E-Commerce Product Management System

Scenario:
You are tasked with developing a simple e-commerce product management system where users can manage product categories, products, and inventory.

Step-by-Step Implementation:
1. **Step 1: Define Classes for Product Management**
    - Create Category and Product classes with appropriate properties.
    - Use inheritance to manage different types of products (e.g., Electronics, Clothing).
2. **Step 2: Implement Collections and Generics**
    - Use List<T> to store and manage products and categories.
    - Implement methods to add, update, delete, and search products.
3. **Step 3: Implement Relationships**
    - Define a relationship between Category and Product classes.
    - Create methods to associate products with categories.
4. **Step 4: Exception Handling**
    - Implement exception handling for scenarios like adding duplicate products, deleting non-existing products, and so on.
    - Create custom exceptions where necessary.
5. **Step 5: Implement Git Version Control**
    - Initialize a Git repository and commit initial project files.
    - Use branches to implement new features (e.g., feature/ add_product, feature/update_product).
    - Merge branches back to the main branch and handle merge conflicts if any.
6. **Step 6: Testing and Debugging**
    - Test for product management functionality by giving different inputs/outputs.
    - Debug and fix any issues found during testing.
7. **Step 7: Final Solution**
    - Finalize the project by ensuring all functionalities are working correctly.
    - Create a final Git commit and push the code to a remote repository.