



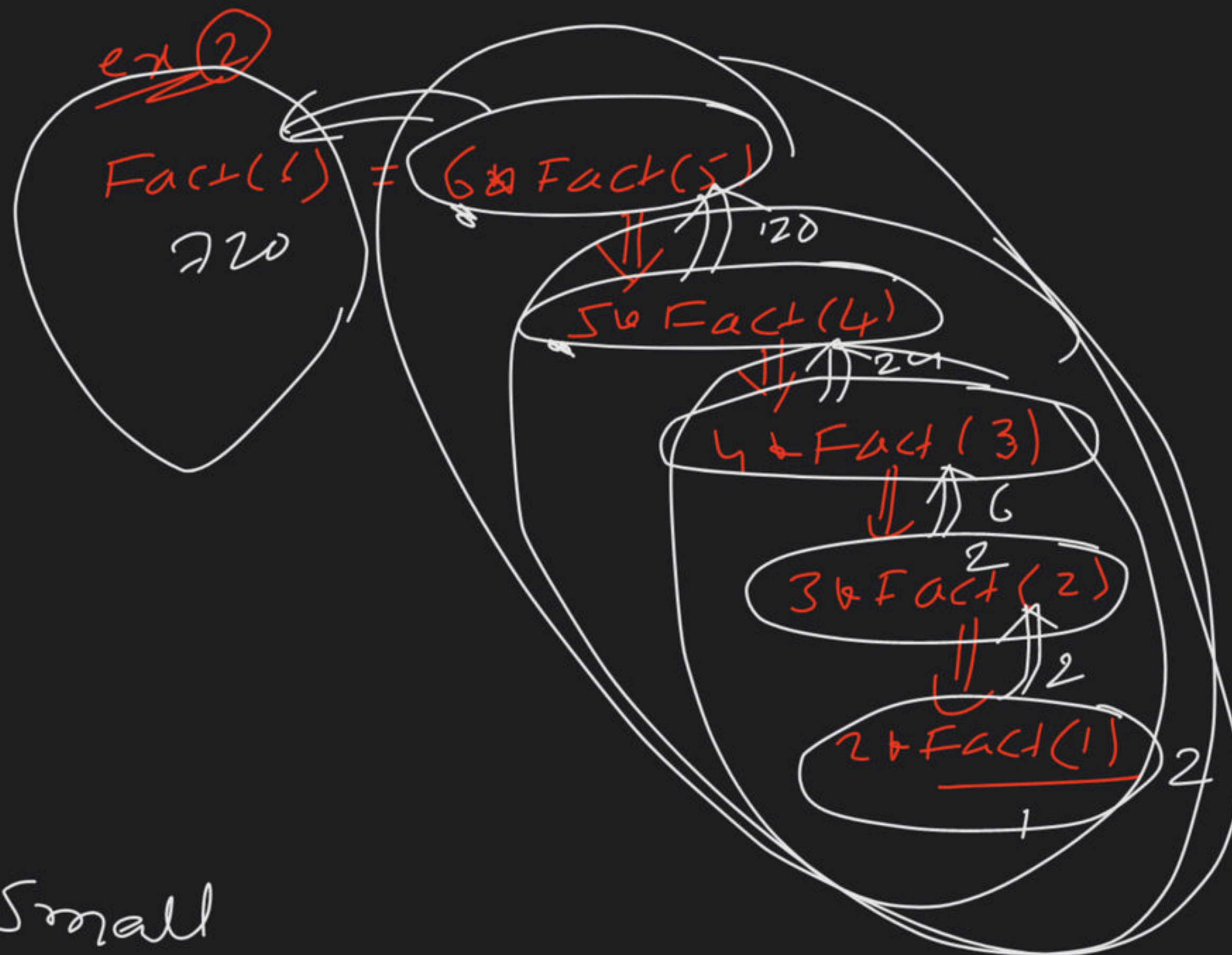
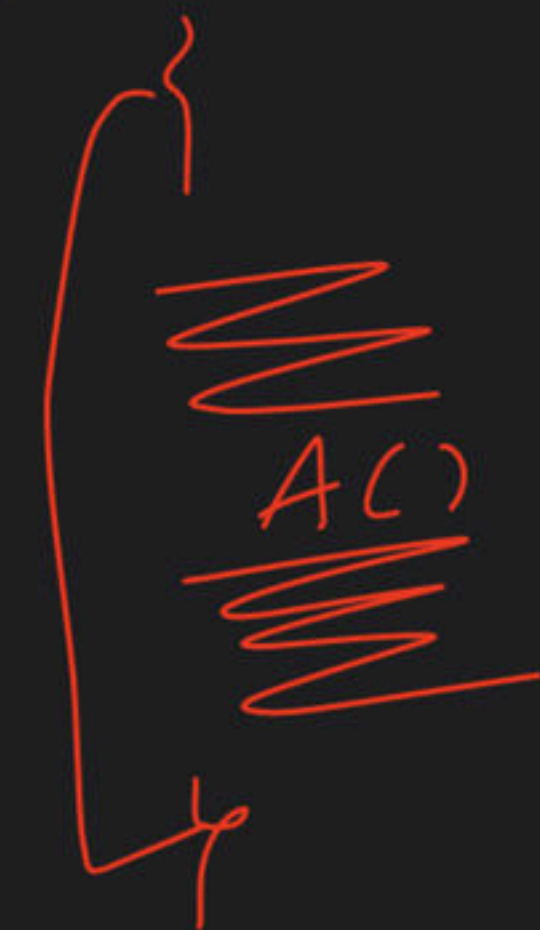
GT - Part III

