Deep Learning Workshop With Python (CSE 3194)

ASSIGNMENT-1: BASIC OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

1. Write a Python code to find the integer encoding for the given list.
   fruits=['apple','banana','orange','banana','apple','cherry']

2. Write a Python code to find the one-hot encoding for the given string with and without using the sklearn function.:
   String1='hello python'

3. Write a Python code to generate 100 data points between -20 to 20 and plot them using the sigmoid function. Define the sigmoid function.

4. Write a Python code to find the slope and intercept for the given data points without using a built-in function.
   X=[2,4,6,8,10]
   Y=[[3,7,5,10,12]

5. Write a Python code to predict the house prices using linear regression with feature square feet. The target value is the price and is also represented in the graph.
   X=[2,4,6,8,10]
   Y= [3,7,5,10,12]

6. Write a Python code to classify a house's purchase decision based on an entity's income using logistic regression. Provide a graphical representation.
   X(income in Rs)= [20000, 30000, 50000, 70000, 80000,100000]
   Y(purchase Decision)= [0, 0, 1, 1, 1, 1]

7. The given data set predicts whether a student passes an exam based on the hours studied using logistic regression. Find the cost for the above dataset using Python.
   X=[2,4,6,8,10] Y=[0,0,1,1,1]

8. Write a Python code to find entropy and information gain for market competition and year for the given dataset.
   Year= [2018, 2019, 2020, 2021, 2022, 2023,2024]
   Market_Competition= ['Medium','High', 'Low', 'Medium', 'High', 'Low','High']
   Type= ['A', 'B', 'A', 'B', 'A']
   Profit_Loss = ['Profit','Profit', 'Loss', 'Profit', 'Profit', 'Loss']
   Dataset=2, 19, 22, 27, 29, 30, 32, 35, 52, 59.

9. Write a Python code to visualize the decision tree model with criterion as Entropy with max depth 3 for the given dataset.

10. Write Python code to find the cluster allocation for the given dataset using the K means clustering algorithm.
    Student= ["A", "B", "C", "D", "E", "F", "G", "H", "I", "J"]
    Math_Marks = [85, 70, 60, 95, 55, 80, 45, 90, 78, 65]
    Science_Marks=[90, 75, 65, 92, 50, 85, 40, 88, 82, 60]
    English =[80, 85, 70, 96, 60, 88, 50, 86, 80, 72]

11. Write Python code to find the cluster allocation for the given dataset using an agglomerative clustering algorithm.
    Student= [”A”, ”B”, ”C”, ”D”, ”E”, ”F”, ”G”, ”H”, ”I”, ”J”]
    Math_Marks = [85, 78, 90, 65, 55, 89, 76, 92, 60, 58]
    Science_Marks=[80, 75, 85, 60, 50, 87, 74, 95, 55, 52]