CS825-001, Spring/Summer 2020
Assignment 4- Part 2
Submitted to Dr. Xue Dong Yang
By
Adarsh Koppa Manjunath
200397257

Question 2-

A) divide the spectrum into a set of rings

Set of Rings Method - Computation Performed with the input **car image**

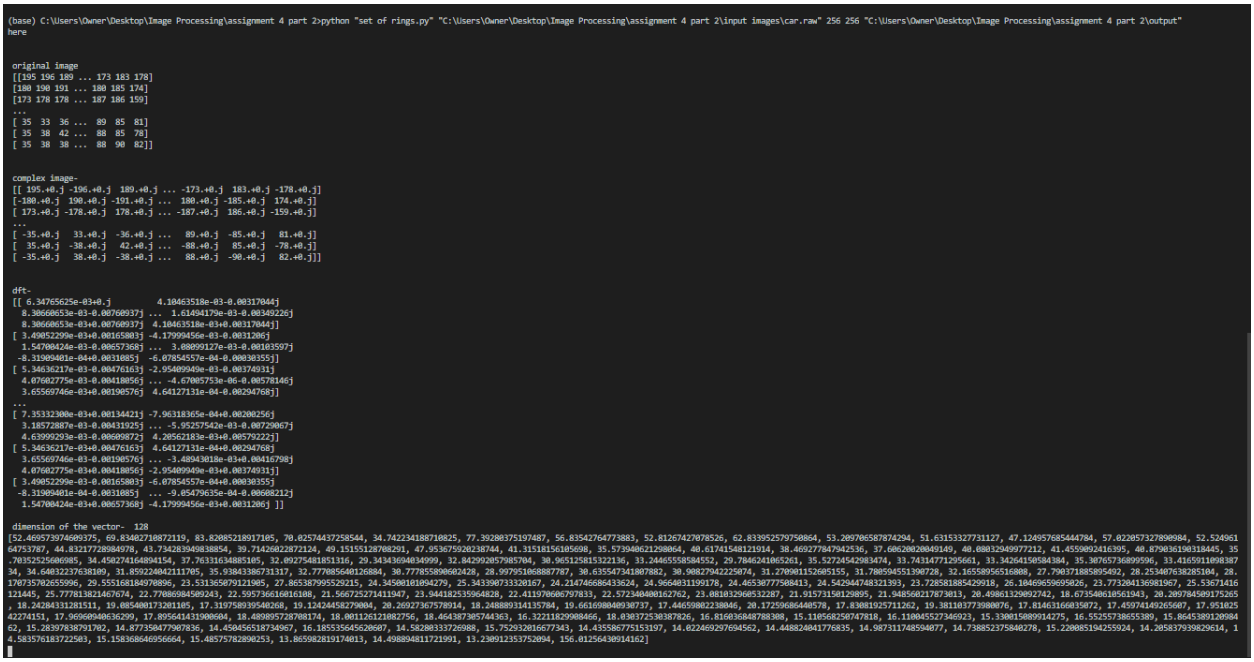

Fig 1- Computation Performed with the input **car image using Set of Rings**

Set of Rings Method - Frequency Histogram using set of rings for car image

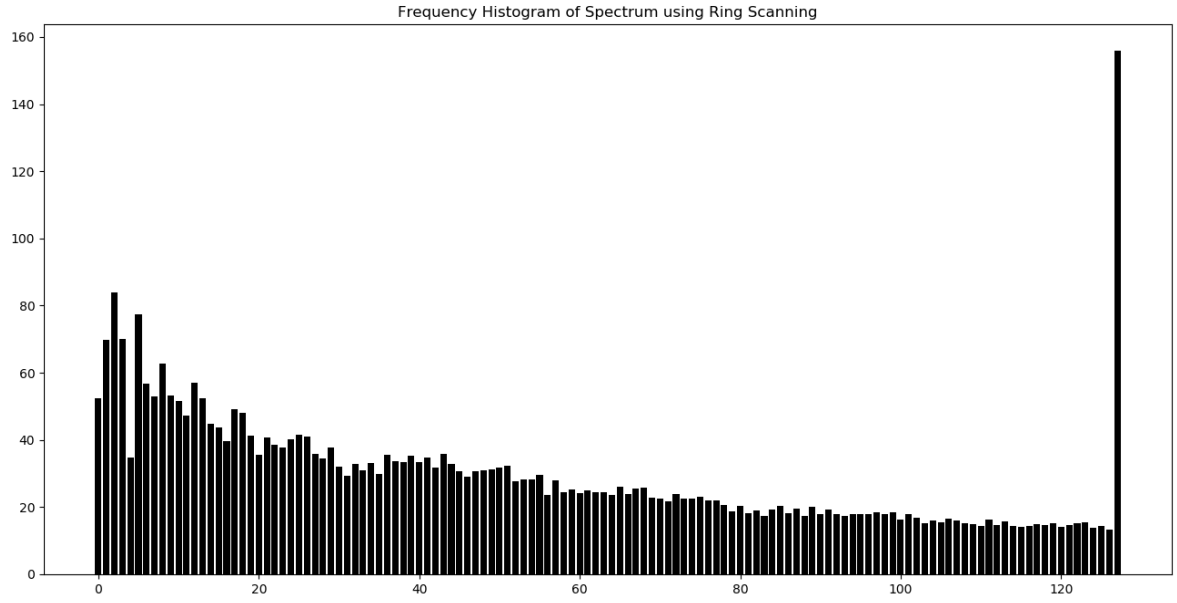

Fig 2- Frequency Histogram using set of rings for car image

Set of Rings Method - Computation Performed with the input **square 256 image**

Fig 3- Computation Performed with the input **square 256 image**

Set of Rings Method - Frequency of histogram using set of rings for square256 image

