COIT20258 Software Engineering
Assessment 3

Weighting: 45%
Submission Due: Review/Exam Week Wednesday (15 October 2025; 11:55pm AEST)
Length: N/A

This assignment is a team-based software development project. You will work in **a team of two to four members** for the design and development of a 3-tier application. You will practice working collaboratively and communicate effectively as part of a productive team.

Your team should create a GitHub repository. Your GitHub repository will be accessible by your tutor. You need to make regular commits according to the tasks you distributed among the team members and the project planned. Distribution of tasks among team members needs to be recorded on the GitHub, and screenshots capturing the key issues found and resolved need to be articulated as evidence of your productive teamwork.

1. Assessment Task

1.1 Problem (Case Study from Assignment 1)

You are to develop a set of user stories that capture the user requirements for a Telehealth System (THS). Below is some basic background information of THS:

> *THS makes essential specialist healthcare services easier to access. When patients live in a rural or remote area, it can be difficult to access specialist healthcare services. Often, patients need to travel long distances to see specialists – which can also result in additional accommodation costs, adding to the stress of travelling when patients are unwell.*
>
> *THS helps patients living in rural and remote areas to access specialist services with greater ease and reduced waiting times. THS helps deliver healthcare services through phone or digital technologies. During a Telehealth consultation, patients and their healthcare professionals will speak to each other via phone or a video call – similar to FaceTime, for example. With THS, patients do not need to be in the same room as their healthcare professionals.*
>
> *As an example, THS provides the following services:*
>
> - *Medical consultation booking;*
> - *Medical consultations via audio or video conferencing;*
> - *Remote control and monitoring of vital signs (e.g., pulse rate, body temperature, respiration rate, and blood pressure); and*
> - *Self-care services.*

This project is to develop THS that needs to:

- Allow patients to make a Telehealth consultation booking with specialists.
- Perform "virtual" medical visits (i.e., online medical consultations).
- Perform *prescription refills* (i.e., patients order a new supply of medication when it is running low (or out of medication) without having to go through their prescribers).
- Send vital signs to remote specialists for monitoring and advice.
- Use mobile health apps to retrieve health information.

(Note: The above list of services of THS is not "complete". You may need to do further research to find out other typical services to be provided by THS.)

THS would need interfaces to other clinics and hospitals (e.g., when a rural patient needs to have a surgery at a hospital).

You will be developing a software prototype THS in three different stages.

You have completed the *first stage* (*Assignment 1: Individual*) in which you completed requirements engineering identifying functional and non-functional requirements through capturing use cases, drawing use case diagrams, and conceptualizing system architecture.

You also completed the *second stage* (*Assessment 2: Individual*) in which you have individually worked, built, and tested an initial software prototype called THS-Initial.

In this *third stage* (*Assessment 3: Group*), your task is to work in a team of 2 to 4 students to build an "enhanced" software prototype called THS-Enhanced by extending the features and functionalities of the THS-Initial. Based on what you have developed in Assignment 2, ***your team will need to create and implement two more functionalities*** by realizing the domain-specific aspects of the THS-Enhanced.

Since this assignment is a team-based project, you need to critically review and select one of the team members' THS-Initials. The THS-Initial you select needs to be justified as the best of the THS-Initial. The THS-Initial you select needs to be improved/enhanced with more functionalities and better design, leading to the enhanced software prototype, i.e., THS-Enhanced.

When building the THS-Enhanced, you should implement a multi-threaded server supported with a MySQL database at the backend. The multi-threaded server supported with the backend database is to enable end users in completing the tasks of the THS-Enhanced. You should follow Model View Controller (MVC) or Model View Presenter (MVP) to build the THS-Enhanced.

The THS-Enhanced that you will build following the enhanced requirements specification and design will be an MVC- or MVP-driven Java-based distributed application with a front-end or client GUI allowing end users to communicate with the multi-threaded server, middle layer to implement the business logic, and backend to store data in MySQL database.

Client is to be built using JavaFX and Scene builder-based GUI. A MySQL-based database is to be linked with the multi-threaded server. The data collected during Assignment 2 through your selected THS-Initial will be loaded into the THS-Enhanced through the multi-threaded server of the THS-Enhanced in a way that all data should be recorded in a MySQL-based database.

You should develop a test plan to test the THS-Enhanced following the functional and non-functional requirements. You should test your application using the test plan you have developed. You should document the test plan and evidence of testing.

1.2 Graphical User Interface (GUI)

The GUI should have necessary controls and components in your THS-Enhanced. Design and implementation of the GUI should ensure usability and improve user experience.

