Topics to discuss

- Print all prime numbers till n.
- Sieve of Eratosthenes.
- Its time & space complexity.

```
static boolean prime(int n){
    if (n <= 1) return false;
    for (int i = 2; i * i <= n; i++) {
        if (n % i == 0)
            return false;
    }
    return true;
}
Static void solution(int n){
    for (int i=2 ; i<=n; i++){
        if( prime(i) == true)
            print (i);
    }
}
```

I/p : 10

O/p : 2, 3, 5, 7

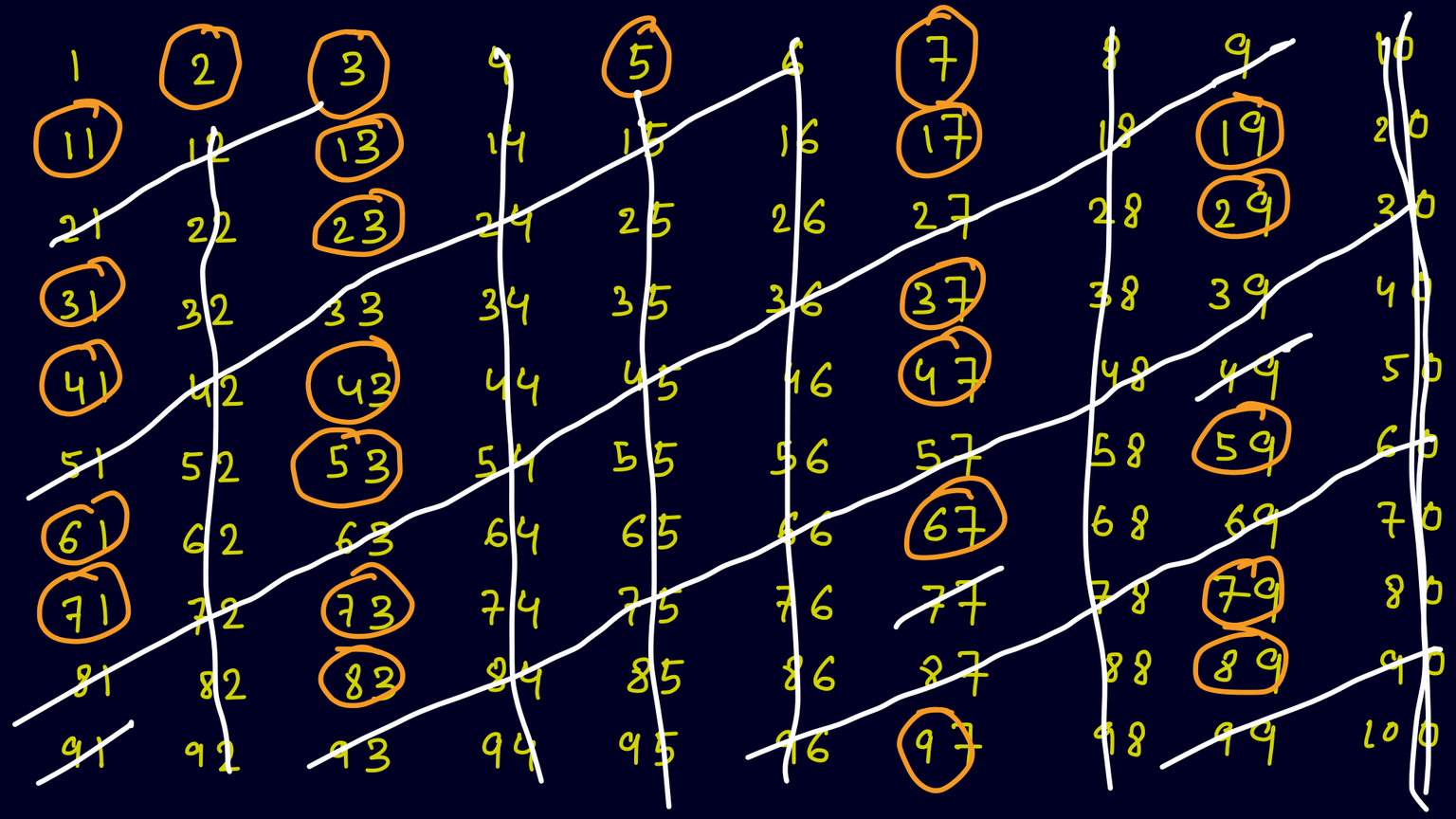
I/p : 20

O/p : 2, 3, 5, 7, 11, 13, 17, 19

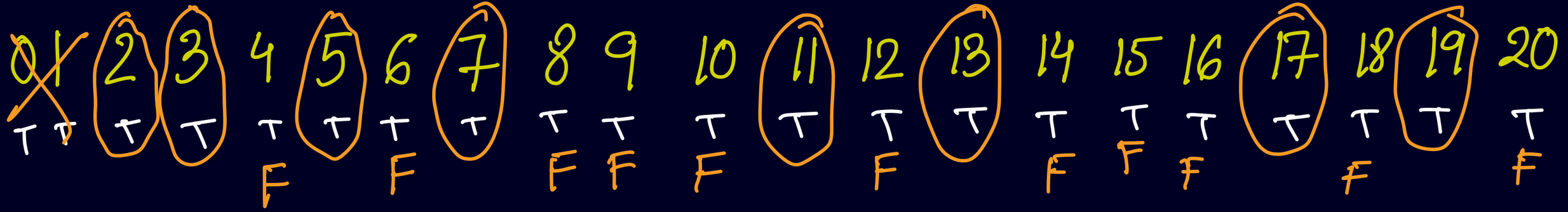
Sieve of Eratosthenes

$n = 100$

$\sqrt{n} = 10$



#DSAWithArfin



#DSAWithArfin

```
static void sieveOfEratosthenes (int n) {
    boolean [] isPrime = new boolean [n+1];
    for (int i=2 ; i<=n ; i++)
        isPrime [i] = true;
    For (int i=2 ; i x i <= n ; i++) {
        for (int j = i x i ; j <=n ; j+=i)
            isPrime [j] = false;
    }
    For (int i=2 ; i<= n ; i++) {
        if (isPrime [i] == True)
            Print (i)
    }
}
```

n = 10

0 , 1 , 2 , 3 , ... 11 10

2 3 4 5 6 .... T

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F

i = 2

j = 2 x 2 = 4

j = j + i

= 4 + 2 = 6

i = 3

j = 3 x 3 = 9

j = j + i

= 9 + 3 = 12