* 1. Write a program (using Matlab/Python) to implement the Entropy-based supervised discretization method. (Use data in Excel File). Plot entropy scores at various cutoff values  and determine the cutoff corresponding to min. entropy.
  2. Extend    (using Matlab/Python) the  entropy-based supervised discretization method by including the effect of spatial distances as illustrated in the attached Excel file. Also , generate necessary plots to compare the results.
  3. Given a data matrix **X** with r rows (observations) and c columns (attributes), create a distance vector **d** that lists all the possible Mahalanobis distances from the mean vector (using Matlab /Python). Also, show the statistical distribution of the   Mahalanobis distances.
  4. Write a program using (Python/Matlab) to calculate Hamming distance and Jaccard Similarity between two binary vectors.

        X = 010101001

         Y =010010110

For python users, upload a single IPython Notebook file (.ipynb) and add sufficient comments and explanations in the markdown.