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Faculty of Information Technology

FINAL –EXAM : **2025-2026**

Course Code and Name: INSY 8212: Programming with C

Instructor: Justin MURENZI
Time: 6 PM
Group: D, F

Exam Duration: 5 days
Submission Date: 17/12/2025

Instructions:
The exam carries 40 marks:

- 25 marks: Application Functionality
- 8 marks: Project Report
- 7 marks: Innovation & Creativity

1. This is a practical examination.
2. Fill out all required information on the front cover of your answer booklet.
3. Use only the C programming language, but you may use any GUI framework.
4. Each student must submit:
   - A written report explaining the project in detail
   - All source code files
   - A compiled .exe application that runs independently on another computer
5. Each student must submit a unique project.
   - If two or more submissions are found to be similar, all involved students will receive a score of 0 due to academic dishonesty.
6. Ensure that your application is fully functional and can run without additional setup on the examiner's computer.

Project Overview

This final project exam requires you to design, implement, and document a GUI-Based Stock Management System using the C programming language. You may use any GUI framework (GTK, WinAPI 32, FLTK, etc.). The system must support product registration, stock updates, selling operations, sorting, reports, and persistent file storage.

Product Requirements (25 marks)

1. Add Product ***(3 marks)***

- Activated when user clicks **"Add Product" button.**
- Collect product name, ID, price per unit, and initial quantity through GUI text fields.
- Validate: quantity > 0, price > 0.
- Display confirmation dialog.

2. View Products ***(2 marks)***

- Display all product details (ID, name, category, quantity, price) in a GUI table.
- Products with quantity less than 5 will be in red color.

3. Update Stock *(2 marks)*

- User enters Product ID and additional quantity using GUI entry fields.
- Validate: quantity to add must be > 5.
- Update stock and refresh table widget.

4. Sell Product *(3 marks)*

- User enters product ID + quantity to sell (must be above 5).
- Check stock availability.
- If enough stock → reduce quantity and calculate total sales.
- Display confirmation or error dialog.

5. Check Stock Level *(2 marks)*

- Show current stock level for any product ID using a message dialog.
- If stock < 5, display **warning dialog**.

6. Calculate Stock Value *(2 marks)*

- Compute total stock value = Σ(quantity × unit price).
- Display result inside a modal popup.

7. Apply Discount *(3 marks)*

- Ask user for discount % (10–20).
- Apply discount to a selected item sale and show discounted amount.

8. Remove Product *(2 marks)*

- User enters product ID.
- Confirm deletion using a GUI confirmation dialog.
- Remove from internal list and refresh display.

9. Stock History *(2 marks)*

- Record all operations (add, sell, update, remove) in static list.
- Display chronological history in a scrollable list widget.

10. Generate Report *(4 marks)*

- Display summary report:
  - Total products
  - Stock value
  - Stock sold
  - Most active product
- Report must be displayed in a dedicated GUI window or popup.

Good Luck!