# ASSIGNMENT ONE ~ CPT230 SP1 2021

Due Date: per Canvas published deadline

**Assignment Objectives & Structure**

This assignment focuses on the concepts raised in lectures 1-3. 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 six parts:

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

**Assessment Value**

15% of your final mark will come from this assignment. As such, this assignment will be marked out of 15.

**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% (1.5 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

# On-Vacc

You have been assigned to develop On-Vacc, a new vaccine administration and handling system, that is based on the Commonwealth Government's vaccine rollout strategy. Here are records of meetings with Shakira and George from the Budget Plus Pharmacy Group, and Corey from the Department of Health.

**Budget Plus Regional Manager - Shakira Rahman**
Thank you for coming on board to help us build On-Vacc. A little bit about us. We are a growing pharmacy group with 20 outlets in Victoria, including two located within regional hospitals. We are so excited to be partnering with the Federal government to implement Phase 2A of the national COVID-19 vaccine rollout strategy. The On-Vacc project is an initiative that we are bringing to the table to make sure that our participation doesn't just meet the legislative requirements and health directive. We want our roll-out of this program to run smoothly and propel our group to be among the top in Australia!

On-Vacc will replace our current vaccination recording software - with the added features that will fully support Phase 2A. It will allow patients to complete the newly released vaccination consent form electronically, as well as other functions including that for vaccine storage and handling.

**Budget Plus Senior Software Engineer - George Alwyn**

For today's meeting let's start by discussing how we will handle the *Comirnaty* ( more commonly known as the 'Pfizer') vaccine administration in our pharmacy stores. I know you are thinking administration means paperwork, but it's the term we use for administering (injecting) the vaccine to patients by trained and accredited pharmacists. Don't worry for the time being how the patients will be selected or notified or booked in to be vaccinated - that is part of the current discussion with the Department of Health...

From the patient point of view, the vaccination appointment begins with the administrator giving them an iPad (or Android equivalent) and they complete the electronic form to give the Government-required 'valid consent'. If they are a returning patient, especially for the second course of the vaccine, then their On-Vacc ID should retrieve their previously completed personal details. When the form is completed and submitted, the Vaccine Administrator will review the details and log into the staff mode of On-Vacc to confirm the vaccination go-ahead and scan a barcode on the syringe which would be prepared by the Vaccine Preparer. Shakira will give more details about those functions. For now, the successful scan will prefill either Dose information on page 4 for the consent form. The

first field should default to the current day, and the second field 'Time received' should be left blank for the vaccine administrator to complete after the vaccination.

Yes, the patient will sign with a stylus just like you do for Australia Post... There are two sets of patient input on pages 2 and 3 of the sample form that will trigger a message to the patient that their vaccination will not proceed. They won't be able to submit the form, but they can change their input (if it was inputted in error) or exit the form. These kinds of incomplete forms will be saved in our records. These triggers are all the Yes checkboxes on page two (except for Question 4 and 11), and failure to tick any of the three tick boxes on page 3 under 'Consent to receive COVID-19 vaccine'. Question 4 and 11 relate to whether the patient has had COVID-19 and whether they had previously received COVID-19 vaccination. We want to enhance the form by secondary questions for Question 4 ( When were you cleared for COVID-19) and Question 11 (When was your last COVID-19 vaccination). As long as the patient was cleared for COVID-19 more than 6 months ago, and their last COVID-19 test was the first course of the Comirnaty vaccine 21 days or more prior, then the vaccination may still proceed.

After the vaccination, the Vaccine Administrator will navigate to the 'Provider use' section of the patient records and check the prefilled information from the previous syringe barcode scan. Then they will update the date if necessary (yes there can be some vaccination programs running around midnight!?) and enter the Time received. If the procedure had gone as intended, they will also update the status of the Dose as 'Confirmed Delivery'. This will ensure that this record will be part of the nightly bulk reporting to the Australian Immunisation Records (AIR) system.

The patient will be asked to remain on site for at least 15 minutes after the vaccination. If the patient experiences any unexpected symptoms before they leave, the Vaccine Administrator will record this in On-Vacc as an 'Adverse Reaction' incident. This will be reported online to the Pfizer vaccine reporting system, as required by the guidelines.

Admin account - this is the super user account, which is reserved for an IT administrator to perform user account management and other tasks such as software updates.

**Budget Plus Regional Manager - Shakira Rahman**

Vaccine consent may be given by a parent for those under 18, though a patient 16 years or younger would not be allowed to successfully submit the form in On-Vacc. In addition to what we discussed so far, valid consent must be given by a person with legal capacity and of sufficient intellectual capacity. The Vaccine Administrator has to assess these criteria, and may decline to vaccinate the patient if they do not consider these criteria are met. Yes! And the Administrator will also decline vaccination if they have cause to doubt any of those questions ticked 'No' in Page 2 of the form.

