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Index Number: 190280N

```
for i in range(1,6):  
    print(i,":",i**2)
```

```
1 : 1  
2 : 4  
3 : 9  
4 : 16  
5 : 25
```

```
import sympy  
for i in range(1,6):  
    if not sympy.isprime(i):  
        print(i,":",i**2)
```

```
1 : 1  
4 : 16
```

```
square_list=[i**2 for i in range(1,6)]  
for j in range(len(square_list)):  
    print(j+1,":",square_list[j])
```

```
1 : 1  
2 : 4  
3 : 9  
4 : 16  
5 : 25
```

```
square_list=[[i,i**2] for i in range(1,6) if not sympy.isprime(i)]  
for j in range(len(square_list)):  
    print(square_list[j][0],":",square_list[j][1])
```

```
1 : 1  
4 : 16
```

```
import numpy as np  
A=np.array([[1,2],[3,4],[5,6]])  
B=np.array([[7,8,9,1],[1,2,3,4]])  
print(A.dot(B))
```

```
[[ 9 12 15  9]  
 [25 32 39 19]  
 [41 52 63 29]]
```

```
B= np.array([[3,2],[5,4],[3,1]])  
print(np.multiply(A,B))
```

```
[[ 3  4]
 [15 16]
 [15  6]]
```

```
R=np.random.randint(1,10, size=(5, 7))
SubR=R[2:5,:2]
print(SubR,'\n','Size = ',SubR.size)
```

```
[[6 3]
 [5 4]
 [5 1]]
Size =  6
```

```
A=np.array([4,8,9,10])
B=np.array([[1,2,3,4],[5,6,7,8]])
print(A+B)
```

```
[[ 5 10 12 14]
 [ 9 14 16 18]]
```

```
C=5
print(B*C)
```

```
[[ 5 10 15 20]
 [25 30 35 40]]
```

```
X= np.array([1,2,3,6,7])
Y = np.array([4,5,6,8])
print(np.reshape(X,(5,1))*Y)
```

```
[[ 4  5  6  8]
 [ 8 10 12 16]
 [12 15 18 24]
 [24 30 36 48]
 [28 35 42 56]]
```

```
m,c = 2,-4
N = 10
x = np.linspace(0,N-1,N).reshape(N,1)
sigma = 10
y = m*x + c + np.random.normal(0,sigma,(N,1))
X=np.append(x,np.ones((N,1)),axis=1)
print(X)
```

```
[[0. 1.]
 [1. 1.]
 [2. 1.]
 [3. 1.]
 [4. 1.]
 [5. 1.]
 [6. 1.]
 [7. 1.]
 [8. 1.]
 [9. 1.]]
```

```
from numpy import linalg
W= ((np.linalg.inv((X.T).dot(X))).dot(X.T)).dot(y)
print(W)
```

```
[[0.58144622]
 [2.76286758]]
```

```
from google.colab import drive
drive.mount('/content/drive')
```

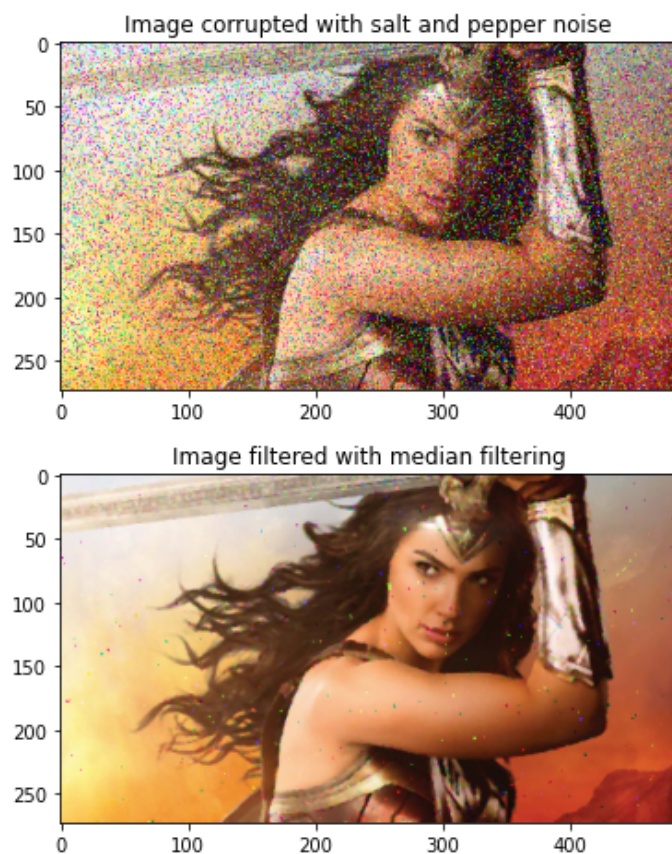
Drive already mounted at /content/drive; to attempt to forcibly remount, call drive.mount("/cont

```
from PIL import Image, ImageFilter
from matplotlib import pyplot as plt
image = Image.open(r"/content/drive/MyDrive/gal_gaussian.png")
plt.figure()
plt.imshow(image)
plt.title('Image corrupted with Gaussian noise')
plt.show()
image = image.filter(ImageFilter.GaussianBlur)
plt.figure()
plt.imshow(image)
plt.title('Image filtered with Gaussian smoothing')
plt.show()
```

