1st Sit COURSEWORK Question Paper: **Summer Semester 2024**

Module Code:	**CS4051NI/CC4059NI**
Module Title:	**Fundamentals of Computing**
Module Leader:	**Hrishav Tandukar** (Islington College)

Coursework Type:	**Individual**
Coursework Weight:	This coursework accounts for **60%** of your total module grades.
Submission Date:	**Sunday, 18 August 2024, before 01:00 PM**
When Coursework is given out:	Week 04
Submission Instructions:	Submit the following to Islington College's MST portal before the due date: ● **Soft copy of the report** ● **Zip file with source code of the program**
Warning:	London Metropolitan University and Islington College take Plagiarism seriously. Offenders will be dealt with sternly.

PLAGIARISM

You are reminded that there exist regulations concerning plagiarism. Extracts from these regulations are printed overleaf. Please sign below to say that you have read and understand these extracts:

Extracts from University *Regulations on Cheating, Plagiarism and Collusion*

Section 2.3: *"The following broad types of offence can be identified and are provided as indicative examples ….*

(i) Cheating: including taking unauthorised material into an examination; consulting unauthorised material outside the examination hall during the examination; obtaining an unseen examination paper in advance of the examination; copying from another examinee; using an unauthorised calculator during the examination or storing unauthorised material in the memory of a programmable calculator which is taken into the examination; copying coursework.

(ii) Falsifying data in experimental results.

(iii) Personation, where a substitute takes an examination or test on behalf of the candidate. Both candidate and substitute may be guilty of an offence under these Regulations.

(iv) Bribery or attempted bribery of a person thought to have some influence on the candidate's assessment.

(v) Collusion to present joint work as the work solely of one individual.

(vi) Plagiarism, where the work or ideas of another are presented as the candidate's own.

(vii) Other conduct calculated to secure an advantage on assessment.

(viii) Assisting in any of the above.

Some notes on what this means for students:

1. Copying another student's work is an offence, whether from a copy on paper or from a computer file, and in whatever form the intellectual property being copied takes, including text, mathematical notation, and computer programs.

2. Taking extracts from published sources *without attribution* is an offence. To quote ideas, sometimes using extracts, is generally to be encouraged. Quoting ideas is achieved by stating an author's argument and attributing it, perhaps by quoting, immediately in the text, his or her name and year of publication, e.g. "$e = mc^2$ (Einstein 1905)". A *reference* section at the end of your work should then list all such references in alphabetical order of authors' surnames. (There are variations on this referencing system which your tutors may prefer you to use.) If you wish to quote a paragraph or so from published work then indent the quotation on both left and right margins, using an italic font where practicable, and introduce the quotation with an attribution.

School of Computing, FLSC

This module is assessed by coursework (60%). For the coursework, the students are required to develop an application based on detailed guidance on given specifications. Through the coursework students should be able to:

- ✓ Develop a ***Furniture Management System***
- ✓ Describe the program
- ✓ Test the program with some sample data to demonstrate its behavior
- ✓ Write a report to present the work

- Students are required to submit weekly assignment along with related research evidence

- The guideline for the Documentation/Development part is given below:

    - Components to be included are: cover page, and table of contents, figures and tables, footer.

    - The report must have an **Introduction** section with definite goals and objectives (approx. 400 words or more).

    - The report must have a **Discussion and Analysis** section in which students need to explain how the program was developed.

1. Scenario

BRJ furniture stores buy various furniture from different manufacturers and sell it to various customers which may be individuals, companies, or organizations. The store orders different types of furniture from different manufacturers.

The furniture store manages information about the available furniture in a text file. A program that can read the text file to display all the available furniture and make changes to the text file according to the nature of the transaction (ordering from manufacturer/selling to customer) needs to be developed. With each order or sale made, a note/receipt should be generated with the details of the transaction. The stock of a particular piece of furniture should also be updated in the main text file. For example, if the store currently has 20 pieces of single beds, and a customer buy 3 of them, the stock should be updated to 17 (the stock is decreased by 3). Likewise, in case the store purchases 5 single beds, the stock should then be updated from 17 to 22 (the stock should be increased by 5).

