Data Science Lab (CS 356)

Assignment 3

Date: 24.01.2022 **Due date to submit : 31.01.2022**

Instructions to submit the lab assignment

- ***a. Add proper comment lines for each important step of the code.***
- ***b. All the codes should be in same file.***
- ***c. Name each file as rollnumber_assignmentnumber.pdf.***
- ***d. Upload the program file in google classroom.***

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1. Write a python program to print all the prime numbers between 1 to 1000 using loop.
2. Use python programming to implement bubble sort. [define a function to perform the sorting and take the input from the user; for each passes display pass number and the respective sorted array]
3. Write a python program to compute the sum of two matrices and display the result. [take the input from the user]
4. Use python programming to implement the binary search by using the methods[take the input from the user]:
   a. Recursive method
   b. Iterative method
5. Write a python program using NumPy:
   a. Create two 1-D arrays of same size with n number of elements and display the index of the arrays where the value of elements in 1st array is more than and equal to its corresponding element in 2nd array.
   b. Create a 1-D array and perform the following:
      i. Replace all even numbers in the array with 0
      ii. Extract the prime numbers from the array
      iii. Convert the 1D array to a 2D array in 2 rows Input
      iv. Display the array element indices such that array elements are sorted in ascending order [without the changing the position of elements]
      v. Convert a binary NumPy array (holding only 0s and 1s) to a Boolean NumPy array.
      vi. Take an input of 10 elements and split the array into 3 arrays, where 1st two arrays should have 2 elements each and the rest of the elements in the last array. Display the arrays.
6. There are 190 students in a class of Data Science Theory. The subject is taught every day (Monday to Sunday) in a week for an hour. Create and display a series of data as a count of attendance of the total number of students attending the subject every day in a week. [Hint: Use pandas to create the dataset, create the dataset for a week i.e. for all 7 days in a week, for each respective day mention the number of attendees.] Perform the following with the series dataset created.
   a. Display the dataset
   b. Display the sorted dataset with least number of attendees at first
   c. Show the day with maximum number of attendees
   d. Display the 1st two days of the week and the number of attendees
   e. Plot the dataset for each day in the week.
7. Consider the data set: https://www.kaggle.com/karthickveerakumar/salary-data-simple-linear-regression and perform the following:
   a. Read the dataset
   b. Display the information related to the dataset such as the number of rows and columns
   c. Display the first 5 rows
   d. Display the summary statistics for each numeric column
   e. Display a random subset (at least 5)