Parents need to upload proof of their ID, Medicare card and employment proof, as well as proof of parent or guardianship of a patient under 18 of age.. On-Vacc will need to support the use of the iPAD (or other device) scanning such ID for our records. I'm a hard-core Apple user! I know George is die-hard Android <laughs>.

**Department of Health Program Coordinator - Corey Messina**

The Department of Health is supporting Budget Plus to develop On-Vacc. The guidelines and requirements for storing vaccines will change for different vaccines, but we will stick to the system supporting *Comirnaty*.

See how the Vaccine administrator already has the syringe and dose prepared? That is the responsibility of an assigned Vaccine Preparer on site. We anticipate that the senior pharmacist will be assigned to this role. Their job is to take the original bottled vaccine from the provider and make the prescribed dilution, and then divide the contents equally between six syringes to obtain the right single dose. The Preparer will also scan the barcode on the original bottle to obtain the vial ID and date of expiry, before using On-Vacc to print labels to be attached to the syringe. The label should include details such as: Vial ID, expiry date and time of the syringe, and since 6 doses are possible from one vial, the label should record each bottle as "Dose X of 6."

The Vaccine Preparer will also record any unused, expired or damaged syringes and vials in On-Vacc - providing a written explanation..

**Budget Plus Business Manager - Shakira Rahman**

How quickly this meeting has gone. Next time we will tell you more about the Vaccine Coordinator role. For now, we can note that they will use the system to record receipt of the vaccine vials when they are delivered to the site (the pharmacy, that is), before they are safely stored in the required refrigerated conditions. The Vaccine Coordinator may also record any unused doses and vials, just like the Preparer. The Vaccine Coordinator also adds new Vaccine Administrator and Preparer roles after checking they have the required accreditation and training prescribed by government guidelines.

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!

# Your Tasks

## 1) Develop a use case diagram in UML

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

b) Do 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) Select one of these key use cases of the system:

i) Patient fills a Consent Form

ii) Under-18 patient fills out a Consent Form

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 elicitation questionnaire

a) Prepare questions (for all or any of them) that will help you elicit more functional and non-functional requirements for further analysis and recording in a Software Requirements Specification (SRS) document.

**NOTE:** Please include **whom** (which customer or stakeholder - doesn't have to be one of Shakira, George or Corey ) each question will be directed to. Please include at least 4 questions that will elicit functional requirements and 4 questions to elicit non-functional requirements that are not given in the recorded meeting.

b) Draft 2 x functional and 2 x non-functional requirements that may be written after the stakeholder answers the question(s). Please follow principles of writing good requirements as found in week 1's lecture notes.

## 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.

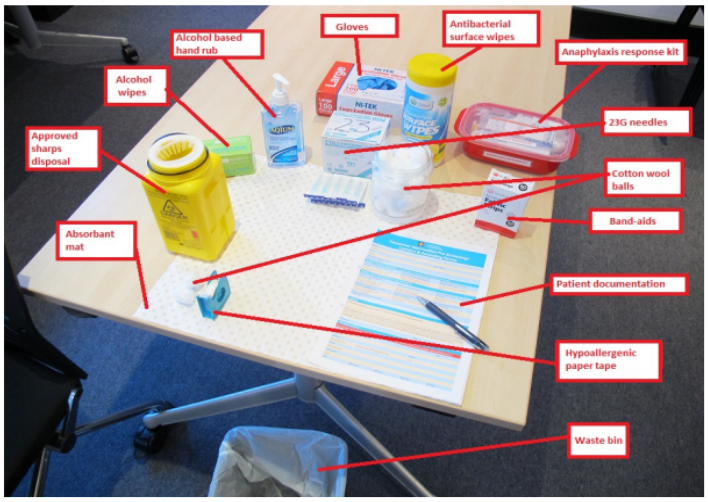
c) Ensure your class diagram is consistent with the object diagram. You may need to revise the class diagram and add any required classes to capture the data.

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: <To be Advised in Canvas>
- 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

*Guidelines for Conducting Pharmacist Initiated and Administered Vaccination Service within a New South Wales Community Pharmacy Environment*




**Example of Vaccination Service Area**

## 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.<br><br>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".<br><br>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.<br>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.<br><br>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.<br><br>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.<br><br>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.<br><br>Don’t go crazy here – do ensure it relates to this particular use case. |