ASSIGNMENT ONE ~ CPT230 SP3 2021

Due Date: per Canvas published deadline

Assignment Objectives & Structure

This assignment focuses on the concepts raised in lectures 1-4. The assignment is designed as a learning experience in itself and will require additional research rather than purely an assessment of course content to date.

The assignment consists of:

1. Develop a use case diagram (4 marks)
2. Write a textual description of a use case (4 marks)
3. Develop requirements (4 marks)
4. Develop a class diagram (4 marks)
5. Develop an object diagram (4 marks)

Assessment Value

20% of your final mark will come from this assignment. As such, this assignment will be marked out of 20.

Help and Hints

A forum dedicated to Assignment One is available on the discussion board. Any queries and discussions should be directed there. You are free to share URLs and offer suggestions, but do not paste your answers and do not share any direct answer to questions in the online forum.

You will need to read the sample solutions provided for previous year's assignment. This will give you an idea of research depth, response quality, and detail required.

NOTE: This assignment touches some topics which have potential complexity. You are not expected to return complex, industry level responses within 4 weeks of an introductory course. Be wary of getting caught in low level detail.

Trouble Getting Started

If you find yourself overwhelmed / going around in circles, the following advice may help.

- Review the relevant lecture, tutorial and textbook material.

- ❖ Model different drafts and try to complete your work incrementally, your first draw/model cannot be the best answer and you need to go through a few drafts for each diagram.

Common mistakes in this subject include

- ❖ ‘analysis paralysis’ – over-analysing the question to the extent you can’t get started
- ❖ over detailing the responses – remember UML has 13 different models. Every model shows a different ‘filter’ or view, and does not need to contain every piece of data you have been given.

How to Submit

You should submit your assignment using Canvas's submission system. Email submissions will not be accepted.

What to Submit

Your submission should include a single pdf file only – no other formats will be accepted. Use the web to locate and download a free pdf writer if required, asking your peers for help on the forums if you are having trouble. Do not zip the file. You should submit only one file. If you have used graphic/modelling programs to generate models, copy/paste these completed models into your main document with an appropriate heading.

Hand drawn models will not be acceptable. You must use Lucidchart or Visual Paradigm to make all models. Difficulty combining graphics with a main document is not a valid reason for lateness. Ensure you are capable of combining your files at least a week before the assignment is due, and ask for help on the discussion forums if needed.

Late /Extension policy

Late assignments will attract a penalty of 10% (2 marks) per day. After 5 days, the penalty will be 100%. You can submit assignment drafts at any time *before the deadline* - these will overwrite previous submissions.

If unexpected or extenuating circumstances mean that you will not be able to submit on time, you can request an extension before the deadline.Longer extension requests are handled by the RMIT Special Consideration unit. Please get further information from this unit regarding policy and time limitations.

Academic integrity

Please refer to RMIT policy:
https://www.rmit.edu.au/students/student-essentials/assessment-and-results/academic-integrity

OurHomeSMS

You have been assigned to develop OurHomeSMS, a new community care service management system that is based on the Victorian state government's regulations and guidelines. Here are records of meetings with Jeanette and Ali from the Lakeview Residential Group, and Shang from the Department of Families, Fairness and Housing.

Lakeview Residences Regional Manager - Jeanette Ottoline
Thank you for coming on board to help us build OurHomeSMS. A little bit about us. We are a growing aged care group with 5 residences, all in the metro area except for one in country Victoria. We are so excited to get a grant from the state government to deliver a complete system tailored for our needs as SRS providers[1]. This will help us make sure that OurHomeSMS doesn't just meet the legislative requirements and best practice guidelines in the interest of all residents and their family members. We want our roll-out of this SMS to run smoothly and propel our plans to double our expansion in metropolitan and regional regions!

Phase 1 of the OurHomeSMS project includes enhancing our legacy SMS to support the management and updates of the residential and service agreement. Here is a copy of the RSA template that Shang has printed for us, and also the Guide for Proprietors.

Lakeview Residences Group Software Engineer - Ali Arafi

Let's start with the RSA or the residential service agreement. It's so important the admin team needs to prepare this in consultation with the resident and have it signed and provided to them within 48 hours of their moving in... During the admission process, the Residence Administrator uses our legacy SMS to enter all of the personal information you see in the template (except for the condition report section and furniture listings) plus a whole lot more. The Accounts Officer prepares all the fees and charges information using a fees calculator in the legacy SMS. Then all the relevant information is imported into OurHomeSMS by the Administrator who completes the condition report section and optionally adds the condition report as a WORD or PDF document attachment. The room furniture item listing is exported from the Inventory module of the legacy SMS but cannot be used in the RSA until the Administrator inspects the room to check off the item list.

