

1st SIT COURSEWORK 02 QUESTION PAPER**Year Long 2022/2023**

Module Code:	CS6004NT
Module Title:	Application Development
Module Leader:	Mr. Rabi Rouniyar / Mr. Samyush Maharjan (Islington College)

Coursework Type:	Groupwork
Coursework Weight:	This coursework accounts for 30% of your total module grades.
Submission Date:	Wednesday, 3 May 2023
When Coursework is given out:	Week 22
Submission Instructions:	<p>Submit the following to the Itahari international College's MST portal before the due date:</p> <ul style="list-style-type: none">• The software application to be developed in C#• The documentation in PDF format by the Group Leader only
Warning:	London Metropolitan University and Itahari International College take Plagiarism seriously. Offenders will be dealt with sternly.

Plagiarism Notice

You are reminded that there exist regulations concerning plagiarism.

Extracts from University Regulations on Cheating, Plagiarism and Collusion

Section 2.3: "The following broad types of offense can be identified and are provided as indicative examples

- (i) Cheating: including 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 offense 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:

- (i) Copying another student's work is an offense, 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.
- (ii) Taking extracts from published sources without attribution is an offense. 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 author's surnames. (There are variations on this referencing system that 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 attribution.

Further information in relation to the existing London Metropolitan University regulations concerning plagiarism can be obtained from <http://www.londonmet.ac.uk/academic-regulations>

Software Development Scenario

The application is to support the operations of the “Hajur ko car rental” System. The company operates from early 9 am to 5 pm. However, the customers can request at any time. The service center provides a 10% discount to regular customers, who rent monthly. The system requires a Driving Licence or Citizen paper in order to verify and grant requests. The system should automatically retrieve the “Verification documents paper” if the user has rented car before, from the system storage.

The client also requires the system to be able to provide special offers to their customers.

The application needs the following features:-

- a. Admin can add new staff members and assign their roles, change passwords, rates, and other features that other staff members can.
- b. Staff can add/remove cars for rent, publish offers, validate client requests, and change their password.
- c. Cars are only rented once authorized by the staff and returns are also entered by staff or admin only (Customers can only initiate requests). Charges are only applied for the requested date and Customers are allowed to cancel their rental request even after rent is approved and no fee should be charged.
- d. The system should show the sales (with date filtering option) with the name of customers, view customers' rental history with authorized by (staffs name)
- e. Customers should be able to create accounts in order to place rental requests and also should be able to change their passwords. For regular customers, a discount of 10% should be also provided
- f. Customers should be notified if their request is approved and special offers.
- g. The system should automatically manage the available car inventory (System should check on database and update the available car on UI automatically).
- h. The admin and staff should be able to view their cars currently on rent and cars currently available. With it, the system should be able to show the cars that have been frequently on rent and cars that have not been rented.
- i. The system should also be able to keep track of customers who have frequently rented cars and those who have been inactive for a long time (3 months)
- j. For any damages done to the car during the process of rental service, there should be a damage request form for the customers where they can notify the

companies.

- k. For damages, the staff should be able to provide a charge for the repair bill to the customer. If bills are not being paid, the customer will not be able to rent cars further.
- l. The system should keep track of the car damages, where paid and unpaid amounts should be shown with the customer's name who rented the car.
- m. The payment is done physically however the system also accepts online payments (for development is optional/ plus marks are granted for the online payment feature)
- n. Upon registration, the customer should compulsorily add their email address, phone number, and address. Uploading of a driving license or Citizenship paper as part of customer profile is optional however upon rental request it is compulsory to add a driving license or Citizen paper as per company policy.
- o. Images for driving license or Citizen paper are acceptable in pdf or png format and strictly, the file size should not exceed 1.5 MB upon uploading (File size Optional, Plus marks granted).

User Access Control

Access to the system is to be controlled by a password. Different users should have access to different sets of the system's functions.

1. Any user can access to view cars bypassing the login. The other functions require you to log in.
2. Staff of the company are provided with a 25% discount if they themselves are to rent the car.
3. Admin should have access to all the functions of the application

DELIVERABLES

Your submission should include the software project and a reflective essay as described below.

1. Your **software artefact** in the form of **a complete Visual Studio project**, which should include the program's source code, compiled classes, the executable file, and the database.
2. A **reflective essay** (1200 words), which concisely documents:
 - a. detailed instructions to run the program
 - b. a concise description of your solution design for each of the implemented functions of the application. Please do not include code listing here.
 - c. the architecture of your software in terms of software classes and their purpose, clearly indicating which classes to be of your own work and which classes from other sources (e.g. from textbooks, online sources such as MSDN, etc.)
 - d. a detailed description of the classes' properties and methods
 - e. **individual** group member's reflection of their own experience of using Visual Studio, C#ASP.NET Core and MS SQL to develop a web application interfacing a backend database, e.g. which feature you like and why, what issues you experienced and your solution to overcome it.

Section	Topic	Full Marks
A	Implementation of Application	80
1.	Admin has the access to add new members and assign their roles (i.e. Staff, Admin), change passwords, rates, and other features that other staff members can.	4
2.	Staff can add/remove cars for rent, publish offers, validate client requests, change their password.	3
3.	Cars are only rented once authorized by the staff and returns are also entered by staff or admin only (Customers can only initiate requests). Charges are only applied for the requested date and Customers are allowed to cancel their rental request even after rent is approved and no fee should be charged.	6
4.	System should show the sales (with date filtering option) with the name of customers, view customers' rental history with authorized by (staffs name)	10
5.	Customers should be able to create accounts in order to place rental requests and also should be able to change their passwords. For regular customers, a discount of 10% should be also provided	10
6.	Customers should be notified if their request is approved and special offers.	3

7.	The system should automatically manage the available car inventory.	3
8.	The admin and staff should be able to view their cars currently on rent and cars currently available. With it, the system should be able to show the cars that have been frequently on rent and cars that have not been rented.	6
9.	The system should also be able to keep track of customers who have frequently rented cars and those who have been inactive for a long time (3 months)	10
10.	For any damages done to the car during the process of rental service, there should be a damage request form for the customers where they can notify the company.	3
11.	For damages, the staff should be able to provide a charge for the repair bill to the customer. In case of bills are not paid, the customer will not be able to rent cars further.	3
12.	The system should keep track of the car damages, where paid and unpaid amounts should be shown with the customers name who rented the car.	3
13.	The payment is done physically however the system also accepts online payments (for development is optional/ plus marks is granted for the online payment feature)	4
14.	Upon registration, the customer should compulsorily add their email address, phone number, and address. Uploading of driving license or Citizenship paper is optional however upon rental request it is compulsory to add a driving license or Citizen paper as per company	6

	policy.	
15.	Images for driving license or Citizen paper are acceptable as pdf or png format and strictly, the file size should not exceed 1.5 MB upon uploading (Image size optional).	6
B	Documentation	10
1.	Detailed instruction to run the program	2
2.	A concise description of your logical solution to each of the implemented functions of the application.	2
3.	The software architecture, i.e., class and their purpose	2
4.	Detailed description of the classes' properties and method	2
5.	Individual member's own reflection of own experience	2
C	Programming Style	10
1.	Clarity of code, Proper Naming conventions & comments	2
2.	Sensible naming of programmer-defined variables, classes, properties, and methods	2
3.	Useful comments in code	2

4.	Data validation and exception handling	2
5.	Interface design and usability of the system	2
	Total Marks	100