

RECURSION Concepts



& Qns



video
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” में, DSA की शपथ
लेता हूँ कि मैं जो पढ़ाउगा
वही तो अच्छे से पढ़ाउगा। ”

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Motivation
(भाषण)

○ तुम्हें पता होगा चार्ल्स की
अगर तुम एक बार ठान
लोगी, तो तुम्हें कोई शक
नहीं पड़ेगा।

⊙ Winner may not be the one who is talented but definitely the one who is hard working.

Recursion Leap Of Faith

Call recursion & have faith on it...

- (i) It will do your work. \Leftarrow
 (ii) Assume that the recursion you called will do the job. \Leftarrow

Example:-

• Factorial of n .

$n = 5$

$5 * 4 * 3 * 2 * 1$

$5 * 4!$

$n = 0! = 1$
 $n = 1! = 1$

```

int factorial (int n) {
    if ( n <= 1 ) { // Base Case
        return 1;
    }
    return 5 * factorial (n-1);
}
  
```

Diagram illustrating the recursive call for $n=5$:
 The expression $5 * factorial(n-1)$ is shown. A yellow box highlights the entire expression. A blue circle highlights the 5 . A blue arrow points from the 5 to the $4!$ part of the expression, which is also circled in blue. A yellow arrow points from the $n-1$ in the recursive call to the $4!$ part of the expression.

(*) Print a string in reverse. $str = "abc"$
 $"cba"$

```
void print(string str) {
```

```
// code here
```

```
Solve (str, 0);
```

```
}
```

↓
abc
idx →

```
void Solve (str, idx) { ←
```

Base: // if (idx >= str.length()) {
return;

```
Solve (str, idx+1);
```

```
cout << str[idx] << end;
```

```
}
```

abc, idx=0

abc, idx=1

abc, idx=2

cba

abc, idx=3