The intention is that on the day (or before) the commencement of the residency, the SRA's fees and charges section are approved by the Accountant using the

[1] https://www2.health.vic.gov.au/ageing-and-aged-care/supported-residential-services

OurHomeSMS. The Resident and the Admin Manager, representing the Proprietor, then signs the RSA digitally with the tablet's touch screen and stylus.

The SysAdmin account is the super user account, which is reserved for an IT administrator to perform user account management and other tasks such as software updates. The Proprietor wants to be able to do everything the Administrator and Admin Manager does… and the super user too - except that she won't be managing users or software updates on a daily basis.

Lakeview Residences Regional Manager - Jeanette Ottoline

We have a special wholesale arrangement with Harvey Norman and JB Hifi. Everyone of our residents is provided with an official Lakeview Android tablet and flat screen TV. They can use an app on both devices to view their SRA, and use the tablet to enter any updates or change to their personal data. Sometimes the resident makes an update to the SRA, such as a new addition to the list of personal belongings of financial value. A nightly run job will send this and all other update requests, to the intray of the Administration team for processing (vetting changes, and dual sign-off). Sometimes Lakeview needs to initiate updates too - such as amended fees or charges that the Accountant has made in the legacy SMS. These may be specific amendments to the resident, or general ones applied to all residents, etc.

Will the app need to run on Apple devices too? Good question, I'm a hard-core Apple user! I know Ali is die-hard Android <laughs>. But Android apps are fine for our Phase 1.

DFFH Program Coordinator - Shang Mingyuan

The Victorian government is very happy to support this project with a business grant and advisory support.

For Phase 1, it is important that OurHome has built-in compliance support for ss. 47-55 of the Act, or page 15 in our Proprietors' Guide[2]. In most cases the RSA is signed off before the residents start their residency. Where they slip through the cracks, then there is the risk to the resident's rights not being protected.

Lakeview Residences Business Manager - Jeanette Ottoline

How quickly this meeting has gone. I hope you have received enough information to get started! Perhaps you have a few questions in return… but I can't wait to see what you come up with for your modelling and requirements!

[2] For Phase 1, as pertains ss. 47-55, focus your modelling/work on pages 1-3 of the RSA template, and the attachments in page 6.

Your Tasks

1) Develop a use case diagram in UML

a) From the requirements gathered for this project, create a Use Case diagram.

b) Be careful not include any additional functionality however obvious it may appear to you. You will be assessed on: completeness of each use case, and appropriate use of actors, includes/extends, generalisations

2) Write a use case textual description of a use case

a) Prepare a UCTD table according to your Class allocation:

- **Class A:** Update RSA initiated by the resident may be approved or rejected by the Administrators depending on whether the change can or cannot be verified, or does not need to be verified.
- **Class B:** Update of RSA initiated by any Lakeview staff, such as for changes to the house rules, routines, complaints process, or fees and charges have their required number of days notice before coming into effect. This will not require signoff by the resident and admin manager, but any updates may be cancelled before it comes into effect - thus the terms of the original RSA continue unchanged.
- **Class C:** The audit inventory initiated by the Administrator, before the RSA is approved, can result in either normal flow, or if there is a discrepancy the Administrator will make physical corrections to the room and proceed with the RSA processing, OR make corrections to the legacy SMS, redo the export and continue the audit inventory flow of actions.

b) Develop a description of the use case using “Template – Use Case textual description” as per Appendix A.

c) You will need to fill in the gaps and provide the flow of events.

3) Develop requirements

a) Draft 2 x functional and 2 x non-functional requirements according to the class allocation guidelines below, following good principles of writing good requirements and the FURPS guidelines[3].

