Lab11

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0.1 Lab 11

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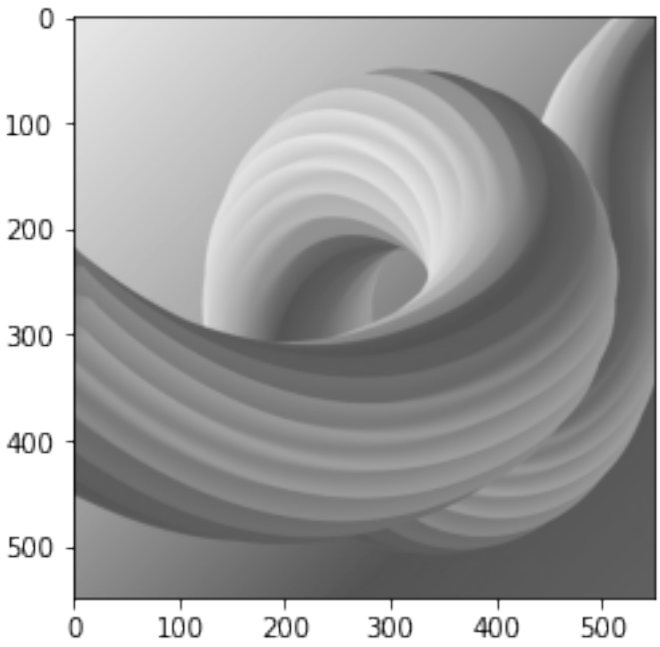
0.2 Importing Necessary modules

[53]:
```
import cv2
import numpy as np
import matplotlib.pyplot as plt
```

0.3 Objective: Implement Lossy Image Compression using DPCM using Quantizer

0.3.1 Importing and Displaying image

[98]:
```
img = cv2.cvtColor(cv2.imread('testImage.jpeg'), cv2.COLOR_BGR2GRAY)
plt.imshow(cv2.cvtColor(img, cv2.COLOR_GRAY2RGB))
plt.show()
img
```



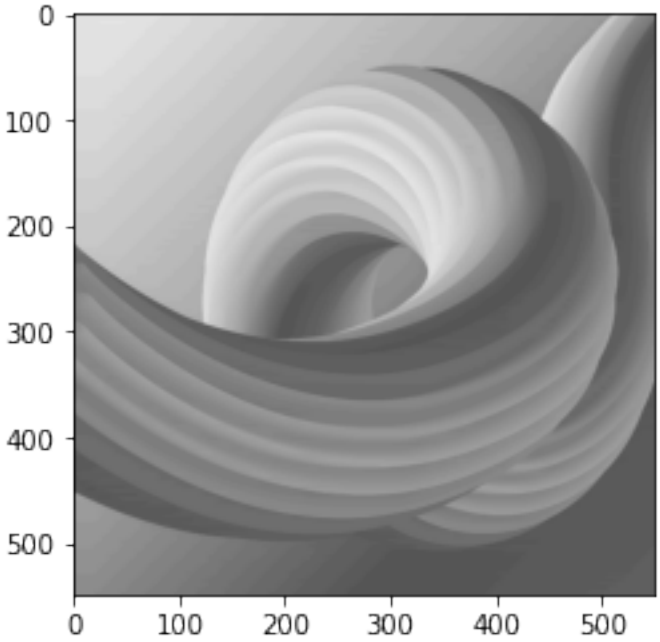
[98]:
```
array([[229, 229, 229, …, 128, 127, 126],
       [229, 229, 229, …, 126, 125, 124],
       [229, 229, 229, …, 125, 124, 124],
       …,
       [141, 141, 141, …,  96,  96,  96],
       [141, 141, 140, …,  96,  96,  96],
       [141, 141, 140, …,  96,  96,  96]], dtype=uint8)
```

0.3.2 Compression of Image and encoding

[100]:
```
sub = 0
sub_ = 0
quantizer = 5
rows = img.shape[0]
cols = img.shape[1]
arr = []
for i in range(rows):
    for j in range(cols):
        arr.append(int((int(img[i][j])-int(sub))/quantizer))
        sub=int((int(img[i][j])-int(sub))/quantizer)*quantizer+sub
```

0.3.3 Decoding and Expansion

[102]:
```
add=0
for ind in range(rows*cols):
    i = int(ind/cols)
    j = ind%cols
    img[i][j] = (arr[ind])*quantizer+add
    add=img[i][j]
plt.imshow(cv2.cvtColor(img, cv2.COLOR_GRAY2RGB))
plt.show()
img
```



[102]:
```
array([[225, 225, 225, …, 130, 130, 130],
       [225, 225, 225, …, 130, 125, 125],
       [225, 225, 225, …, 125, 125, 125],
       …,
       [140, 140, 140, …,  95,  95,  95],
       [140, 140, 140, …,  95,  95,  95],
       [140, 140, 140, …,  95,  95,  95]], dtype=uint8)
```

[ ]: