INFS2044 Assignment 1

Due date: Monday, 12 April 2021, 11:59 PM
Weighting: 30% (group component) + 10% (individual component) of the course total marks.

Submission instructions are at the end of this document.

Instructions:

This assessment item must be conducted in groups. Students must work in the groups published on the course website. If there are any issues with your group, please let the teaching staff know early.

You will be creating a component decomposition for a given case study and validate the design on use cases. Refer to the document *Assignment 1 Case Study* on the course website for details about the case study.

All submitted materials must be entirely your group's work.
Penalties apply for academic misconduct.

You will receive marks via learnonline within 3-4 weeks.

Answers will be scored based on relevance, completeness, and correctness of your answers. Refer to the marking scheme provided in this document.

The word count for this assignment will not be verified. Please do not write excessively long answers (10k+ words). Excessively short answers, such as submitting only diagrams without explanation, are unlikely to satisfy the marking criteria.

It is your responsibility to use appropriate document management and collaboration tools if required and to maintain adequate backup at all times. Hardware and software failure are not usually acceptable reasons for requesting extensions.

A word of advice: do not allocate individual tasks to individual group members and work in isolation. This strategy will almost certainly result in outcomes that do not align with each other, resulting in low marks, possibly even a Fail grade for the group. Rather, collaborate closely with each other to address all three group tasks.

Start this assignment well before the due date. It is unlikely that you will be able to complete the work in one or two days.

Assignment tasks

This assignment consists of four tasks. Three tasks are group activities that will be assessed for the entire group, whereas the fourth task is to be completed by each individual student.

For each task, document all assumptions you make and justify the design decisions (such as assumptions about use cases and requirements, volatilities, decisions to separate or merge components, design of operation signatures in interfaces, and any other considerations that may have influenced your design). Make reasonable assumptions and stay within the scope of the case study and the tasks given below. Ensure that you provide sufficient information so that the markers will be able to understand and assess your design.

Present your answers to the tasks using the headings given below.

1. **Volatility List** (group task)

Identify the volatilities that are explicit and implicit in the case study case document.

Create a volatility list showing the identified volatilities.

2. **Component Decomposition** (group task)

Create a component decomposition based on the volatilities identified in task 1.

Define the components in the system architecture and their responsibilities.
Show how the volatilities identified in Task 1 are addressed by the design.

3. **Design Validation** (group task)

Validate the design using the following use cases:

- UC02 Monitor Vehicles
- UC03 Issue Expiation Notice
- UC04 View KPIs

For each use case, create an interaction diagram showing the interaction among the components that comprise the use case realisation.

4. **Presentation** (individual task)

Prepare a 10-minutes long Powerpoint presentation describing your software design.

For the presentation, suppose that you were working at a large software firm and were presenting your proposed design to a group of senior software engineers, who are seeking to review your analysis and design.

Present the volatilities that you have identified and how you identified them, discuss the components you have introduced and how they encapsulate the identified volatilities. Demonstrate that the proposed design is suitable for implementing the use cases in task 3.

Clearly describe the specific contributions YOU made to the group work.

Whilst tasks 1-3 are group work, the presentation must be entirely *your own work*. You can however reuse diagrams created as part of tasks 1-3 in your presentation.

Create and upload a video recording to learnonline. Refer to the submission instructions for details.

Marking Scheme

Task	Marks (as a fraction of course total)
Task 1: Volatility List • Captures all volatilities implied by the case study • Assumptions reasonable, relevant, and documented	5% (group mark)
Task 2: Component Decomposition • Decomposition depicted in a diagram • Responsibilities of components defined and correct • Mapping of volatilities to components documented • Assumptions reasonable, relevant, and documented	10% (group mark)
Task 3: Design Validation • Decomposition validated using one or more interaction diagrams (Sequence Diagram or Communication Diagram) • Diagram(s) use correct syntax • Diagram shows feasible and correct interactions for the use case • Assumptions reasonable, relevant, and documented	10% (group mark)
Quality of Design Document Deliverable • Professionally presented • Free of grammar/spelling mistakes • Easily legible when printed on A4 paper	5% (group mark)
Task 5: Presentation • Demonstrates that student has full understanding of all aspects of the submitted work • Well laid out & easily legible presentation aids • Covers all aspects of design and design decisions • Clarity of speech and content • Adheres to time limit (slightly long is fine)	10% (individual mark)
Total	**40%**

Marks for the group component may be adjusted if it is determined that a student has not contributed sufficiently and consistently.

Submission Instructions

Please create your own document and presentation. There is no example/template for the submission document and the presentation.

Submit in two parts:

1) For each group: a single PDF document containing your group's answers to tasks 1-3.

2) For each individual student: a video recording (.mov or .mp4 format) of their presentation (task 4). The recording shall show the slides and the audio and video of the presenter. Such a recording can be created using Zoom (sharing the screen, turning video on, recording the session to the local machine).

Submit Part 1 via the *Assignment 1 Group Component Submission* activity on the course site.

Submit Part 2 via the *Assignment 1 Individual Presentation Submission* activity on the course site.

For Part 1, DO include:

- A cover sheet showing:
  - group number, and
  - the names, student identifiers, and email addresses of each student in your group.
- Show the group number on each page in the header or footer.

Do NOT include:

- parts of the assignment specification.
- long and/or general introductions.
- text that is given in the assignment specification and the case study document.
- definitions of essential concepts studied in the course. These are assumed knowledge.
- executive summary, introduction, table of contents, conclusion sections.

For Part 2, DO include:

- A title slide showing your group number, name, student ID, and email address.

For Part 2, do NOT include:

- Any answers submitted for the group components of the assignment (tasks 1-3). Any such content will not be marked.