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| --- | --- | --- | --- | --- |
| **Algorithm** | **Time complexity** | **Memory** | **Sorting** | **Suitable when** |
| Linear | **O(n)** | O(1) | No | Small catalogs, or data frequently mutates and staying sorted is too costly |
| Binary | **O(log n)** | O(1) | Yes (sorted) | Large, mostly‑read catalogs such as an e‑commerce product table |

For an e‑commerce search service where reads (searches) vastly outnumber writes (catalog updates), maintain the products sorted by productId (or index them in a tree / B‑tree / DB index) and use binary search or better yet a hash‑indexed or tree‑indexed data structure.

Linear search is only reasonable for prototypes or very small datasets.