1.3 Data Structure

Data structure chosen should ensure high performance while storing, retrieving, and modifying the data as required in the THS-Enhanced.

1.4 Database and Tables

Database and tables should be generated programmatically. When you save data in the database, it will create an ID for each entity.

1.5 Privacy and Data Security

All data to be entered and recorded will be arbitrary, but measures to ensure privacy and data security should include access rights to view and modify data, time stamping, encryption, decryption, and non-repudiation within the scope of the THS-Enhanced.

2. Coding

You can use NetBeans or another IDE to develop your application. Follow the cording standards given in the Moodle website. Using meaningful names and comments as necessary.

Once you have created your UML class diagrams with correct attributes, you can use your IDE to generate most of the methods such as constructors, getters, and setters. Include necessary accessors, mutators methods, constructors, and toString() method for each class. The auto-generated toString() method will not give correct display format. Write your own toString() method.

3. Report

Prepare and submit group report and individual teamwork report by following the formats and instructions as specified in Section 6 of this document.

4. Video

A 20-minute video should be submitted to demonstrate the core functions of THS-Enhanced. This video should be played back by common media players. ***At least two team members*** should be involved in the presentation in the video.

5. Team Membership Rules

By default, a team works collaboratively with all members performing their duties timely. By following Assignment 3 submission due date, the team leader is required to submit the project and the group report (refer to Section 6.1 below), and each member must submit his/her teamwork report as per Template A (refer to Section 6.2 below).

A significant emphasis of this group project is to solving minor collaborative problems as part of teamwork, and this should be reflected in the teamwork report. Each team should minimize contacts with the lecturer/tutor/Unit Coordinator for minor collaborative problems, as too many contacts show the ineffectiveness or inefficiency of the team for solving minor problems and will result in loss of marks.

Each team member should use the following rules if a major problem arose. The Unit Coordinator should be contacted as the last resort, only when the dispute cannot be solved by the following agreement.

When teams are formed in GitHub, each team member agrees that the whole team is to take its own risk when the project progress is delayed by an individual member. Some circumstances are:

a. A team member cannot take his/her allocated duty normally for a particular reason, e.g., health condition. If an extension is given to that particular member, the extension is applied to the whole team. If there is no extension granted for that particular member, the whole team is to take the risk of a late penalty. In addition, the whole team is to take its own risk of any other impact, e.g., influence on the schedule of other units of study, which may be caused by the improper delivery of duty of that team member.
b. The other members of a team are to complete the whole project if a team member leaves in the middle of the project for any sound reasons or no reason.
c. If a team splits into individuals in the middle of the project, each individual needs to complete the whole project separately.
d. If a team member does not take his/her allocated duty and cannot be contacted, the team can provide evidence of 3 contacts without responses or other relevant evidence to the Unit Coordinator. The Unit Coordinator reserves the final right to decide whether the member should be excluded from the team. However, as mentioned in item b above, the rest of the team needs to complete the whole project if a team member is excluded from the team.
e. Any individual, who separates/quits from a team for any reason in the middle of the project, needs to complete the whole project and the teamwork report of Template B (refer to Section 6.2 below).

6. Assignment Submission

You are required to submit two parts: Part 1 (collectively) and Part 2 (individually).

5.1 Part 1

Part 1 contains three items: (a) Group Report, (b) Software, and (c) Presentation Video.

a. Group report documenting the design and testing aspect of the software you have built as a team. Format of the group report is given below. You should submit a document (.doc or .docx) containing the following details:

    - Cover page with the team and individual information
    - Requirement specification
    - Design — UML diagrams:
        - Use case diagrams
        - Class diagrams
        - Sequence diagrams, and
        - Entity-relationship diagrams (ERDs) for the database
    - Test plan showing input data, expected results, and actual results

b. Software prototype, THS-Enhanced, you have built as a team. You will need to:

    - Provide the complete implementation code of your project pertaining to the fully functional THS-Enhanced, including Java source code and executable files.

- Ensure that your implementation of the THS-Enhanced can be compiled directly without any further revision/re-development or debugging.
- Provide all the required libraries, resources, database scripts, and everything that your project needs to run.
- Provide detailed screenshot-based instructions on how to run and test your software within a NetBeans IDE or other IDE.
- Use version control software (i.e., GitHub) as your code repository.
- Provide the link to your GitHub repository in your report.
- Provide SQL script to create and populate the MySQL database used by your application.

c. A 20-minute video (***at least two members*** should be involved in the presentation).

Note 1: Only one submission of this part from the team leader is required. The Group Report, complete project, and the video will need to be compressed into a zip file for the team leader to submit. This part will be marked, and the same mark will be given to all team members.

