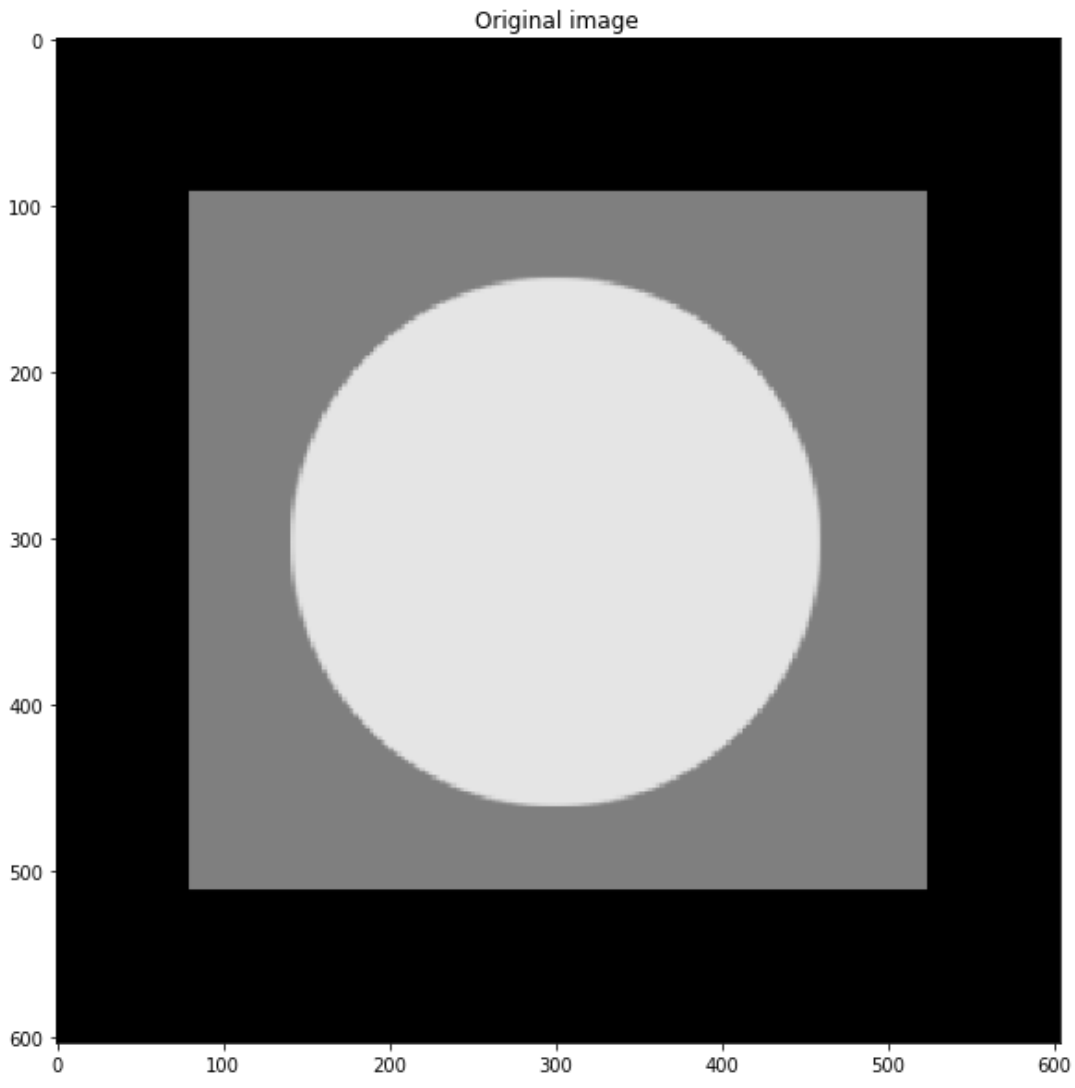
In [ ]:

```
%matplotlib inline
from IPython.display import display, Math, Latex
import cv2
import random
import numpy as np
import matplotlib.pyplot as plt
import requests
from PIL import Image
from io import BytesIO

url = 'https://media.cheggcdn.com/media%2F2a9%2F2a90c92c-db23-4c83-ad8a-ae394c72a576%2Fphp2bN8Kd.png'
response = requests.get(url)
img = Image.open(BytesIO(response.content)).convert('L')

# display the image
figsize = (10,10)
plt.figure(figsize=figsize)

plt.imshow(img, cmap='gray', vmin=0, vmax=255)
plt.title("Original image")
```

Out[ ]:

```
Text(0.5, 1.0, 'Original image')
```



In [26]:

