Algorithm complexity

- **Complexity in computer science** **measures how efficient an algorithm is in terms of time and space.**
- **What is complexity?**

Complexity in computer science measures how efficient an algorithm is in terms of time and space.

1. **Time complexity:** **how fast an algorithm run as the input size increases.**
2. **Space complexity:** **how much memory an algorithm us**

1.Types of complexity:

- **Time complexity**

  -measures execution time.

  -examples:

  O(1),O(n),O(n^2),(long n)

- **Space complexity**

  -measures memory usage.

  -examples: O(1) (CONSTANT MEMORY),O(n) (linear memory)

Common complexity orders (best _ worst)

1.O(n):constant time (best & fastest)

2.O(long n):logarithmic time (fast)

3.O(n):linear time (acceptable)

4.O(n long n):linear time (commonly used in sorting)

5.O(n^2):Quadratic time (slow)

6.O(n^3):cubic time (slower)

7.O(2^n):exponential time (very slow)

8.O(n!):factorial time (worst & slowest)