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1-According to the image jpg1.Q, answer this question:

The output of the matplotlib library Do like opencv .

c) After the notebook is made, create empty folders in the 1Q folder with the help of `makedirs.os` , and then read the images in the 1Q folder one by one and make the images black and white, then create a file with the same format and dimensions for each image Save the image Finally, save the images and text files in the folder you created .

3- According to the ipynb3.Q notebook , answer the following questions:

10 33 65	
12 78 9	
25 59 104	

{digit: number of appearance}

$$\{0: 2, 1: 3, 2: 2, 3: 2, 4: 1, 5: 3, 6: 1, 7: 1, 8: 1, 9: 2\}$$



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4- In the notebook ipynb4.Q, in the specified parts, perform the following matrix operations using data guides.
done:

A) Obtain the result of the following expression with the help of the *numpy* library:

$$\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix} \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix} - \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix} \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix} + \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$$

b) Slide the 3 x 3 matrix A onto the 5 x 5 matrix B and multiply it step by step and add up the results.
Then save this sum in the result matrix. To solve this question on the matrix B with Python functions
and iterate through the numpy library and calculate the results.

B

1	1	1	1	1
1	2	2	2	1
1	2	2	2	1
1	2	2	2	1
1	1	1	1	1

A

1	1	1
1	-9	1
1	1	1

To better understand the question, pay attention to the following

B is as follows: on

guide: What is meant by sliding matrix A

In the specified area, perform multiplication by multiplication and then add the product of the multiplications and then put it in
the resulting matrix:



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Then move the matrix A to the right and repeat the same operation and place the result in the corresponding row in the output matrix:

5- (scoring) Read the png5.Q image that is attached with the questions in the ipynb5.Q notebook in color, first the various characteristics of the read image, including dimensions, type of values, average pixels, maximum and minimum amount

in total Find the image and also within the indices [0 :, :] (all the pixels of index 0 from the 2nd dimension).

This image is given to an object detection model (you will get familiar with these concepts later in this lesson, but for this question it is enough to run the corresponding cell) and some detection samples are taken from the model. These the class that is and It belongs to it γ detections include the rectangle of the environment. to the detected objects, the degree of confidence of the detection. First, according to the instructions made in the notebook, draw the detections on the original image and display the result Also save the result as requested.

Note: It is preferable to use the colab environment for this question.