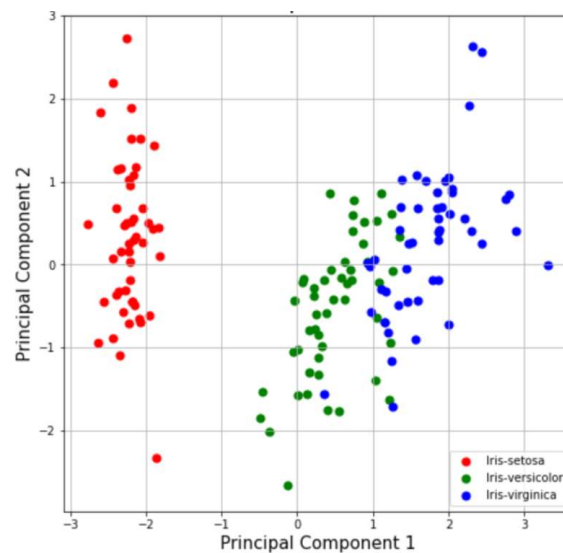
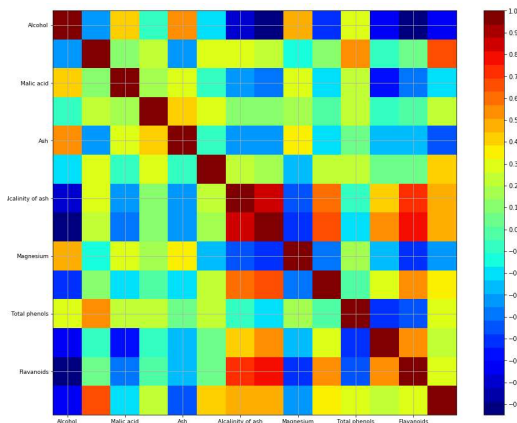


## Lab Assignment 4

1. Make use of the iris data set to do the following tasks.
  - (a) Standardize the dataset using the StandardScaler which will be having distribution with mean =0 and variance =1. Separate the feature and target value from the dataset and apply the standardization to features only.
  - (b) Project the 4-dimensional data (since iris dataset has four features) into two dimensions using Principal Component Analysis. Store the principal components in a separate variable. Now combine the principal components and the target of iris data to make them a single dataframe having three columns.
  - (c) Using the resultant dataframe after combining the principal components with the target of the iris dataset print the datapoints with the help of scatter plots.



2. Read the **winedata.csv** and do the following tasks.
  - (a) Use the data to boxplot the feature information to study outlier analysis. Find out the covariance matrix using the feature information and plot the covariance matrix with the help of a heatmap.



- (b) Make use of standard scaler to scale the data present in the feature information. Now Make use of PCA to reduce the dimension (or the number of features present in the dataset). Plot the variance ratio of the fitted principal components that you have generated using scatter plot. Restrict the number of components to be two for doing the scatter plot. Next plot the whole data using the two principal components to show the distribution. (Expected Outputs)

