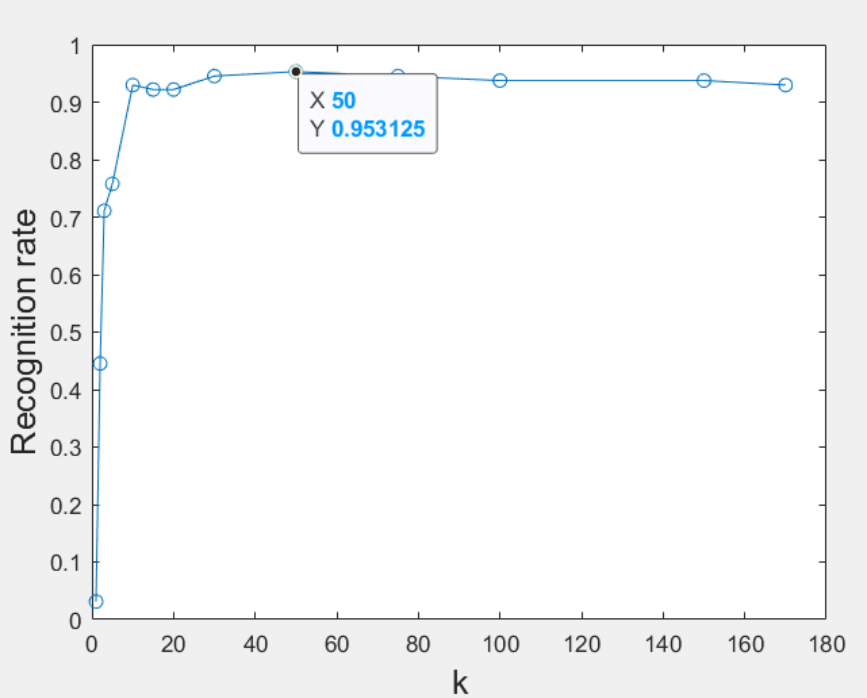
Q1.

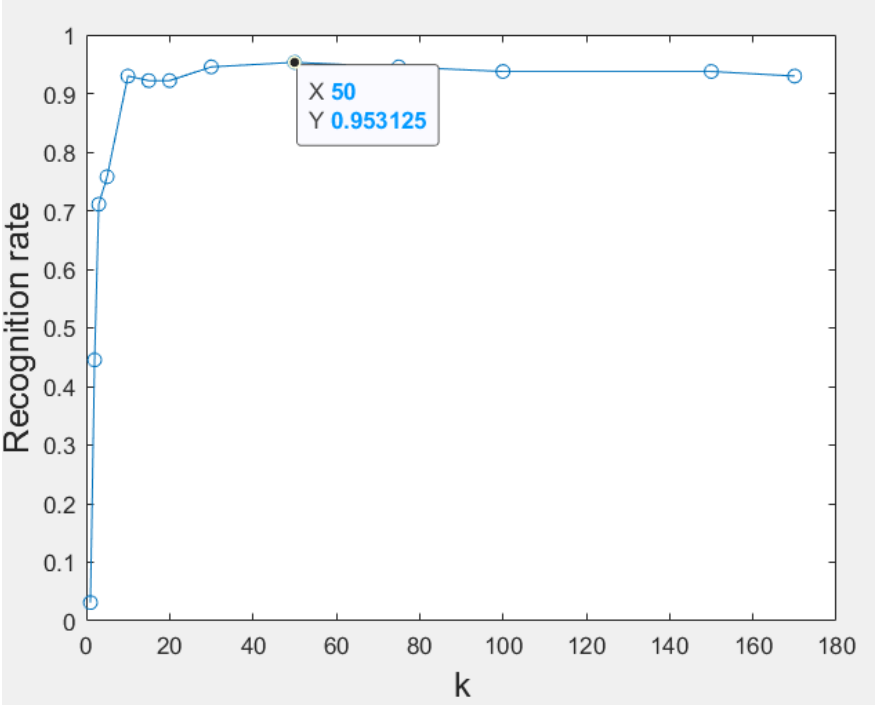
Ans.

