AI AND VISIONS LABORATORY INDIVIDUAL REPORT -1

Question:

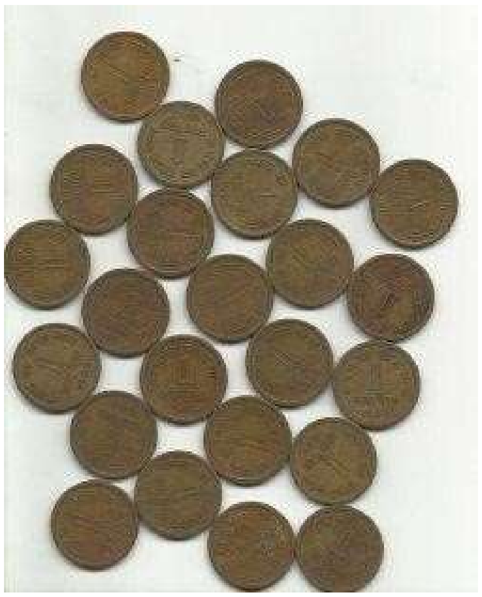
1. Find the number of coins in the given image.

Coding:

```
# Import libraries
import cv2
import numpy as np
import matplotlib.pyplot as plt

image = cv2.imread('sample.jpg')
gray = cv2.cvtColor(image, cv2.COLOR_BGR2GRAY)
cv2.imshow("gray",gray)
cv2.waitKey(0)

blur = cv2.GaussianBlur(gray, (11, 11), 0)
cv2.imshow("Blurred",blur)
cv2.waitKey(0)
canny = cv2.Canny(blur, 167,275, 3)
cv2.imshow("Canny",canny)
cv2.waitKey(0)
dilated = cv2.dilate(canny, (1, 1), iterations=0)
cv2.imshow("Dilated",dilated)
cv2.waitKey(0)

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

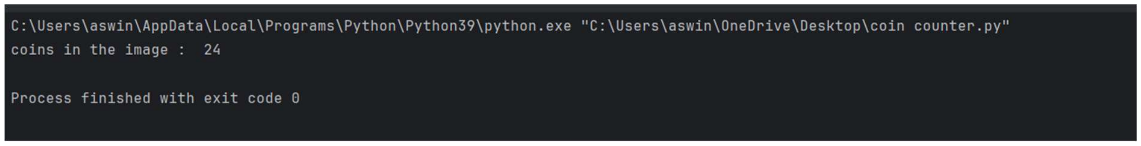
```
cv2.imshow("contour",contour)
cv2.waitKey(0)
print("coins in the image : ", len(cnt))
```

Input Image:



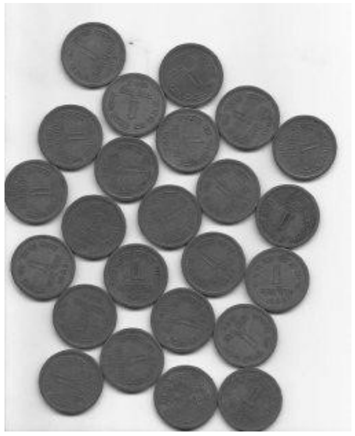
Output (In Terminal):

coins in the image: 24

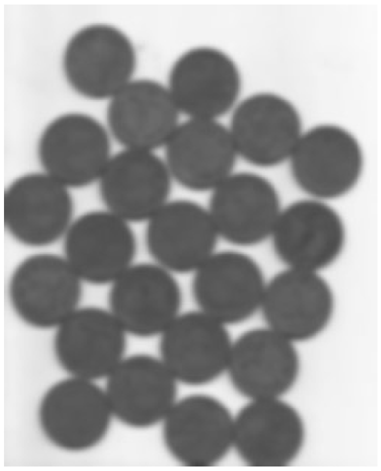


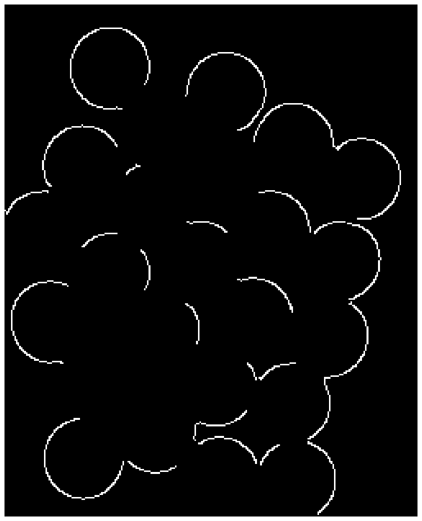
```
C:\Users\aswin\AppData\Local\Programs\Python\Python39\python.exe "C:\Users\aswin\OneDrive\Desktop\coin counter.py"
coins in the image :  24

