**Exercise 2: E-commerce Platform Search Function**

Understand Asymptotic Notation

**What is Big O Notation?**

Big O notation describes the upper bound of an algorithm’s running time as input size (n) grows.  
It helps analyze efficiency and scalability.

**Analysis**

| **Algorithm** | **Time Complexity** | **Space Complexity** | **Requires Sorted Array?** |
| --- | --- | --- | --- |
| Linear Search | O(n) | O(1) | No |
| Binary Search | O(log n) | O(1) | Yes |

**Which is better?**

* Use Linear Search if:
  + The dataset is small or unsorted.
  + Search is occasional.
* Use Binary Search if:
  + The dataset is large and sorted by productId.
  + Search happens frequently and needs speed.