1. Plots with ORL dataset.

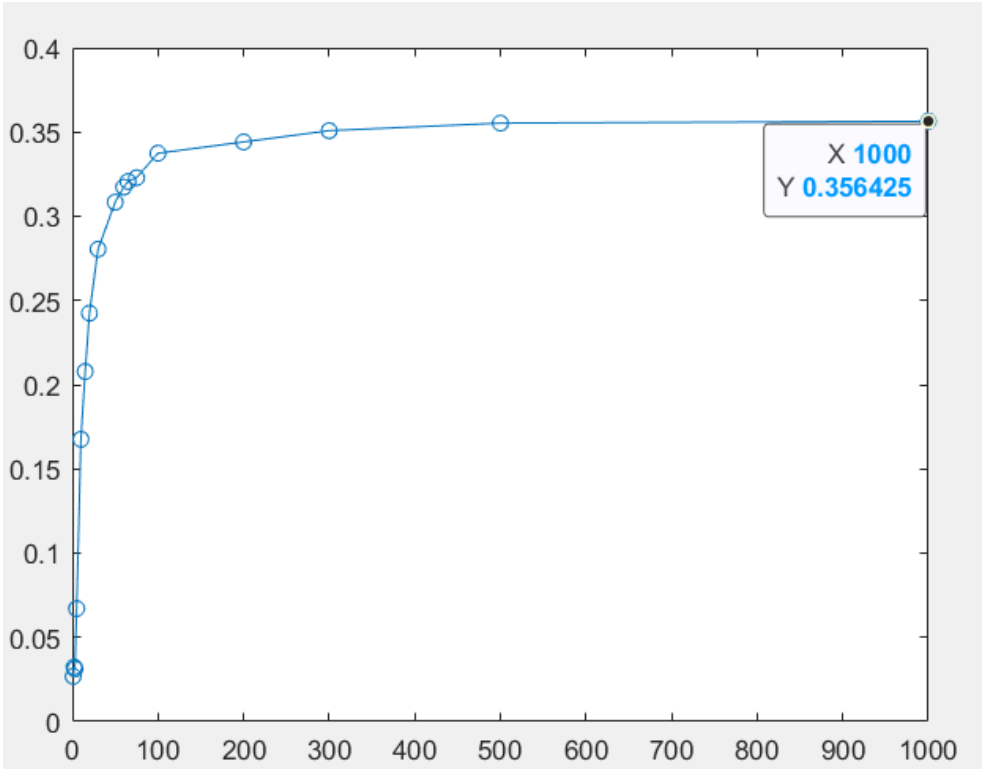
With Using **Eig** function in Matlab:-



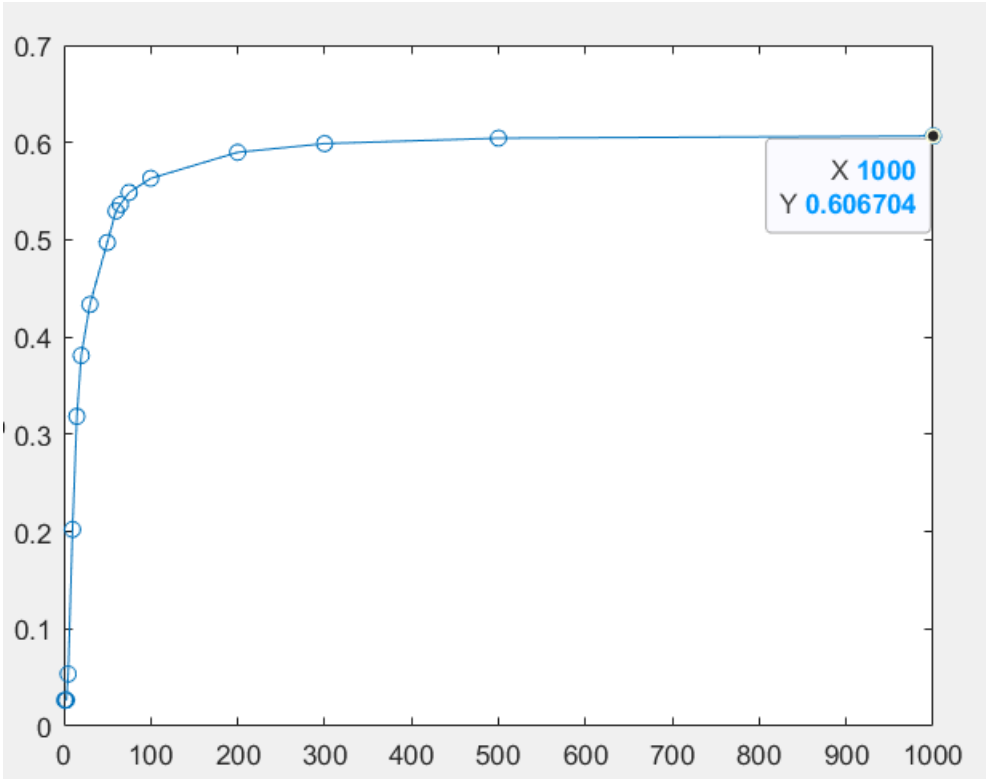