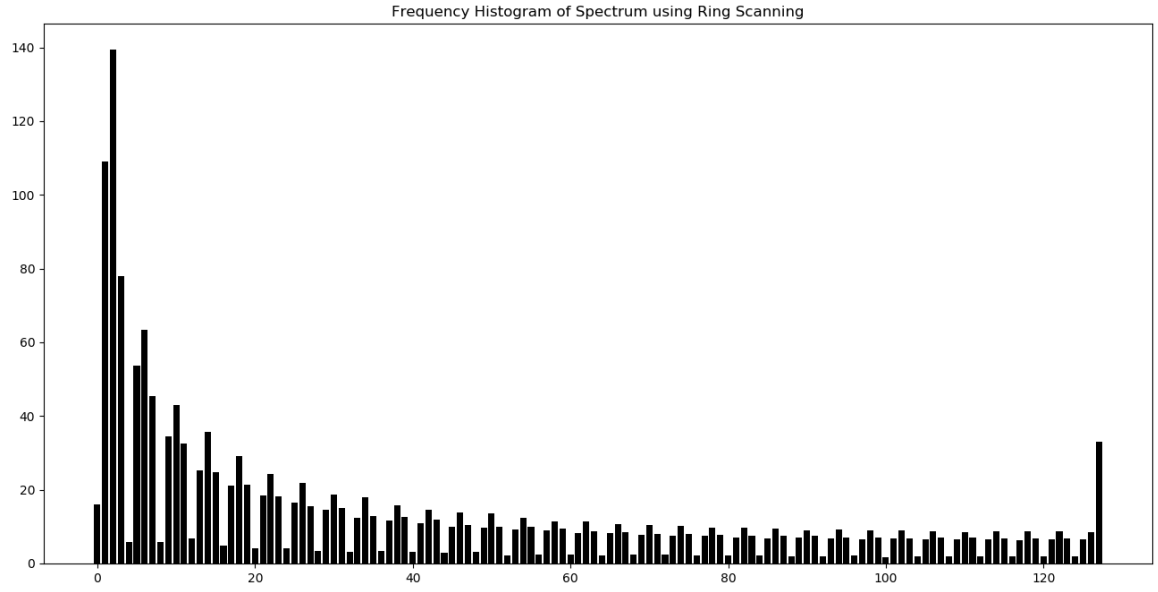

Fig 4- Frequency of histogram using set of rings for square256 image

2) B) divide the spectrum into angular sectors

Angular Sector Method- Computation performed for car image

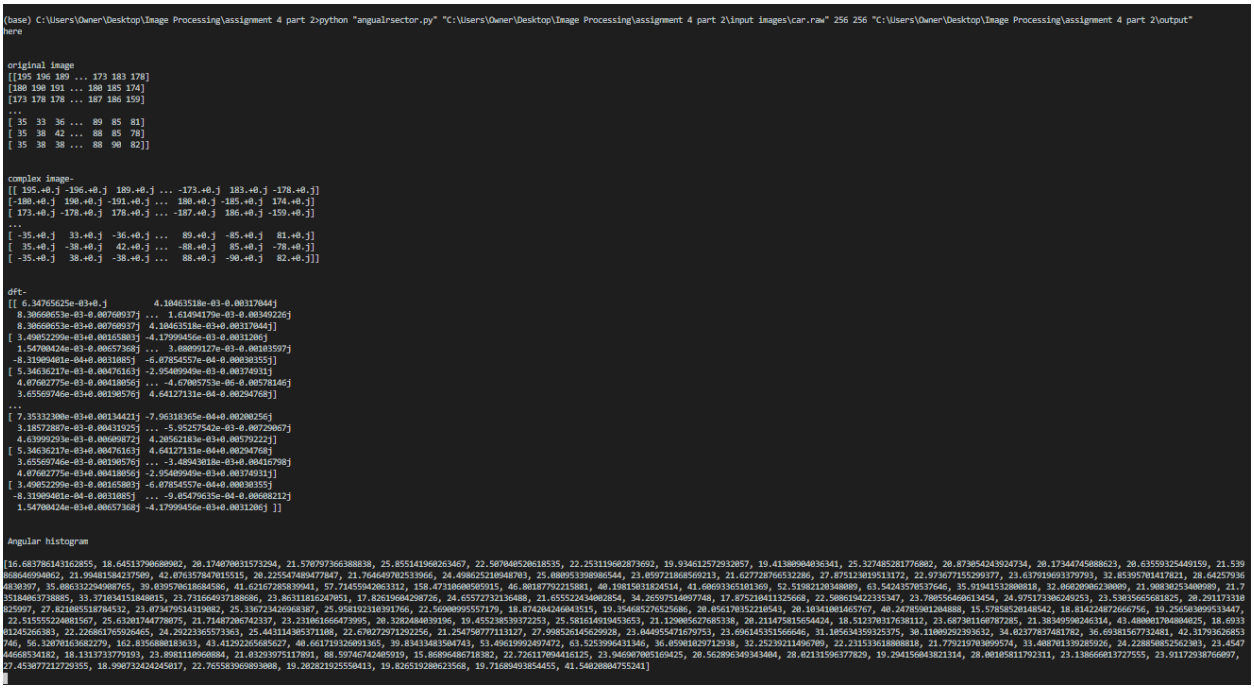

Fig 5 - Computation performed for car image using angular sector method

Frequency histogram for car using angular method

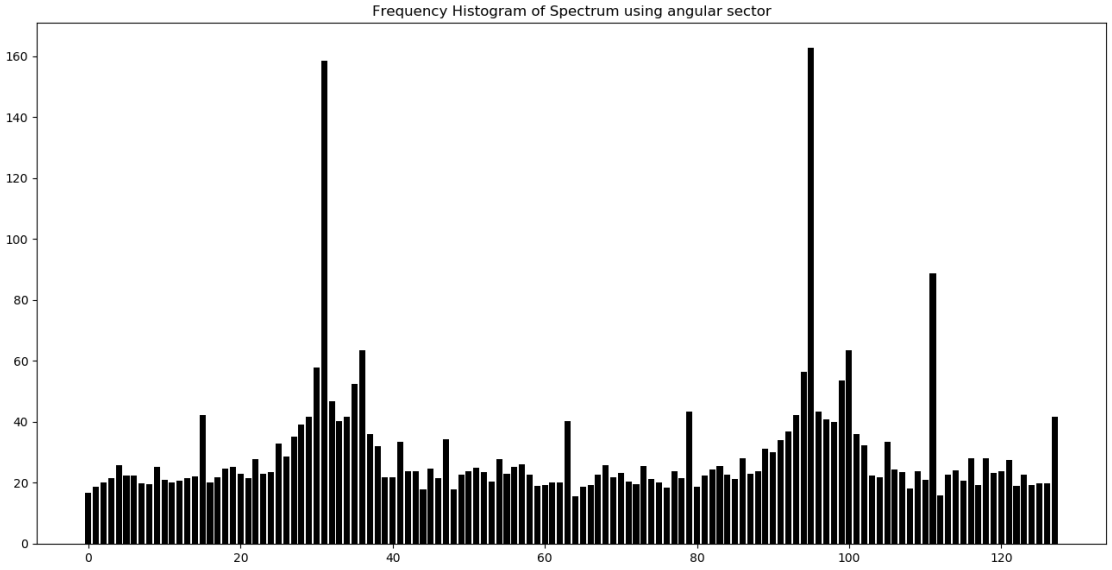

Fig 6- Frequency histogram for car using angular method

Angular Sector Method - Computation performed for square256 image

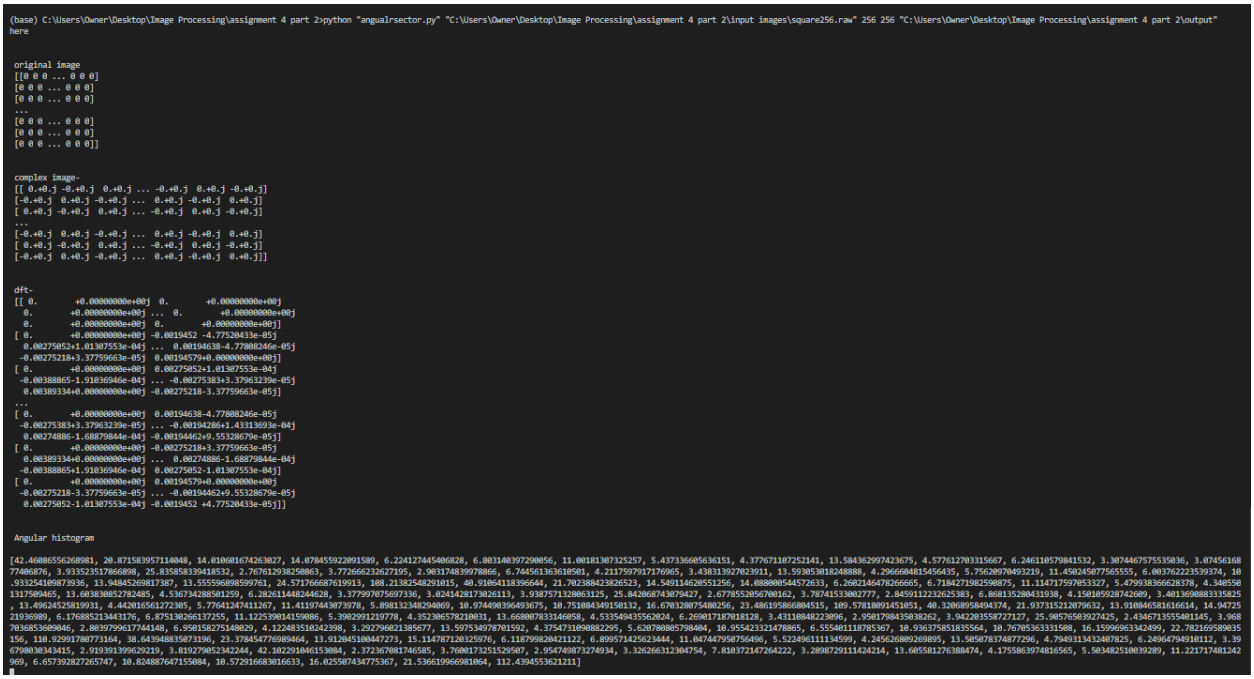

Fig 7- Computation performed for square256 image using angular sector method

Angular Sector Method - Frequency histogram for square 256

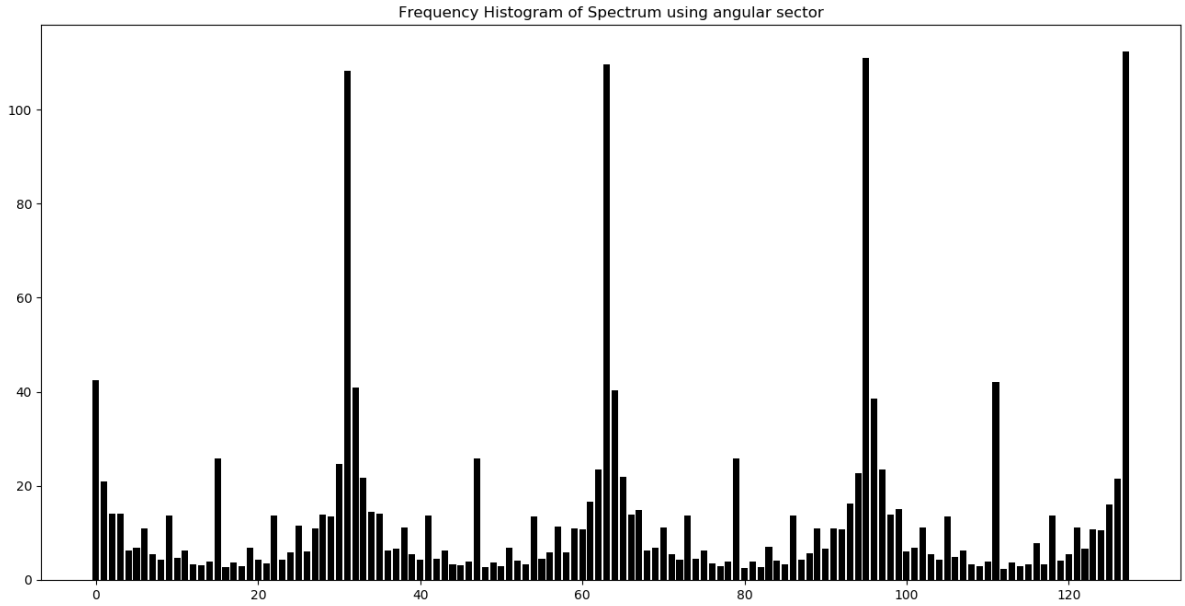

Fig 8 - **Frequency histogram for square 256 using angular sector method**

Question 3)

Below Screenshots include raw pixel images and computations performed. Low pass filter is performed with the cut off frequencies 30 and 70 for both car and square images. High pass filter is performed with the cut off frequencies 10 and 60 for both car and square images.

Below screenshots consists 8 executions. For every execution, there is a screenshot of raw image, screenshot of the filter and screenshot of the invers fft performed.

