

$$\overset{a}{\underline{\underline{4}}} \times \overset{b}{\underline{\underline{3}}} = 4 + 4 + 4$$

value times

$$\boxed{\underline{\underline{4}}} + \underline{\underline{4 \times 2}}$$

$$\text{return } 4 + (\underline{\quad}) \quad 4 + 4 \times \underline{\underline{1}} = \underline{\underline{4}}$$

$$\text{timesb} == 1$$

return ~~value~~ a

else : return a + add(a, b-1)

def prod(a, b)

if $b == 1$:

return a

else:

return a + prod(a, b-1)

$$100 \times 1 : 100$$

$$\underline{\underline{500}} \times 1 : 5000$$

$$4 \times 3 = \boxed{12} + 4 \times 2$$

$$\begin{array}{c} \uparrow \\ 18 \leftarrow 4 + 4 \times 1 \\ \uparrow \\ 4 \end{array}$$

$$\underline{4 + 4 + 4}$$

$$5! = 5 \times 4 \times 3 \times 2 \times 1$$

$$5 = 5 + 4 + 3 + 2 + 1$$

fact(n):

if $n == 0$
return 1

$$0! = 1$$

$$1! = 1$$

$$5! = 5 \times 4!$$

51 : 5 x 41 120

$\begin{array}{r} 22 \\ 1 \times 3 \\ \hline 63 \end{array}$

3x21

2022

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

0 1 1 2 3 5 8 13

fib(32)

fib(8) fib(5)

fib(31)

fib(30)

30 29
25 28 28 27

29 28
28 27 27 26
125