AIML Lab work

1) **Implement the following graph search algorithms to find optimal path from source to destination:**
    a) **Greedy**
    b) **A***
    c) **Dijkstra's shortest path**

```
mygraph={}
mygraph['A']={'Z': 75, 'T':118, 'S':140}
mygraph['B']={'G': 90, 'U':85, 'F':211, 'P':101}
mygraph['C']={'D': 120, 'R':146, 'P':138}
mygraph['D']={'M': 75, 'C':120}
mygraph['E']={'H': 86}
mygraph['F']={'S': 99, 'B':211}
mygraph['G']={'B': 90}
mygraph['H']={'U': 98, 'E':86}
mygraph['I']={'N': 87, 'V':92}
mygraph['L']={'T': 111, 'M':70}
mygraph['M']={'L': 70, 'D':75}
mygraph['N']={'I': 87}
mygraph['O']={'Z': 71, 'S':151}
mygraph['P']={'R': 97, 'C':138, 'B':101}
mygraph['R']={'S': 80, 'C':146, 'P':97}
mygraph['S']={'O': 151, 'A':140, 'R':80, 'F':99}
mygraph['T']={'A': 118, 'L':111}
mygraph['U']={'B': 85, 'V':142, 'H':98}
mygraph['V']={'I': 92, 'U':142}
mygraph['Z']={'A': 75, 'O':71}
```

```
SLDToB={'A':366, 'B':0, 'C':160, 'D':242, 'E':161, 'F':178, 'G':77,
'H':151,'I':226, 'L':244, 'M':241, 'N':234,'O':380,'P':98,
'R':193,'S':253,'T':329,'U':80,'V':199, 'Z':374}
```

2) Preprocessing of dataset shared at https://drive.google.com/file/d/13ZyWy8BChKUcKx-PH6tTAaQ1YMFS4_x8/view?usp=sharing
3)

4) Simple Linear Regression on Dataset https://drive.google.com/file/d/1uJNG6C6VWG10fWBPid_bjqO3OHV3F1PH/view?usp=sharing
    a) Write function to compute parameters using (i)Normal equation and (ii) gradient descent method using the above dataset
5) Multiple Linear Regression on Dataset (with appropriate preprocessing) https://docs.google.com/spreadsheets/d/1g8SSKCjMEEKXG5nwQlD3zcbCwI-8Ef4Z/edit?usp=sharing&ouid=113197604106951171273&rtpof=true&sd=true

Lab 2

6) Logistic regression on dataset with appropriate preprocessing
    a) https://drive.google.com/file/d/10W_32IO0RL4E2kk8Y6Nh2ZIChTzBEzhz/view?usp=sharing
    b) https://drive.google.com/file/d/10_67Ozz3_-nWL_w4Glo4Rr4M2gQQnDam/view?usp=sharing
    c) Evaluate performance of the classifier using Accuracy, Presion, Recall, F1 score
    d) Use dataset (b) to compute parameters of Logistic regression using Gradient Descent method, and compare it with the ones computed by the existing library functions
7) Naive Bays's classification on the above dataset in 6(a) and 6(b) and Evaluate performance of the classifier using Accuracy, Presion, Recall, F1 score
8) Decision Tree classification on the above dataset in 6(a) and 6(b) and Evaluate performance of the classifier using Accuracy, Presion, Recall, F1 score
    a) Compute Information Gain, Gain Ratio and Gini Index of Age attribute in dataset 6(b) - assume binary partitioning. Also programmatically identify the partition threshold (Hint: threshold giving the maximum gain is more attractive).

Lab 3:

1. Neural network
    a. Classification on dataset https://drive.google.com/file/d/1dOEsu9ZJAzOVJ9yDrugQ3FqIAVc_BSDt/view?usp=sharing
    b. Regression on dataset https://docs.google.com/spreadsheets/d/12nTWzJEOfPrKzjm_EiwdnK0AsYNpGISf/edit?usp=sharing&ouid=113197604106951171273&rtpof=true&sd=true
    c. Backpropagation algorithm on the regression dataset.