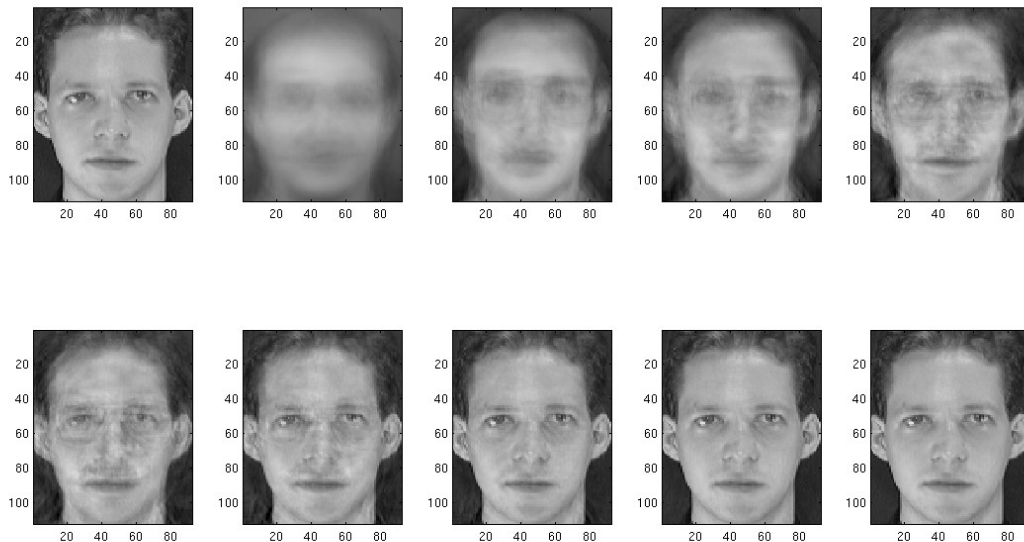


Assign 4: Question 3

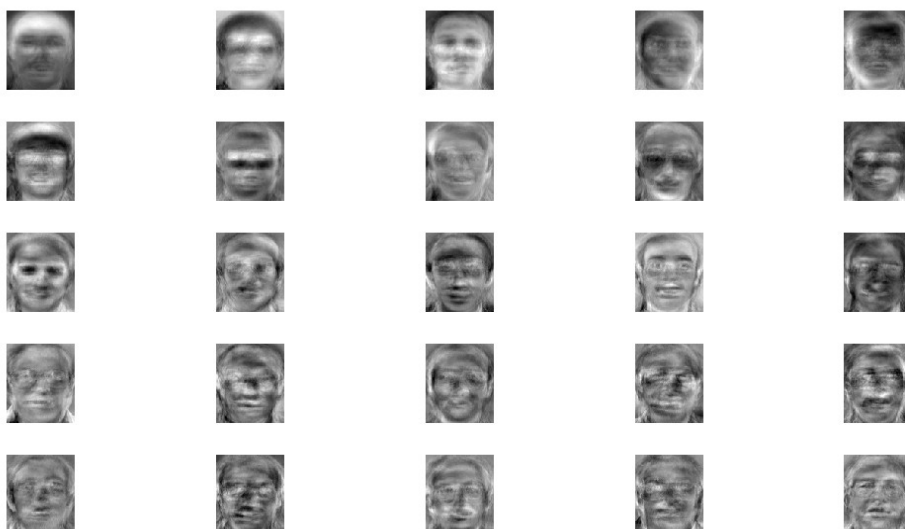
PART A: Image reconstruction

First block has the original image; thereafter left-to-right, top-to-bottom, there are images corresponding to reconstruction using $k = 2, 10, 20, 50, 75, 100, 125, 150, 175$ respectively. We can see that for $k = 125$ and onwards the output image is satisfactorily reconstructed.



PART B: Eigen Faces

As we go from left-to-right and top-to-bottom, we have eigen faces using eigen vectors corresponding to eigen values from maximum to minimum (top 25 eigen values).



PART C: Fourier Transform of eigen faces

Here again the arrangement is as above. We can observe that as corresponding eigen value decreases (ie as we go from left-to-right and top-to-bottom), more and more higher frequency components are introduced (ie radius of white blob at the center increases). This is in accordance with the fact that lower eigen values give information about edges and other high frequency artifacts.

