Firstly step is to compile all the java files. This can be done by executing the command given below

----- javac -cp .:jblas.jar \*.java

1st task: Convert ASCII image to binary image. This can be done by executing the command given below

----- java -cp .:jblas.jar SVD 1 CAS.pgm

program will use binary coding to save all necessary information in your asci pgm image.

Used 2 bytes to save the wide of the image and 2 bytes to save the height of the image;

used one byte for the grey scale levels; and use one byte for the grey level of each pixel.

Output saved as CAS\_b.pgm

2nd task: convert binary to ASCII image. This can be done by executing the command given below.

----- java -cp .:jblas.jar SVD 2 CAS\_b.pgm

Output saved as CAS\_copy.pgm.

3rd task: To decompose the matrix and getting image\_header.txt and image\_svd.txt. This can be done by executing the command given below

----- java -cp .:jblas.jar DecomposeMatrix CAS.pgm

Output saved as CAS\_header.txt and CAS\_SVD.txt

4th task: This task compress the image and then converts into binary file. This can be done by executing the command given below.

----- java -cp .:jblas.jar SVD 3 CAS\_header.txt CAS\_SVD.txt rank

The header.txt contains 3 integers (width, height, grey scale levels). SVD.txt contains 3 matrices.

Rank is 2.

Output saved as CAS\_b.pgm.SVD.

5th task: To recover the image. This can be done by executing the command given below.

----- java -cp .:jblas.jar SVD 4 CAS\_b.pgm.SVD

Output saved as CAS\_2.pgm

6th task: Error Calculations. This can be done by executing the command given below.

java -cp .:jblas.jar SVD 5 CAS.pgm CAS\_2.pgm CAS\_b.pgm.SVD

**Outputs are THE RATE OF COMPRESSION AND MEAN SQUARE ERROR.**