated.copy(), cv2.RETR_EXTERNAL, cv2.CHAIN_APPROX_NONE)
rgb = cv2.cvtColor(image, cv2.COLOR_BGR2RGB)
cv2.drawContours(rgb, cnt, -1, (0, 255, 0), 2)

print("boxes in the image :",len(cnt))
```

## 1nput image :-

## Output:-