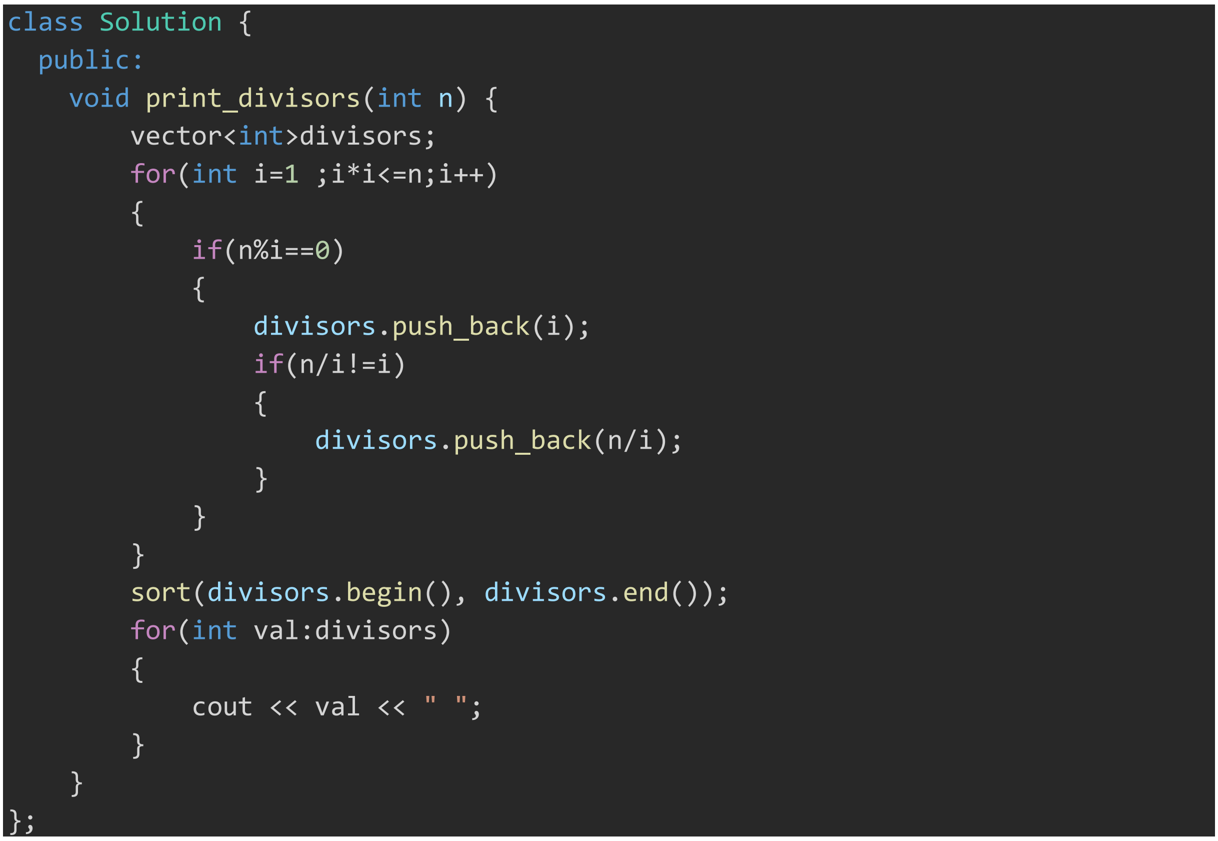
MATH FOR DSA

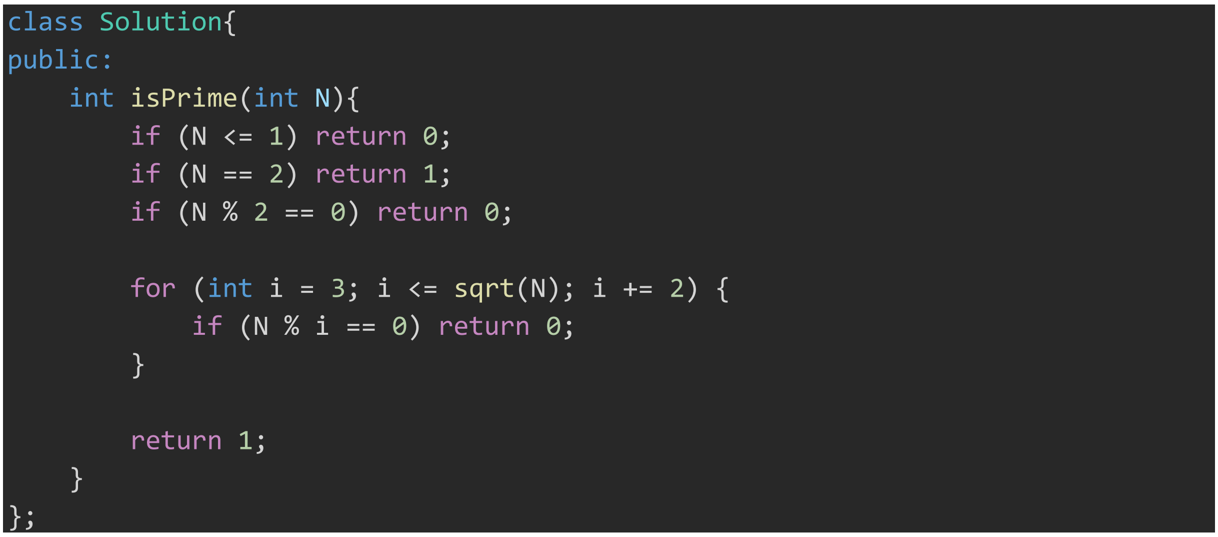
01.) PRINT DIVISOR



```
class Solution {
  public:
    void print_divisors(int n) {
        vector<int>divisors;
        for(int i=1 ;i*i<=n;i++)
        {
            if(n%i==0)
            {
                divisors.push_back(i);
                if(n/i!=i)
                {
                    divisors.push_back(n/i);
                }
            }
        }
        sort(divisors.begin(), divisors.end());
        for(int val:divisors)
        {
            cout << val << " ";
        }
    }
};
```

02.) CHECK IF NUMBER IS PRIME OR NOT

CODE 01



```
class Solution{
public:
    int isPrime(int N){
        if (N <= 1) return 0;
        if (N == 2) return 1;
        if (N % 2 == 0) return 0;

        for (int i = 3; i <= sqrt(N); i += 2) {
            if (N % i == 0) return 0;
        }

        return 1;
    }
};
```

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CODE 02

```
class Solution{
public:
    int isPrime(int N){
        if (N <= 1) return 0;
        if (N <= 3) return 1;
        if (N % 2 == 0 || N % 3 == 0) return 0;

        for (int i = 5; i * i <= N; i += 6) {
            if (N % i == 0 || N % (i + 2) == 0) return 0;
        }

        return 1;
    }
};
```

CODE 03

```
