Concurrency Project

Prime Numbers

There are an infinite number of prime numbers. Amongst the primes there are what are known as twin primes.

A twin prime is a prime number that is either 2 less or 2 more than another prime number—for example, either member of the twin prime pair (41, 43). In other words, a twin prime is a prime that has a prime gap of two. Sometimes the term twin prime is used for a pair of twin primes; an alternative name for this is prime twin or prime pair.

It is (currently) unknown whether there are an infinite number of twin primes. Examples include: (3, 5), (5, 7), (11, 13), (17, 19), (29, 31), (41, 43),...

Your task is to write a parallel program that counts the number of primes less than n for any number n and also finds and lists all twin primes less than n. The code should run on linux.

Example output after running your code with $n = 50$ would be:

```
>primeTwinCount 50
Total number of primes: 15
Twin Primes: 3, 5, 7, 11, 13, 17, 19, 29, 31, 41, 43
>
```

You must submit the following:

Source Code Full source code including README, full installation instructions, Makefile and Doxygen Configuration file;

Report A short report on the approach you took to achieving maximum concurrency. This will contain:

Pseudocode Outline of the algorithm illustrated with pseudocode;

Speedup Results Both *absolute speedup* and *relative speedup* should be calculated

Scalability Graph(s) showing the scalabiltiy of your code.

The report does not need to be long. It must be concise and on point.

The idea is that you learn how to measure code performance as well as write parallel code. There is plenty of scope for making the code efficient.