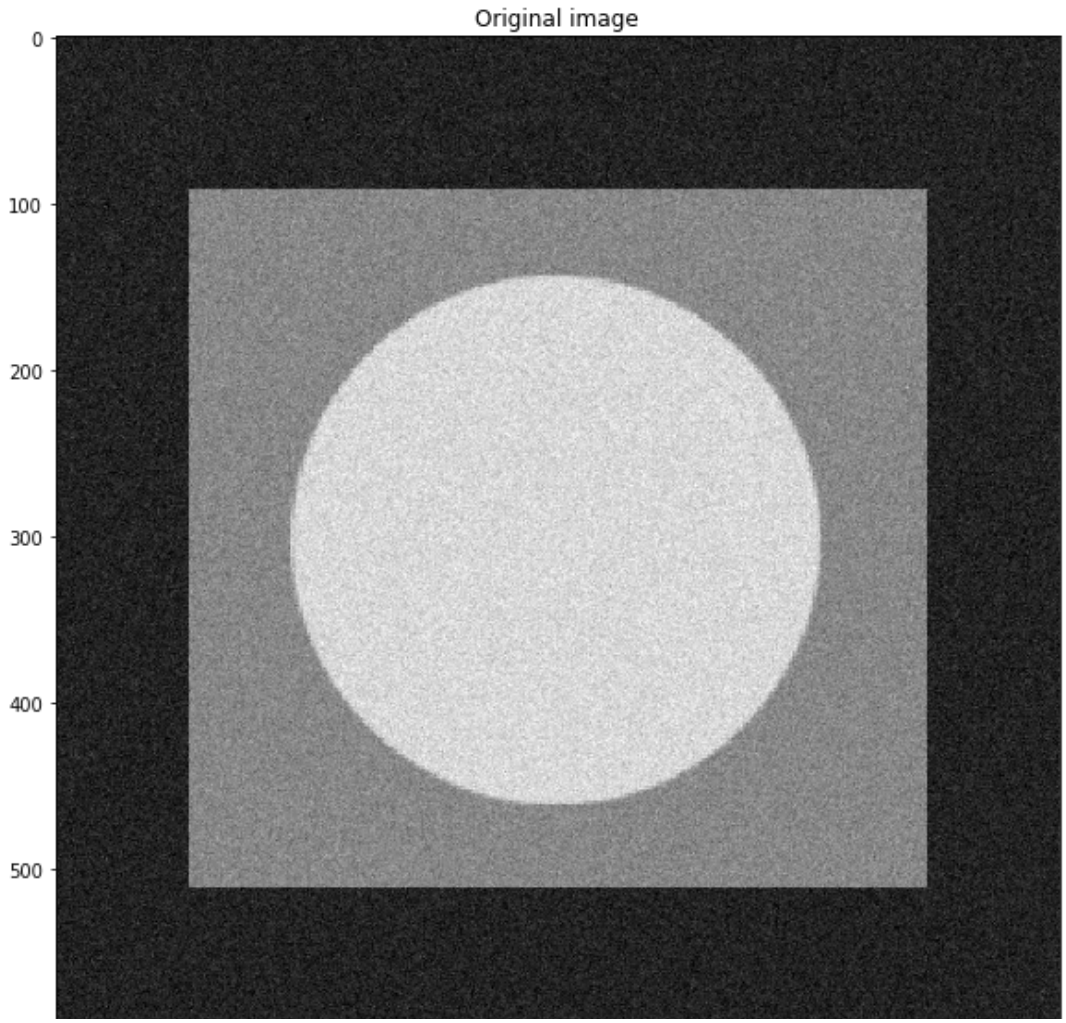
```
def uniform_distribution_noise(img):
  uniform = np.random.normal(8, 20, (img.shape[0],img.shape[1]))
  noisy_image = np.zeros(img.shape, np.float32)
  if len(img.shape) == 2:
    noisy_image = img + uniform
  else:
    noisy_image[:, :, 0] = img[:, :, 0] + uniform
    noisy_image[:, :, 1] = img[:, :, 1] + uniform
    noisy_image[:, :, 2] = img[:, :, 2] + uniform

  cv2.normalize(noisy_image, noisy_image, 0, 255, cv2.NORM_MINMAX, dtype=-1)
  noisy_image = noisy_image.astype(np.uint8)
  alpha = 0
  beta = 30
  noisy_image = np.int16(noisy_image)
  noisy_image = noisy_image * (beta/127+1) - beta + alpha
  noisy_image = np.clip(noisy_image, 0, 255)
  noisy_image = np.uint8(noisy_image)
  return noisy_image
```

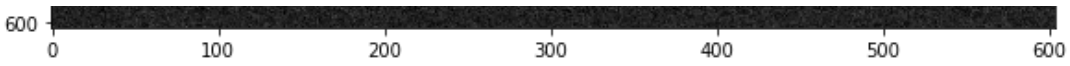
In [27]:

```
img = np.asarray(img)
noise_image = uniform_distribution_noise(img)

# display the image
figsize = (10,10)
plt.figure(figsize=figsize)

plt.imshow(noise_image, cmap='gray', vmin=0, vmax=255)
plt.title("Original image")
```

Out[27]:

```
Text(0.5, 1.0, 'Original image')
```




600
0
100
200
300
400
500
600