Computer Science 181

Project 5 – The Sieve of Eratosthenes

Write a program that prompts the user for an integer greater than 1, and then uses the Sieve of Eratosthenes to calculate all the prime numbers less than or equal to that integer. You must implement the following algorithm which uses vectors to solve the problem.

Declare two vectors. One vector will contain numbers that you have discovered which are prime. It should be empty, initially. The other vector will be where the sieve takes place. Initially, it should contain all the integers between two and the number entered by the user, inclusive. Insert these numbers into the vector so that they are in increasing order.

Remove the first integer from the sieve vector. This value is prime. Insert it into the prime vector. Then, remove all elements from the sieve vector that are multiples of that value.

Repeat the previous step until the sieve vector is empty.

At this point, the prime vector contains all the prime numbers between 2 and the number entered by the user. Print out the contents of this vector in increasing order.

Here is an example of what your program should look like when executed. User input is shown in bold.

Enter a positive integer greater than 1: **25**

Here are the primes less than or equal to 25:

2

3

5

7

11

13

17

19

23

**What to turn in:** When you are ready to turn your program in, upload your program to blackboard. Note: **No late programs will be accepted.**