MIS 6382
Object Oriented Programming with Python
Fall 2019
Homework Two

The following guidelines should be followed and will be used to grade your homework:

- The code for each question should be implemented using Jupiter notebooks.
- All the code should be included in one single notebook (.ipynb file).
- This is an individual homework assignment; no group submissions will be accepted.
- Sample runs shown in the question should be used as a guide for implementation. However extensive testing needs to be done on your code to deal with all test cases that might possibly be executed.
- **Submit a zipped folder containing ONLY one .ipynb file for this assignment. The zip file should be named using your name and the chars "hw2". You will be penalized 15% of the grade if your submission does not follow these requirements.**
- **You will get zero points if your program has syntax errors.**

Q1: Write a python program to sum of the first n positive integers after accepting the value of **n** from the user.

Below is a sample interaction

```
(C:\ProgramData\Anaconda3) C:\Users\rvm019000\Dropbox\Teaching\Python\Fall 2019\Code\Homework\Homework Two>python F19HW2Q1.py
Enter a positive integer: -78
You have entered an invalid number.  Exiting the program

(C:\ProgramData\Anaconda3) C:\Users\rvm019000\Dropbox\Teaching\Python\Fall 2019\Code\Homework\Homework Two>python F19HW2Q1.py
Enter a positive integer: 1
The sum of 1 positive numbers is 1

(C:\ProgramData\Anaconda3) C:\Users\rvm019000\Dropbox\Teaching\Python\Fall 2019\Code\Homework\Homework Two>python F19HW2Q1.py
Enter a positive integer: 12
The sum of 12 positive numbers is 78

(C:\ProgramData\Anaconda3) C:\Users\rvm019000\Dropbox\Teaching\Python\Fall 2019\Code\Homework\Homework Two>python F19HW2Q1.py
Enter a positive integer: 18
The sum of 18 positive numbers is 171
```

Q2: Given two positive integers x and y, write a program to print the Greatest Common Divisor (GCD) of x and y.

Below is a sample interaction

```
(C:\ProgramData\Anaconda3) C:\Users\rvm019000\Dropbox\Teaching\Python\Fall 2019\Code\Homework\Homework Two>python F19HW2Q2.py
Enter the first number: 45
Enter the second number: 63
The GCD of 45 and 63 is 9

(C:\ProgramData\Anaconda3) C:\Users\rvm019000\Dropbox\Teaching\Python\Fall 2019\Code\Homework\Homework Two>python F19HW2Q2.py
Enter the first number: 23
Enter the second number: 81
The GCD of 23 and 81 is 1

(C:\ProgramData\Anaconda3) C:\Users\rvm019000\Dropbox\Teaching\Python\Fall 2019\Code\Homework\Homework Two>python F19HW2Q2.py
Enter the first number: 30
Enter the second number: 54
The GCD of 30 and 54 is 6
```

Q3: An integer, greater than 1, that is only divisible by 1 and itself is called a prime number. All other numbers greater than 1 are called composite numbers. The integers 0 and 1 are neither prime nor composite. Write a python program that requests a positive integer from the user, determines if it is a prime, composite or neither prime or composite and prints the message.

```
(C:\ProgramData\Anaconda3) C:\Users\rvm019000\Dropbox\Teaching\Python\Fall 2019\Code\Homework\Homework Two>python F19H&2Q3.py
Enter a positive integer: 18
18 is a composite number

(C:\ProgramData\Anaconda3) C:\Users\rvm019000\Dropbox\Teaching\Python\Fall 2019\Code\Homework\Homework Two>python F19H&2Q3.py
Enter a positive integer: 1
1 is neither prime nor composite

(C:\ProgramData\Anaconda3) C:\Users\rvm019000\Dropbox\Teaching\Python\Fall 2019\Code\Homework\Homework Two>python F19H&2Q3.py
Enter a positive integer: 0
0 is neither prime nor composite

(C:\ProgramData\Anaconda3) C:\Users\rvm019000\Dropbox\Teaching\Python\Fall 2019\Code\Homework\Homework Two>python F19H&2Q3.py
Enter a positive integer: 53
53 is a prime number

(C:\ProgramData\Anaconda3) C:\Users\rvm019000\Dropbox\Teaching\Python\Fall 2019\Code\Homework\Homework Two>python F19H&2Q3.py
Enter a positive integer: 97
97 is a prime number

(C:\ProgramData\Anaconda3) C:\Users\rvm019000\Dropbox\Teaching\Python\Fall 2019\Code\Homework\Homework Two>python F19H&2Q3.py
Enter a positive integer: 99
99 is a composite number
```

Q4: Write a Python function called print_square() that accepts an integer as input and prints out the square of all numbers between 1 and that integer (both included). Then call the function from main() after getting the value of n from the user. Note: Your submission MUST consist of the functions definitions for both main() as well as print_square().

Below is a sample interaction

```
(C:\ProgramData\Anaconda3) C:\Users\rvm019000\Dropbox\Teaching\Python\Fall 2019\Code\Homework\Homework Two>python F19H&2Q4.py
Enter a positive integer: -6
You have entered an invalid number.  Exiting the program

(C:\ProgramData\Anaconda3) C:\Users\rvm019000\Dropbox\Teaching\Python\Fall 2019\Code\Homework\Homework Two>python F19H&2Q4.py
Enter a positive integer: 6
The square of 1 is 1
The square of 2 is 4
The square of 3 is 9
The square of 4 is 16
The square of 5 is 25
The square of 6 is 36

(C:\ProgramData\Anaconda3) C:\Users\rvm019000\Dropbox\Teaching\Python\Fall 2019\Code\Homework\Homework Two>python F19H&2Q4.py
Enter a positive integer: 12
The square of 1 is 1
The square of 2 is 4
The square of 3 is 9
The square of 4 is 16
The square of 5 is 25
The square of 6 is 36
The square of 7 is 49
The square of 8 is 64
The square of 9 is 81
The square of 10 is 100
The square of 11 is 121
The square of 12 is 144
```