Practice Problem Sheet 3

(For, while and nested Loops)

SL	Problems	Sample Input	Sample Output
1	Write a program that will take an input **n from the console** and print the following series up to **n-th terms** **1,2,3…**	n=5	1, 2, 3, 4, 5
2	Write a program that prints all **Odd numbers** between 1 to **N. (**use While or For loop.)	N=10	1,3,5,7,9
3	Write a program that will print the following series upto **Nth** terms. 1, 0, 1, 0, 1, 0, 1, 0, 1, 0, 1, 0, 1, 0, 1, 0, 1, …….	N=5	1,0,1,0,1
4	Calculate the **sum** of numbers from 1 to 10 using a **for loop.**		55
5	Write a program to count how many numbers between 1 and n are divisible by both 3 and 7.	n=30	count=2
6	Write a program that takes an input **n from the console** and prints the **multiplication table** of n (up to 10 rows).	num=5	**Multiplication table of 5:** **5 x 1 = 5** **5 x 2 = 10** **5 x 3 = 15** **5 x 4 = 20** **5 x 5 = 25** **5 x 6 = 30** **5 x 7 = 35** **5 x 8 = 40** **5 x 9 = 45** **5 x 10 = 50**
7	Write a program that will take a string as an input and print the string backwards using loops.	string=”Dumbledore”	erodelbmuD
8	Write a program that will reverse the digits of an input integer.	1234	4321
9	Write a program to count the number of vowels in a given string using a loop.	string="Hogwarts"	Number of vowels: 2
10	Write a program that will take an input **n from the console** and print the following **“*”** pattern using a **For Loop.** (The number of rows should be equal to **n**) The pattern: ***** ****** ******* ******** *********	n=3	***** ****** *******

11	Write a program that will take **N numbers** as inputs and compute their average. (Restriction: Without using any array)	N=3 10 , 5, 6	Average : 7
12	Write a program that takes **N** integers from the user and finds the maximum number (without using built-in max).	N=4 Numbers: 10, 5, 20, 8	Maximum: 20
13	Write a program that will print a pattern based on the input integer n. 1 12 123 1234 12345	n=3	**1** **12** **123**
14	Write a program that will take two numbers **X and Y as inputs**. Then it will print the **square of X and increment (if XY) X by 1**, until **X reaches Y**. If and when X is equal to Y, the program prints “Reached!”	x=5 y=10	25, 36, 49, 64, 81, Reached!
15	Write a program that will find x y (x to the power y) where x, y are positive integers.	5 2 --- 2 4	25 --- 8
16	Write a program that will find the **GCD (greatest common divisor)** and **LCM (least common multiple)** of two **positive** integers.	5 7	GCD: 1 LCM: 35
17	Take a list input from the console and Write a program to check if a specific number is present in a list.	list=[111,2,43] n=111 n=4	 Present Not Found!
18	lst=[1,2,3,4,5] Write a program to print **cube** of the elements in the given list.		1 8 27 64 125
19	num=[22,42,12,6,0,44,346,23,9,3] Write a program to print the maximum number in the given **List**. (You cannot use **max()** function)		Max value is : 346
20	hogwarts=[“Harry”,”Ron”,”Hermione”, “Dobby”, “Bellatrix”, “Voldemort”, “Ginny”, “Luna”, “Snape”] Write a program to filter out names from the list that have more than **5 letters.**		Hermione Bellatrix Voldemort.

21	Write a program to count how many numbers in the calculates the sum of the indices of the odd and even numbers. num_list=[2,4,3,77,32,5,12,35,68,50,100]		Odd numbers: 4 Even numbers: 7 Sum of indices of odd numbers: 18 Sum of indices of even numbers: 33
22	Iterates through a list and prints each item along with its type: `datalist = [1452, 11.23, 1+2j, True, 'Pikachu', (0, -1), [5, 12], {"Type":'Electric', "Ability":'Static'}]`		Type of 1452 is <class 'int'> Type of 11.23 is <class 'float'> Type of (1+2j) is <class 'complex'> Type of True is <class 'bool'> Type of Pikachu is <class 'str'> Type of (0, -1) is <class 'tuple'> Type of [5, 12] is <class 'list'> Type of {"Type":'Electric', "Ability":'Static'} is <class 'dict'>
23	Write a program to print each spell in the list along with its length. spells = ["Expelliarmus", "Lumos", "Alohomora", "Accio", "Expecto Patronum"]		Expelliarmus: 12 characters Lumos: 5 characters Alohomora: 9 characters Accio: 5 characters Expecto Patronum: 17 characters
24	num=[1,3,4,1,0,1,2,3,4,0,5,2,1,5,3,0] Write a program to count how many times each element appears in the given list. **Solve the problem using a loop and another list to keep track of the counts**.		Count List: [3, 4, 2, 3, 2, 2] Element 0 appears 3 times. Element 1 appears 4 times. Element 2 appears 2 times. Element 3 appears 3 times. Element 4 appears 2 times. Element 5 appears 2 times
25	Your university is organizing its annual sports day, and the traditional paper-based record-keeping system is being replaced with a sensor-based system to determine the winners of a **10-meter race**. Write a program to accept the race participants' finish times as input. Each participant is represented by their **participant number** (starting from 0), and their finish time (in seconds) is recorded in a list. The program should: 1. Determine the **1st**, **2nd**, and **3rd place winners** based on their finish times. 2. Display the participant numbers along with their finish times for the winners. 3. Ensure that there are no ties; each participant has a unique finish time.	5 1 2 4 9 10 7	First Place: 1 Second Place: 2 Third Place: 3