Low pass filter

Low pass filter for car with the cutoff frequency 30

Fig 9- Low pass filter for car with the cutoff frequency 30

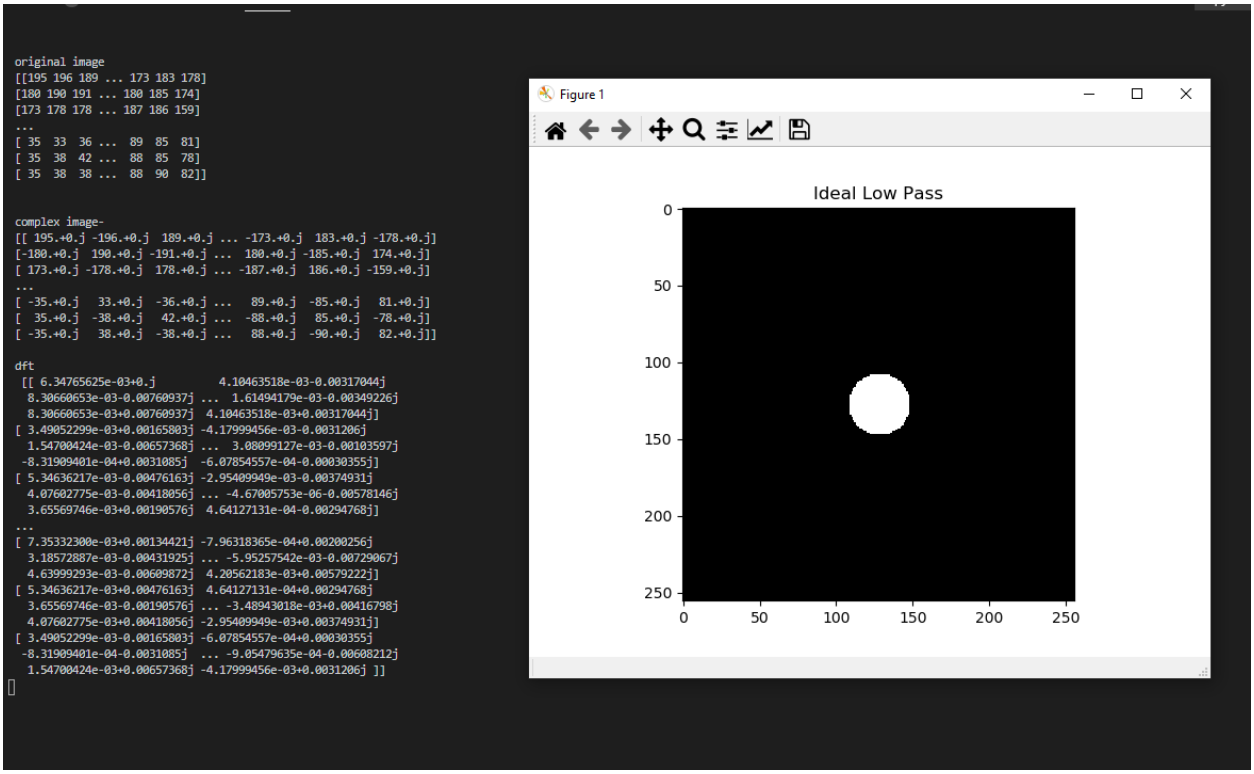

Fig 10- Low pass filter for the car with the cut off frequency 30

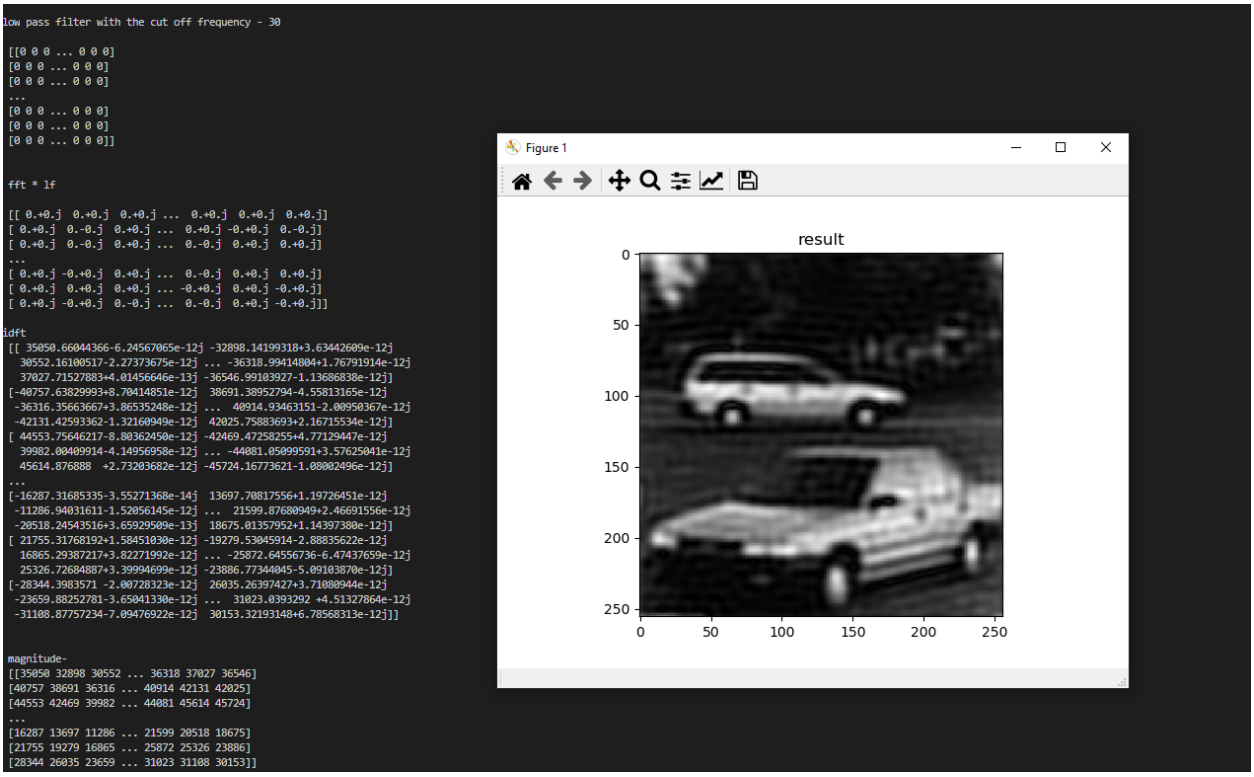

Fig 11- Low pass filter inverse fft result for the car with the cut off frequency 30

