## **Loop related problems (total 20 questions)**

SL		Problem statement	Difficulty levels
1.	Write a program (WA	P) that will print following series upto N <sup>th</sup> terms.	*
		1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14,	
	Sample input	Sample output	
	2	1, 2	
	5	1, 2, 3, 4, 5	
	11	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11	
2.	Write a program (WA	P) that will print following series upto N <sup>th</sup> terms.	*
	1, 3,	5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31	
	Sample input	Sample output	
	2	1, 3	
	5	1, 3, 5, 7, 9	
	11	1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21	
3.	Write a program (WA	P) that will print following series upto N <sup>th</sup> terms.	**
		1, 0, 1, 0, 1, 0, 1, 0, 1, 0, 1, 0, 1, 0, 1, 0, 1,	
	Sample input	Sample output	
	1	1	
	2	1, 0	
	3	1, 0, 1	
	4	1, 0, 1, 0	
	7	1, 0, 1, 0, 1, 0, 1	
	13	1, 0, 1, 0, 1, 0, 1, 0, 1, 0, 1	
4.	Write a program (WA	P) that will take <b>N</b> numbers as inputs and compute their average.	*
	(Restriction: Without	using any array)	
	(Nestriction: Without	using any array)	
	Sample input	Sample output	
	3 10 20 30.5	AVG of 3 inputs: 20.166667	
	2	AVG of 2 inputs: 16.750000	
	22.4 11.1		
5.	Write a program (WA	P) that will take two numbers <b>X</b> and <b>Y</b> as inputs. Then it will print	*

the square of X and increment (if X <y) (if="" decrement="" or="" x="">Y) X by 1, until X reaches Y. If</y)>
and when <b>X</b> is equal to <b>Y</b> , the program prints "Reached!"

	Sample input(X,Y)	Sample output
10	5	100, 81, 64, 49, 36, Reached!
5	10	25, 36, 49, 64, 81, Reached!
10	10	Reached!

**6.** Write a program (WAP) for the described scenario:

Player-1 picks a number **X** and Player-2 has to guess that number within **N** tries. For each wrong guess by Player-2, the program prints "Wrong, **N-1** Choice(s) Left!" If Player-2 at any time successfully guesses the number, the program prints "Right, Player-2 wins!" and terminates right away. Otherwise after the completion of **N** wrong tries, the program prints "Player-1 wins!" and halts.

(Hint: Use break/continue)

Sample input (X,N,n1, n2,,nN)	Sample output
5	Wrong, 2 Choice(s) Left!
3	Wrong, 1 Choice(s) Left!
12 8 5	Right, Player-2 wins!
100	Wrong, 4 Choice(s) Left!
5	Right, Player-2 wins!
50 100	
20	Wrong, 2 Choice(s) Left!
3	Wrong, 1 Choice(s) Left!
12 8 5	Wrong, 0 Choice(s) Left!
	Player-1 wins!

7. Write a program (WAP) that will run and show keyboard inputs until the user types an 'A' at the keyboard.

Sample input	Sample output
X	Input 1: X
	Input 2: 1
a	Input 3: a
A	

8. Write a program (WAP) that will reverse the digits of an input integer.

Sample input	Sample output
13579	97531
4321	1234

Write a program (WAP) that will find the grade of **N** students. For each student, it will take the marks of his/her the attendance (on 5 marks), assignment (on 10 marks), class test (on 15 marks), midterm (on 50 marks), term final (on 100 marks). Then based on the tables shown below, the program will output his grade.

