# Q. GCD → Greatest Common Divisor
↳ HCF

(1)

(12, 60)

↓

12 — 2 3 4 6 ~~12~~

10, 15

1 2 3 4 5 6 7 8 9 10 11 12

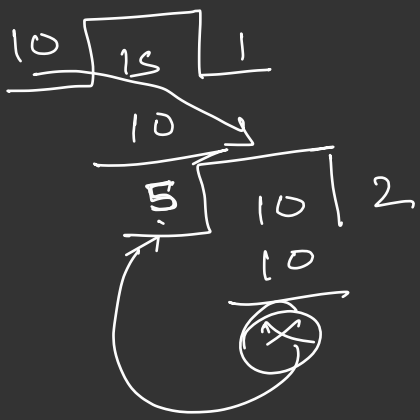
→ 5

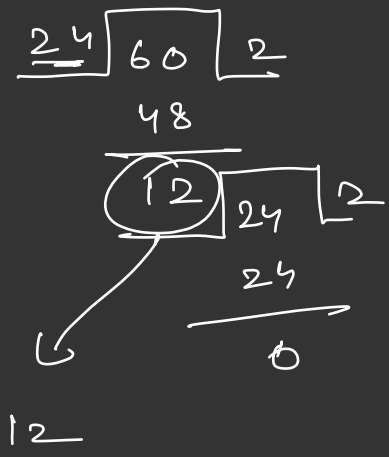
2, 3, 4, 5, 6, 7, 8, 9

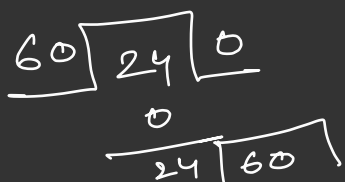
ans = 5

```
i = 2; i < min(a,b); i++
```

→ a%i == 0 && b%i == 0



$GCD(a, b) = GCD(b, a \% b)$

24 60


$GCD(60, 24)$

60 % 24

24, 12

12, 0

---

Ques LCM

$LCM \times HCF/GCD = a \times b$

$$LCM = \frac{a \times b}{GCD(a, b)}$$

---

Modulo Arithmatic ∵

$m = 10^9 + 7$ ∵ $10^9+7$

$$(a+b) \% m = ((a \% m) + (b \% m)) \% m$$

$$(a \times b) \% m = ((a \% m) * (b \% m)) \% m$$

```
int fact (int n) {
    int f = 1, m = 1000000007;
    for( i = 2; i <= n; i++ ) {
        f = (f % m) * i ) % m;
    }
    return f;
```

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Ques Prime numbers

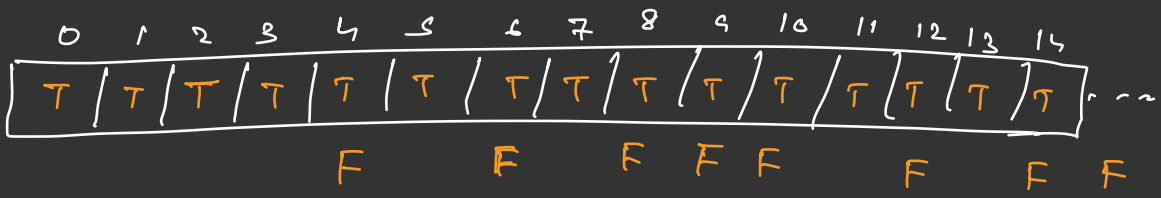
1 - n


```
for( i = 2; i <= √n ; i++) {
    if (n % i == 0) return false
}
return true
}
```

# Sieve of Eratathonies

$n = 20$

$n+1$




$\sqrt{n} \times n \Rightarrow \sqrt{n}\, n$