Homework 5

COMSC-122

Fall 2017

Homework 5

Prime Numbers

A prime number is a number that is only evenly divisible by itself and 1. For example, the number 5 is prime because it can only be evenly divided by 1 and 5. The number 6, however, is not prime because it can be divided evenly by 1, 2, 3, and 6.

Write a Boolean function named `is_prime` which takes an integer as an argument and returns true if the argument is a prime number, or false otherwise. Use the function in a program that prompts the user to enter a number and then displays a message indicating whether the number is prime.

TIP: Recall that the `%` operator divides one number by another and returns the remainder of the division. In an expression such as `num1 % num2`, the `%` operator will return 0 if `num1` is evenly divisible by `num2`.

- In order to do this, you will need to write a program containing two functions:
  - The function main()
  - The function isprime(arg) which tests the argument (an integer) to see if is Prime or Not.

Homework 5A

- The following is a description of what each function should do:
- **main()** will be designed to do the following:
  - On the first line you will print out: "*My Name's* Prime Number Checker"
  - You will ask that an integer be typed in from the keyboard.
  - You will check to be sure that the number (num) is equal to or greater than the integer 2. If it isn't, you will be asked to re-enter the value.
  - You will then call the function isprime(num), which is a function which returns a Boolean Value (either True or False).
  - You will then print out the result that the function returned to the screen, which will be either:
    - If the function returned True, then print out num "is Prime", or
    - If the function returned False, then print out num "is Not Prime".
  - Your entire main() function should be contained in a while loop which asks you, at the end, if you would like to test another number to see if it is Prime. If you type in "y", then the program runs again.
- **isprime(arg)** will be designed to do the following:
  - It will test the argument sent to it (nuM in this case) to see if it is a Prime Number or not.
  - The easiest way to do that is to check to be sure that it is not divisible by any number, 2 or greater, which is less than the value of nuM.
  - As long as the modulo of nuM with any number less than it (but 2 or greater) is not zero, then it will be Prime, otherwise it isn't.
  - Return the value True, if it is Prime, or False if it is not Prime.
- Call this program: *YourName*-Hwrk5A.py

Homework-5B

- This exercise assumes that you have already written the isprime function, isprime(arg), in Homework-5A.
- Write a program called: *YourName*Hwrk5B.py, that displays all the prime numbers from 2 to whatever integer that you type in.
- Your main() function should start by printing your name at the top of the display (e.g. “Charlie Molnar’s Prime Number List”)
- This program should have a loop that calls the isprime() function, which you include below the function main().