Attendance (A)	5%
Assignments (HW)	10%
Class Tests (CT)	15%
Midterm (MT)	30%
Final (TF)	40%

Marks	Letter Grade	Marks	Letter Grade	Marks	Letter Grade
90-100	A	70-73	C+	Less than 55	F
86-89	A-	66-69	С		
82-85	B+	62-65	C-		
78-81	В	58-61	D+		
74-77	B-	55-57	D		

Sample input (A,HW,CT,MT,TF)			(A,HW,	СТ,МТ,Т	Sample output
2					Student 1 : A
5	10	15	44.5	92.5	Student 2 : F
0	7.5	5	20	55.5	

**10.** Write a program (WAP) that will give the sum of first N<sup>th</sup> terms for the following series.

Sample input	Sample output
2	Result: -1
3	Result: 2
4	Result: -2

\*\*

Write a program (WAP) that will calculate the result for the first N<sup>th</sup> terms of the following series. [In that series sum, dot sign (.) means multiplication]

Samn	le input	Sample output	
<u> </u>	ic iiiput	Result: 14	
3		Result: 50	
4		Result: 130	
7		Result: 924	
/rite a program (W/	AP) that will print	Fibonacci series upto N <sup>th</sup> terms.	**
	1, 1, 2, 3, 5,	, 8, 13, 21, 34, 55, 89,	
Sample input		Sample output	
1	1		_
	1, 1		
4	1, 1 1, 1, 2, 3		
4 7 /rite a program (W <i>F</i>	1, 1, 2, 3 1, 1, 2, 3, 5, 8, AP) that will print	the factorial ( <b>N!</b> ) of a given number <b>N</b> . Please see	2 **
2 4 7 Vrite a program (W <i>I</i> he sample input out	1, 1, 2, 3 1, 1, 2, 3, 5, 8, AP) that will print		**
4 7 Vrite a program (W <i>F</i>	1, 1, 2, 3 1, 1, 2, 3, 5, 8, AP) that will print		**
4  7  Vrite a program (WA ne sample input out	1, 1, 2, 3 1, 1, 2, 3, 5, 8, AP) that will print	the factorial ( <b>N!</b> ) of a given number <b>N</b> . Please see	<u>*</u> **
4 7 Vrite a program (WA ne sample input out Sample input 1	1, 1, 2, 3 1, 1, 2, 3, 5, 8, AP) that will print	the factorial ( <b>N!</b> ) of a given number <b>N</b> . Please see	2 **
7/rite a program (WA) ne sample input out Sample input 1 2	1, 1, 2, 3 1, 1, 2, 3, 5, 8, AP) that will print	the factorial (N!) of a given number N. Please see  Sample output  1! = 1 = 1  2! = 2 X 1 = 2  3! = 3 X 2 X 1 = 6	**
4 7 Vrite a program (WAne sample input out  Sample input  1 2 3	1, 1, 2, 3 1, 1, 2, 3, 5, 8, AP) that will print	the factorial (N!) of a given number N. Please see  Sample output  1! = 1 = 1  2! = 2 X 1 = 2	2 **
4 7 Vrite a program (WA) he sample input out  Sample input  1 2 3 4	1, 1, 2, 3 1, 1, 2, 3, 5, 8, AP) that will print put.	the factorial (N!) of a given number N. Please see  Sample output  1! = 1 = 1  2! = 2 X 1 = 2  3! = 3 X 2 X 1 = 6  4! = 4 X 3 X 2 X 1 = 24	
Vrite a program (WAne sample input out  Sample input  2  3  4  Vrite a program (WA	1, 1, 2, 3 1, 1, 2, 3, 5, 8, AP) that will print put.	Sample output	**
Vrite a program (WAne sample input out  Sample input  2 3 4  Vrite a program (WA	1, 1, 2, 3 1, 1, 2, 3, 5, 8,  AP) that will print put.  AP) that will find "	the factorial (N!) of a given number N. Please see  Sample output  1! = 1 = 1  2! = 2 X 1 = 2  3! = 3 X 2 X 1 = 6  4! = 4 X 3 X 2 X 1 = 24	
Vrite a program (WAne sample input out  Sample input  2  3  4  Vrite a program (WA  Sample input  5 2	1, 1, 2, 3 1, 1, 2, 3, 5, 8,  AP) that will print put.  AP) that will find "	Sample output	
Vrite a program (WA) he sample input  Sample input  2 3 4  Vrite a program (WA)  Sample input  5 2 10 3	1, 1, 2, 3 1, 1, 2, 3, 5, 8,  AP) that will print put.  AP) that will find not	Sample output	
Vrite a program (WAne sample input out  Sample input  2  3  4  Vrite a program (WA  Sample input  5 2	1, 1, 2, 3 1, 1, 2, 3, 5, 8,  AP) that will print put.  AP) that will find "	Sample output	

Sample output

12.

