**What Does O(n) Time Mean?**

**O(n)** is **"Big O notation"**, used to describe the **time complexity** of an algorithm — in other words, **how the running time grows** as the input size grows.

**O(n) Explained:**

* **"n"** is the size of the input.
* **O(n)** means the time it takes to run the algorithm **grows linearly** with the input size.

So, if the input doubles, the running time also **roughly doubles**.

**Comparison with Other Time Complexities:**

| **Time Complexity** | **Example** | **Growth Rate** |
| --- | --- | --- |
| O(1) | Access by index: arr[5] | Constant (very fast) |
| O(log n) | Binary search | Fast (shrinks problem in half) |
| **O(n)** | Loop through all elements | Linear |
| O(n²) | Nested loops (e.g. bubble sort) | Quadratic (slow for large n) |

A graph of a graph

AI-generated content may be incorrect.