Fitchburg State University
CSC 7014 Practice Computer Programming
Instructor: Nguyen Thai
Due: 10/21/2016 at 11:00 PM
Student: Lina Mi

Assignment 5: Prime Number

The purpose of this assignment is to learn how to program functions. Your program is to be written in the Python language. You will be graded for output correctness, code comments, code indentation, descriptive variables and source code file header completeness.

As you work through the assignment be sure to answer all questions (type your answers into this document) and take all screenshots as requested (copy them into the document). For the screenshots, you can use the Snipping Tool that is built-in to Windows to capture the important parts of the lab as highlighted in the document below. Do not delete the contents of this file. When finished, you will submit the document source code file and associated data files to the instructor via Blackboard. DO NOT SUBMIT ZIP FILES OR INDIVIDUAL IMAGES. If you have any questions or need any clarification, email the instructor *before* the deadline.

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1. In this assignment you are to write a program in Python called *primeNumber.py* to verify whether a given integer number is a prime number.

2. An integer greater than 1 is prime if its only positive division is 1 or itself. For example, 2, 3, 5 are prime number, but 4, 6, 8 are not.

3. Design and develop a function called isPrime() with the following signature:

```
def isPrime(number):

    # INSERT YOUR CODE HERE
```

4. Write a test case to test your function, using the numbers: 21, 29, 109, 163 and 227. Print the test results to a console.

5. Before coding, think how you are going to tackle this problem, and write a short description of the logic of your program. **INSERT YOUR DESCRIPTION HERE.**

Ans:

First, define isPrime() function, to test a given number *n* is prime or not, using 2,3,4…..*n*-1 to divide the test number *n* separately, since all even numbers except 2 are not prime number, to improve the efficiency of the program, the test number are divided by 2,3,5,7, 9…the maximum odd less than *n*.

1) if the remainder of any of these division is zero, that is means the test number *n* has other factor besides 1 and itself, then *n* is not prime number, the function ends and return False.

2) If none of the remainders of all of divisions is equal to zero, then the test number *n* is prime number, the function ends and return True.

Second, give a prompt to ask user to enter a test number and check the input number is valid or not(the input number should be integers greater than 1) , if the input number is not valid, such as 1 or negative number, then print out error message and ask user to enter the test number again.

After get a valid test number from user, then invoke isPrime function to test the given number is prime or not, print out the test result.

6. **TAKE A SCREENSHOT** of your input and output, and paste them here. Do not paste your source code in this document.

```
 RESTART: C:/Users/milin/Registered_Courses_2017_Summer&Fall/Registered_Courses_
2017_Fall/Practice of Computer Program/primeNumber.py
Please input the test number:1
the entered number is not valid!
Please input the test number:-3
the entered number is not valid!
Please input the test number:21
num: 21 i: 3 residule of num/i: 0
The number 21 is prime number: False
>>>
 RESTART: C:/Users/milin/Registered_Courses_2017_Summer&Fall/Registered_Courses_
2017_Fall/Practice of Computer Program/primeNumber.py
Please input the test number:29
The number 29 is prime number: True
>>>
 RESTART: C:/Users/milin/Registered_Courses_2017_Summer&Fall/Registered_Courses_
2017_Fall/Practice of Computer Program/primeNumber.py
Please input the test number:109
The number 109 is prime number: True
>>>
 RESTART: C:/Users/milin/Registered_Courses_2017_Summer&Fall/Registered_Courses_
2017_Fall/Practice of Computer Program/primeNumber.py
Please input the test number:163
The number 163 is prime number: True
>>>
 RESTART: C:/Users/milin/Registered_Courses_2017_Summer&Fall/Registered_Courses_
2017_Fall/Practice of Computer Program/primeNumber.py
Please input the test number:227
The number 227 is prime number: True
>>>
```

7. Submit your source code (primeNumber.py) and this document to Blackboard for grading.