

Official (Closed), Non-Sensitive



CA1: Interim Report

Prepared and submitted by

Name:	Ng Zen Yu	P2123011
School of Computing		
Diploma in Applied AI & Analytics		
Company Name:	QueueCut Pte Ltd/ Thinkture Pte Ltd	
Co. Supervisor:	Tony Teoh	

In partial fulfilment of the requirements for the module

(fill in own module code and remove the brackets): Year Long Internship

Lecturer: Dr Saw Vee Liem

Submission Date: 18 August 2023

Word Count: 1499 words

Table of Content

Background - page 2

Objectives - page 2

identification of problem areas - page 4

Stakeholder Analysis - page 5

Conceptual Solution Proposal - page 6

Project Plan - page 6

Solution Explored - page 8

References - page 20

Appendix - page 20

(A single page will be sufficient, listing the top one or two levels of heading within your report.)

Background

1500 word limit starts here.

I am working for a company by the name of QueueCut, which provides a food delivery and pickup service for its customers. With other delivery services, which normally take a percentage of each sale made, the merchants normally have different prices when ordering on a food delivery app as merchants mark up their prices to make up for the commission charge. We do not charge an up-charge/commission to its merchants for using our service, giving our merchants a peace of mind.

Thinkture is an IT consultant company, Which focuses on Software Development, Infrastructure Security, IT Automation and Response as well as Service Management. As Thinkture is the parent company of QueueCut, I am often required to work on projects from Thinkture. The project that I was required to work on was a project from our Client. This project required me to learn the ins-and-outs of Android Studio, and work on an app that would allow a staff of Client (See Appendix) to be able to register, check-in and check-out an item that has been tagged with a RFID tag.

- One or two paragraphs should be sufficient to cover the background of your company.

Include in this section the project selected, its type and the work you need to do.

Objectives

The list of objectives should be collectively described what the final deliverables and achievements of your project will be.

The aim of this project is to build an app that allows the Client's staff to check in and out items that were taken from a raid into the office or to be transferred out to another office or

department. To do this certain protocols and measures must be taken to allow for official registrations of items in and out of the database.

Firstly, the database, using SQL and Python, we made a mock database and local APIs for testing of the first demonstration of the app.

Secondly, the app, which consists of 3 main functions, Raid, Check-In, and Check-Out. Firstly, The staff needs to use raid. When the staff opens the app, they will have to sign in. Then, there will be an option to use raid, check-in, or check-out. When the staff first opens the app, they will use raid. There, the staff will be able to view the assigned cases, and choose the case to work on. Once the staff chooses the case, they are able to create and assign the rfids to the items, and assign the relevant variables such as location, description etc. Once the staff has finished adding all the items, they are prompted to print the documentation. After the documentation is printed, they are prompted to do a digital signature, which will then print the documentation with the signature. Once that is done, the items will be pushed to the server. Once the staff is back at the office, they will need to use the check-in function. There, the staff will scan the RFIDs of the raided objects and check them into the database. For item transfers to another department, checkout is used for both of those circumstances. The staff will scan the rfids and check them out of the department/office, and use check-in again when they reach the other department/office. Other functions include a scan-check function, where the staff will be able to view all the relevant details about an object, such as the location it is meant to be stored in, the type of item, the description attached to it and so on, by scanning its attached RFID.

Requirement Analysis

• Identification of Problem Areas

There should be a presentation on the background of the problem at a high level that covers the business problem, known issues and opportunities to improve the organization.

Our client has staff that need to conduct raids to collect evidence. During the raids, these staff will need to collect evidence from the site, tag them with RFID tags, and bring them back to the office. Currently, Client does not have a solution to this problem.

Therefore, we were asked to help build the system that will allow them to register, check-in, check-out, and verify the RFIDs. Due to the high traffic of items/evidence passing in and out the office, by completing this project, it will allow Client to be able to swiftly and easily transfer items in and out of the office via a custom handheld device, While also allowing them to easily identify the location of the item by scanning it using said handheld device.

Describe the need or opportunity to improve the organization through the successful implementation of the proposed project. The description should include the identification of where organization needs and opportunities are currently not being met.

- Stakeholder Analysis

Customer/User –

[Identify the users of the system. What are they using this system for? Who has a stake in the project?](#)

Clearly explain the value and purpose of the effort to produce the necessary and expected business benefits from use by Customers and Users.

Due to the nature of our client's industry, our client's staff need to retrieve evidence by conducting raids. Hence, they would need a sorting system to record where each item is and be able to retrieve that information on the go. Before this project, Client did not have a proper check- in and check-out system, therefore by completing this project, we will be able to provide a functioning system for the staff of Client to log the items efficiently. The staff of Client are the main users of this system. These staff require a system that is able to track and locate each of the registered RFIDs, as well as being able to check in, check out and register the RFIDs. The people who have a stake in this project are the staff of Client and the Client's administrators that will run this system.

