General Time Complexity Table in DSA (Extended)

Time Complexity	Name	Example in DSA	When It Happens	Real-Life Analogy
O(1)	Constant Time	Accessing array element, Hash map lookup, Stack push/pop	Operation doesn't depend on input size	Picking the first book from a shelf
O(log n)	Logarithmic Time	Binary Search, Balanced BST search, Heap operations	Input size reduces by half each step	Finding a word in a dictionary
O(n)	Linear Time	Traversing array, Linear Search, BFS/DFS in graph	Every element needs to be checked once	Taking attendance in a class
O(n log n)	Linearithmic Time	Merge Sort, Quick Sort (avg), Heap Sort, Tree Sort	Efficient divide-and-conquer algorithms	Sorting names in a phonebook
O(n^2)	Quadratic Time	Bubble Sort, Selection Sort, Insertion Sort (worst case)	Nested loops over entire input	Comparing every student with every other student
O(n^3)	Cubic Time	Matrix multiplication (naïve), 3 nested loops	Triple nested iterations	Checking all seat combinations in a hall
O(2^n)	Exponential Time	Recursive Fibonacci, Travelling Salesman (subset method)	Branching doubles with each input	Trying every combination of clothes
O(n!)	Factorial Time	Travelling Salesman (brute force), generating permutations	When every possible order/arrangement is tried	Shuffling and checking every order of a deck of cards