Process finished with exit code 0
```

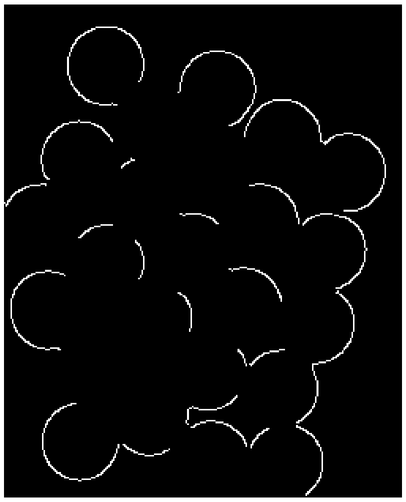
Processed Images:

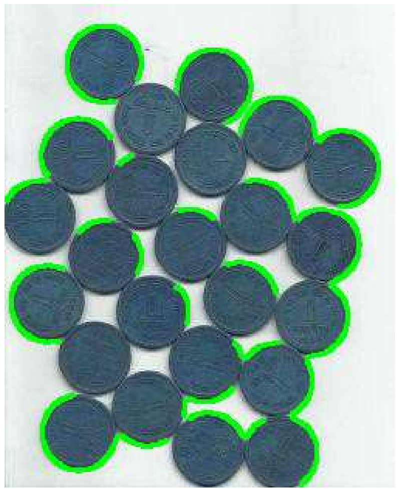


Grayscale Image


Blurred Image


Canny Image


Dilated Image


Contour Image

Explanation:

Import Libraries:

cv2: OpenCV library for computer vision.

numpy: Library for numerical operations.

matplotlib.pyplot: Library for plotting.

Read Image:

cv2.imread('sample.jpg'): Reads the image file named 'sample.jpg'.

Convert to Grayscale:

cv2.cvtColor(image, cv2.COLOR_BGR2GRAY): Converts the loaded image to grayscale.

Display Grayscale Image:

cv2.imshow("gray", gray): Displays the grayscale image.

Gaussian Blur:

cv2.GaussianBlur(gray, (11, 11), 0): Applies Gaussian blur to the grayscale image.

Display Blurred Image:

cv2.imshow("Blurred", blur): Displays the blurred image.

Canny Edge Detection:

cv2.Canny(blur, 167, 275, 3): Applies Canny edge detection to the blurred image.

Display Canny Image:

cv2.imshow("Canny", canny): Displays the Canny edge-detected image.

Dilation:

cv2.dilate(canny, (1, 1), iterations=0): Dilates the Canny edges.

Display Dilated Image:

cv2.imshow("Dilated", dilated): Displays the dilated image.

Find Contours:

cv2.findContours(dilated.copy(), cv2.RETR_EXTERNAL, cv2.CHAIN_APPROX_NONE): Finds contours in the dilated image.

Draw Contours on Original Image:

cv2.drawContours(rgb, cnt, -1, (0, 255, 0), 2): Draws contours on the original image in green.

Display Contoured Image:

cv2.imshow("contour", contour): Displays the image with drawn contours.

Print the Number of Coins:

print("coins in the image : ", len(cnt)): Prints the number of contours found, which can be considered as the number of coins.