CSE 101 - Computer Engineering Concepts & Algorithms (2017 Spring)

LAB#5

Q1.

Task

Read an integer N. For all non-negative integers $i < N$, print i^2. See the sample for details.

Input Format

The first and only line contains the integer, N.

Constraints

$1 \leq N \leq 20$

Output Format

Print N lines, one corresponding to each i.

Sample Input

```
5
```

Sample Output

```
0
1
4
9
16
```

Q2. Write a Python script which reads in two numbers *a* and *n* from the user; *a* is a 3-digit number and *n* is *a* single digit. Your script checks whether *n* is one of the digits of *a* or not.

```
sgoren@ubuntu:~/CSE101-Python/lab5$ ./q2.py
Enter a 3-digit number: 345
Enter a single digit number: 8
8 is not a digit of  345
sgoren@ubuntu:~/CSE101-Python/lab5$ ./q2.py
Enter a 3-digit number: 299
Enter a single digit number: 9
9 is a digit of  299
```

Q3. Write a Python script that takes n numbers and outputs the maximum of them. Your script should take as many numbers as user enters and it should quit whenever the user enters "q".

```
sgoren@ubuntu:~/CSE101-Python/lab5$ ./q3.py
11178
Maximum is  11178
111111
Maximum is  111111
988822
Maximum is  988822
5639
Maximum is  988822
-3
Maximum is  988822
4
Maximum is  988822
-238585856
Maximum is  988822
q
Goodbye!
```

Q4. Modify your script in Q4 such that it can output both the maximum and minimum of the entered n numbers and quits whenever the user enters “q”.

```
sgoren@ubuntu:~/CSE101-Python/lab5$ ./q4.py
-2
Maximum is  -2 Minimum is  -2
5
Maximum is  5 Minimum is  -2
-123
Maximum is  5 Minimum is  -123
45653
Maximum is  45653 Minimum is  -123
67
Maximum is  45653 Minimum is  -123
672847
Maximum is  672847 Minimum is  -123
q
Goodbye!
```

Q5. Write a Python script that computes the sum of integers between $1 \leq x \leq N$, where *N* is entered by the user. Use a for loop and check the result with the summation formula.

```
sgoren@ubuntu:~/CSE101-Python/lab5$ ./q5.py
67
The sum of integer x 1<=x<=N is 2278
The formula N*(N+1)/2 is 2278.0
sgoren@ubuntu:~/CSE101-Python/lab5$
```

Q6. Write a Python script that sums up an arithmetic series shown below. User enters a,d, and n. Use a for loop to compute it and check your result with the formula given below.n/ +(

To sum up the terms of this arithmetic sequence:

$$a + (a+d) + (a+2d) + (a+3d) + \ldots$$

use this formula:

$$\sum_{k=0}^{n-1}(a+kd) = \frac{n}{2}(2a+(n-1)d)$$

```
sgoren@ubuntu:~/CSE101-Python/lab5$ ./q6.py
a= 23
d= 45
n= 10000
Sum is  2250005000
Sum computed with the formula is 2250005000.0
```

Q7. Write a Python script that computes $\sum_{i=0}^{N}\sum_{j=0}^{i} 2j^3$.

```
sgoren@ubuntu:~/CSE101-Python/lab5$ ./q7.py
N= 100
Sum =  1050838340
```