**AL-2001**

**Programming for AI**

**Lab # 3**

**Objectives**

**Practice on Iterative/loops structure, Strings, Functions**

**Note: Carefully read the following instructions (***Each instruction contains a weightage***)**

* First think about statement problems and then write your logic on Copy / Notebook.
* Write **Your Name** and **Roll No** on your Paper/Sheet’s first page.
* Do not copy from any source otherwise you will be penalized with negative marks.
* Complete your lab **within given Time Slot**.
* Paste all your codes along with screenshots in a word file and renamed with your roll number.
* Keep all your source files in your computer for verification. Do not overwrite a single source file for all programs.

**[Problems/Task]**

1. Write a program to iterate the first 14 numbers, and in each iteration, print the sum of the current and previous number.

**Expected Output**:

Printing current and previous number sum in a range (14)

Current Number 0 Previous Number 0 Sum: 0

Current Number 1 Previous Number 0 Sum: 1

Current Number 2 Previous Number 1 Sum: 3

Current Number 3 Previous Number 2 Sum: 5

Current Number 4 Previous Number 3 Sum: 7

Current Number 5 Previous Number 4 Sum: 9

Current Number 6 Previous Number 5 Sum: 11

Current Number 7 Previous Number 6 Sum: 13

Current Number 8 Previous Number 7 Sum: 15

Current Number 9 Previous Number 8 Sum: 17

Current Number 10 Previous Number 9 Sum: 19

Current Number 11 Previous Number 10 Sum: 21

Current Number 12 Previous Number 11 Sum: 23

Current Number 13 Previous Number 12 Sum: 25

1. Write a code snippet loops over a list called cities and prints the name of each city in the list:

**Expected output:**

London

Istanbul

Houston

Rome

1. Write a program that searches for a name in the given names list. When the name is found, it prints “Name found!” and exits the loop. If the name is not found after going through all the names in the names list, the else block is executed, which prints “Name not found!”.
2. Write a code to check how many times a given number can be divided by 3 before it is less than or equal to 10.
3. Write a code that take input to enter any number between 100 and 500. We will keep asking the user to enter a correct input until enters the number within a given range.
4. **Print even and odd numbers between 1 to the entered number.**
5. Write a while loop to display each character from a string and if a character is number then stop the loop.
6. Write a while loop to display only alphabets from a string.

**Hint:** In this example, we will print only letters from a string by skipping all digits and special symbols

1. Use nested while loop to print pattern.

**+**

**+ +**

**+ + +**

**+ + + +**

**+ + + + +**

1. Reverse a while loop to display numbers from 20 to 1.
2. **Write a code to iterate string letter by letter.**
3. Write a Python code to print the following number pattern using a loop.

1

1 2

1 2 3

1 2 3 4

1 2 3 4 5

1. Write a Python program to accept a number from a user and calculate the sum of all numbers from 1 to a given number. For example, if the user entered 10, the output should be 55 (1+2+3+4+5+6+7+8+9+10)

**Expected Output:**

**Enter number: 10**

**Sum is: 55**

1. Print multiplication table of a given number

**Given:**

**num = 2**

**Expected output is:**

**2\*1=2**

**2\*2=4**

**2\*3=6**

**2\*4=8**

**2\*5=10**

**2\*6=12**

**2\*7=14**

**2\*8=16**

**2\*9=18**

**2\*10=20**

1. Using for loop iterates over the numbers list, looking for a number that is a multiple of 7. If it finds such a number, it prints a message and breaks out of the loop. The other block is executed if the loop completes all iterations without finding a multiple of 7.
2. Write a Python program to accept a number from a user and calculate the sum of all numbers from 1 to a given number. For example, if the user entered 10, the output should be 55 (1+2+3+4+5+6+7+8+9+10)

**Expected Output:**

**Enter number: 10**

**Sum is: 55**

1. Write a Python program to count the total number of digits in a number using a while loop. For example, the number is **75869**, so the output should be **5**.
2. Print list in reverse order using a loop

**Given:**

list1 = [10, 20, 30, 40, 50]

**Expected output:**

50

40

30

20

10

**You need to done with your exercise within given time.**