Low pass filter for the car with the cut off frequency 70

Fig 12- Low pass filter for the car with the cut off frequency 70

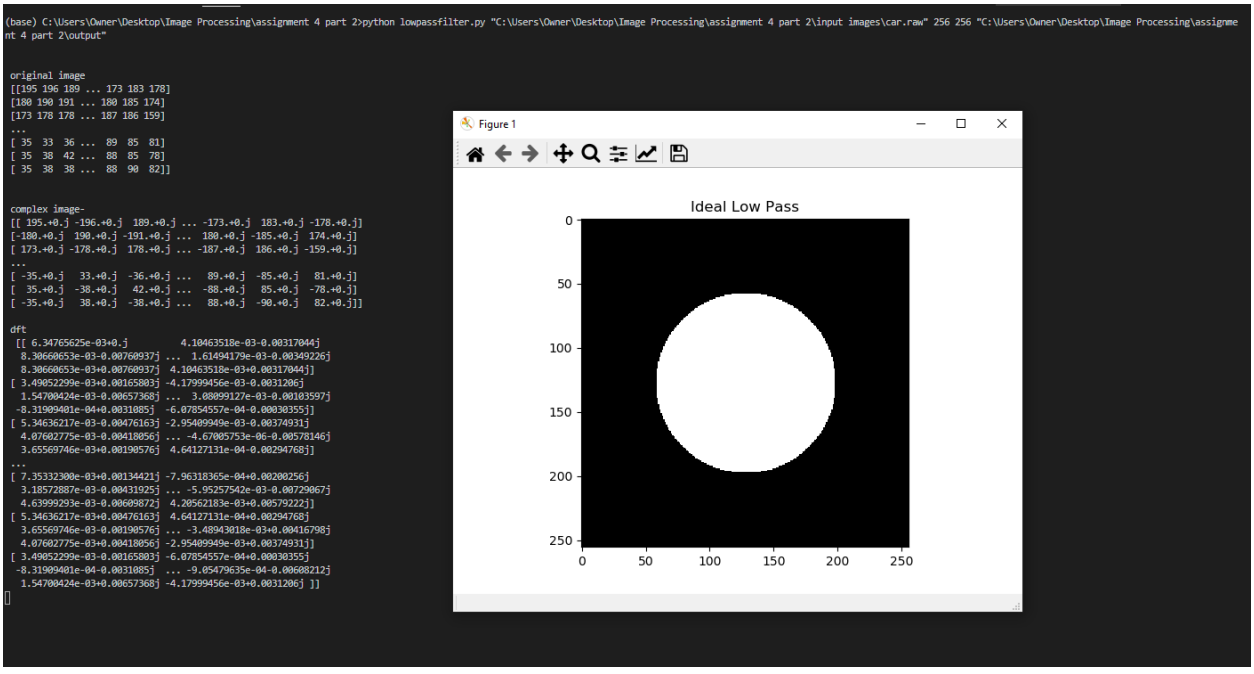

Fig 13- Low pass filter for the car with the cut off frequency 70

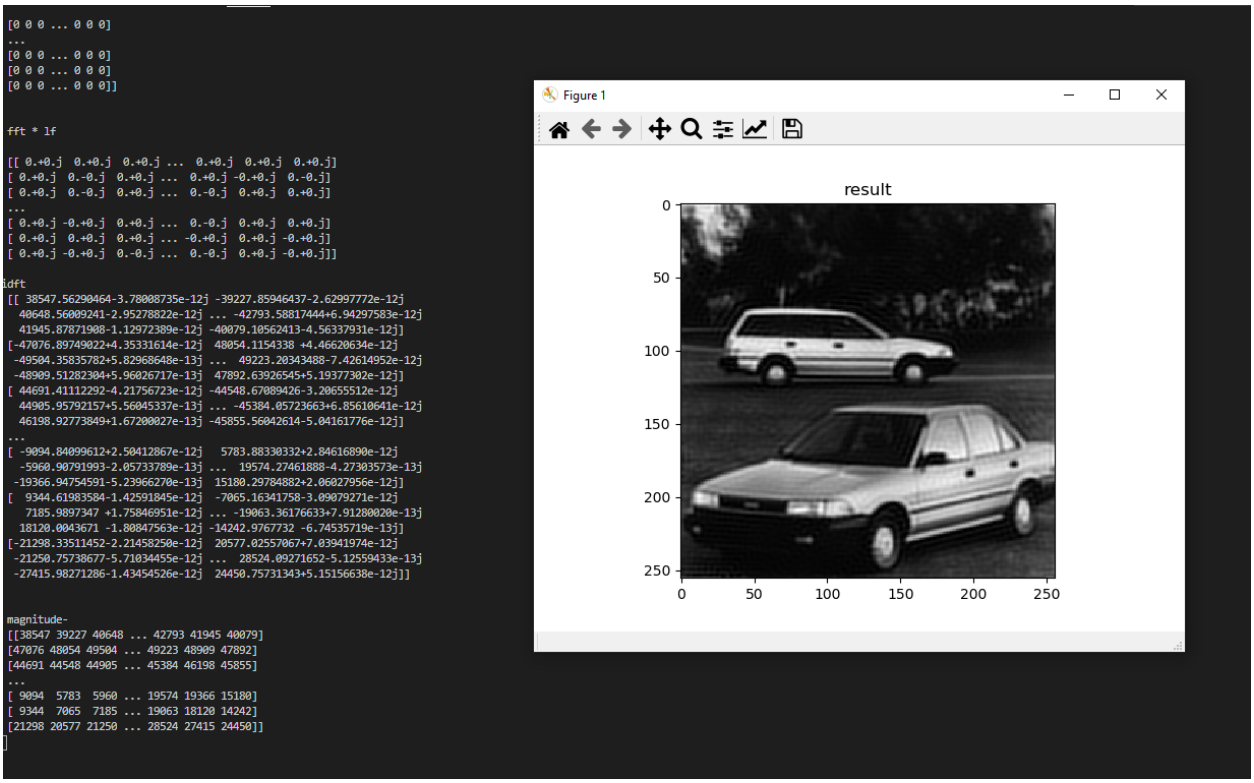

Fig 14- Low pass filter inverse fft result for the car with the cut off frequency 70