class Solution{
public:
    int isPrime(int N){
        if (N <= 1) return 0;
        if (N <= 3) return 1;

        for (int i = 2; i <= sqrt(N); i++) {
            if (N % i == 0) return 0;
        }

        return 1;
    }
};
```

03.) PRINT PRIME FACTORS

```
#include <bits/stdc++.h>
using namespace std;

void primeFactors(int n)
{
    while (n % 2 == 0)
    {
        cout << 2 << " ";
        n = n / 2;
    }

    for (int i = 3; i <= sqrt(n); i = i + 2)
    {
        while (n % i == 0)
        {
            cout << i << " ";
            n = n / i;
        }
    }

    if (n > 2)
        cout << n << " ";
}

int main()
{
    int n = 315;
    primeFactors(n);
    return 0;
}
```

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04.) SIEVE OF ERATHOTHENES

```cpp
#include <bits/stdc++.h>
using namespace std;

void SieveOfEratosthenes(int n) {
    bool prime[n + 1];
    memset(prime, true, sizeof(prime));

    for (int p = 2; p * p <= n; p++) {
        if (prime[p] == true) {
            for (int i = p * p; i <= n; i += p)
                prime[i] = false;
        }
    }

    for (int p = 2; p <= n; p++)
        if (prime[p])
            cout << p << " ";
}

int main() {
    int n = 30;
    cout << "NUMBERS ARE :- " << n << endl;
    SieveOfEratosthenes(n);
    return 0;
}
```

THANK YOU !