

1st SIT COURSEWORK 2 QUESTION PAPER**Year Long 2022/2023**

Module Code:	CS5002NI
Module Title:	Software Engineering
Module Leader:	Mr. Rubin Thapa (Islington College)

Coursework Type:	Individual
Coursework Weight:	This coursework accounts for 35% of your total module grades.
Submission Date:	Week 26 Week 18
When Coursework is given out:	
Submission Instructions:	Submit the following to Islington College's MST PORTAL before the due date: <ul style="list-style-type: none">● Softcopy (in .pdf format)
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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 offense can be identified and are provided as indicative examples*

- (i) Cheating: including taking unauthorized material into an examination; consulting unauthorized material outside the examination hall during the examination; obtaining an unseen examination paper in advance of the examination; copying from another examinee; using an unauthorized calculator during the examination or storing unauthorized 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 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:

1. 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.

2. 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 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.

CS5002 Software Engineering

Assignment - (Individual)

Assume that your team has been approached by "**Allgemein**" to build their online system. So, you are required to carry out Object Oriented Analysis and Design of the proposed system.

1. Introduction

This assignment contributes 35% to the overall mark for this module.

2. Specification

"**Allgemein**" is an establishment that has been ruling the entertainment industry for a decade. Its source of income is from projects related to the entertainment industry like movie making, documentary filming, music and game production etc. Recently, they are looking to expand their business in the transport industry as well. They have bought a huge number of vehicles to support their business. The vehicles range from normal cab to transport/Construction oriented vehicles like Cargo-truck and Bulldozers.

They want to particularly focus on two services. First to provide cab services where the customer can book the cab services for going from one place to another. The cab service is not limited inside Kathmandu valley but is applicable for going between the states as well. Second, they want to provide vehicle rental service for vehicles like cargo trucks, bulldozers. After depositing a certain amount of money and identification documents, customers can rent the vehicles for some period of time.

To manage these sorts of operations, they need an application. Apart from the core functionalities, they want a system to track every record of transaction, customers information, every vehicle information so that necessary information can be extracted whenever needed.

1.1 Detailed Specification

The proposed system is to have following functions

1. Take Membership

Any new customer should be a member to use the services.

2. Book cab.

The provision to book the cab. The users place requests specifying the journey details. The cab drivers confirm the booking.

3. Track the status of drivers.

The provision to track the drivers whether they have accepted/rejected the request and visualize their location.

4. Register staff and vehicles.

System provision to register newly appointed staff (any staff) and vehicle information in the system.

5. Hire a vehicle.

The provision to hire vehicles (like bulldozers/cargo trucks) and hire the specialist drivers if needed.

6. Report preparation.

The facility for the admins to generate reports related to customers, business, revenue generated, vehicles.

7. Rate the ride experience and vehicle's efficiency.

Customers should be able to rate the journey they carried out, rate the efficiency of vehicles they hired and be able to put suggestions.

8. Join the training courses.

Special paid training is carried out twice a year to learn how to drive heavy vehicles like cargo trucks and bulldozers. Such programs/announcements should be able to be posted in the system. The customers can enroll in the training only after they pay a certain fee.

Planning, requirements modeling and analysis (65%)

1. Prepare a Gantt chart indicating how you might schedule the work of developing the system. Please ensure that the Gantt chart is based upon a methodology of your choice.
2. Produce a Use Case Model for the required system – including a Use Case diagram, and High-Level Use Case Descriptions for each Use Case. For two of the Use Cases, produce Expanded Use Case Descriptions.

Choose one of these expanded Use Case Descriptions to model both the Collaboration and Sequence diagram, in qn 3, below.

3. Explain how you would go about producing the Communication diagram and a Sequence diagram from a Use Case model. Showcase the steps involved in it.

Produce a Collaboration diagram and then produce a Sequence diagram for the same Use Case.

4. Explain in words how you would produce the Class Diagram. The description can contain the steps starting from use case and any additional considerations that may require while drawing the class diagram.

Produce an Analysis Class diagram showing the domain classes.

Design (35%)

1. Some of the work has been done till date (analysis and design diagrams have been done). Now how do you plan to move further in the process of completing the project? You are required to select a methodology that you think is feasible for this project and your explanation of further planning should be relatable to the methodology that you have chosen. (**Note: the further planning can include things like design plan, development plan, testing plan etc**)
2. Develop prototype design for “Allgemein” including features which are listed in detailed specification. (Note: Minimum of 10 prototypes should be shown)

Marking Scheme

Individual Marks	Marks
Gantt Chart	10
Use Case	10
High Level Use Case	5
Expanded Use Case	5

Collaboration Diagram	10
Sequence Diagram	10
Class Diagram	10
Further Development	20
Prototype	15
Report Format	5