CIS 103 Midterm Assignment: Programming Fundamentals and Problem Solving

Objective:

To assess your understanding of programming fundamentals, including program design, control structures, data types, modular programming, and debugging techniques. You will write a Python program that solves real-world problems using the concepts covered in class.

Assignment Overview:

You are required to create a Python program that will help a small business manage their customer orders. The program should handle the following tasks:

1. Customer Information Management (10 points)

- Allow the user to input a customer's name and contact information (name, phone number, and email).

- Validate that the phone number and email are in the correct format.

2. Product Ordering System (10 points)

- The system should allow customers to choose products from a predefined list of at least five items, each with a unique ID, name, and price.

- The user should be able to input the product ID and the quantity for each item they wish to purchase.

- Calculate the total cost of the order before tax (8.25% tax rate applied).

3. Discounts and Final Calculation (10 points)

- If the total order is more than $100, apply a 10% discount before calculating the tax.

- Display the final order amount after applying the tax and any applicable discount.

4. Program Structure (10 points)

- The program should include at least the following functions:

  - A function to input and validate customer information.

  - A function to display the product list.

  - A function to calculate the total cost and apply discounts.

- A main function to control the flow of the program.

5. Error Handling (5 points)

- Ensure that your program handles invalid inputs (e.g., non-numeric input when a number is expected).

- If the user enters an invalid product ID, prompt them to try again.

6. Extra Credit (Optional) (10 points)

- Add functionality to store each order in a text file and include a summary of all customer orders at the end of the session.

- Allow the user to choose between delivery and pickup, and charge a flat $10 delivery fee if delivery is chosen.

Submission Requirements:

- Submit your Python program as a `.py` file.

- Your code should be well-commented, with a header comment block explaining the program, its author, and the date. Each function should also have a brief comment explaining its purpose.

- Include sample input and output in a separate text file.

Grading Rubric:

Functionality (10 points): Program meets all requirements and handles inputs correctly.

Modularity (10 points): Use of functions to separate logic appropriately.

Code Quality (10 points): Code is well-organized, readable, and follows proper naming conventions.

Error Handling (5 points): Program handles errors without crashing.

Comments and Documentation (5 points): Clear, meaningful comments throughout the code.