COP 3502 9/18/23

(1) Recursion!

- function that sometimes CALLS itself!

factorial

$n! = 1 \times 2 \times 3 \times \ldots n$

$n! = \boxed{(1 \times 2 \times 3 \times \ldots (n-1))} \times n$

$n! = (n-1)! \times n$

↑ Problem of the exact same nature

Section of code w/o <u>rec</u> call is the base case(s)

```
// base case
if (n <= 1) return 1;

// recursive case
return fact(n-1) * n;
```

Power

$b^e = \boxed{b^{e-1}} * b^1 = b^{e-1+1} = b^e$

Tip Chart

1	0.15
2	0.30
⋮	
9	1.35
10	1.50

TC (1, 9)

⟹ print (10)

TC (low, high)

TC(low, high-1)

printf("%d \t %.2lf \n", high, high*RATE);

Towers

n disks

to solve
towers(n, start, end)

forced to do

1. towers(n-1, start, mid)

2. move bot disk from start to end

3. towers(n-1, mid, end)