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

Scenario:

You are working on the search functionality of an e-commerce platform. The search needs to be optimized for fast performance.

Steps:

1. Understand Asymptotic Notation:

o Explain Big O notation and how it helps in analyzing algorithms.

o Describe the best, average, and worst-case scenarios for search operations.

2. Setup:

o Create a class Product with attributes for searching, such as productId, productName, and category.

3. Implementation:

o Implement linear search and binary search algorithms.

o Store products in an array for linear search and a sorted array for binary search.

4. Analysis:

o Compare the time complexity of linear and binary search algorithms.  
