COL 331
LAB 2
Print Primes

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TO RUN:

make RUN N=___ t=____

by default values of N=10^6 and t =10, but one can specify using above command.

(As given by piazza)

NOTE:
1. max value of N = 10^6   (As given by piazza)
3.Histogram shows timing data.

Naive Approach:
Divided the array into start and end ranges.
Each thread checks for each number in the range **[start, end),** and sets the value in the shared array to 0 if not prime.

Load Balance Approach:
Maintained a shared counter that starts from 2.
Lock the counter
Store its value
Increment counter value
Unlock
And then keep working with stored value.

Timings for individual threads:
I used clock_t function withing the parallel function.
Stored timings in different files for naive and load approach.

OBSERVATIONS:
From the plots we can observe that due to random allocation of load balance, all threads get to have same timings. Meanwhile in naive method some threads spend more time than others because of different distribution of numbers, somethreads keep on adding larger numbers only.
Moreover the load balance approach has higher time for larger N values due to increase of overhead.
At smaller N values load balance dominates
At larger N values naive approach dominates.