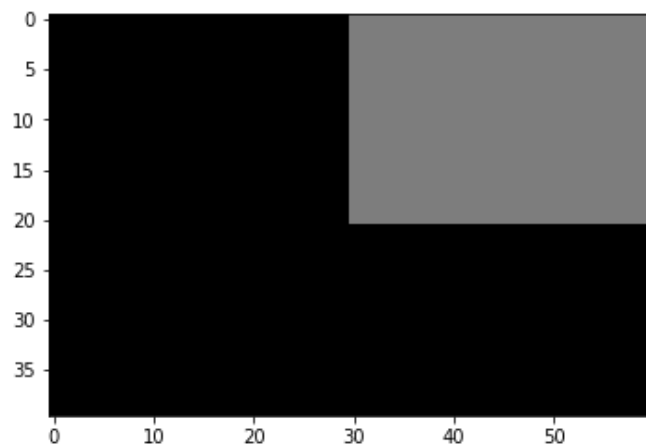


```
image = Image.open(r"/content/drive/MyDrive/gal_sandp.png")
```

```
plt.figure()
plt.imshow(image)
plt.title('Image corrupted with salt and pepper noise')
plt.show()
image = image.filter(ImageFilter.MedianFilter(size = 3))
plt.figure()
plt.imshow(image)
plt.title('Image filtered with median filtering')
plt.show()
```



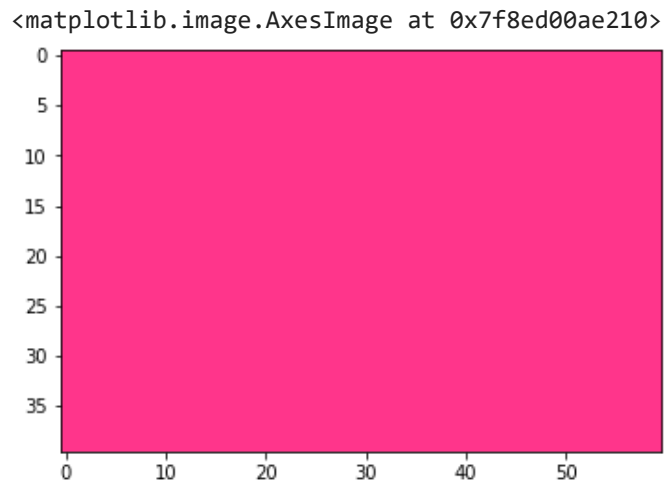
```
img=np.zeros((40,60),dtype=np.uint8)
img[0:21,30:61]=125
plt.imshow(img,cmap='gray',vmax=255,vmin=0)
plt.show()
```



```

from PIL import Image
img = Image.new('RGB', (60,40),(255,53,139))
#img[20:41,0:31]=125
plt.imshow(img)

```

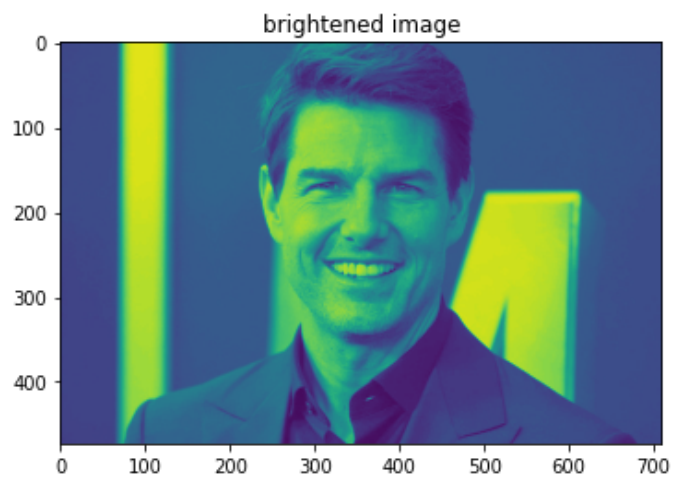


```

from PIL import Image, ImageEnhance
img = Image.open("/content/drive/MyDrive/tom_dark.jpg")
enhancer=2
bright_image = ImageEnhance.Brightness(img).enhance(enhancer)
plt.imshow(bright_image)
plt.title('brightened image')

```

☐ Text(0.5, 1.0, 'brightened image')



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