Programming Assignment 1

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CSC-410 Parallel Computing

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Listing 1: Non-parallelized Sieve of Eratosthenes

```
void erat(int n, int * pcnt){
  for(int i=2;i<=n;i++)
    sieve[i]=1;
  for(int i=2;i*i<=n;i++)
    if(sieve[i])
      for(int j=i*i;j<=n;j+=i)
        sieve[j]=0;
  *pcnt=0;
  for(int i=2;i<=n;i++)
    if(sieve[i])
      primes[(*pcnt)++]=i;
}
```

Listing 2: Parllelized Sieve of Eratosthenes

```
void erat2(int n, int * pcnt){
  #pragma omp parallel for
  for(int i=2;i<=n;i++)
    sieve[i]=1;
  int sqrtn = sqrt((double)n);
  for(int i=2;i <= sqrtn;i++)
    if(sieve[i]){
      #pragma omp parallel for
      for(int j=i*i;j<=n;j+=i)
        sieve[j]=0;
    }
  *pcnt=0;
  for(int i=2;i<=n;i++)
    if(sieve[i])
      primes[(*pcnt)++]=i;
}
```

Listing 3: Output on Command line from Prime Sieve Program

Monte Carlo

Listing 4: Slower For Loops with Color Image

Listing 5: Logical Indexing with Color Image

Listing 6: Command Line Performance Testing