Project Owner

The Project owner is our client, and is also the organization that is endorsing this project. The individuals that are vested in the success of this project are the staff of Client and the Administrators of the system at Client.

[Who endorses the project? Who is vested in the success of this system \(Project Owner\)? How is project owner related to company supervisor?](#)

- Conceptual Solution Proposal

Conceptual Solution Proposal is a business problem that is solved by an IT solution. The IT solution is reviewed by the company supervisor to ensure that the project is still considered viable and desirable. Intern should articulate this in the report. The project advances to the planning stage when the company supervisor approves the conceptual proposal.

For this project, I was tasked with the development of the android app, using a modified android device with RFID scanning capabilities. My Conceptual Solution Proposal was as follows:

As the producer of the modified android device had provided an android studio file to demo the functions of the device, I referenced this file to apply the same functions to my app as well. using the function from this file, I would create the functionality for the raid, check-in and check-out functions.

- Project Plan

Define project schedule. Identify the resource requirement and allocated resources. Define tasks. Include cost estimation and project budget plan (optional). Schedule milestones and reviews. Propose a format for periodic project status report which should report progress status of the project and compare the actual status with the forecast.

Throughout the project, we held weekly meetings to update customers and supervisors. Later on, my supervisor and I conducted live demonstrations at the client's office.

We were given around 2 weeks to produce the first prototype. Later on, we would be given a few months to produce a second prototype and eventually a finished product.

Project Tasks:

Mock Database: Initially, we were to receive APIs for the app from another team, but as they weren't ready, we created a mock database using SQL and Python. This allowed seamless testing and transition to actual APIs.

First prototype - for the first version of this app, I made a "bare-bones" layout for the app, enough to showcase the main functions, raid, check-in and check-out. Raid included displaying the cases that the staff is assigned, once the case is selected the staff can begin item creation (adding type of item, description, location of item etc.), and afterwards proceed to register all the items into the system. After they have registered the items, they are prompted to check-in the items when they are back at the office, where they scan the RFIDs and add the location they should be stored into. Check-out allows the staff to scan the RFIDs of the items they want checked out, and are then able to bring these items out of the office.

Second prototype: new features - For raid, after the staff has created all the items, they will be able to scroll through the items and click on the items they want to edit. They will then be able to change the location, description etc. attached to that item. After the staff is done with creating items, the items will be displayed in HTML format on the mobile device, formatted in a way that would emulate a Client document, allowing them to see the items listed as how it will be printed on paper. After confirmation, the staff can print the HTML display. Next, the staff can sign the document. This will allow the staff to sign directly on the document through the app, and will be prompted to print the document again, now with the signature. Once the staff has confirmed the above, they are able to use the check function, which will allow the staff to check the information associated with the RFID by using the device to scan it.