13.

14.

15.

Sample input(x,y)

	5 2	25	
	2 0	1	
	6 1	6	
	0 5	0	
16.	WAP that will find the of two positive integer	e GCD (greatest common divisor) and LCM (least common multiple) ers.	**
	Sample input	Sample output	
	5 7	GCD: 1	
		LCM: 35	
	12 12	GCD: 12	
		LCM: 12	
	12 32	GCD: 4	
		LCM: 96	
17.	WAP that will determ	ine whether a number is prime or not.	**
		·	
	Sample input	Sample output	
	1	Not prime	
	2	Prime	
	4	FIIIIE	
	11	Prime	
	11 39	Prime Not prime	
	11 39 101	Prime Not prime Prime	**
18.	11 39 101	Prime Not prime	**
18.	11 39 101 WAP that will determ	Prime Not prime Prime Index of the state of	**
.8.	11 39 101  WAP that will determ  Sample input	Prime  Not prime  Prime  Inne  Not prime  Sample output	**
18.	11 39 101  WAP that will determ  Sample input 9	Prime  Not prime  Prime  Prime  Sample output  Yes	**
L <b>8.</b>	11 39 101  WAP that will determ  Sample input 9 91	Prime Not prime Prime  Inne whether an integer is palindrome number or not.  Sample output Yes No	**
18.	11 39 101  WAP that will determ  Sample input 9 91 222	Prime Not prime Prime  Inne whether an integer is palindrome number or not.  Sample output Yes No Yes	**
18.	11 39 101  WAP that will determ  Sample input 9 91 222 12321	Prime Not prime Prime  Inne whether an integer is palindrome number or not.  Sample output Yes No Yes Yes Yes	**
18.	11 39 101  WAP that will determ  Sample input 9 91 222	Prime Not prime Prime  Inne whether an integer is palindrome number or not.  Sample output Yes No Yes	**
18.	11 39 101  WAP that will determ  Sample input 9 91 222 12321	Prime Not prime Prime  Inne whether an integer is palindrome number or not.  Sample output Yes No Yes Yes Yes	**
18.	11 39 101  WAP that will determ  Sample input 9 91 222 12321	Prime Not prime Prime  Inne whether an integer is palindrome number or not.  Sample output Yes No Yes Yes Yes	**
18.	11 39 101  WAP that will determ  Sample input 9 91 222 12321	Prime Not prime Prime  Inne whether an integer is palindrome number or not.  Sample output Yes No Yes Yes Yes	**
	11 39 101  WAP that will determ  Sample input 9 91 222 12321 110	Prime  Not prime  Prime  Sample output  Yes  No  Yes  Yes  Yes  No  Yes  No	
	11 39 101  WAP that will determ  Sample input 9 91 222 12321 110  WAP that will calcula	Prime  Not prime  Prime  Inine whether an integer is palindrome number or not.  Sample output  Yes  No  Yes  Yes  Yes  No  Yes  Yes  No  Yes	**
18.	11 39 101  WAP that will determ  Sample input 9 91 222 12321 110	Prime  Not prime  Prime  Inine whether an integer is palindrome number or not.  Sample output  Yes  No  Yes  Yes  Yes  No  Yes  Yes  No  Yes	

$$Sinx = x - \frac{x^3}{3!} + \frac{x^5}{5!} - \frac{x^7}{7!} + \dots \dots \infty$$

Sample input		Sample output	
1	0.841		
2	0.909		
3	0.141		

Write a program that takes an integer number n as input and find out the sum of the following series up to n terms.

1 + 12 + 123 + 1234 + ......

Sample input	Sample output
1	1
2	13
3	136
4	1370