With **svd** function in matlab:-



2. Plots on Yale dataset.



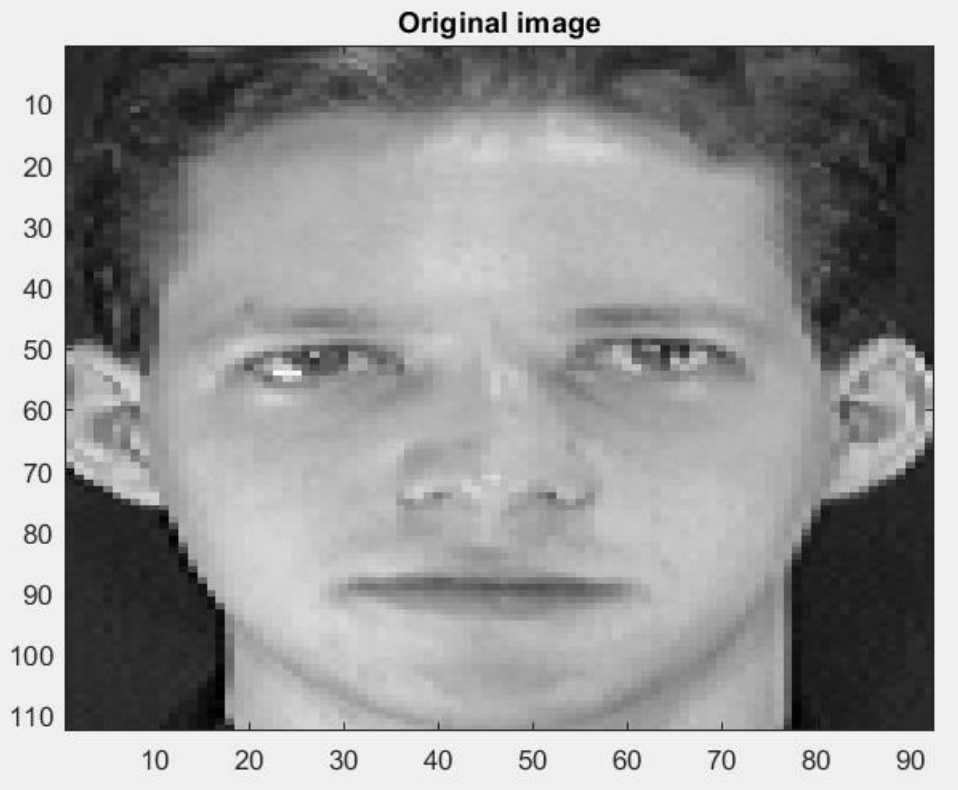
Squared difference between all the Eigen coefficients.