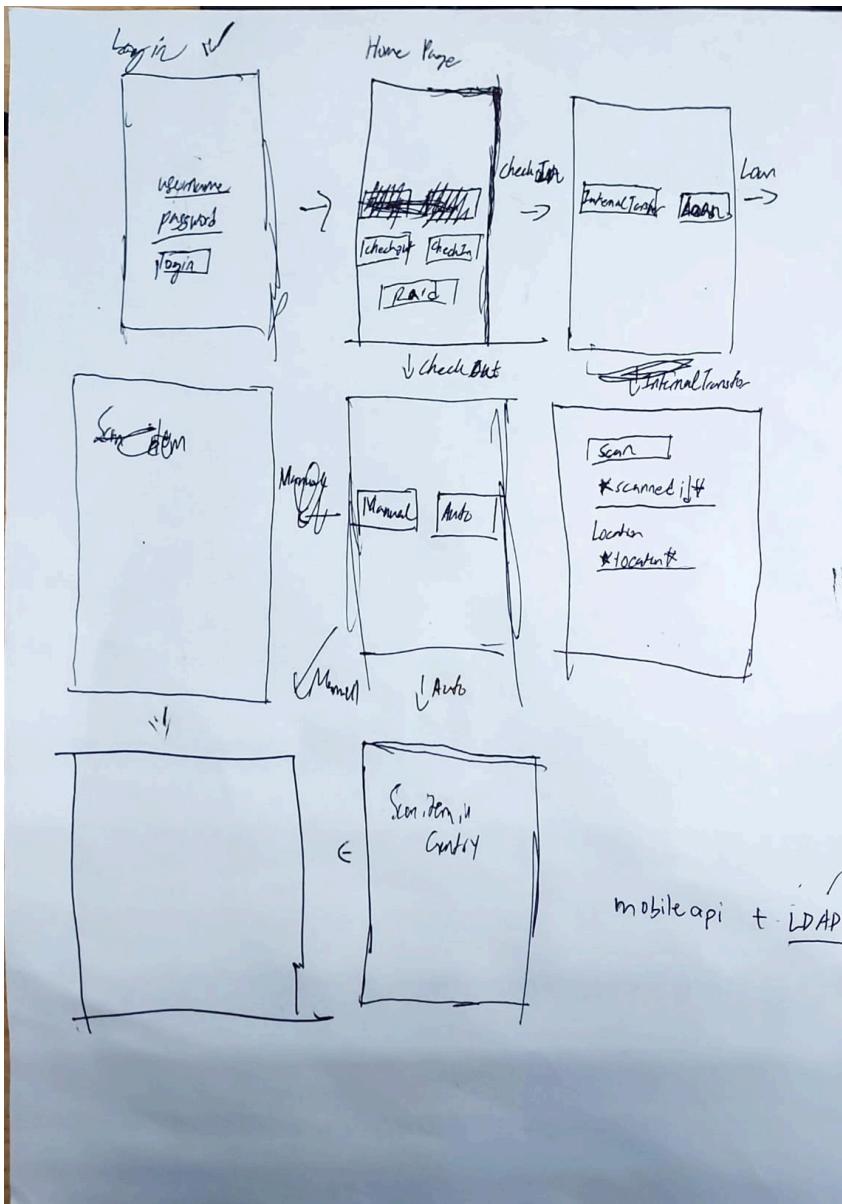
Solution Explored

In this phase, you will design the system inputs, processes, and interfaces. Such details can be provided in various formats. Different types of projects and different varieties of customers/users will find success using different techniques listed below for collecting and representing the functional requirements. Note that all of the techniques should be briefly considered at the beginning and appropriate ones should be determined based on type of project and customer/user.

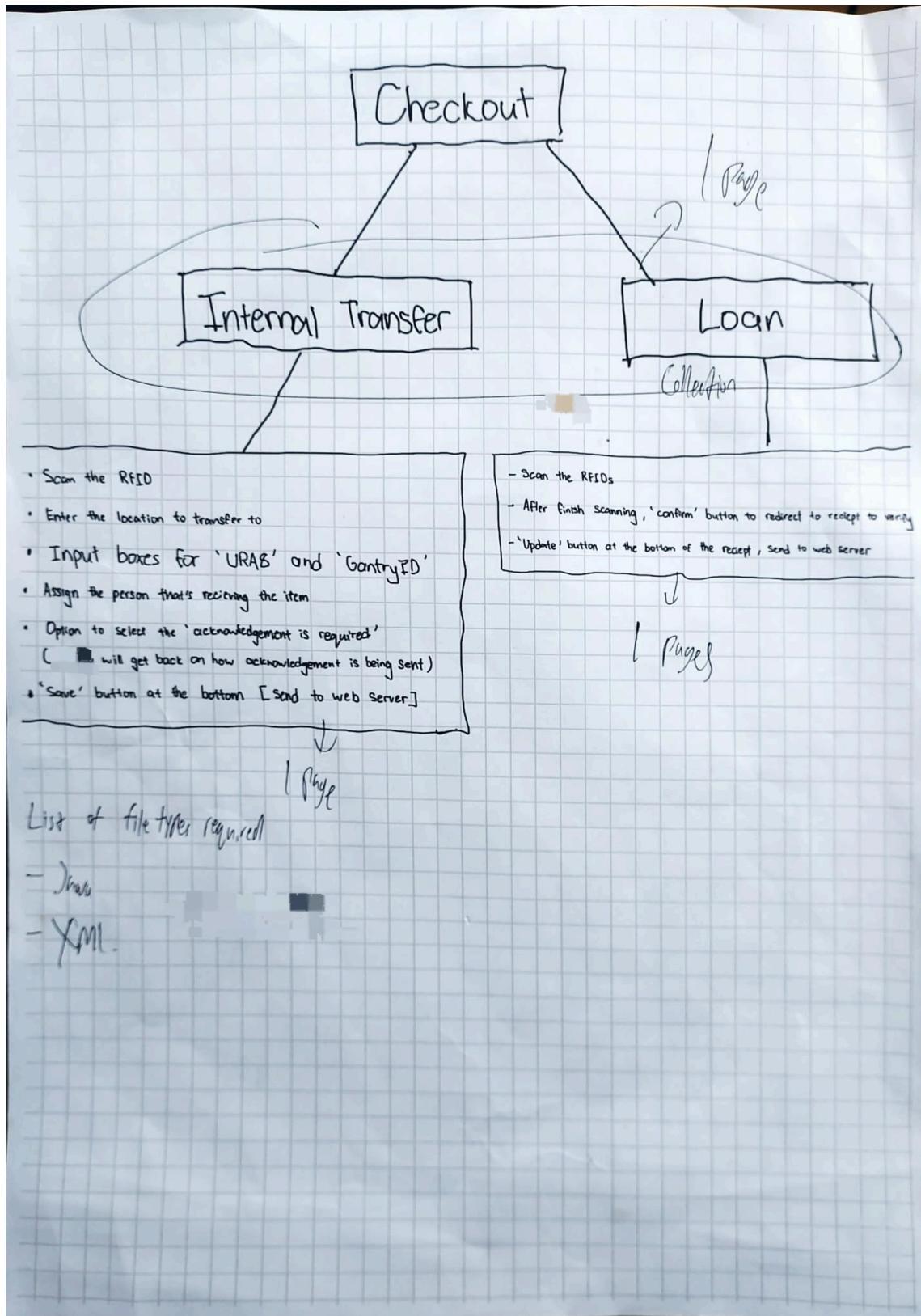
For the app, Client did not give us an idea of the GUI that they wanted us to achieve, therefore I decided that I would make it simple and wait for Client to give us instructions on the UI. We then had multiple meetings to discuss the flow of the app (from raid -> create item -> register -> check-in etc.), and finalize on the final list of functions and features for the first live demonstration of the app.

