Product Management System (Console App)

Objective:

Build a console-based application using Node.js that allows a user to manage products in an inventory.

Features and Requirements:

1. Add Product:

   - Prompt the user to enter the product's name, category, price, and unique product ID.

   - Store this information in an array or a file (using `fs` module).

2. List All Products:

   - Display a list of all products currently in the system, showing their name, category, price, and product ID.

3. Search Product:

   - Allow users to search for a product by its name, category, or product ID.

   - Display all matching results.

4. Update Product:

   - Allow users to update the details of a product using its unique product ID.

5. Delete Product:

   - Allow users to remove a product from the system by specifying its product ID.

6. Save and Load:

   - Save the current list of products to a file whenever a product is added, updated, or removed.

   - Load this list from the file whenever the application starts.

7. User Interface:

   - Use the console for user input and output.

   - Guide the user with clear instructions and options like:

```
Welcome to the Product Management System!
    1. Add a product
    2. List all products
    3. Search for a product
    4. Update a product
    5. Delete a product
    6. Exit

Enter your choice:
```

Steps to Approach:

1. Set up a Node.js application with a main file, say `app.js`.

2. Implement the main loop where the user is presented with the menu options.

3. For each option, implement the corresponding functionality (e.g., adding a product, displaying all products, etc.).

4. If you're using the `fs` module to store products, use JSON format as it'll be easier to load and parse the data.

5. Make sure to handle errors gracefully - for instance, alerting the user if they try to delete a product that doesn't exist or try adding a product with a product ID that's already present.

Bonus:

1. Product Statistics: Provide an option to display statistics, such as the total number of products, average product price, or the number of products in each category.

2. Implement basic input validation to ensure the product ID is unique, and other fields are not left empty.

3. Implement a basic logging system that keeps track of when products are added, deleted, updated, or searched.