Low pass filter for the square with the cut off frequency 30

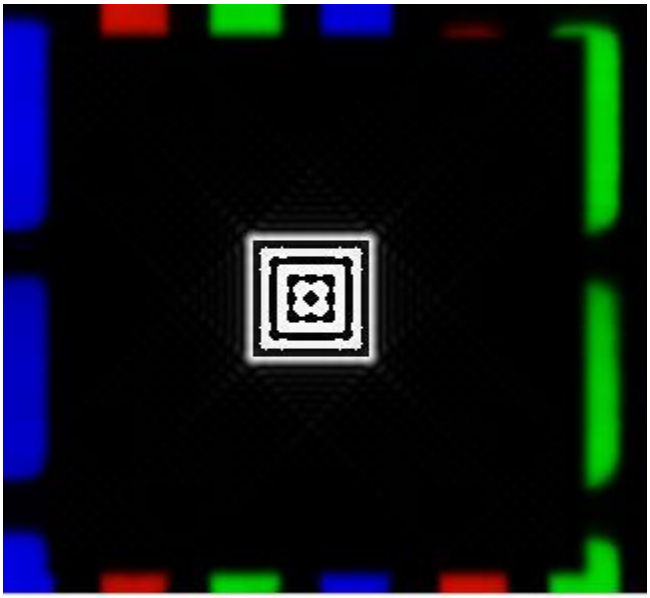

Fig 15 - Low pass filter for the square with the cut off frequency 30

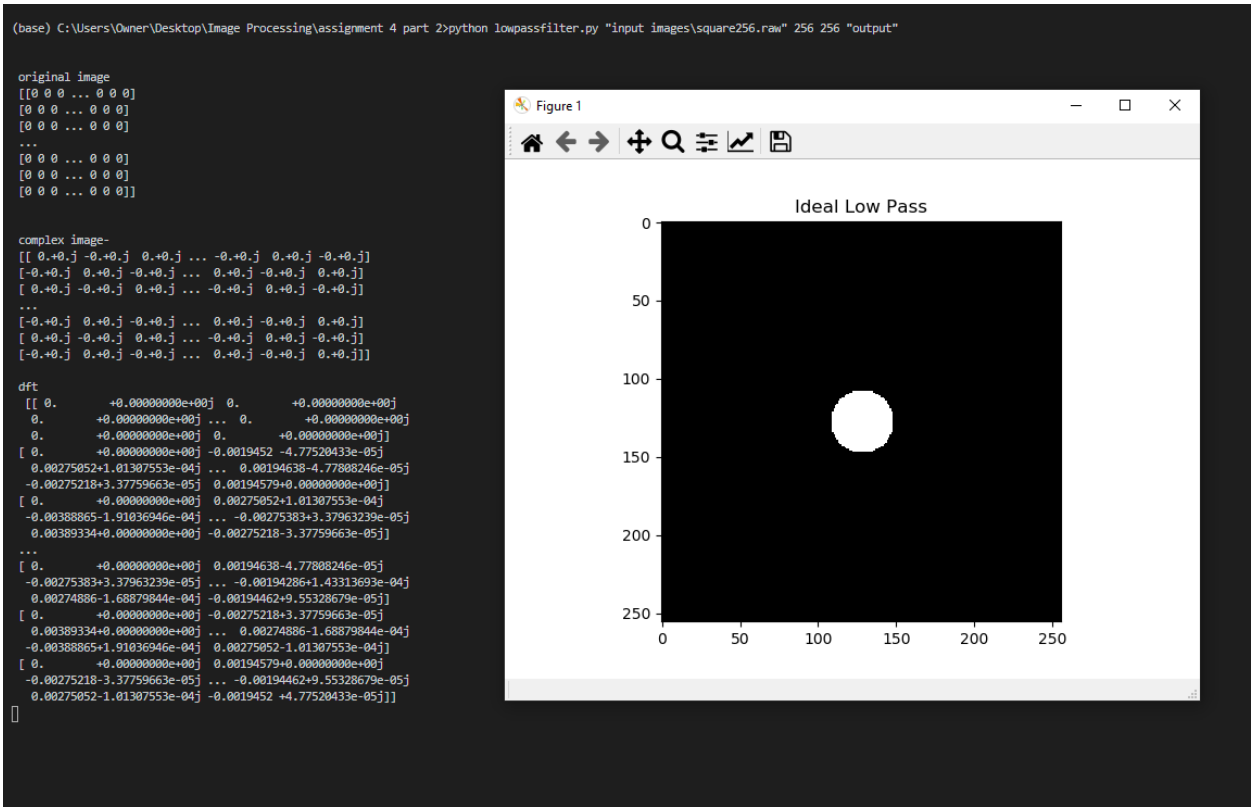

Fig 16- Low pass filter for the square with the cut off frequency 30

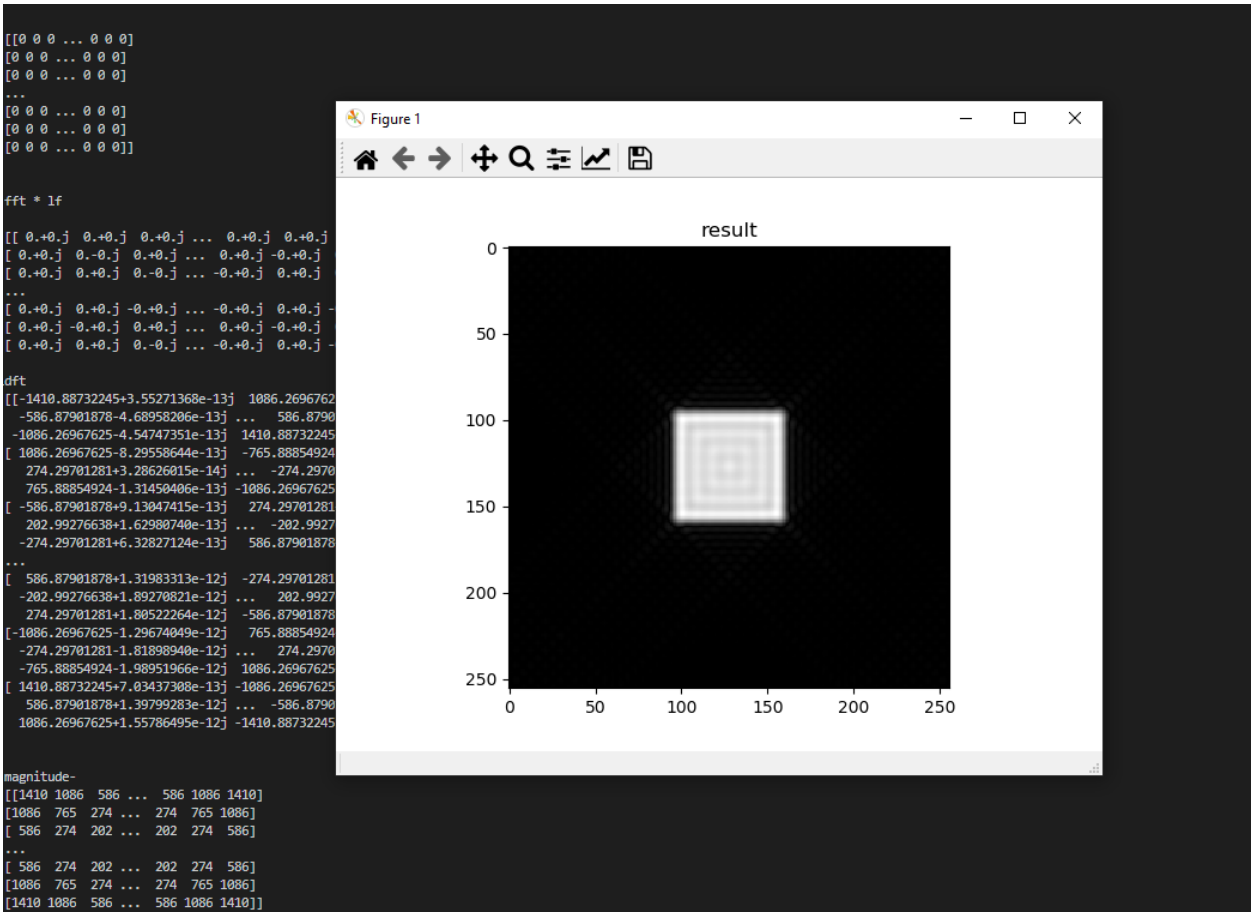

Fig 17- Low pass filter inverse fft result for the square with the cut off frequency 30

Low pass filter for the square with the cut off frequency 70

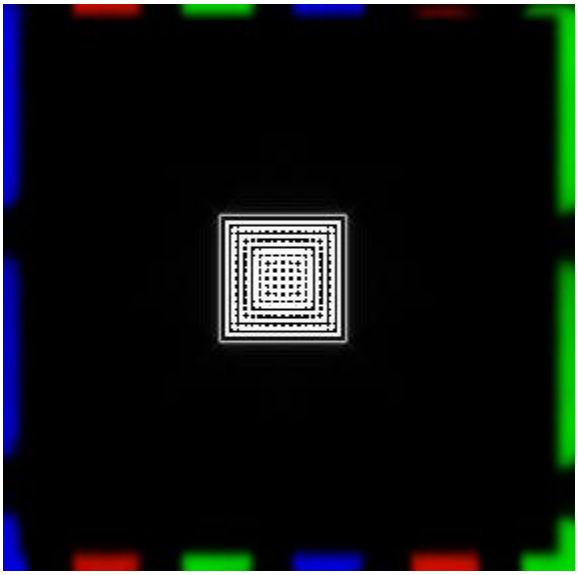

Fig 18 - Low pass filter for the square with the cut off frequency 70

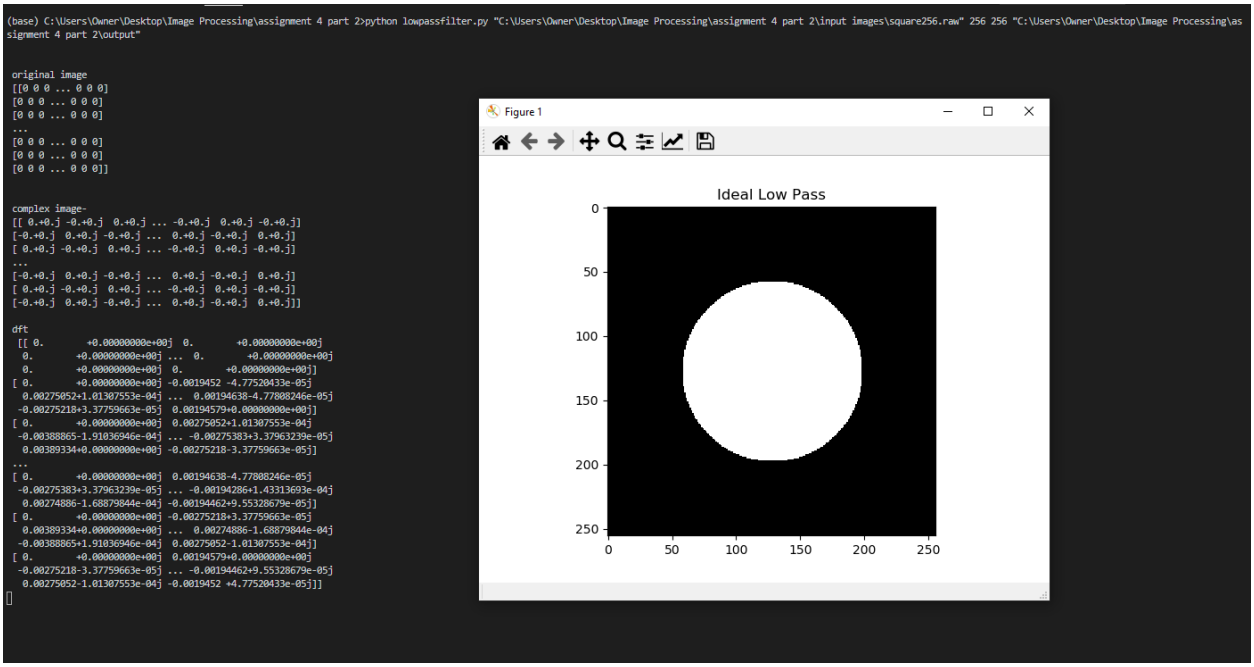

Fig 19- Low pass filter for the square with the cut off frequency 70

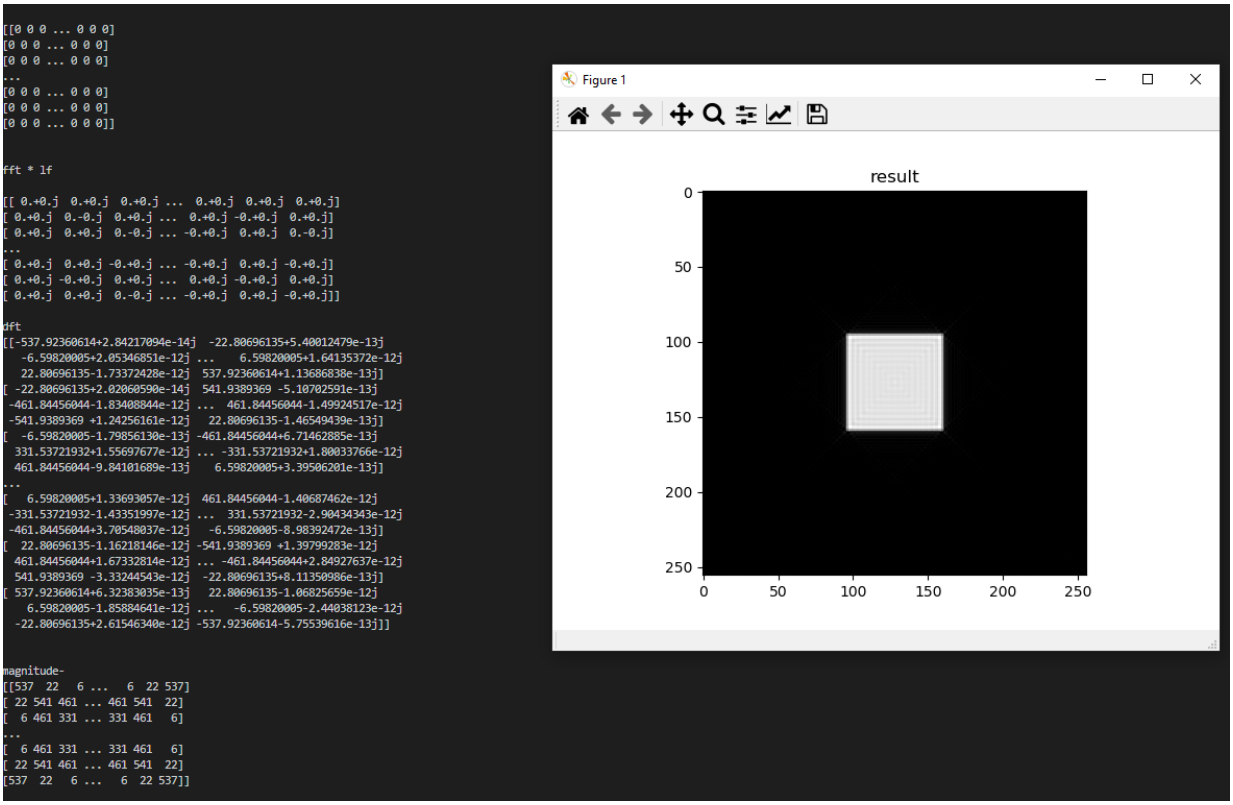

Fig 19- Low pass filter inverse fft result for the square with the cut off frequency 70

