VARENDRA UNIVERSITY
বরেন্দ্র বিশ্ববিদ্যালয়

Date: 29 Jan 2024 (Mon)
CSE-432 :: Cryptography and Network Security Lab

| Teacher: Md. Arshad Wasif | Lab #01 | Topic: Sieve, Prime Array |
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There are 2 tasks. Complete each task in separate file using this naming convention: task[n]_[your ID]_Lab01_[course_code].cpp

**Task1:**

You are given an array of integers called prime[N] whose elements are 1,2,3,4, …,N .

| Value | 0 | 1 | 2 | 3 | 4 | 5 | 6 | … | N |
|---|---|---|---|---|---|---|---|---|---|
| Index | 0 | 1 | 2 | 3 | 4 | 5 | 6 | … | N |

So, we can write prime[2]=2, prime[3]=3, prime[N]=N etc.
Now print all the prime numbers in the console from the array using Eratosthenis's sieve algorithm that we discussed in class. For your help, here is a code snippet.

```
/*Sieve of Eratosthenis*/
#include<bits/stdc++.h>
using namespace std;
int main()
{
    /*array declare*/
    int prime[1000]={0};
    /*Last range,N declare*/
    int N=500;
    /*inserting values to the array*/
    for(int i=1; i<=N;i++)
    {
        prime[i]=i;
    }
    /*crossing out 2's multiple*/
    for(int i=2;i<=N;i+=2){
        if(prime[i]%2==0)
            prime[i]=0;
    }
    /*adding it back*/
    prime[2]=2;
```

Use the code snippet and try to understand and complete the task.

**Task2:**

The task here is to extract all the primes you found in task 1 into another array called only_primes[N].

Your output should be like this:

| Value | 2 | 3 | 5 | 7 | 11 | 13 | 17 | 19 | … |
|---|---|---|---|---|---|---|---|---|---|
| Index | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | … |