E-commerce Inventory Management Service

1. Purpose

This PRD defines the requirements for a simple e-commerce inventory management service. Use coding assistants like GitHub Copilot, Cursor OR Windsurf and your preferred framework to build it.

We are **not focusing on authentication or authorization** in this assignment.
You can assume that the system is being used by an Admin, who has full access to manage products, categories, and SKUs.

2. Entities & Relationships

- Entities
  - Category: Used to group products (e.g., Electronics, Apparel).
  - Product: Represents a general product concept (e.g., "iPhone 15").
  - SKU: Represents a sellable variant of a product (e.g., "iPhone 15 - 128GB - Black").
- Relationships
  - A Product belongs to one Category.
  - A Product can have many SKUs.
  - A SKU belongs to one Product.

3. Requirements

3.1 Build Rest APIs for

- Category
  - Create, Read, Update, Delete Categories
  - List all categories
- Product
  - Create, Read, Update, Delete Products
  - List Products with:
    - Search by product name
    - Filter by category
    - Pagination (page & pageSize params)
  - Each Product must belong to an existing Category
- SKU
  - Add, Update, Delete SKUs for a Product
  - Each SKU must belong to a valid Product
  - Return all SKUs of a product

3.2 Expectation

- The code should be of production grade.
- Handle all the necessary validations, relationships, edge cases.
- Write Unit tests and share the coverage report.
- For I3 and above ensure code-quality, code-structure, API documentation, complete test coverage.

4. Deliverables

- Create a new GitHub **PRIVATE** Repo using your Talentica email
- Push the entire new solution to the repo
- Share the GitHub repo with the below users:
    - dmistryTal
    - nileshmallick1606
    - Sachin-Salunke-Talentica
- **The repo should contain**:
    - Entire source code.
    - README.md — project overview, setup, run instructions
    - Project-structure.md file
    - **Copilot Chat Export.md**
        - Export of the entire chat history.
        - If you have used multiple chat windows that extract all and stitch in a single file