Orders of Growth:

Recursive Factorial Procedure:

The number of steps grows proportionally to the input n. For each n, steps grow as O(n) and the space required grows as O(n).

(factorial 4)

Step Breakdown:

(\* 4 (factorial 3))

(\* 4 (\* 3 (factorial 2)))

(\* 4 (\* 3 (\* 2 (factorial 1))))

(\* 4 (\* 3 (\* 2 1)))

(\* 4 (\* 3 2))

(\* 4 6)

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(factorial 7)

Step Breakdown

(\* 7 (factorial 6))

(\* 7 (\* 6 (factorial 5)))

(\* 7 (\* 6 (\* 5 (factorial 4))))

(\* 7 (\* 6 (\* 5 (\* 4 (factorial 3)))))

(\* 7 (\* 6 (\* 5 (\* 4 (\* 3 (factorial 2))))))

(\* 7 (\* 6 (\* 5 (\* 4 (\* 3 (\* 2 (factorial 1)))))))

(\* 7 (\* 6 (\* 5 (\* 4 (\* 3 (\* 2 1))))))

(\* 7 (\* 6 (\* 5 (\* 4 (\* 3 2)))))

(\* 7 (\* 6 (\* 5 (\* 4 6))))