- *Entity-relationship diagrams*
- *Activity diagrams*
- *Mockups*
- *Data Flow Diagrams: Intended to represent the flow of information around a system*

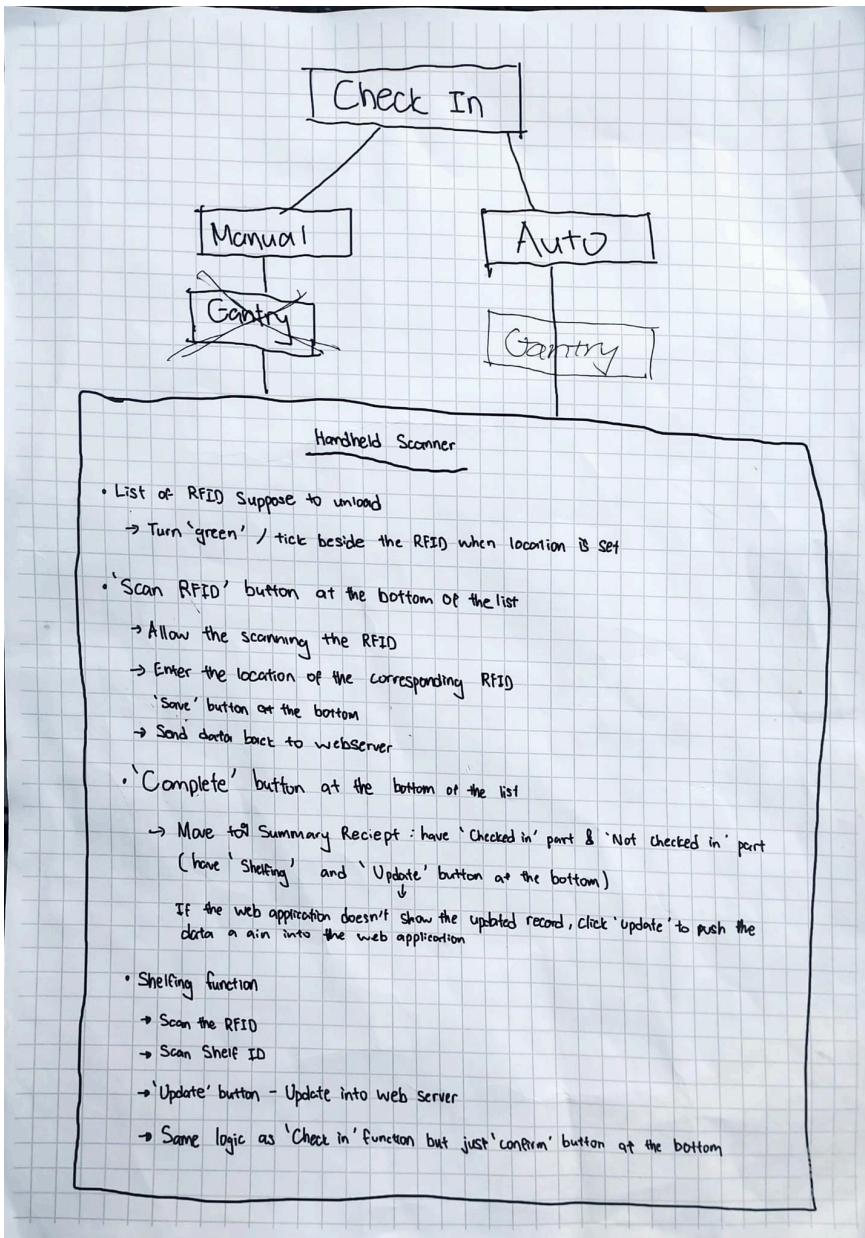
GUI Design and app flow Conception for self-reference



Flow for the check-out function



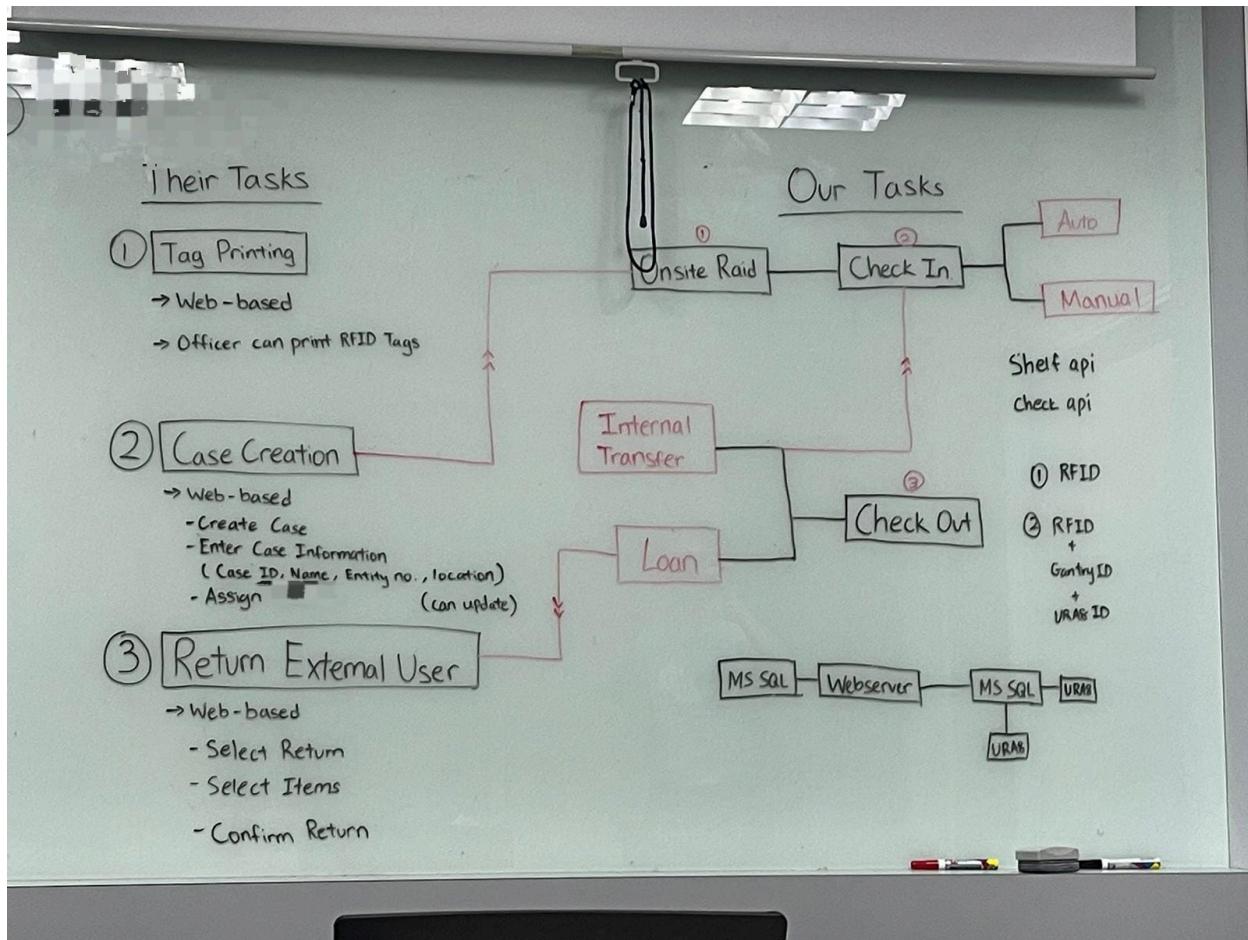
Flow for the Check-in function



Flow for the raid function

Raid

- Show the list of 'Case No' assign to the [redacted]
 - Select the 'Case No'
- Location of Raid
 - Select the location
 - Add in the location
- Have a 'Create item' button
 - Type of item
(e.g Computer, box of documents)
 - Description of the item
 - Date of collection
 - Scan feature [Link RFID to this item]
 - Save button at the bottom of the form
(have a confirmation text before saving)
- Show the list of items created so far
 - Have an edit function for all the items created [Only description can be edited]
(have a save button and prompt 'confirmation text' after saving)
- Have a 'Finish' button at the end of the list
 - After clicking, goes to a receipt that shows the summary of this case
 - Have 'Print' button at the bottom of the receipt [Bluetooth to their printer]
[Prompt 'Confirmation' text before printing]
- Show 'printing completed' page
 - Button 'Proceed with digital signature'
 - Goes to the receipt, but can do digital signature at the bottom
 - 'Print' button at the bottom (Prompt 'confirmation' text)
 - After printing complete, have 'Load complete' button and 'Count scan' button
 - Button 'Proceed with no digital signature'
 - Goes back to the receipt and have the line 'No digital signature' at the bottom
 - 'Print' button at the bottom (Prompt 'confirmation' text)
 - After printing complete, have 'Load complete' button and 'Count scan' button

