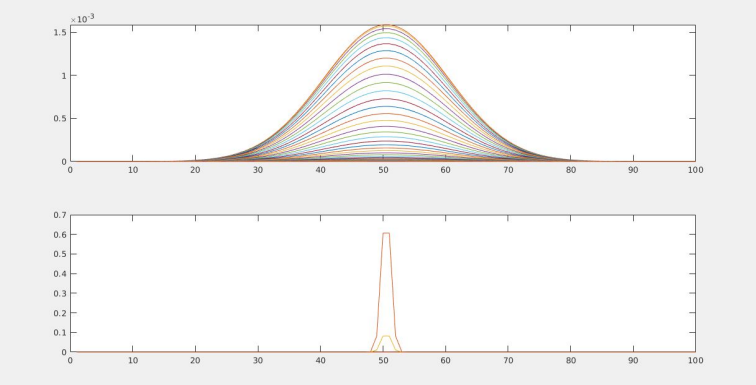
Report

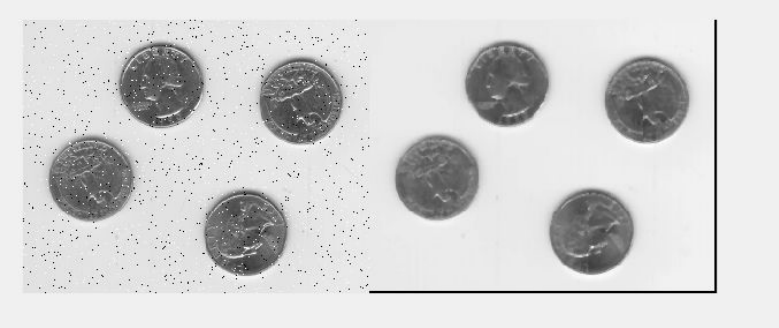
1.

1. Comparing my filter to inbuilt fspecial filter.

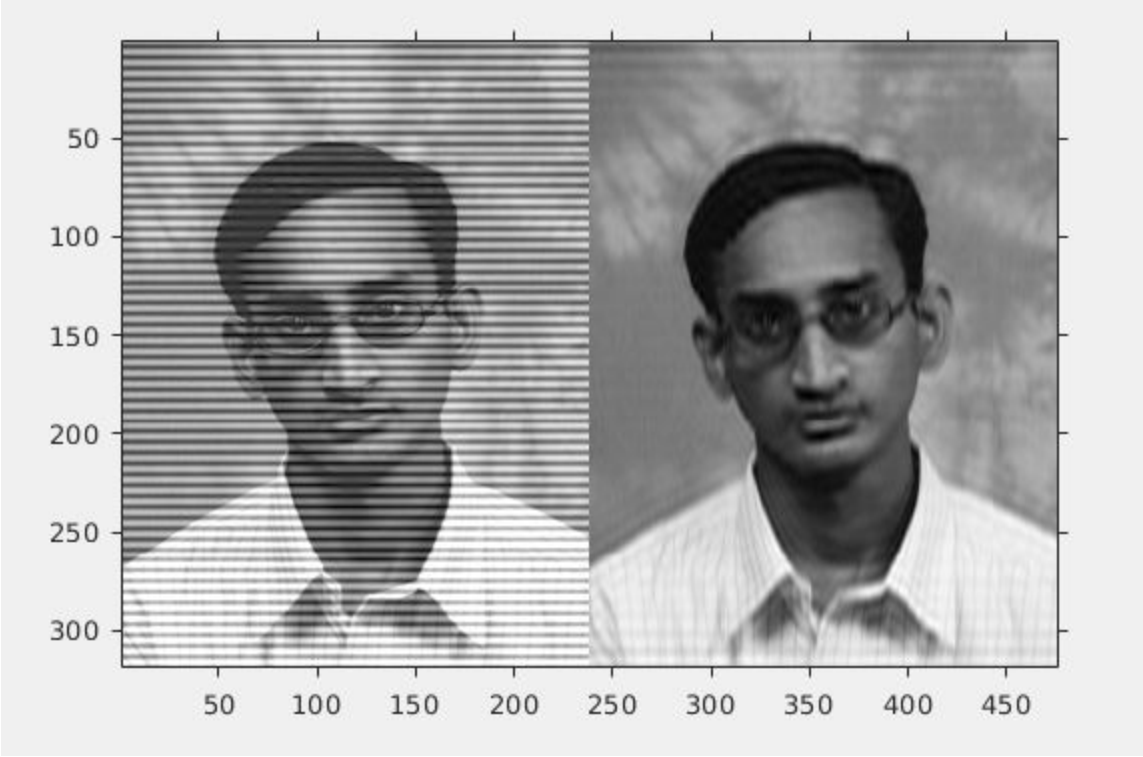


2. Result of gaussian and median filter.

3. Result of median image on img1.png with window size =3



4. Result after removing noise frequencies from img2.png



2.

