**3. Decision-Tree-Using-ID3**

Problem : Write a program to demonstrate the working of the decision tree based ID3 algorithm. Use an appropriate data set for building the decision tree and apply this knowledge to classify a new sample.

Given Play Tennis Data Set:

PlayTennis Outlook Temperature Humidity Wind

0 No Sunny Hot High Weak

1 No Sunny Hot High Strong

2 Yes Overcast Hot High Weak

3 Yes Rain Mild High Weak

4 Yes Rain Cool Normal Weak

5 No Rain Cool Normal Strong

6 Yes Overcast Cool Normal Strong

7 No Sunny Mild High Weak

8 Yes Sunny Cool Normal Weak

9 Yes Rain Mild Normal Weak

10 Yes Sunny Mild Normal Strong

11 Yes Overcast Mild High Strong

12 Yes Overcast Hot Normal Weak

13 No Rain Mild High Strong

Id3-1:

Prints the above table

ID3-2:

Calculation of entropy

*#Function to calculate the entropy of probaility of observations*

*# -p\*log2\*p*