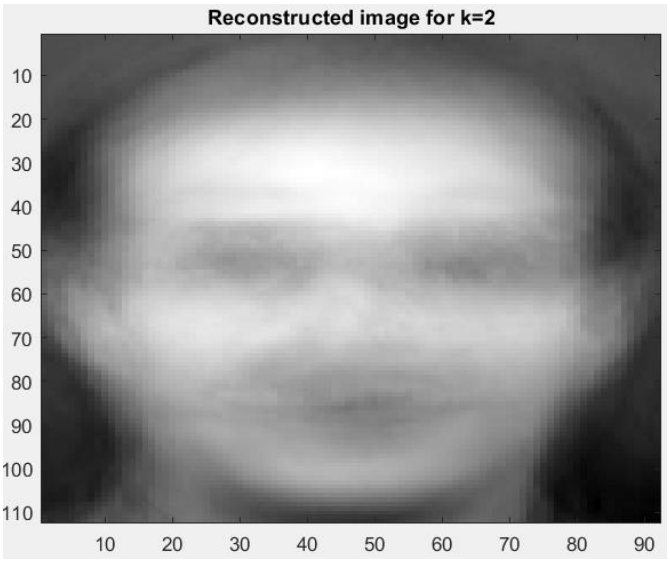


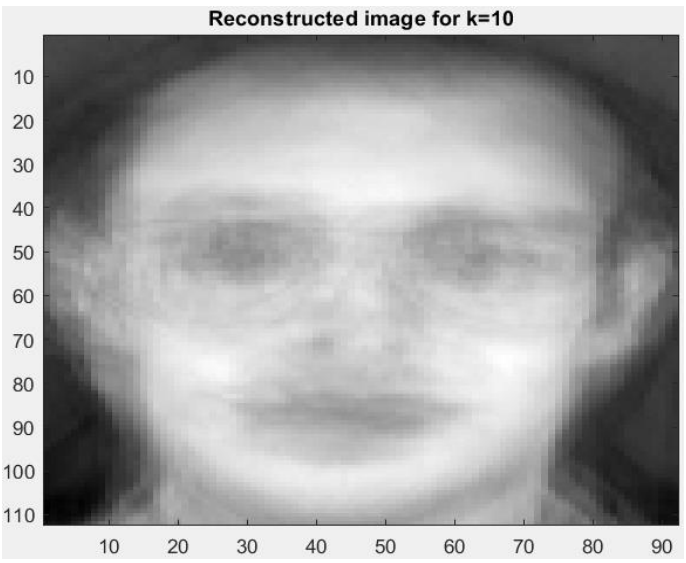
Squared difference between all except the three Eigen coefficients corresponding to the eigenvectors with the three largest eigenvalues.

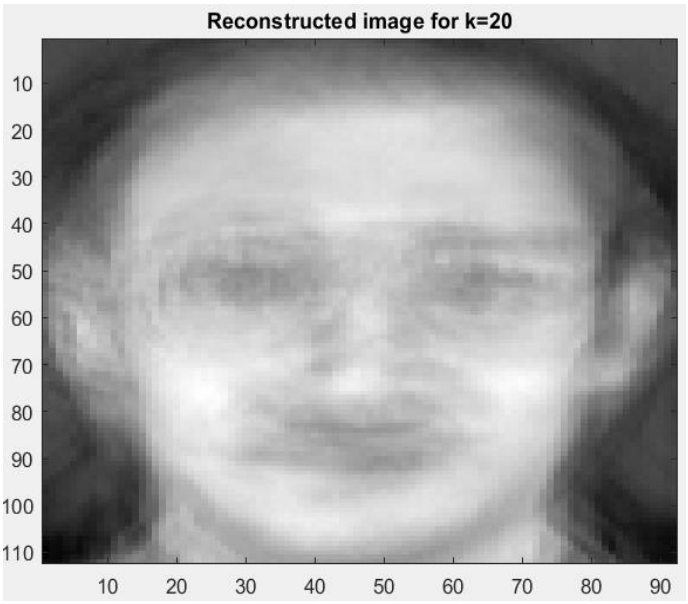
Conclusion: It can be seen from both the plots and it was obvious that neglecting top 3 Eigen coefficients will lead to lot of filtering of low light illumination. Hence got better result with after neglecting.

