**Abstract:**

This report details the development of a Simple Inventory Management System using Python. The system provides core functionalities such as adding new products, viewing current inventory, updating product quantities, and removing products. The project is designed as a learning exercise for beginners, utilizing basic programming concepts such as functions, loops, conditionals, and data structures like lists and dictionaries. The system’s simplicity and functionality offer an effective introduction to Python programming and software design principles.

**Summary:**

The Simple Inventory Management System is a Python-based project aimed at assisting store owners in managing their inventory. The system allows users to add products by specifying details like product name, ID, quantity, and price. It also enables users to view the current inventory, update the quantity of existing products, and remove products from the inventory.

This project is structured to include a text-based menu interface, allowing users to navigate through different functionalities with ease. Each product is stored as a dictionary within a list, making it easy to manage and retrieve product information. The project also includes basic input validation to ensure the accuracy and reliability of the operations performed.

**Components Used**

1**. Python Programming Language:** The entire system is implemented using Python, which provides an easy-to-learn syntax and a rich set of libraries for handling various programming tasks.

2. **Data Structures:**

**- List:** Used to store the inventory, with each product represented as a dictionary within this list.

- **Dictionary:** Each product is stored as a dictionary, containing keys like `name`, `id`, `quantity`, and `price`.

3. **Functions:** The project is modularized into functions, each handling a specific task:

- **`add\_prod()`:** Adds a new product to the inventory.

- **`view\_inven()`:** Displays the current inventory.

- **`up\_prod\_quantity()`:** Updates the quantity of an existing product.

- **`remove\_prod()`:** Removes a product from the inventory.

- **`main()`:** Drives the program, presenting the user with a menu and calling the appropriate functions based on user input.

4. **Input Validation:** Basic checks are included to ensure that product IDs exist when updating or removing products, preventing errors and improving the program's reliability.

Project Workflow

1. **Initialization:** The inventory is initialized as an empty list, ready to store product details as dictionaries.

2. **Main Menu:** Users interact with the system through a text-based menu that provides options to add, view, update, or remove products, as well as exit the program.

3. **Adding Products:** Users are prompted to enter the product name, ID, quantity, and price. This information is stored in a dictionary and added to the inventory list.

4. **Viewing Inventory:** The system displays all products currently in the inventory, providing a quick overview of all items, including their quantities and prices.

5. **Updating Product Quantity:** Users can update the quantity of a specific product by entering its ID. The system searches for the product and updates its quantity if found.

6. **Removing Products:** Users can remove a product from the inventory by entering its ID. The system finds the product and removes it from the list if it exists.

7. **Exiting the Program:** The user can exit the program at any time, concluding the session.

**Conclusion**

The Simple Inventory Management System is a functional and educational Python project that introduces fundamental programming concepts. It offers a hands-on approach to learning how to structure a program, manage data, and interact with users. The project’s design makes it accessible for beginners while providing a solid foundation for further development and enhancement. Future improvements could include advanced features such as search functionality, data persistence through file storage, and a graphical user interface (GUI).