SIEVE OF ERATOSTHONES IN O(N)

**const int N = 10000000;**

**int lp[N+1];**

**vector<int> pr;**

**for (int i=2; i<=N; ++i) {**

**if (lp[i] == 0) {**

**lp[i] = i;**

**pr.push\_back (i);**

**}**

**for (int j=0; j<(int)pr.size() && pr[j]<=lp[i] && i\*pr[j]<=N; ++j)**

**lp[i \* pr[j]] = pr[j];**

**}**