Note 2: If your NetBeans project does not compile or run, it will be marked by visual code inspection, but there will be 50% reduced mark penalty.

5.2 Part 2

Part 2 contains individual Teamwork report.

Note: This part is to address a team member's individual experience with teamwork. The document ***is not shared among team members***, which means that ***each team member needs to submit his/her document individually. The same/copying contents of this part by two or more team members will be treated as plagiarism.***

If a student completes the whole project as a member of a team, then he/she should prepare a document using **Template A**, addressing the following questions, and submit individually via Moodle.

Template A

1. **Team Details**
   a. Team Number:
   b. Your Name and Student ID:
   c. Team Leader (Name and Student ID):
   d. Other Team Members (Name and Student ID):
2. **Teamwork Report**
   a. Describe team forming, task assigning, your role and responsibility and the project timeline.
   b. List two technical problems in the project development and describe how the problems have been solved by the team.
   c. List two collaborative problems in the teamwork and how the problems are negotiated and solved by the team.
   d. Describe and justify what is important for the success of teamwork.
   e. Describe the communication skills that you have developed in this team-based project.

If a student separates/quits a team in the middle of the project, then he/she should prepare a document using **Template B**, addressing the following questions, and submit individually via Moodle.

Template B

1. **Team Details**
   a. Team Number:
   b. Your Name and Student ID:
   c. Team Leader (Name and Student ID):
   d. Other Team Members (Name and Student ID):
2. **Teamwork Report**
   a. Describe team forming, task assigning, your role and responsibility and the project timeline.
   b. Describe what major problems that cause you to leave the team or cause the team to break into individuals.
   c. Describe and justify the impact on you and other team members caused by your leave or the break of the team.
   d. Describe and justify what are important strategies for successful teamwork.
   e. Describe and justify how you can avoid such hindrances of teamwork in future opportunities of teamwork.

7. Marking Criteria

Criteria (Total: 55)	Marks Allocated
Part 1: Group Report & Software (Team Leader Submission)	**50**
Requirements specification	8
1. User requirements are clear & complete with necessary screenshots	2
2. System requirements: Functional requirements are clear & complete	2
3. System requirements: Non-functional requirements are clear & complete	2
4. Two additional features/functionalities captured from the domain-specific aspects of THS-Enhanced	2
Design specification	14
1. System architecture with clearly defined layers	1
2. Use case diagrams for THS-Enhanced	1
3. Class diagrams for THS-Enhanced	1
4. Sequence diagrams for THS-Enhanced	1
5. ERDs for THS-Enhanced	1
6. Test plan shows input data, expected results, & actual results	3
7. Evidence (through screenshots) of testing using the test classes & test data	3
8. GitHub URL link is provided & accessible by the tutor. Task distributed & regular comments made on the GitHub related to the tasks	3
Software	20
1. Full NetBeans project is provided & shows evidence of gradual development through GitHub	5
2. Project can be compiled & runs (if your NetBeans project does not compile or run, it will be marked by visual code inspection, but there will be 50% reduced mark penalty)	5
3. MVC or MVP is used as implementation design pattern	2
4. Intuitive GUI with all input & output facilities for the client part	3
5. Correctly implemented two additional features/functionalities captured from the domain-specific aspects of THS-Enhanced	5
20-minute video	8
A well-presented video demonstrating the core functions of the software prototype (***at least 2 members*** should be involved in the presentation)	8
Part 2: Teamwork Report (individual submission, either Template A or Template B)	**5**
Template A	5
1. Describe team forming, task assigning, your role & responsibility, & the project timeline	1
2. List 2 technical problems in the project development & describe how the problems have been solved by the team	1
3. List 2 collaborative problems in the teamwork & how the problems are negotiated & solved by the team	1
4. Describe & justify what are important strategies for successful teamwork	1
5. Describe the communication skills that you have developed in this team-based project	1
Template B	5
1. Describe team forming, task assigning, your role & responsibility, & the project timeline	1
2. Describe what major problems that cause you leave the team or cause the team break into individuals	1
3. Describe & justify the impact on you & other team members caused by your leave or the break of the team	1
4. Describe & justify what are important strategies for successful teamwork	1

5. Describe & justify how you can avoid such hinderances of teamwork in future opportunities of teamwork	1
Subtotal for Assignment 3	**55**
Penalties	
Late penalty (5% of the total allocated marks per calendar day)	
Plagiarism (penalty as per the plagiarism policy)	

Note: The final score will be scaled down to a total of 45 (the weighting of Assignment 3)