Things to do:

1. Perform normalization, the necessary preprocessing step.

done

2. Use PCA and SVD on the dataset given below. Reduce the dimensionality to 2 dimensions. Display the principal components from both PCA and SVD. Are they the same ? You can answer this in the output. Project the original data instances (points) onto the principal components resulting from both SVD and PCA. Are they the same ? You can answer this in the output. Plot the two principal components from SVD (PC1, labeled as such, capturing the maximum variance from the data, and PC2, labeled as such, the next one) and the projections onto them of the original data.

Display the principal components from both PCA and SVD. Are they the same ?

no

Project the original data instances (points) onto the principal components resulting from both SVD and PCA. Are they the same ?

no

Plot the two principal components from SVD (PC1, labeled as such, capturing the maximum variance from the data, and PC2, labeled as such, the next one) and the projections onto them of the original data.

3. Project the features (dimensions) onto the principal components and print out the resulting array. Interpret these projections as a short answer, explaining what features' essence is captured by PC1 and PC2, and what are they signifying. Remember, when you reduce the dimensions, the new dimensions carry the weight or essence of the more than one original dimension or feature.

The projections represent the most significant set of features with PC1 representing the most significant ones and PC2 representing the next most significant set.

4. A working program to do all the above, preferably commenting, broadly indicating which part, does what. Don't waste time commenting each little bit of code. The program output also should have preceding comments like "Printing original data", and then print data; "After SVD, Printing original data projected onto principal components" and then print...

done