Complete Course on Algorithm for GATE - CS & IT

Recursion

① Function calling itself is known as recursion.

ex ① A()



② Stack

③ Big \Rightarrow Small

④ Termination condition

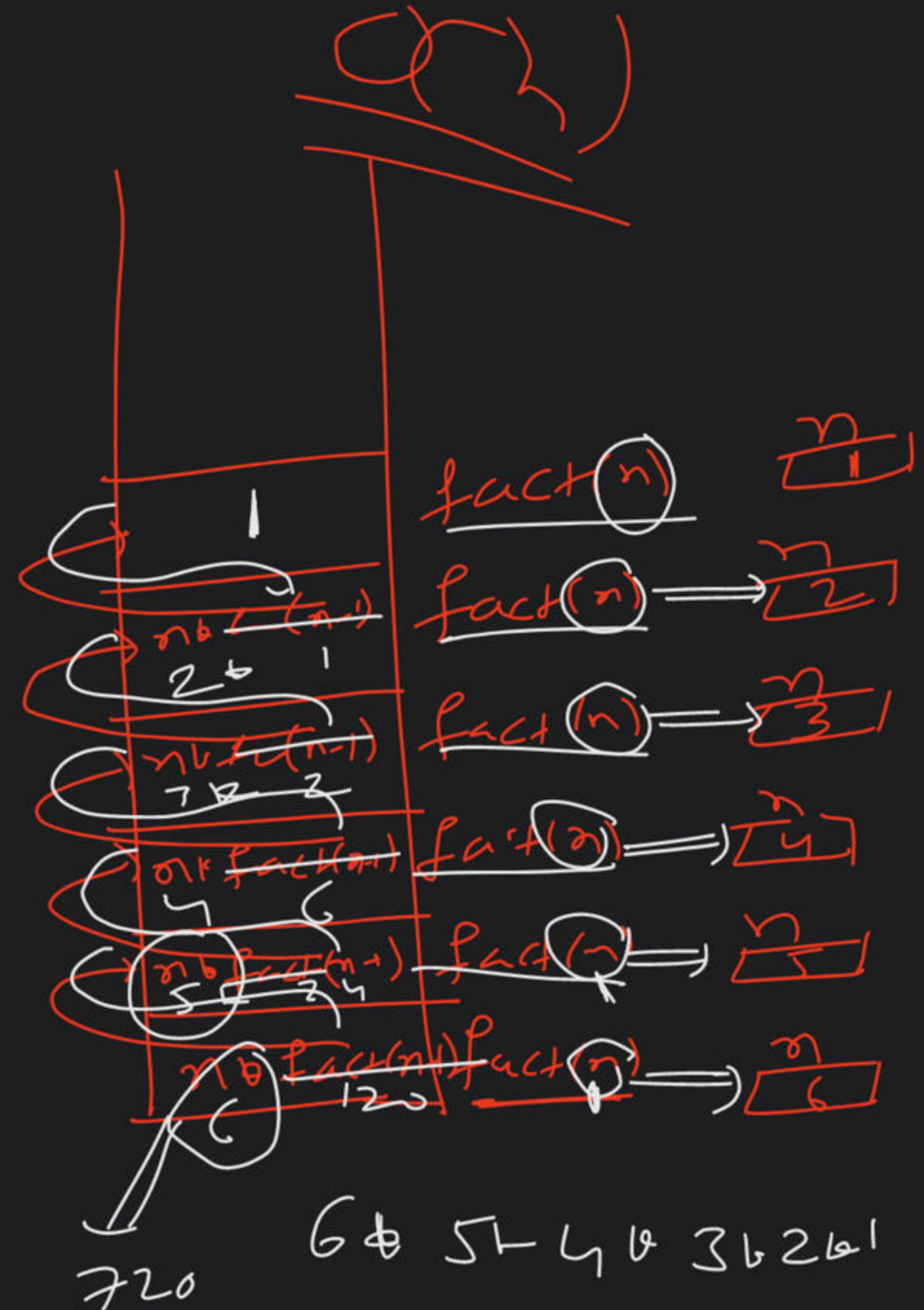
⑤

fact(int n)

```
if (n <= 1) return 1;
else
    return n * fact(n-1);
```

Recurrence Relation — Value

$$f(n) = \begin{cases} 1 & \text{if } n \leq 1 \\ n * f(n-1) & \text{if } n > 1 \end{cases}$$



⑥

fact(int n)

s = 1

for (i = n; i ≥ 1; i--)

s = s * i;

return(s)

O(n)

s

i

1

6

6

5

5

4

4

3

3

2

2

1

1

Reason

num n! = 1

⑦ Non. Keen program \leq kernel program
Stack space

⑧ Time Same