A sample format of the text file containing the information about the Furniture are as follows:

1, HNI Corporation, Bunk Bed, 100, $400

2, HNI CorporationHaworth Inc., Twin Bed, 200, $600

3, Achham furniture, Sleeper Sofa, 50, $200

4, Kimball International Inc., Corner sofa, 75, $350

5, Kohler Co., Armchair, 30, $150

6, Masco Corporation, Desk chair, 40, $100

**The 1st column contains the unique id of each furniture, 2nd column contains the name of manufacturers, 3rd column contains the product name, 4th column contains the available quantity, and 5th column contains the product price per unit.*

Note: You can use your own format and add other information too.

A note/invoice should be generated for each transaction. When a particular furniture is ordered from the manufacturer, a note/invoice should be generated which must show the ID of the furniture, the name of the manufacturer, product name, quantity, name of the person who purchased the item at that time(employee), date and time of purchase, and the amount to be paid. Likewise, if an employee decides to order different types of furniture, then the amount should be added up for all the purchased furniture.

Similarly, when a customer wants to purchase furniture from a store, a note/invoice should be generated again which should contain the name of the customer, id of the furniture, brand of furniture, name of the product, quantity, price, date, and time of purchase, total amount without the shipping cost, the shipping cost itself and the total amount to be paid for the furniture which should include the shipping cost. If a customer decides to purchase more than one piece of furniture, then the amount should be added up for all the purchased furniture.

Note: *While purchasing the furniture a vat amount 13% should be added in the total cost of items with shipping cost (if required). Here, while selling the furniture, VAT amount is calculated and added to the net amount after which the shipping cost is added to the amount after VAT.*

** The format of the notes/invoices is up to you. But each file should have a unique name.*

2. Algorithm

- An algorithm should be developed for the application where everything the program does should be taken into account. The algorithm should be described in steps, pseudocode, and flowcharts should also be included.

3. Data Structures

- The programming should be done using data structures and operations in Python for input/output, character and string processing, and data storage.
- It can use any primitive or complex data structures which might be necessary for holding the data (pairs, lists, strings, dictionaries, etc.)
- The choice of data structures must be specified in the report.

4. Program

- The program must work in a loop, displaying the available furniture and waiting for the administrator to enter the details of the customers. The program should not close unless the administrator decides to do so.
- The program must check the input data, displaying error messages whenever unwanted data is entered, for example, if some string value is entered where a numerical value is expected.
- The program must be implemented in a modular way with separate functions for the different operations such as input/output, reading files, generating invoices/notes, etc.

5. Description

- The program must be described in terms of its structure and behavior.
- It can be presented using text and structural charts, flowcharts, or other diagrams as needed.
    - The report must have a **Testing** section with evidence (through appropriate screenshots) that has been carried out for the program.
    - The report must include a **Conclusion** section where they need to present their findings of the development and research (approx. 300 words).
- Demonstration of the project.
    - If any individual student is not able to justify his/her project, then the project will be kept under plagiarism.

NOTE: The technicality of the project will be judged during the demo and marked accordingly.

Marking Breakdown for Coursework	
Criteria	**Total Marks**
1. Introduction	*5*
2. Algorithm	*5*
3. Pseudocode	*5*
4. Flowchart	*5*
5. Data Structures	*5*
6. Program	
a. Correctness	*10*
b. Implementation (modularity, use of functions/classes)	*10*
c. Programing Style	*10*
d. Exception Handling	*10*
e. User interface/program usability	*10*
7. Testing	*5*
8. Conclusion	*5*
9. VIVA	*10*
10. Report Structure and Formatting	*5*
Total:	**100**