**ICS 108 – Object-Oriented Programming**

**Lab # 23 – Lists**

**Objectives:**

In this lab, the following topic will be covered:

1. Lists

**Task**

The Sieve of Eratosthenes is an ancient algorithm that generates prime numbers. Consider the list of numbers from 2 to 10 as follows:

2 3 4 5 6 7 8 9 10

The algorithm starts with the first prime number in the list, which is 2, and then iterates through the remainder of the list, removing any number that is a multiple of 2 (in this case, 4, 6, 8, and 10), leaving

2 3 5 7 9

We then repeat the process with the second prime number in the list, which is 3, and then iterate through the remainder of the list, removing any number that is a multiple of 3 (in this case 9), leaving

2 3 5 7

We then repeat starting with each successive prime number, but no elements are removed because there are no multiples of 5 or 7 (a more efficient implementation of the algorithm would stop without examining 5 or 7). The numbers that remain in the list are all prime numbers.

Implement this algorithm using a LinkedList of integers that is initialized to the values from 2 to 100. Iterate through the elements using an iterator (do not use get method). Output all remaining prime numbers to the console.