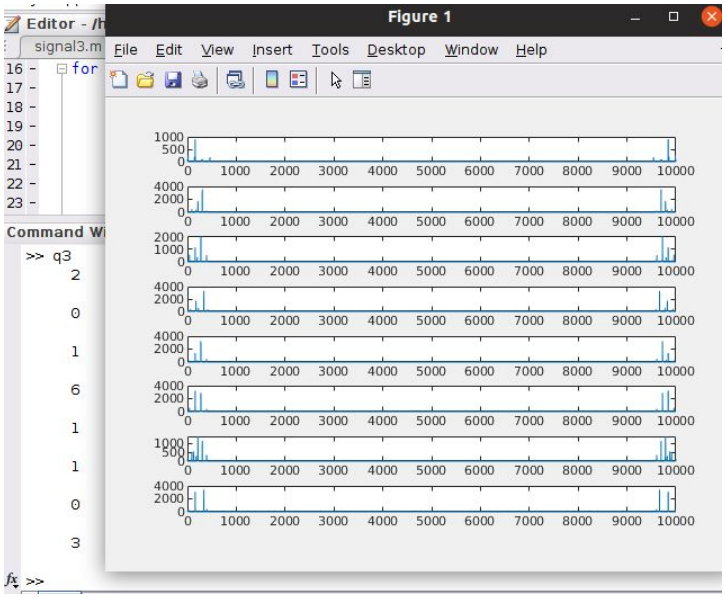
a) There are N square filters of size F*F.
Image is W*H and has C channels.
Convolution step size=S
Padding of Z initially =0.
Image size after padding = [w+2*z h+2*z]

b) Assuming 0 padding after each filter,now filter is convolved with image with step lengths of S units.

Thus final image has dimensions (W-F+2*P)/(S+1) * (H-F+2*P)/(S+1)
Number of convolutions per channel = output width*output height;

Let result after (i-1)th convolution be W_i-1,H_i-1,then
W_i = (W_i-1 -F+2*P)/(S+1) and
H_i = (H_i-1 - F+2*P)/(S+1)

3.



Extract top two peaks from all <number.ogg> files and compare with top two peaks of each number in tone.wav, number dialed is *20161103.*

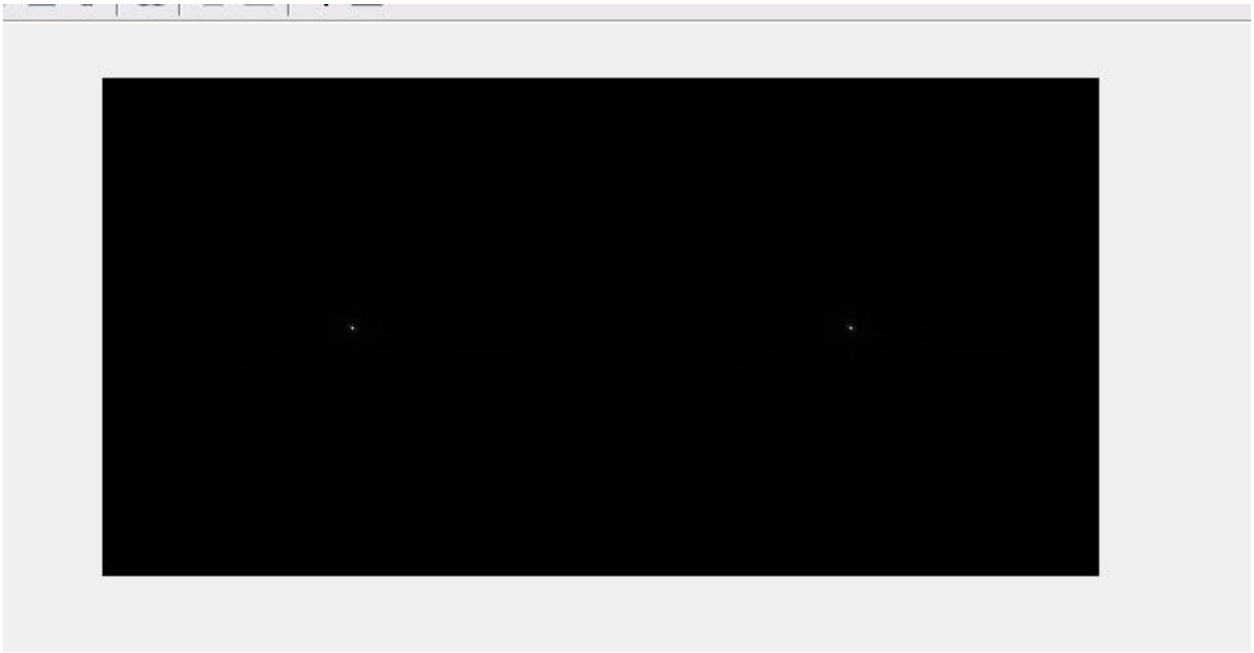
4. We have to apply a low pass and remove some unwanted frequencies Low pass attenuates higher frequencies.Sgolay and movmean remove high frequencies,and sgolay sounded better and hence it was used.

