Assignment One

Console input, output, functions with a return value, loops and conditions, arithmetic computations

CS2263, SUMMER 2020

Outcome

Develop and test a program that determines if a value is a valid Fibonacci prime number.

Fibonacci Primes

A. Describe the Fibonacci primes: define what they are, describe what's known about them, include at least TWO references.

B. Write a C function (show the source code) that accepts as one parameter: an integer, and determines if it is a prime number. Return 0 if it is not and 1 if it is.

```
int isPrime(int i);
```

C. Write a C program (show the source code and the screen capture for the test run) that prompts for an integer value and prints a message if the number is a prime. The test program should use isPrime function stored in a separate file. The compilation command may look like this:

```
$gcc testingprimes.c isprime.c –o prog1
```

D. Write a C function (show the source code) that accepts an integer as a parameter and determines if it is a number from the Fibonacci sequence. Return 0 if it is not and 1 if it is.

```
int isFib(int i);
```

E. Write a C program (show the source code and the screen capture for the test run) that prompts for an integer value and prints a message if the number is from the Fibonacci sequence. The test program should use isFib function stored in a separate file. The compilation command may look like this:

```
$gcc testingfibs.c isfib.c –o prog2
```

F. Now, write a C program (show the source code and the screen captures for the test runs) that accepts two integer values x1 and x2 specifying the range of integers (all inclusive), and tests all the values in the specified range printing only the Fibonacci primes in this range. Use

the functions defined in separate files isprime.c and isfib.c. Run the program on each of the ranges:

i. 10 to 100
ii. 1597 to 1597

Submit:

- the source code
- directory listing from the directory where your program is stored showing the source code file(s) and the compiled program file(s) names.
- the screen shot of the terminal, including your compile and testing (including examples where the numbers have different counts of 1s).

Submission

Before the assignment deadline, submit a single zip or tar file (named *LastName_FirstName_Lab1.zip* or *LastName_FirstName_Lab1.zip*) containing:

- a pdf document containing the discussion and testing runs for each of a through F; and
- the source files for your programs and functions.