High Pass Filter

High pass filter for the car with the cut off frequency 10

Fig 20- High pass filter for the car with the cut off frequency 10

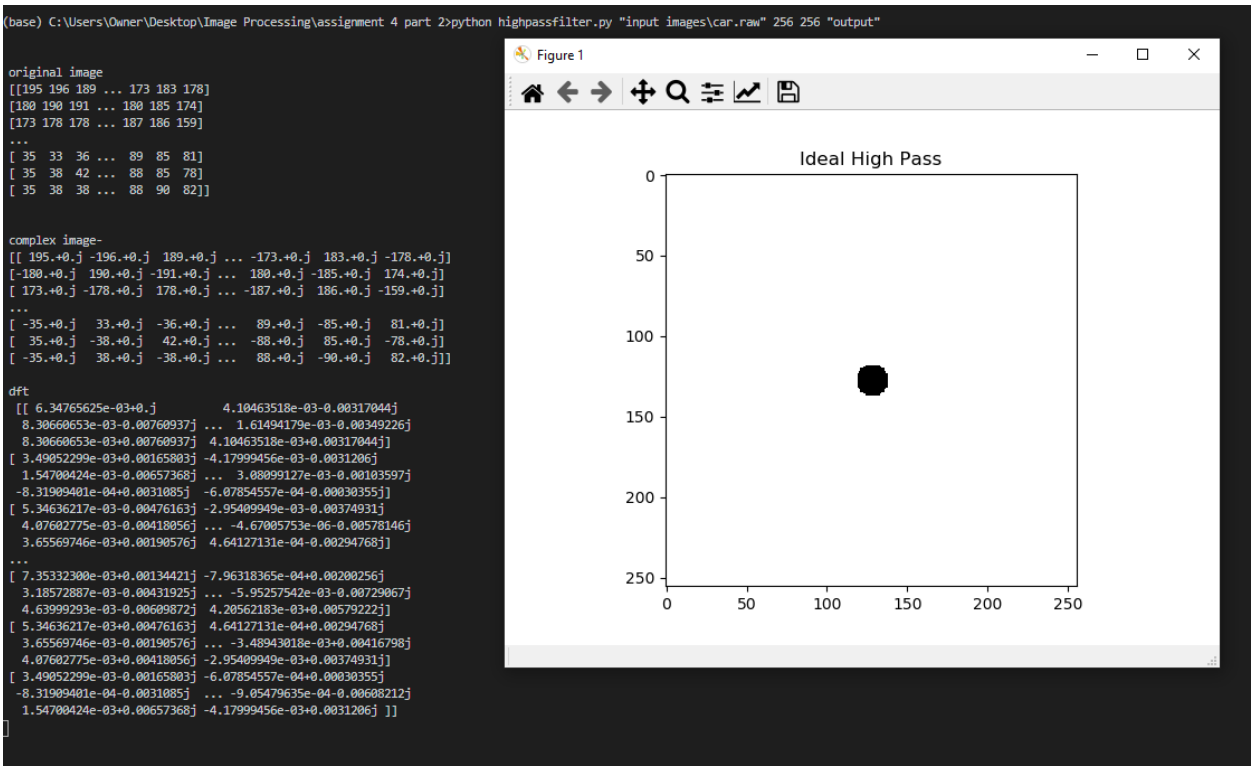

Fig 21- High Pass Filter for the car with the cut off frequency 10

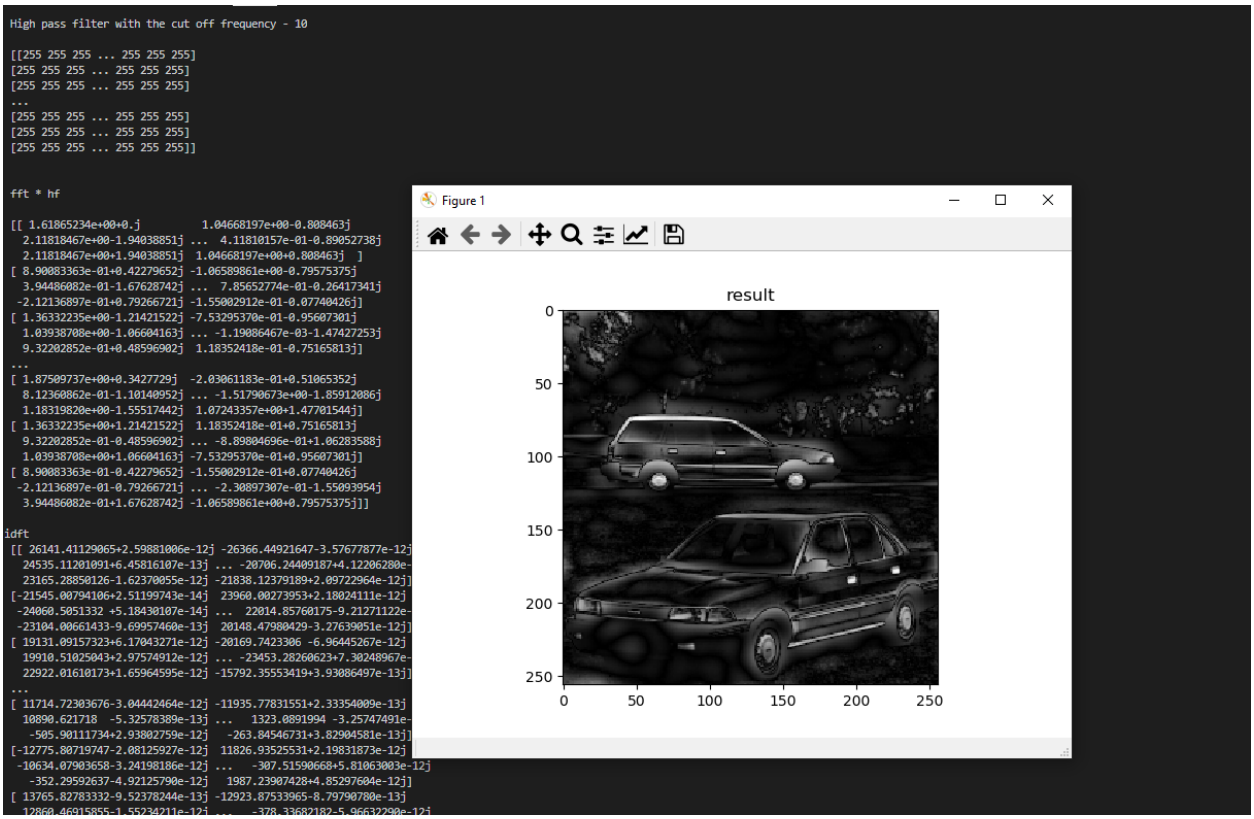

Fig 22- High Pass Filter inverse fft result for the car with the cut off frequency 10

