# **Department of Computer Science Gujarat Vidyapith**

# **MCA-103(Practical)-MATHEMATICAL & STATISTICAL COMPUTING USING PYTHON**

**Enrollment No : Year : 2023 Subject Teacher : Dr. Ajay Parikh**

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| **Sr. No.** | **Name of Task** | **Assignment Date** | **Submission Date** | **TA. Sign** | **Sign of Teacher** | **Grade** | **Remark** |
| 1 | Write a program to find maximum and minimum number from the given number (using two and three number) | 22-9-23 | 27-9-23 |  |  |  |  |
| 2 | Write a program to compute the sum of element that in the list container (using for loop) | 22-9-23 | 27-9-23 |  |  |  |  |
| 3 | Write a program to find sum of 'n' number | 22-9-23 | 27-9-23 |  |  |  |  |
| 4 | Write a program to print digit in pyramid shape | 27-9-23 | 5-10-23 |  |  |  |  |
| 5 | Write a program to print string except articles in given string (except capital and small) | 27-9-23 | 5-10-23 |  |  |  |  |
| 6 | Write a program using user-define function to print reverse string | 5-10-23 | 9-10-23 |  |  |  |  |
| 7 | Write a program using user-define function to print string except special characters in given string | 5-10-23 | 9-10-23 |  |  |  |  |
| 8 | Write a program using user-define function to find out mean | 5-10-23 | 9-10-23 |  |  |  |  |
| 9 | Write a program using user-define function to find out median | 5-10-23 | 9-10-23 |  |  |  |  |
| 10 | Write a program using user-define function to find out mode | 5-10-23 | 9-10-23 |  |  |  |  |
| 11 | Write each string in the data list to a separate line in file (new lines are not automatically included, so they need to be added) | 12-10-23 | 13-10-23 |  |  |  |  |
| 12 | Write a program to find out factorial using recursion | 8-10-23 | 9-10-23 |  |  |  |  |
| 13 | Write a program to find out percentage using lambda function | 9-10-23 | 12-10-23 |  |  |  |  |
| 14 | Write a program to copy content one txt file to another txt file | 16-10-23 | 19-10-23 |  |  |  |  |
| 15 | Write a program to create child class from car class | 19-10-23 | 23-10-23 |  |  |  |  |
| 16 | Write a program to find out the addition of two matrix and multiplication of two matrix using numpy library | 30-10-23 | 3-11-23 |  |  |  |  |
| 17 | Write a program to solve the system of linear equation using python (minimum 3 equation) | 30-11-23 | 1-12-23 |  |  |  |  |
| **Task** | | | | | | | |
| 1 | Write a NumPy program to perform efficient array operations as below :   1. Create a NumPy array using the 'np.array' function 2. Perform array operations such as squaring each element and calculating the sum using NumPy functions 3. Reshaped the array into a 2D array using the 'reshape' method | 6-12-23 | 9-12-23 |  |  |  |  |
| 2 | Write a Python program in NumPy to create an array with low-level ndarray with perform the following tasks :   1. Creating an array using the low-level 'ndarray' constructor in NumPy involves specifying the array's shape, and data type, and optionally providing initial data 2. Modify an element in the array (custom\_array [2] = 10) 3. Reshape the array into a 2D array (reshaped\_array = custom\_array.reshape((1, 5))) | 6-12-23 | 9-12-23 |  |  |  |  |
| 3 | Write a Python program in NumPy to create an array with existing data and perform the following tasks :   1. Create an array ('array1') using the 'np. array()' function with existing data ('data1') 2. Create another array ('array2') using the 'np.asarray()' function with different data ('data2') 3. Modify the original data ('data1[2] = 100') and observe that the 'np. array()' array ('array1') remains unchanged, as it creates a new copy of the data | 6-12-23 | 9-12-23 |  |  |  |  |
| 4 | Write a Python program to create an array with numerical ranges in NumPy using 'np. arrange ()', 'np. linspace()' and 'np. logspace()' :  Start from 1, stop before 11, step by 2 | 6-12-23 | 9-12-23 |  |  |  |  |
| 5 | Write a Python program in NumPy to perform a vectorization operation on the entire array with the following steps :   1. Create two arrays ('array1' and 'array2') 2. Perform vectorized addition ('array1 + array2'), multiplication ('array1 \* array2'), and square root ('np.sqrt(array1)'). | 6-12-23 | 9-12-23 |  |  |  |  |
| 6 | Write a Python program in NumPy to find out Eigenvalues and Eigenvectors | 22-12-23 | 26-12-23 |  |  |  |  |
| 7 | Write a Python program using Pandas Series to create a series, and perform some basic operations with the following tasks.   1. Create a Pandas Series (series) from a list. 2. Access an element by index (series[2]). 3. Perform element-wise operations (squaring) on the Series (squared\_series). 4. Filter elements in the Series based on a condition (filtered\_series). 5. Calculate descriptive statistics like the mean and maximum value of the Series. | 26-12-23 | 28-12-23 |  |  |  |  |
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