Overall Flow

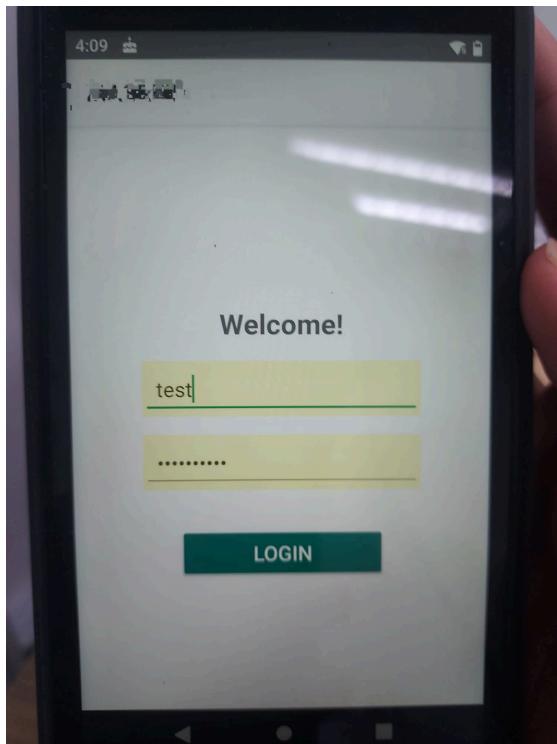
You will then transform functional requirements listed above into a detailed system architecture or design. This system architecture or design will reflect the structure of the components of a program or solution. The system design may comprise:

Once we had figured out the flow of the project, we got started on making the prototype for the project. This included the app and the mock database. Sticking to the GUI design that I had laid out earlier, I implemented the raid, check-in and check-out features as shown:

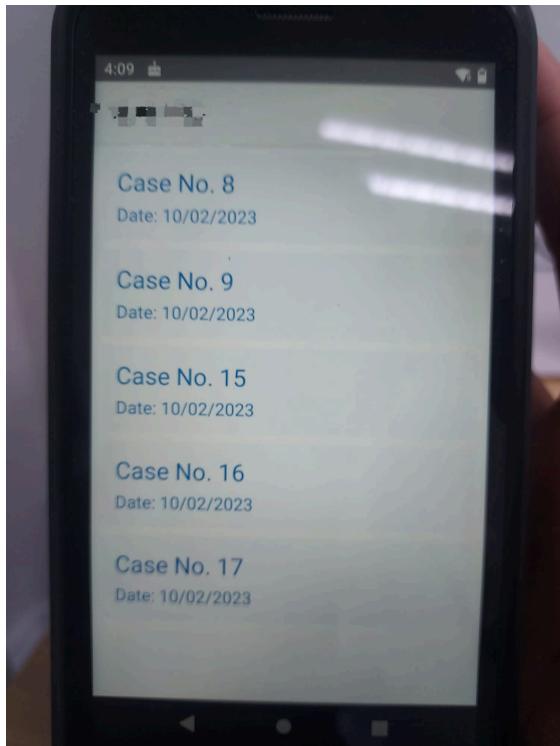
The variables in each table used for the database (testing only)

loan	check_out	assigned_raid
evidence_id custodian_name	case_id evidence_id transfer_location custodian_name date_received	case_id item_id user_id
sample	login	check_in
case_id evidence_id	user_id username password full_name	case_id evidence_id shelf_id storage_location date_received
	raid	cases
	case_id item_id user_id user_name case_name entity_no item_type item_description case_location collection_date casename_updated_date description_updated_date	case_id user_id user_name case_location entity_name entity_no

