**OUTPUT**

**1. Singleton Pattern**

**Output:**

Logger initialized.

Log: This is the first log message.

Log: This is the second log message.

Both instances are the same: true

**2. Factory Method Pattern**

**Output:**

Opening Word document...

Opening PDF document...

Opening Excel document...

**3. Finanace**

**Output:**

=== Financial Forecast Using Recursion ===

Future value after 10 years: ₹21589.25

=== Financial Forecast Using Memoization ===

Future value after 10 years: ₹21589.25

**4. Ecommerce**

**Output:**

=== Linear Search ===

Product found at index 4: P005 - Camera - Electronics

=== Binary Search ===

Product found at index 0: P005 - Camera - Electronics