Assignment 4: Looping Statement

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1. Print the output for the following series
    a) $1 + 4 – 9 + 16 – 25 + 36 …. + n.-^2$
    b) $1^2 + 2^2 + 3^2 + 4^2 + ... + n^2$
    c) $x – x^3/3! + x^5/5! – x^7/7! + x^9/9! ….$
    d) Given Number is Armstrong number or Not. (153 = 13 + 33 + 53)
    e) Given Number is Strong number or Not. (145 = 1! + 4! + 5!)

2. Print the following patterns: (Nested for loops)

A)

```
    *
   * *
  * * *
 * * * *
```

B)

```
12345
1234
123
12
1
```

C)

```
1
4 1
9 4 1
16 9 4 1
25 16 9 4 1
```

E)

```
1          1
12        21
123      321
1234    4321
12345 54321
```

F)

```
1
1 2
1 2 3
1 2 3 4
1 2 3 4 5
1 2 3 4
1 2 3
1 2
1
```

F)

```
      A
    A C E
  A C E G I
A C E G I K M
```


```
A C E G I K M
  A C E G I
    A C E
      A
```


3. Write a program to do the following task

    a) Accept any 2 positive numbers, say n1 and n2. Assume n1 > n2.

b) Print all even numbers that lie between n1 and n2.

c) Print the total number of even numbers between n1 and n2

4. Write a program to calculate the sum of the square of each digit of the given number.

[E.G. 4534 -> $4^2 + 5^2 + 3^2 + 4^2 = 66$]

5. Accept 2 four-digit positive integers then calculate and display the sum of the product of each pair of digits occupying the same position in the two numbers. [E.G. if the first number is 3445 and the second number is 4534 then the output will be 64.]

(Example: 3 * 4 + 4 * 5 + 4 * 3 + 5 * 4 = 64)

Competitive problem.

6. Given two integers L and R where L ≤ R, the task is to find an integer K such that:

L ≤ K ≤ R.

All the digits of K are distinct.

The value of the expression (L – K) * (K – R) is maximum.

If multiple answers exist then choose the larger value for K.

7. Count of triples (A, B, C) where A*C is greater than B*B

Given three integers A, B and C. The task is to count the number of triples (a, b, c) such that a * c > b2, where 0 < a <= A, 0 < b <= B and 0 < c <= C.