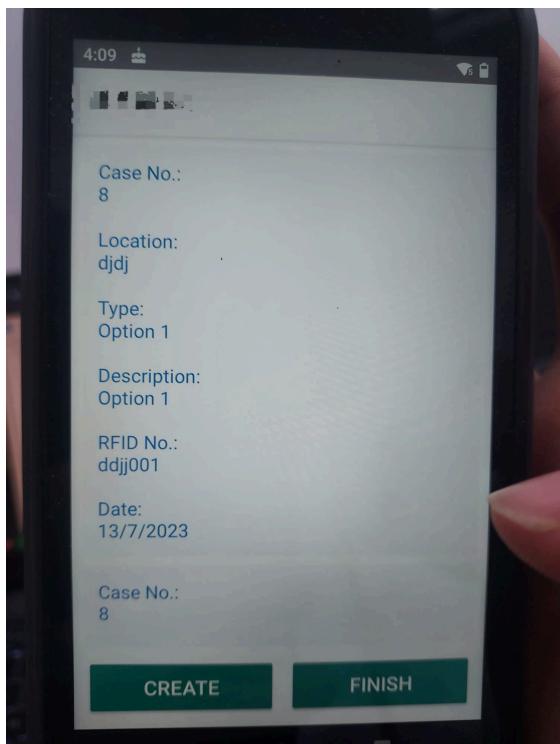
Login Screen



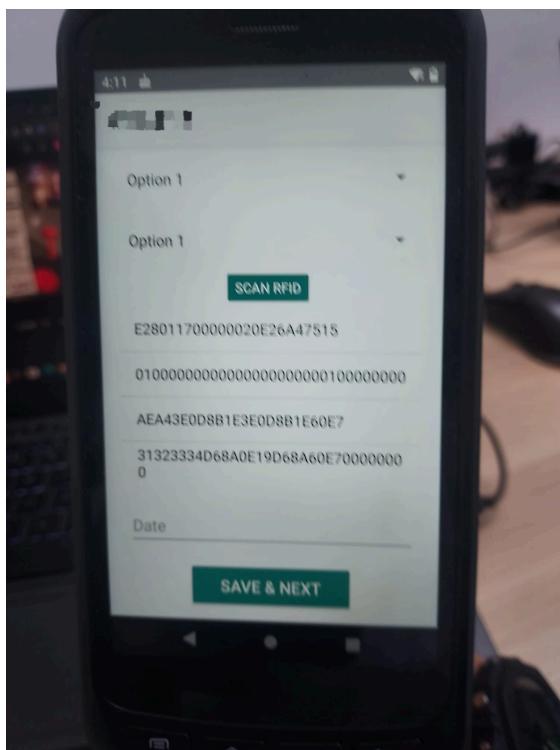
case selection



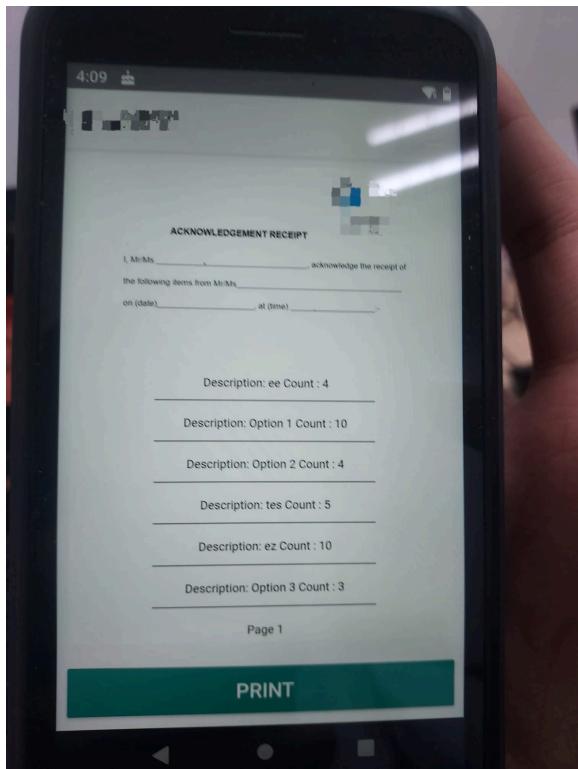
Item display



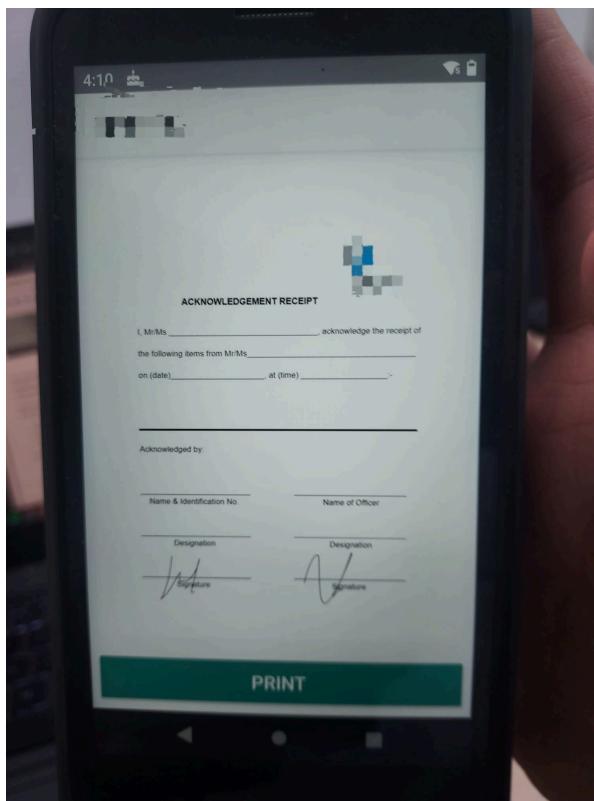
Item creation



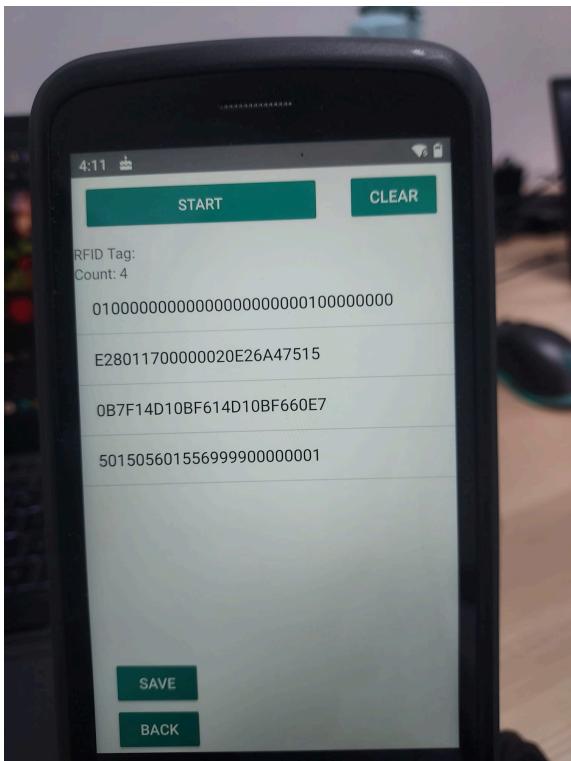
Display document before print



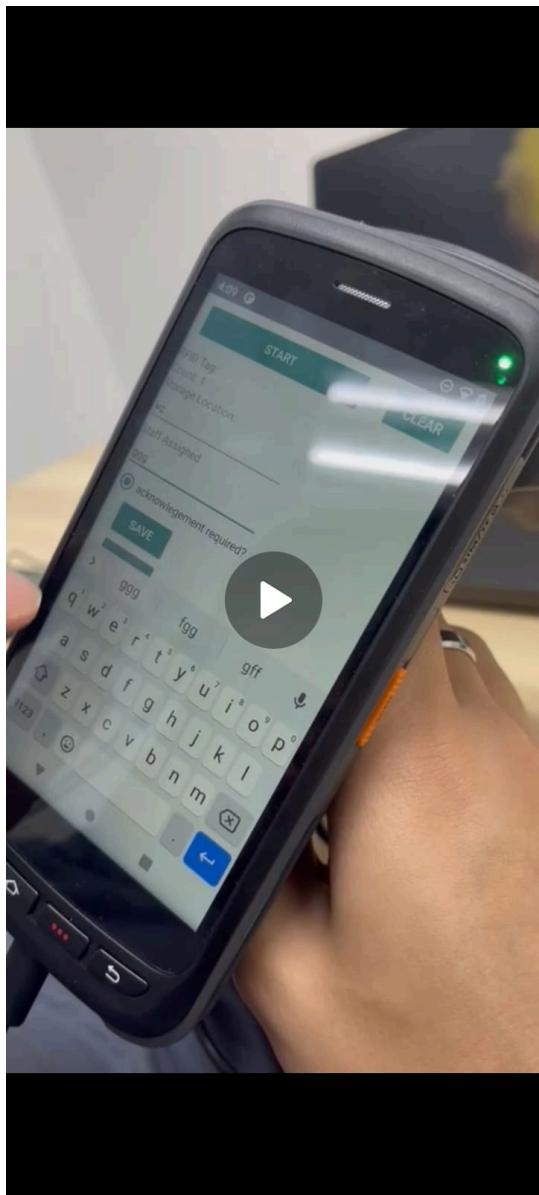
Digital signing document



Check in / Check out GUI



Shelving Item GUI



- *Business rules/application logic*
- *Interface design (app-to-app, app-to-db)*
- *User interface (GUI)*
- *Database design (data storage and db access)*
- *Data Dictionary*
- *Process Diagram*
- *Screen Layout Diagrams*
- *Prototype/Proof-of-Concept*

1500 words limit ends here.

References

(References should be provided for all materials that you have referred to in your report.

Weaver, Philip L. (2004) *Success in your project. A guide to student system development projects.*

Available online from SP Library

Christian Dawson (2015) *Projects in Computing and Information Systems. A Student's Guide*

)

Thinkture 2023, Thinkture Website, Accessed 16 August 2023, <<http://thinkture.com.sg/>>.

Appendix

Identity of Client

Due to the nature of my client's work, I have consulted my company supervisor and was advised to not have any mention of our client's name inside this particular report. Therefore, I will refer to our client as Client throughout the entirety of the report, and refer to their employees as

staff. The attached images in this report will also have any mention of the client's company information censored.

(Full details of items referred to in your report.)

Internal Use only (Confidential)

Liaison staff's Marks		Neutral Judge's Marks	
Requirement Analysis		Requirement Analysis	
Solution Explored		Solution Explored	
Language, Organisation, Visual		Language, Organisation, Visual	