Assignment 2
Loop related problems (total 15 questions)

<table>
<tr><th>SL</th><th>Problem statement</th></tr>
<tr><td>1.</td><td>Write a program (WAP) that will print following series upto Nth terms.

1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, …….

<table>
<tr><th>Sample input</th><th>Sample output</th></tr>
<tr><td>2</td><td>1, 2</td></tr>
<tr><td>5</td><td>1, 2, 3, 4, 5</td></tr>
<tr><td>11</td><td>1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11</td></tr>
</table>
</td></tr>
<tr><td>2.</td><td>Write a program (WAP) that will print following series upto Nth terms.

1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31 …….

<table>
<tr><th>Sample input</th><th>Sample output</th></tr>
<tr><td>2</td><td>1, 3</td></tr>
<tr><td>5</td><td>1, 3, 5, 7, 9</td></tr>
<tr><td>11</td><td>1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21</td></tr>
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<tr><td>3.</td><td>Write a program (WAP) that will print following series upto Nth terms.

1, 0, 1, 0, 1, 0, 1, 0, 1, 0, 1, 0, 1, 0, 1, 0, 1, …….

<table>
<tr><th>Sample input</th><th>Sample output</th></tr>
<tr><td>1</td><td>1</td></tr>
<tr><td>2</td><td>1, 0</td></tr>
<tr><td>3</td><td>1, 0, 1</td></tr>
<tr><td>4</td><td>1, 0, 1, 0</td></tr>
<tr><td>7</td><td>1, 0, 1, 0, 1, 0, 1</td></tr>
<tr><td>13</td><td>1, 0, 1, 0, 1, 0, 1, 0, 1, 0, 1, 0, 1</td></tr>
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<tr><td>4.</td><td>Write a program (WAP) that will take N numbers as inputs and compute their average.

(Restriction: Without using any array)

<table>
<tr><th>Sample input</th><th>Sample output</th></tr>
<tr><td>3
10 20 30.5</td><td>AVG of 3 inputs: 20.166667</td></tr>
<tr><td>2
22.4 11.1</td><td>AVG of 2 inputs: 16.750000</td></tr>
</table>
</td></tr>
</table>

5. Write a program (WAP) that will take two numbers **X** and **Y** as inputs. Then it will print the square of **X** and increment (**if X<Y**) or decrement (**if X>Y**) **X** by 1, until **X** reaches **Y.** If and when **X** is equal to **Y**, 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 3 12 8 5	Wrong, 2 Choice(s) Left! Wrong, 1 Choice(s) Left! Right, Player-2 wins!
100 5 50 100	Wrong, 4 Choice(s) Left! Right, Player-2 wins!
20 3 12 8 5	Wrong, 2 Choice(s) Left! Wrong, 1 Choice(s) Left! 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 1 a A	Input 1: X Input 2: 1 Input 3: a

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

Sample input	*Sample output*
13579	97531
4321	1234

9. Write a program (WAP) that will give the sum of first N^{th} terms for the following series.

1, -2, 3, -4, 5, -6, 7, -8, 9, -10, 11, -12, 13, -14, …….

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

10. Write a program (WAP) that will print Fibonacci series upto N^{th} terms.

1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, …….

Sample input	*Sample output*
1	1
2	1, 1
4	1, 1, 2, 3
7	1, 1, 2, 3, 5, 8, 13

11. Write a program (WAP) that will print the factorial (**N!)** of a given number **N**. Please see the sample input output.

Sample input	**Sample output**
1	1! = 1 = 1
2	2! = 2 X 1 = 2
3	3! = 3 X 2 X 1 = 6
4	4! = 4 X 3 X 2 X 1 = 24

12. Write a program (WAP) that will find ${}^{n}\mathbf{C}_{r}$ where **n >= r**; **n** and **r** are integers.

Sample input	*Sample output*
5 2	10
10 3	120
7 7	1
6 1	6

13. Write a program (WAP) that will find x^y (x to the power y) where x, y are positive integers.

Sample input(x,y)	***Sample output***
5 2	25
2 0	1
6 1	6
0 5	0

14. WAP that will find the GCD (greatest common divisor) and LCM (least common multiple) of two positive integers.

Sample input	***Sample output***
5 7	GCD: 1 LCM: 35
12 12	GCD: 12 LCM: 12
12 32	GCD: 4 LCM: 96

15. WAP that will determine whether a number is prime or not.

Sample input	***Sample output***
1	Not prime
2	Prime
11	Prime
39	Not prime
101	Prime