SKILLS

	12	18
12	✓	✗
11	✗	✗
10	✗	✗
9	✗	✗
8	✗	✓
7	✗	✗
6	✓	✗
5	✗	✗
4	✓	✓

Brute Force Approach:

$$gcd(x, y) \leq \underline{min(x, y)}$$

ursion Questions - 4 | GCD | Euclids Algorithm | Lecture 31 | Java & DSA Course

$x = 24$

$y = 15$

Divisor → y

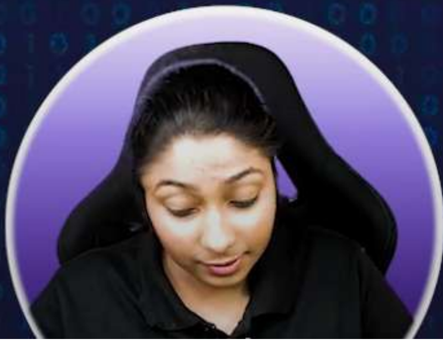
Dividend → x

$15 \overline{)\,24\,}(\,1$
$\quad 15$

$9 \overline{)\,15\,}(\,1$
$\quad 9$

$6 \overline{)\,9\,}(\,1$
$\quad 6$

$3 \overline{)\,6\,}(\,2$
$\quad 6$
$\quad 0$



SKILLS

```
while ( x % y != 0) {
    rem = x % y;
    x = y
    y = rem;
}
return y;
```

Euclid's Algo.

$$gcd(x, y) = gcd(y, x \% y)$$

$$gcd(x, 0) = x$$

$x = \cancel{24}\ 15$

$y = \cancel{15}\ 9$

Divisor ↑ → Dividend

$y \leftarrow 15 \overset{x}{\overline{)\,24\,}} (1$

15

$y\ 9 \overset{x}{\overline{)\,15\,}} (1$

9

$y\ 6 \overset{x}{\overline{)\,9\,}} (1$

6

$y\ 3 \overset{x}{\overline{)\,6\,}} (2$

6

0

$gcd(24, 15) = gcd(15, 9)$

Euclid's Algo.

$$gcd(x, y) = gcd(y, x \% y)$$

$$gcd(x, 0) = x$$

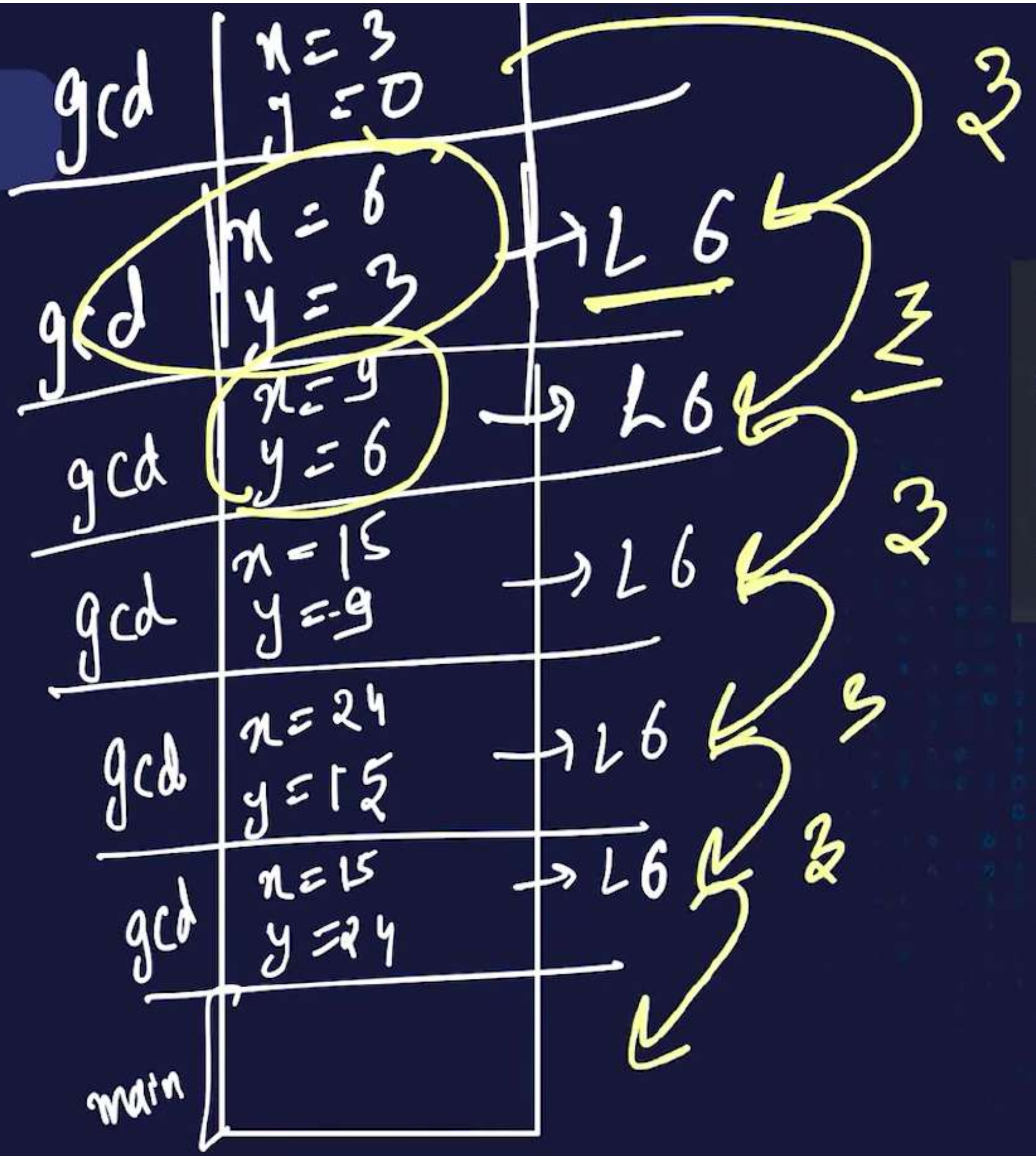
$$gcd(24, 15) = gcd(15, 9)$$

$$gcd(9, 6)$$

$$gcd(6, 3)$$

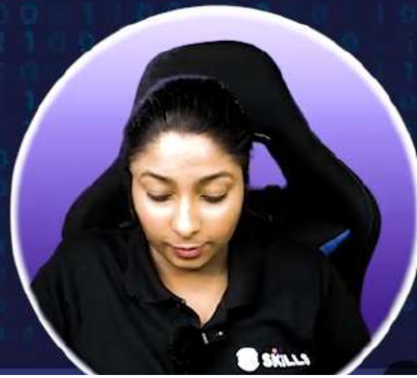
$$gcd(3, 0)$$

SKILLS




```java
static int gcd(int x, int y){
    if(y == 0) return x;
    return gcd(y, y: x % y);
}
```

3



Summary

- In this lecture we have learnt how to find GCD of two numbers using the Euclidean algorithm.

$$lcm * \boxed{gcd} = x * y$$

$$\boxed{lcm = \frac{(x * y)}{gcd}}$$

Summary

- In this lecture we have learnt how to find GCD of two numbers using the Euclidean algorithm.

Recurs

Euclid's algo :-

$$\boxed{\begin{aligned} GCD(x, y) &= GCD(y, x \% y) \\ GCD(x, 0) &= x \end{aligned}}$$