DCSN04C - PROJECT PROPOSAL

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SECTION: **IT201NIS**	

PROJECT TITLE:

"A Car Detailing Shop Inventory Management System Using Python, Tkinter (for GUI), and Applying Data Structure Algorithms"

PROJECT DESCRIPTION:

This project aims to develop a creative and fully functionable Inventory Management System for a car detailing shop brand **GYEON -** this is not an affiliate but used for education purposes only. The program will focus on tracking essential supply of GYEON products like: Gyeon Ceramic Detailer, Gyeon Wet Coat, and other Gyeon detailing products. The operator of the program will be able to execute 5 main functions of the program such as: **(1) Add items; (2) Update stock quantity; (3) Search for a specific product; (4) View the entire inventory through inventory.** The items will be categorized by their product number, name, type, and quantity. This program will be created in Python incorporating Tkinter properties for making the GUI for the inventory management system, and file handling to append data, update, delete, and read from a Json file.

DATA STRUCTURES and ALGORITHMS USED:

1. **List Algorithm (Array) –** This is where each item or object recorded/ stored in a list shows proper data structure usage which will hold the 3 basic operations such as:
    a. **Add Operation –** Append / Insert at correct position of element.
    b. **Delete Operation –** Using linear search algorithm in removing/shifting elements.
    c. **Update Operation –** Using linear search while modifying the field elements.
2. **Searching for an Item (Linear Search) –** This is where operators can search for an item by name.
3. **Sorting Inventory (Bubble Sort or Selection Sort) –** This is where stored items can be sorted alphabetically or by quantity.
4. **Optional Feature (Dictionary/Hash Table) –** This helps in storing items keyed by name which makes search faster.

EXPECTED FUNCTIONALITY:

1. Add new inventory items (Product Number, Name, Category, Quantity).
2. Update existing quantities of inventory items.
3. Remove items from inventory items.
4. Search for items by name.
5. Sort items (alphabetically or by quantity level).
6. View all items in a clean tkinter table or list box.
7. Creative and User-friendly Tkinter GUI with buttons and entry fields.

EXPECTED DELIVERABLES:

- Source Code in source (src/) folder.
- Documentation in documents (docs/) folder.
- Assess cases and a 3-minute video demo in test (tests/) folder.
- A README read file installation and running instructions.
- And a final written project report containing: the problem statement; chosen data structures and algorithms; design overview; sample input/output; testing and results; and challenges and solutions