CS 5740 **Parallel and Distributed Computing**
Assignment # 4 Due Date: November 08, 2011

Sieve of Eratosthenes

Modify the parallel Sieve of Eratosthenes program to incorporate the following three improvements.

1. Delete even integers. Make sure that you do not set aside memory for even integers.
2. Eliminate broadcast. Each process should use the sequential Sieve of Eratosthenes algorithm on a separate array to find all primes between 3 and $\sqrt{n}$.
3. Change the array to be an array of bits instead of chars.

Benchmark your performance against the code I wrote for the parallel algorithm for different number of processors.

After you are done, find out the largest distance between any two consecutive primes between 0 and n. For example, the distance between consecutive primes is given by the following table:

Prime 1	Prime 2	Distance
3	5	2
5	7	2
7	11	4
11	13	2
13	17	4
17	19	2
19	23	4
23	29	6
29	31	2
⋮	⋮	⋮

What to handin

Create your programs in a directory called *username*.4 where *username* is your user name on admiral. Once you are done with everything, *remove the executables and object files*, copy the directory to admiral, and issue the following commands:

```
% cd
% ~bhatis/bin/handin cs5740 4
```