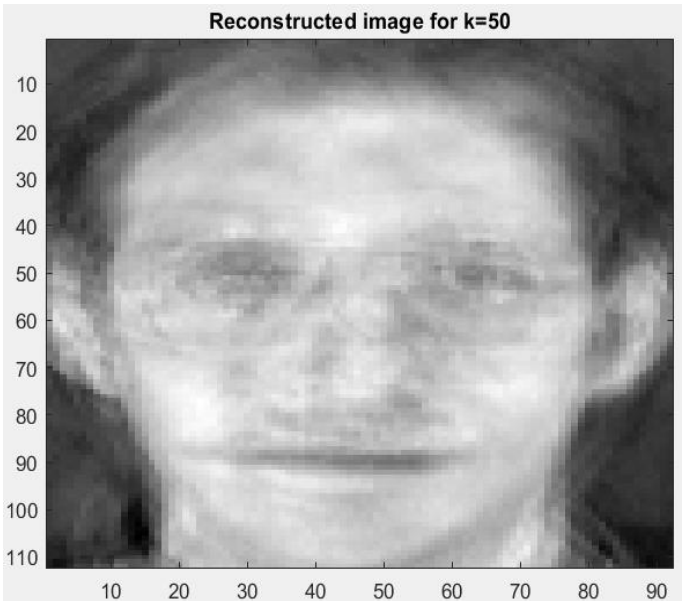
(b) Display in your report the reconstruction of any one face image from the ORL database using k ∈ {2, 10, 20, 50, 75, 100, 125, 150, 175} values.




Reconstructed image for k=2
10
20
30
40
50
60
70
80
90
100
110
10
20
30
40
50
60
70
80
90


Reconstructed image for k=10
10
20
30
40
50
60
70
80
90
100
110
10
20
30
40
50
60
70
80
90


Reconstructed image for k=20
10
20
30
40
50
60
70
80
90
100
110
10
20
30
40
50
60
70
80
90


Reconstructed image for k=50
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20
30
40
50
60
70
80
90
100
110
10
20
30
40
50
60
70
80
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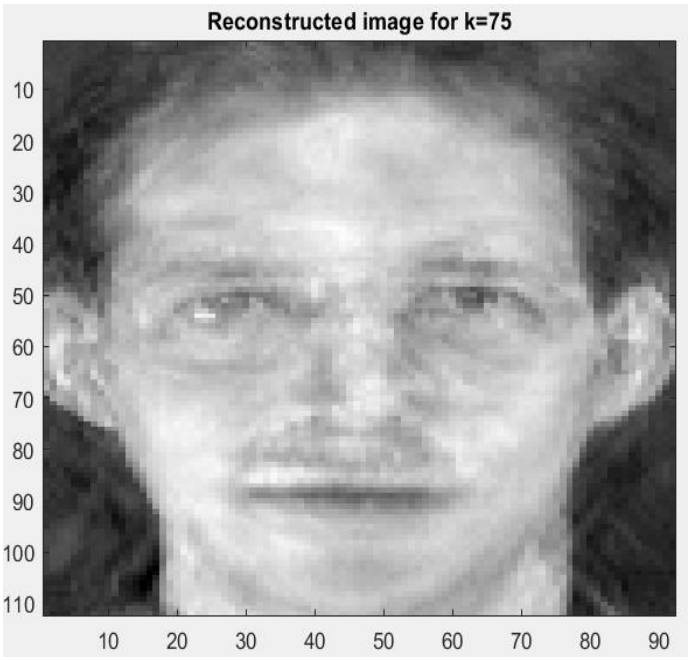
Reconstructed image for k=75
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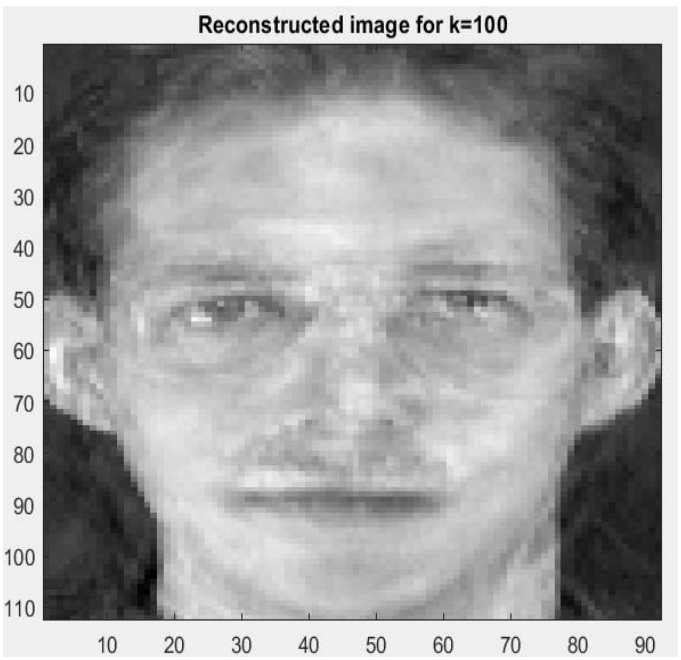
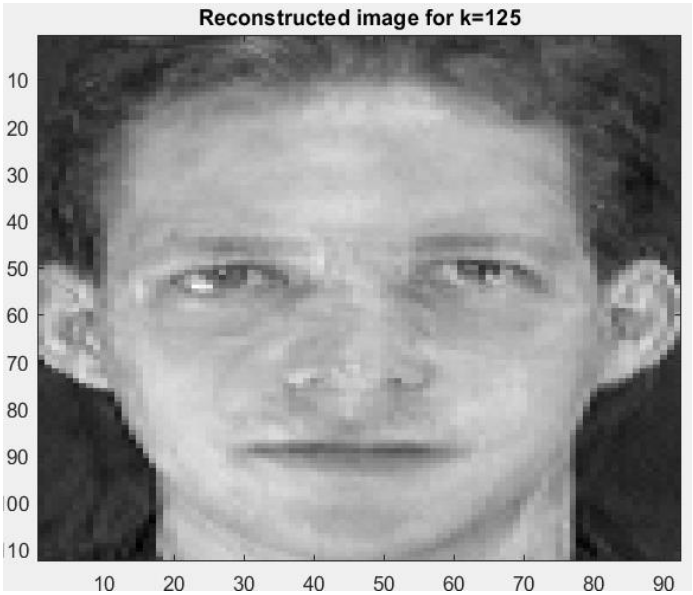
20
30
40
50
60
70
80
90
100
110
10
20
30
40
50
60
70
80
90