- Class A
  - Non functional requirements: Performance, Implementation
  - Functional requirements: other than accounts- and admin-related
- Class B:
  - Non functional requirements: Reliability, Design
  - Functional requirements: admin-related functions
- Class C:
  - Non functional requirements: Usability, Interface
  - Functional requirements: accounts-related functions

b) Support your answer for each of the two non-functional requirements with a brief explanation of what you understand it to be - include any extra references used (other than that provided here or in the course materials)

4) Develop a class diagram

a) Develop a class diagram based on your use case model and the requirements gathered so far.

b) Think about what classes you will need. You should include some attributes to capture important information particularly for consistency with the Object diagram in this assignment but methods are not required.

c) Ensure your class diagram is consistent with the object diagram. You may need to revise the class diagram and add any required classes to capture the data.

d) Your diagram will be assessed on: consistency with the customer requirements (you can add new data, but do not contradict existing ones) and appropriate use of UML notation

5) Develop an object diagram from your class diagram

Develop one object diagram, consistent with your class diagram which captures the following scenario:

[3] Eeles P (2001) Non-functional Requirements, IBM Group, Accessed Online 05/09/2021

a. On 15/6/2021, Martin Freeman (DOB 13/02/1951) has signed an agreement with Lakeview Residence Ballarat and will move into room 1880 as soon as he can confirm the removalists for his personal belongings.
b. He doesn't have a guardian but he has nominated his daughter Phoebe Freeman (ph 0415 313 151, email phoebe.freeman@gmail.com) to receive any information about his residence and support arrangements.
c. Martin has sold his house and has signed for a contract to stay indefinitely with Lakeview.
d. His payments have been worked out by the Accounts officer (Stephanie Beecham) to be $290 per fortnight, which he will pay by direct debit.
e. Martin has received the room's condition report and it matches the impression formed from his personal inspection.
f. The furniture in the room belonging to Lakeview are: the Double-size bed, bedside cabinet, bookcase, small wooden dining table and two chairs, and of course the flat screen 60inch TV he was promised... Light and electrical fittings provided don't need to be included in the listed items, nor does the built-in wardrobe and bathroom fittings and fixtures. Martin will organise any other furnishings that he needs.
g. He hates dealing with money and had wanted Lakeview to manage the maximum allowable (one month's fees) for him. The Accounts officer mistakenly calculated it as $630, but after discussing with the Accountant (Henry Forde) who picked up this error, they settled the amount to be managed as 2 x his fortnightly fees, which is $580 per month.
h. Janet Cho (ph 040 115 1122) is the proprietor of Lakeview residences, and the Manager of the Ballarat home is Rowan Atkinson (ph 040 115 1199).

Your diagram will be assessed on: consistency with your class diagram (ensure you update your class diagram as relevant), and appropriate use of UML notation

NOTE: Please feel free ignore all 'log in' or authentication functions for your modelling and answers as no marks will be awarded for those.

For example you can model the UC diagram without need for a 'Log in' UC, it will be understood by the markers, or you can add a note that says all UC require authentication. Ditto for the class diagram.

THE END

APPENDIX: TEMPLATE FOR USE CASE TEXTUAL DESCRIPTION

Name	This **must** have an identical name as one of the use cases in the use case diagram (it is an expanded description of it)
Version	Identifier to distinguish between versions of one use case
Goal	A one sentence summary of the use cases existence
Summary	A short paragraph describing the process that is followed.
Actors	List the primary actor (the person who initiates the use case) and the secondary actors (anyone else who is involved in the use case).These should be job titles not individual's names. Be careful to distinguish between data and actors – eg in a childcare system, a child's data may be used but it does not make the child an actor.
Pre - conditions	Conditions that must be true before the use case can even start. Write as a predicate; that is as a statement that is either true or false. E.g, For Withdraw Cash a precondition is "The person is a customer of the bank". A pre-condition is not something that is checked within the basic course of events (eg "there is enough money in the account") – it is a condition that has to be true BEFORE the basic course of events is even commenced.
Triggers	The event that causes the use case to activate. For Withdraw Cash the trigger is "The person enters their card and PIN and selects Withdraw Cash".
Basic Course of Events	A numbered sequence of steps taken to achieve the goal. It should be possible to achieve this goal by only following these steps, without having to follow any of the alternative paths. This list may also refer to other use cases (representing the "includes" relationship discussed earlier), or it may specify extension points (where other use cases can take over).
Alternative Paths	Other ways to achieve the same goal. This is also where failure paths are considered (e.g. insufficient cash for a withdrawal).

Post - conditions	The state of the system after the goal has been achieved. For example, if the customer successfully withdraws cash their bank balance should be lower by the withdrawn amount. There may be multiple postconditions if multiple outcomes are possible.
Business Rules	Any condition that should be observed/maintained that is specified by either the business or an external entity. Eg, a childcare system may only enrol children where they are immunised or over a certain age.
Notes	As numerous as the sections above are, there may be some extra information that you need to record. This section is the dumping ground for anything you think is relevant to the use case but doesn't fit into any of the other categories. Don’t go crazy here – do ensure it relates to this particular use case.