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

LAB#6

FUNCTIONS

IN ALL OF THE QUESTIONS TRY YOUR FUNCTIONS IN A SCRIPT!!!

Q1. Write a function that prints a matrix. Your PrintMatrix function should have four arguments as follows:

PrintMatrix (row_count, column_count, list_matrix, name_matrix)

row_count: (integer) number of rows

column_count: (integer) number of columns

list_matrix: (List of integers) one-dimensional array of matrix entries

name_matrix: (String) name of the matrix

```
sgoren@ubuntu:~/CSE101-Python/lab6$ ./q1.py
listA [1, 2, 3, 4, 5, 6, 7, 8, 9]
listB [11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25]
Matrix MatrixA
1 2 3
4 5 6
7 8 9
Matrix MatrixB
11 12 13 14 15
16 17 18 19 20
21 22 23 24 25
```

Note that to print on the same line use

print(mystring, end=' ')

Q2. Write a function (NprintOnTheSameLine (string, num) that prints the string num times.

```
def NPrintOnTheSameLine (string, num):
```

```
sgoren@ubuntu: ~/CSE101-Python/lab6
sgoren@ubuntu:~/CSE101-Python/lab6$ ./q2.py
CSE101 CSE101 CSE101 CSE101 CSE101 CSE101 CSE101 CSE101 CSE101 CSE101 CSE101 CSE
101 CSE101 CSE101 CSE101 CSE101 CSE101 CSE101 CSE101 CSE101 sgoren@ubuntu:~/CSE1
01-Python/lab6$
```

Q3. Write a function (Max(list)) that computes and returns the maximum of the list and prints it.

```
sgoren@ubuntu:~/CSE101-Python/lab6$ ./q3.py
[1, -1, 10000, 3, 56, -90, -1000]
Max:  10000
sgoren@ubuntu:~/CSE101-Python/lab6$
```

Q4. Write a function (Min(list)) that computes and returns the minimum of the list and prints it.

```
sgoren@ubuntu:~/CSE101-Python/lab6$ ./q4.py
[1, -1, 10000, 3, 56, -90, -1000]
Min:  -1000
sgoren@ubuntu:~/CSE101-Python/lab6$
```

Q5. Write a function (Average(list)) that computes and returns the average of the list and prints it.

```
sgoren@ubuntu:~/CSE101-Python/lab6$ ./q5.py
[1, -1, 10000, 3, 56, -90, -1000]
Average:  1281.2857142857142
```

Q6. Write a function (Area (length, width)) that computes the area of a rectangle and prints it.

Q7. Write a function (Volume(length,width,depth)) that computes the volume of a prism and print it. Use Area function of Q6 in Volume function such that volume= area*height

Q8. Write a function (Factorial (n)) that computes n!, returns and prints it. Use a for loop.

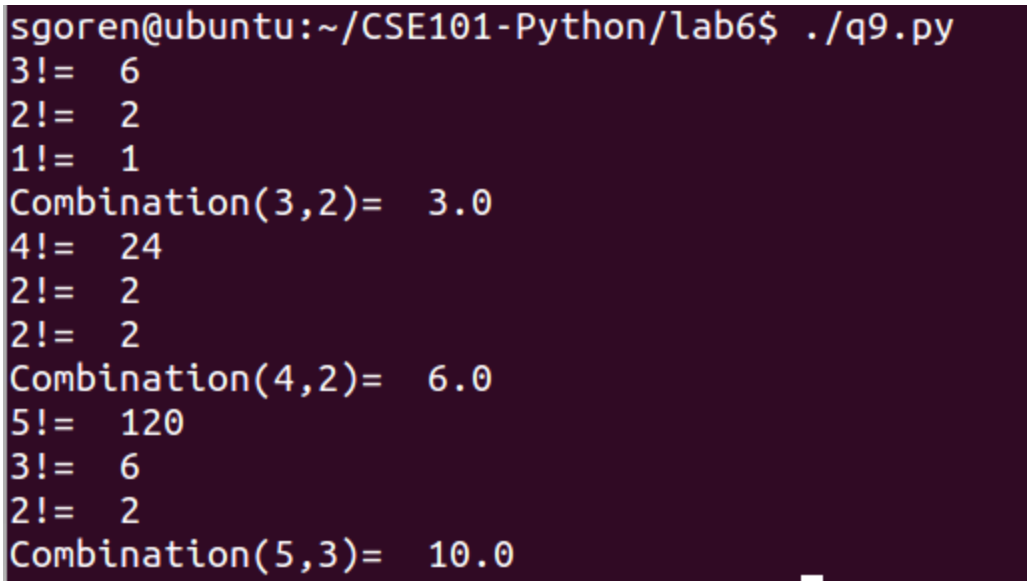
```
sgoren@ubuntu:~/CSE101-Python/lab6$ ./q8.py
4!=  24
5!=  120
6!=  720
1!=  1
10!=  3628800
sgoren@ubuntu:~/CSE101-Python/lab6$
```

Q9. Write a function for

$$\binom{n}{k} = \frac{n(n-1)\cdots(n-k+1)}{k(k-1)\cdots 1},$$

which can be written using factorials as $\frac{n!}{k!(n-k)!}$ whenever $k \leq n$, and which is zero when $k > n$.

Use the function Factorial(n) in Q8 to write a new function, Combination (n,k).


sgoren@ubuntu:~/CSE101-Python/lab6$ ./q9.py
3!= 6
2!= 2
1!= 1
Combination(3,2)= 3.0
4!= 24
2!= 2
2!= 2
Combination(4,2)= 6.0
5!= 120
3!= 6
2!= 2
Combination(5,3)= 10.0