Reconstructed image for k=100
10
20
30
40
50
60
70
80
90
100
110
10
20
30
40
50
60
70
80
90


Reconstructed image for k=125
10
20
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40
50
60
70
80
90
00
10
10
20
30
40
50
60
70
80
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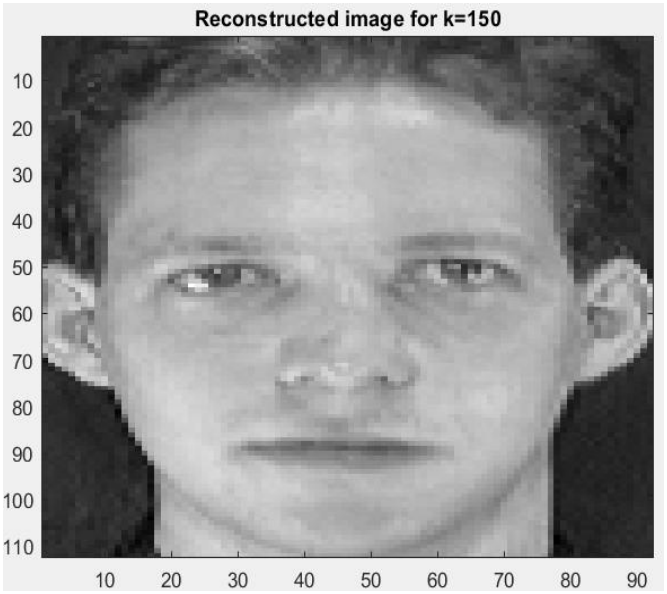
Reconstructed image for k=150
10
20
30
40
50
60
70
80
90
100
110
10
20
30
40
50
60
70
80
90

Plot the 25 eigenvectors (eigenfaces) corresponding to the 25 largest eigenvalues using the subplot or subimage commands in MATLAB.