PS Code	Problem Statements
DAA1	Write a program non-recursive and recursive program to calculate Fibonacci numbers and analyze their time and space complexity.
DAA2	Write a program to implement Huffman Encoding using a greedy strategy.
DAA3	Write a program to solve a fractional Knapsack problem using a greedy method.
DAA4	Write a program to solve a 0-1 Knapsack problem using dynamic programming or branch and bound strategy.
DAA5	Design n-Queens matrix having first Queen placed. Use backtracking to place remaining Queens to generate the final n-queen's matrix.
ML1	Predict the price of the Uber ride from a given pickup point to the agreed drop-off location. Perform following tasks: 1. Pre-process the dataset. 2. Identify outliers. 3. Check the correlation. 4. Implement linear regression and random forest regression models. 5. Evaluate the models and compare their respective scores like R2, RMSE, etc. Dataset link: https://www.kaggle.com/datasets/yasserh/uber-fares-dataset
ML2	Classify the email using the binary classification method. Email Spam detection has two states: a) Normal State – Not Spam, b) Abnormal State – Spam. Use K-Nearest Neighbors and Support Vector Machine for classification. Analyze their performance. Dataset link: The emails.csv dataset on the Kaggle https://www.kaggle.com/datasets/balaka18/email-spam-classification-dataset-csv
ML3	Given a bank customer, build a neural network-based classifier that can determine whether they will leave or not in the next 6 months. Dataset Description: The case study is from an open-source dataset from Kaggle. The dataset contains 10,000 sample points with 14 distinct features such as CustomerId, CreditScore, Geography, Gender, Age, Tenure, Balance, etc. Link to the Kaggle project: https://www.kaggle.com/barelydedicated/bank-customer-churn-modeling Perform following steps: 1. Read the dataset. 2. Distinguish the feature and target set and divide the data set into training and test sets. 3. Normalize the train and test data. 4. Initialize and build the model. Identify the points of improvement and implement the same. 5. Print the accuracy score and confusion matrix (5 points).
ML4	Implement Gradient Descent Algorithm to find the local minima of a function. For example, find the local minima of the function $y=(x+3)^2$ starting from the point $x=2$.
ML5	Implement K-Means clustering/ hierarchical clustering on sales_data_sample.csv dataset. Determine the number of clusters using the elbow method. Dataset link : https://www.kaggle.com/datasets/kyanyoga/sample-sales-data
BT1	Write a smart contract on a test network, for Bank account of a customer for following operations: 1. Deposit money 2. Withdraw Money 3. Show balance
BT2	Write a program in solidity to create Student data. Use the following constructs: 1. Structures 2. Arrays 3. Fallback Deploy this as smart contract on Ethereum and Observe the transaction fee and Gas values.