MongoDB Inventory Lab 2

Please Don’t Take ScreenShot for the Queries Copy the Queries into the answers file only (no Screenshots)

Part 1: Basic Aggregation

1. Calculate the number of products per category and sort by highest count first.
2. Find the maximum price for each product category and include a list of products in that category.
3. Retrieve all orders made by user "ahmed" with full product details populated.
4. Calculate the highest total order value for user "ahmed".
5. Calculate the average price of products for each vendor and display vendors sorted by their average price.

Part 2: Advanced Queries and Projection

6. Find all Apple products and only return the first stock location using the $ positional operator.
7. Find all products that have at least one stock location with more than 100 units using $elemMatch.
8. Find all Laptop products and return only their name and price, excluding the _id field.
9. Find all products with a price greater than 10000 and return their names in uppercase and price with a 10% discount.
10. Use projection to return only the second stock value for all products with at least 3 stock locations.

Part 3: Update Operations

11. Update all products in the "Phone" category to add a new "features" array and increase price by 10%.
12. For all products that have a stock array, add a new inventory location with 50 units.
13. Decrease the stock by 5 for the first stock location that has more than 50 units for "Apple" products.
14. Use $pull to remove all stock values less than 10 from all products.
15. Add a "lastUpdated" timestamp to all products that don't have it, then create a TTL index that expires documents after 30 days.

Part 4: Indexes and Performance

16. Create a compound index for category and price, then query using it to verify performance.

17. Create a unique index on the product name field, then attempt to insert a duplicate product.
18. Create a text index on the product name and use it to search for products containing "phone".

Part 5: Advanced Aggregation Pipeline (Bonus)

19. Create a comprehensive product analytics report using aggregation pipelines that shows:
    - Category performance metrics (count, avg price, min/max price, total inventory)
    - Inventory risk assessment (identify items with less than 20 units in stock)
    - Vendor analysis with diversity score (number of different categories per vendor)