High pass filter for the car with the cut off frequency 60

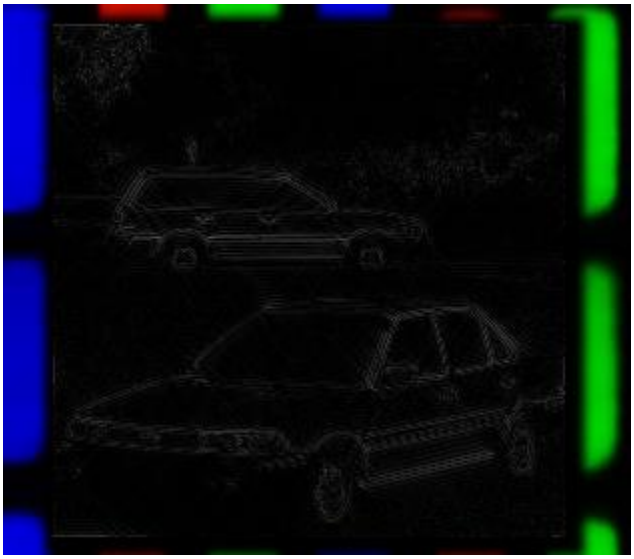

Fig 23 - High pass filter for the car with the cut off frequency 60

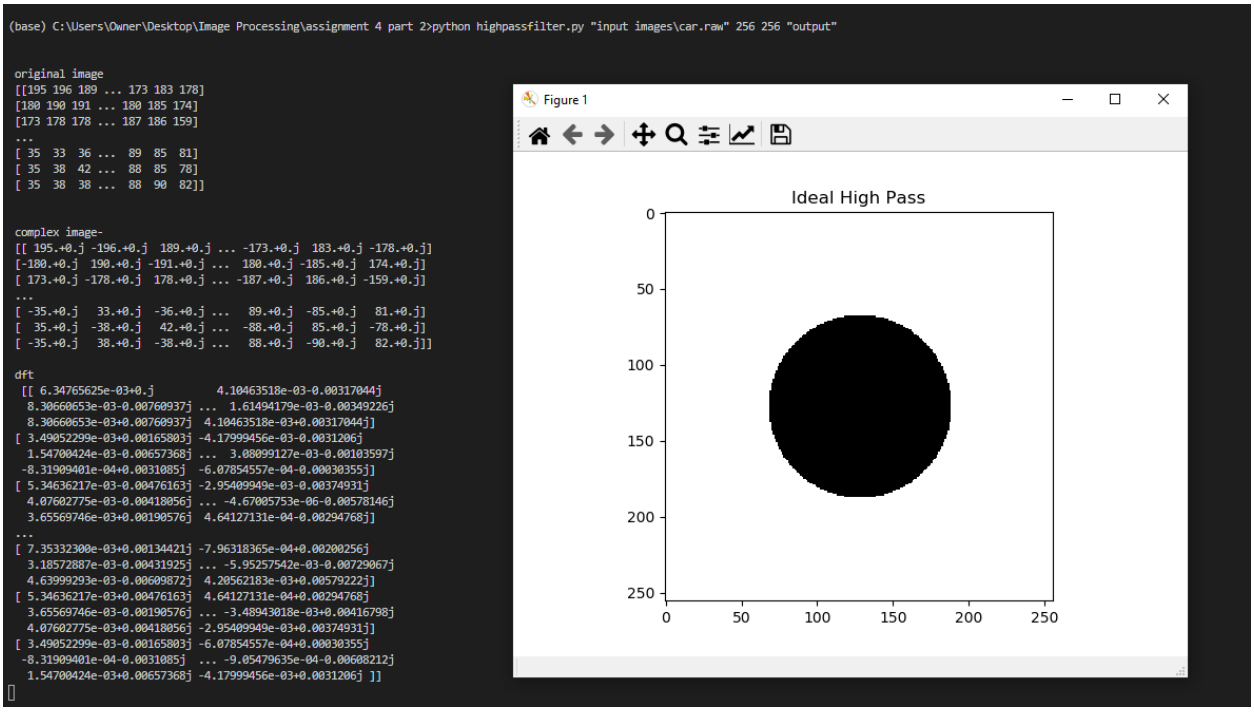

Fig 24- High Pass Filter for the car with the cut off frequency 60

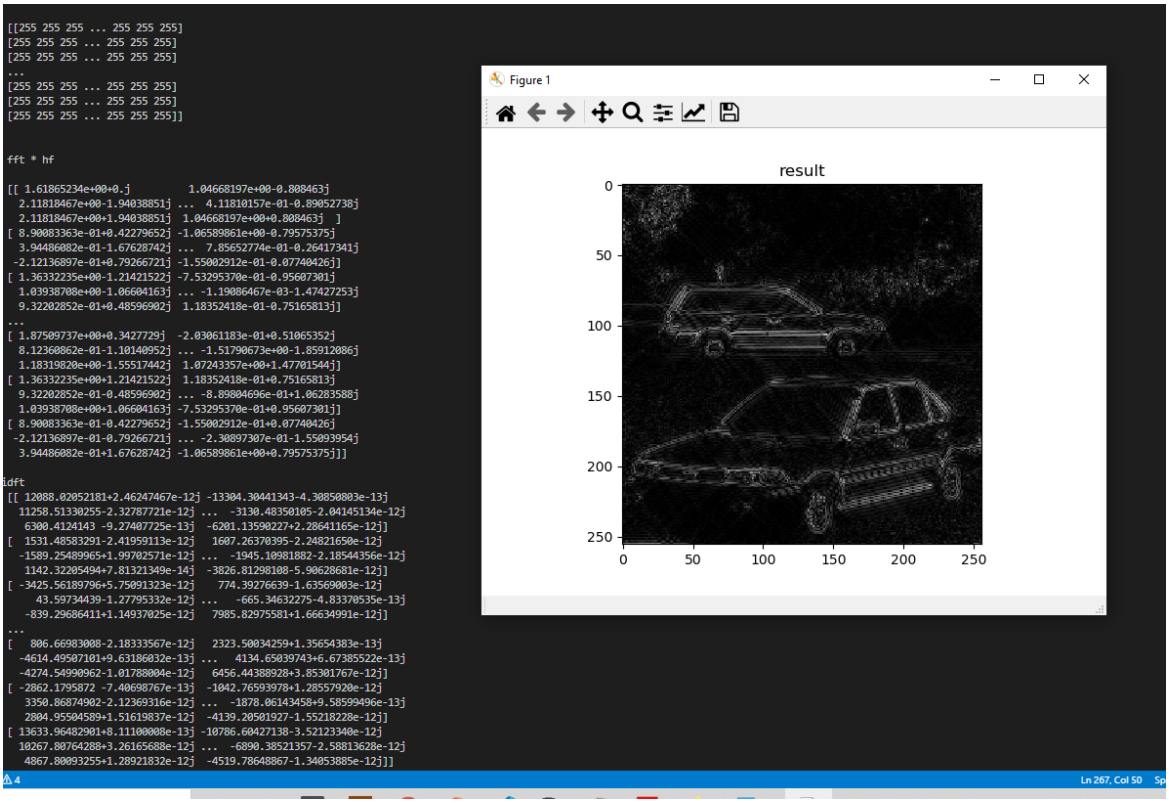

Fig 25- High Pass Filter for the car with the cut off frequency 60

High pass filter for the square with the cut off frequency 10

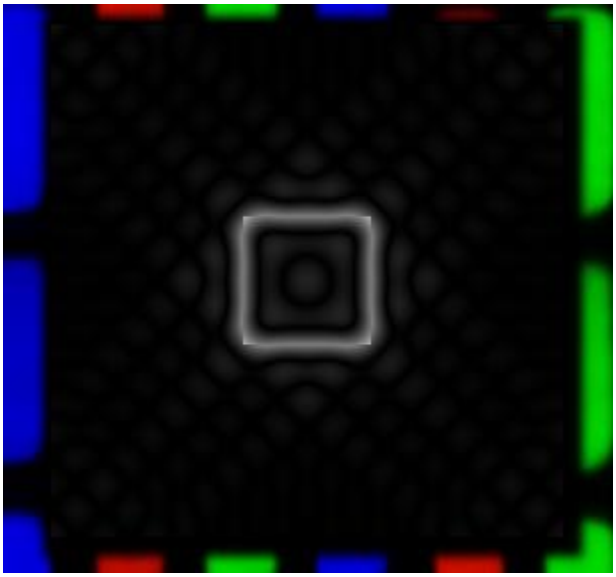

Fig 26- High pass filter for the square with the cut off frequency 10

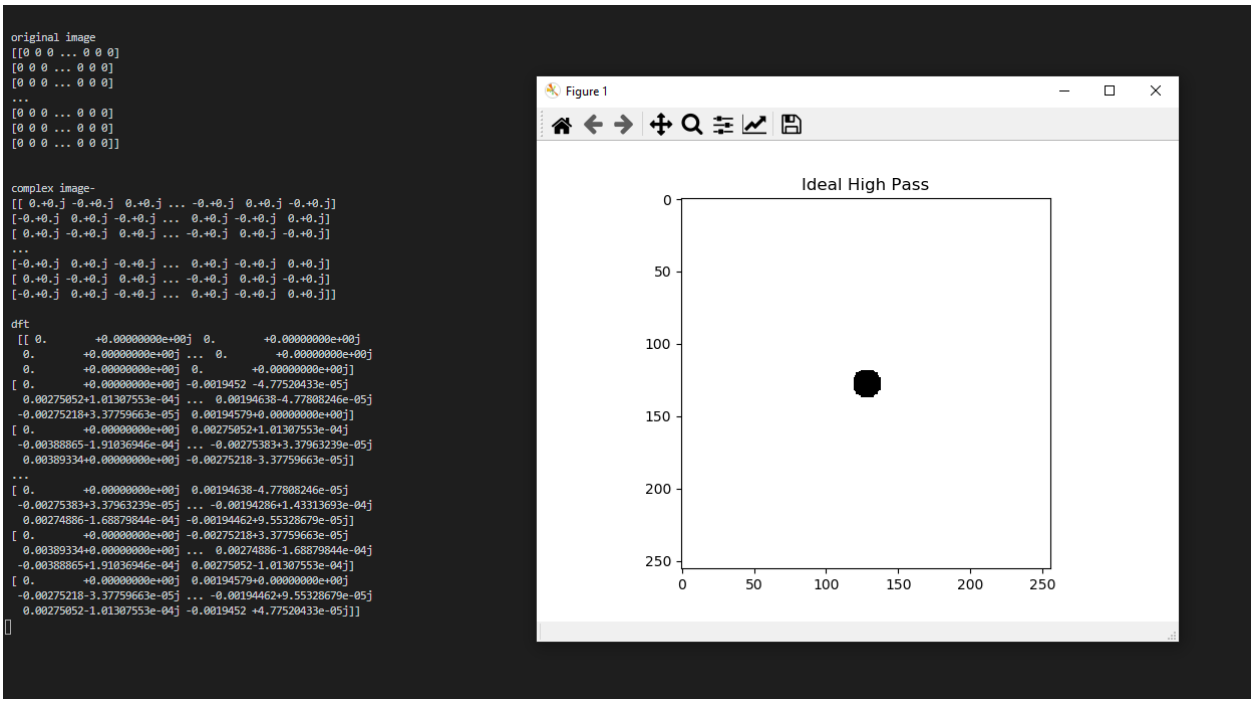

