Product Management System Documentation

The Product Management System is a comprehensive solution designed to streamline the inventory management process for businesses. At its core, the system handles product information and encompasses various aspects of product variants, such as size, color, or fit. With the primary objective of simplifying the cataloging and tracking of a diverse range of products, the system is equipped with functionalities to manage product details effectively and efficiently. It features classes like Product, Variant, and Order, each tailored to handle specific aspects of product and order management.

The system is centered around two key classes: the Product and Variant classes. The Product class represents a product in the inventory, uniquely identified by an ID. This ID is generated automatically, ensuring each product can be distinctly tracked and managed. The class also stores the product's name and a list of its variants, facilitating easy access and modification of product information.

The Variant class, inheriting from the Product class, is designed to represent specific variants of a product. This subclass extends the functionality of a basic product by incorporating variant-specific details, thereby offering a more granular level of management.

A notable feature of the system is the generation of unique identifiers for products using the generateUUID function. This function is crucial for maintaining distinctiveness among products, a critical aspect of inventory management. Furthermore, in scenarios where the system interfaces with external data sources, it is equipped to parse CSV files. This functionality allows for efficient batch processing and initialization of the product catalog, directly importing details from structured data files.

To use this program, Python must be installed on your system as the entire program is developed in Python. Starting the program involves running the main script from the command line or terminal in the program directory. For instance, if the main script is named main.py, it can be executed with the command python main.py.

Once the program is running, it guides the user through a series of prompts to add new products, including their names and variants. The interface also provides options for viewing and managing the list of products and their details. For more specific tasks like managing product variants, the program offers intuitive commands to add or modify variants within a selected product.

To ensure the program's functionalities are working as intended, unit tests can be executed. These tests validate the integrity of the system and can be run using the command python -m unittest test\_product.py, where test\_product.py should be replaced with the actual name of the test file.