Assignment 01
Note : This programming assignment is to be completed in R

Guidelines for submitting the assignments :

- **Language allowed for this assignment : R**
- **Create a separate folder for Numerical and Categorical Analysis and place the scripts in the respective folders.**
- **Make separate scripts for each sub-parts and name them accordingly . (e.g. C.r , D.r , etc.)**
- **The final compressed file should have the following naming convention : FirstName_RollNo.zip .**

Q1 . Numerical Analysis :

Use the following dataset for this part : NumericDataSet
Answer the following questions based on the above dataset :
  A. Display the covariance matrix for this dataset. Is there any pair of attributes which are linearly independent?
  B. Which numerical attribute has maximum dispersion?
  C. Compute the multivariate mean vector .
  D. Which two pairs of attributes have highest correlation coefficient?
  E. Assuming that Attribute 1 is normally distributed, plot its probability density function.
  F. Order the attributes in decreasing order of their variance.
  G. Calculate the mode and median for all attributes
  H. Display the scatter plots for the first 5 attributes. What can you say about the relationships of these attributes to each other?
  I. Draw the Equi-depth histogram for attribute 1. (An Equi-depth histogram is one which each group contains approximately same number of values. Refer Equal frequency binning in the following link : Equi-depth Histogram)
  J. Is there any pair of data objects which are orthogonal to each other?
  K. List a pair of objects such that norm of their difference vectors is maximum?
  L. Consider each attribute as an vector consisting of n components where n is the number of objects. List a pair of attribute such that the Euclidean distance between the two is maximum.
  M. List two pairs of objects whose cosine distance is minimum?

Q2. Categorical Analysis :

Use the following dataset for this part : CategoricalAnalysis
Answer the following questions based on the above dataset :
  A. Which pairs of categorical attributes does have the lowest and highest chisquare statistic value?
  B. List a ranking of all attributes on the basis of chisquare static value with respect to the target class attribute.