5.

Run time of my dft vs Run time of my fft

256*256 input :
FFT:Elapsed time is 0.039610 seconds.
DFT:Elapsed time is 0.013501 seconds.

Sample output from my fft and inbuilt fft (cameraman.tif)

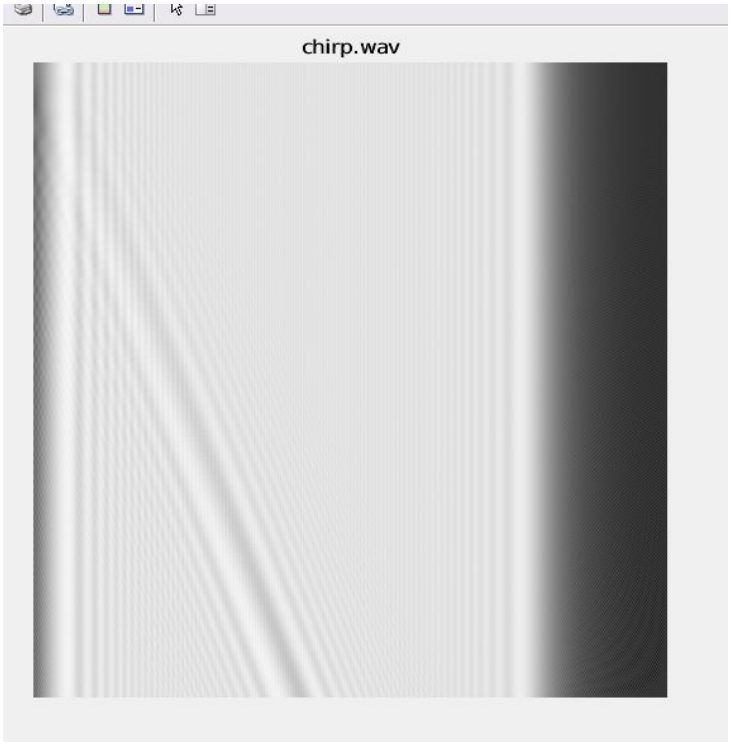


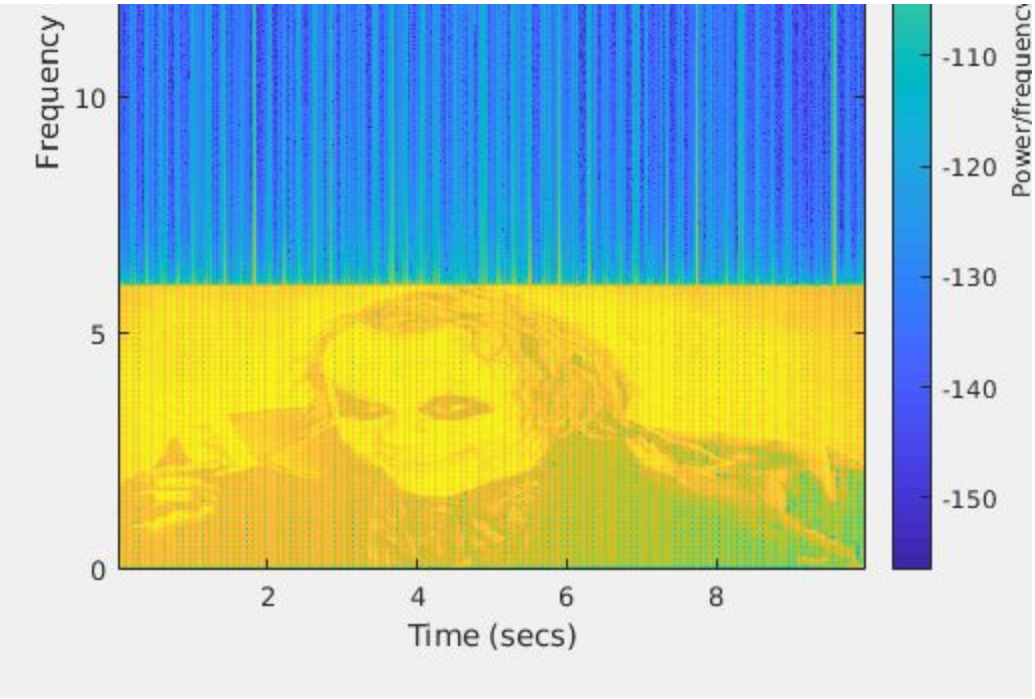
6.show original and double inverted

Original image **fft(fft(image))**

We must do fliplr and then flip in frequency domain to get back our original image

7.



2. 

Hence the password is *joker.*

3.