Fig 27- High Pass Filter for the square with the cut off frequency 10

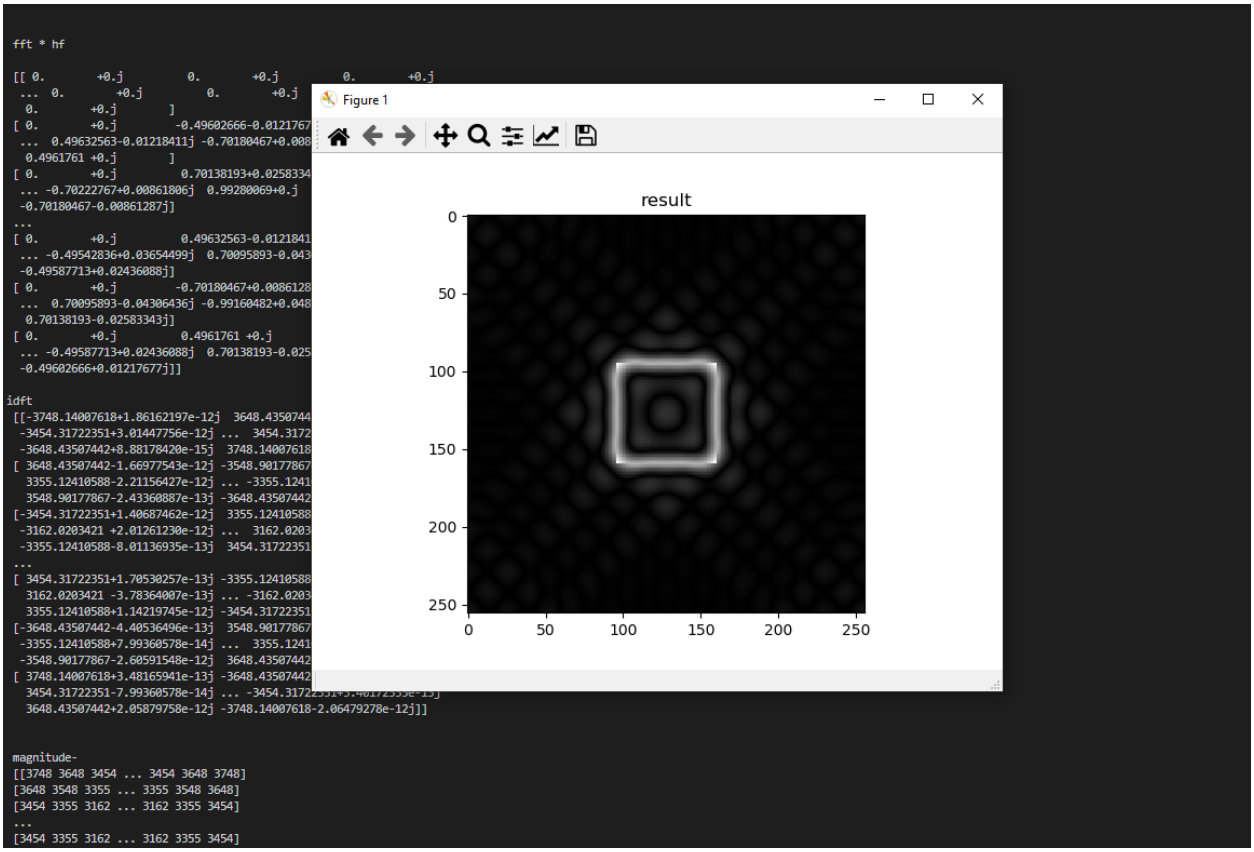

Fig 28- High Pass Filter inverse fft result for the square with the cut off frequency 10

High Pass filter for the square with the cut off frequency 60

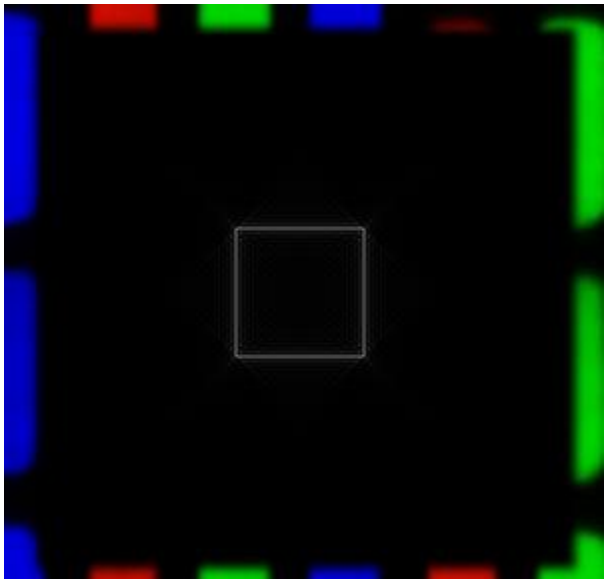

Fig 29 -High Pass filter for the square with the cut off frequency 60

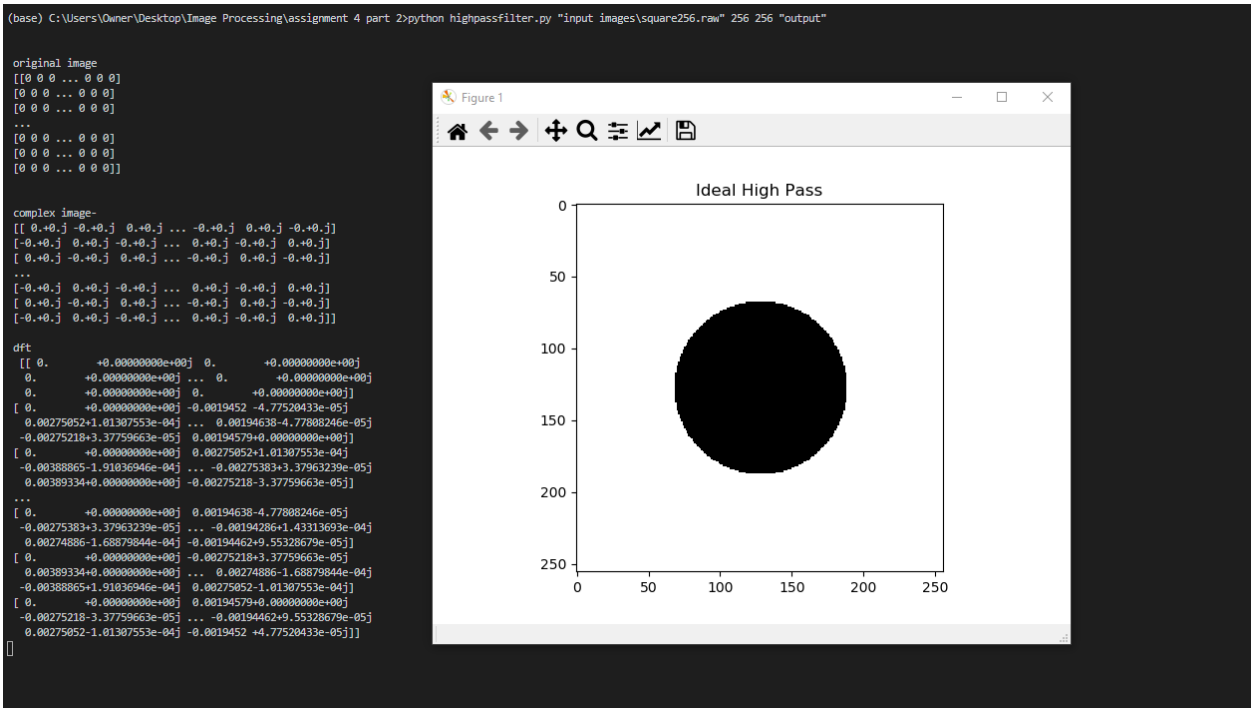

Fig 30- High Pass Filter for the square with the cut off frequency 60

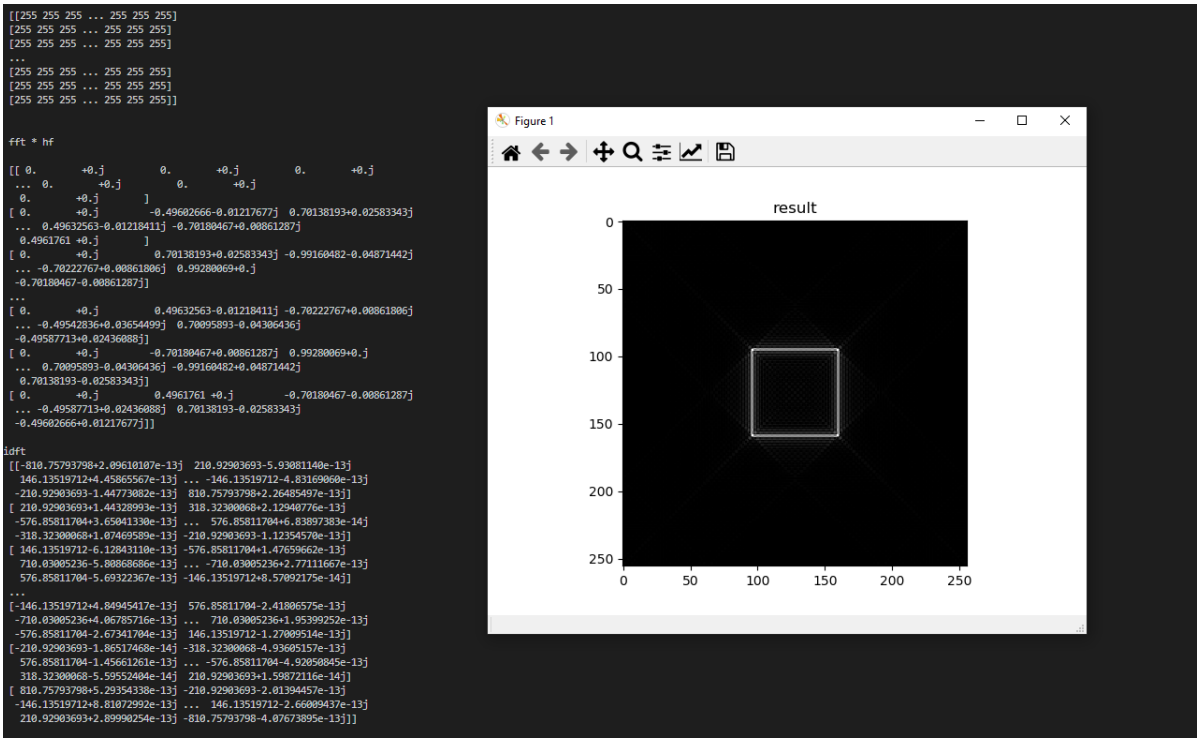

Fig 31- High Pass Filter inverse fft result for the square with the cut off frequency 60