MACQUARIE University

Faculty of Science and Engineering

DEPARTMENT OF COMPUTING

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ASSIGNMENT ONE

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COMP6750: Applications Modelling and Development

Contents

Task 2 - Requirements Elicitation

Q2 - Requirements Gathering Techniques

As an analyst, in my view, the two requirements-gathering techniques that can be used during the implementation of the POG System would be:

- Interviews
- Surveys /Questionnaires

1. Interviews

Interviewing is one of the most valuable methods for gathering information on human and associated system requirements. Conducting interviews with all the stakeholders involved such as farmers, POG System admin, local shop owners, customers and POG delivery persons allows for a deeper understanding of their needs, goals, and expectations of the POG system. The method begins with preparing for interviews.

Numerous steps can be taken for Interview preparation

- Having an understanding of the POG organization and its goals along with the background information on each stakeholder on how they fit in the current process.
- Defining interview objectives early to conduct the interview in phases and maximize the time on hand.
- Picking interviewees from different ranges of users. This could include customers with different purchasing patterns, small and medium-sized farmers, and experienced and new delivery persons.
- Keeping the interviews time-bound and not exceeding more than 1 hour.
- Plan question types and structure early to cover key areas of decision-making and pain points.

Interview questions can be categorised into **open questions** and **closed questions**. Open questions facilitate a deep understanding of a topic whereas closed questions generate precise data for analysis. The arrangement of questions also plays a role in the effectiveness of interviews. Since the stakeholders are not using any legacy system, interviews would be more

effective by following a **funnel structure**. It begins with broad, open-ended questions regarding current processes and procedures, concluding with specific, closed questions concerning the proposed new system. The funnel structure provides an easy, non-threatening way to start an interview.

2. Questionnaires/Surveys

Questionaries are the most cost-effective method of gathering information from a vast number of people. In the case of POGS, it can used for understanding the preferences and behaviour of specific groups of customers and suppliers and their approval for particular features in the proposed system. Questionnaires are also made up of open and closed questions.

For POGS, we have the opportunity to conduct a variety of surveys tailored to each user group: Farmers, Local Shop Owners, POGS Admin, and Customers. Given the broader groups like farmers, shop owners, and customers, we might opt for more closed-ended questions to ensure the surveys are quick, less burdensome, and straightforward to analyze. Important questions will be placed at the beginning of the survey with less important ones towards the end written in simple language and easy to understand.
A few sample questions applicable to both techniques along with the objective for each actor are given below.

- **Aussie Farmer**

  Objective:

  Understand the current digital literacy of farmers and their confidence in using a platform for selling their products.

  Possible Questions:

  Open - What is the current sales method, and what are your thoughts on introducing the POG system for future transactions?

  Closed - How comfortable do you feel using digital applications? 5 being easy, 1- being too difficult-> 1 2 3 4 5

- **POG Admin**

  Objective:

  Identify the functionalities for managing product listings, customer orders and dispute requests.

  Possible Questions:

  Open - How do you handle and address dispute requests from customers?

  Closed- What specific information should be included in the automated email content?

- **Customer**

  Objective:

  Understand their preferences for order customization, product listings, and receiving deliveries.

  Possible Questions:

  Open - Do you lean towards using a web application or a mobile app for the system in question and why?

  Closed - How do you prefer to set up an account in the system: through an email or a mobile number, or would you prefer a Single Sign-On (SSO) method for logging in?

- **Delivery Person**

  Objective:

  Understand their role in the delivery process, including order assignment, status updates, and customer interaction.

  Open - What approach do you take when dealing with situations where an order cannot be delivered according to the original plan?

  Closed- What is the average number of deliveries you get per month over 6 months?

- **Local Shop Owner**

  Objective:

  Understand their registration process into the system, inventory management and product listings.

Possible Questions:

Open - How often does the quantity on hand change and are there any specific reasons?

Closed- What improvements could be made to the process of submitting product management requests to the POG Admin?

Task 3 - Requirements Specification

Q3 - Epic and User Stories

1. EP 01 - Manage Product Listings

Objective:

The POG Admin can effectively manage product listings on the POG System. This includes compiling, creating, updating and deleting product information shared by farmers and local shop owners.

User Stories

1. **US 01.01 - Compile and Create Product Listings**

   As a POG Admin,

   I want to automatically compile the list of products shared by the farmers each week, and create product listings

   so that all available products are accurately listed on the system for customers.

2. **US 01.02 - Update Product Listings**

   As a POG Admin,

   I want to update product listings by adding new products, updating existing product details, or deleting products from the listings

   so that the product listings are up-to-date.

3. **US 01.03 - Create Mystery Box**

   As a POG Admin,

   I want to create pre-defined mystery boxes containing a variety of fresh produce

   so that customers who prefer something other than customizing their orders can also enjoy the products.

2. **EP 02 - Customer Order Management**

Objective:

Customers can effectively place orders in the POG system. This includes creating a customer account, placing orders by creating a veggie box, order payment, and pick-up or delivery options.

User Stories

1. **US 02.01 - Create Customer Account**

   As a Customer,

   I want to set up a customer account in the POG system

   so that I can place orders for fresh produce.

2. **US 02.02 - Create Veggie Box**

   As a Customer,

   I want to search and select products to create my veggie box

   so that I can add it to my cart and place an order for it.

3. **US 02.03 - Complete Order Payment**

   As a Customer,

   I want to make payment for the items in my cart

   so that I can purchase them and get the order picked up or delivered to my preferred location.

Q4 - Functional Requirements

1. **FR1 Supplier Management**

   FR 1.1 - The system shall allow POG suppliers to register with POGS to create a POG Supplier Account by submitting their details and verifying their ABN.

   Actor: Supplier(Both farmers and local shop owners)

2. **FR2 Admin Management**

   FR 2.1 - The system shall enable the POG Admin to manage product listings by allowing them to add new products to the listing, update details about existing products and delete products from the listings.

   Actor: POG Admin

3. **FR3 Customer Management**

   FR 3.1 - The system shall allow customers to create an account in POGS, select different products, add them to their cart, pay, and place an order.

   Actor: Customer

4. **FR4 Order Delivery Management**

   FR 4.1 - The system shall enable delivery persons to update the status of an order to be delivered once the delivery is completed.

   Actor: Delivery Person

Q5 - Non-Functional Requirements

1. **NFR 1 Security:**

   NFR 1.1 - The system shall support Single sign-on (SSO) for customers accessing POGS with an authentication response time not greater than 5 seconds.

2. **NFR 1 Security:**

   NFR 1.2 - The system shall use encryption standards such as Advanced Encryption Standard 256 (Abdullah, 2017) for data storage and Transport Layer Security 1.2 (Parmar and Gonsai, 2015) or higher for data transmission.

3. **NFR 2 Accuracy:**

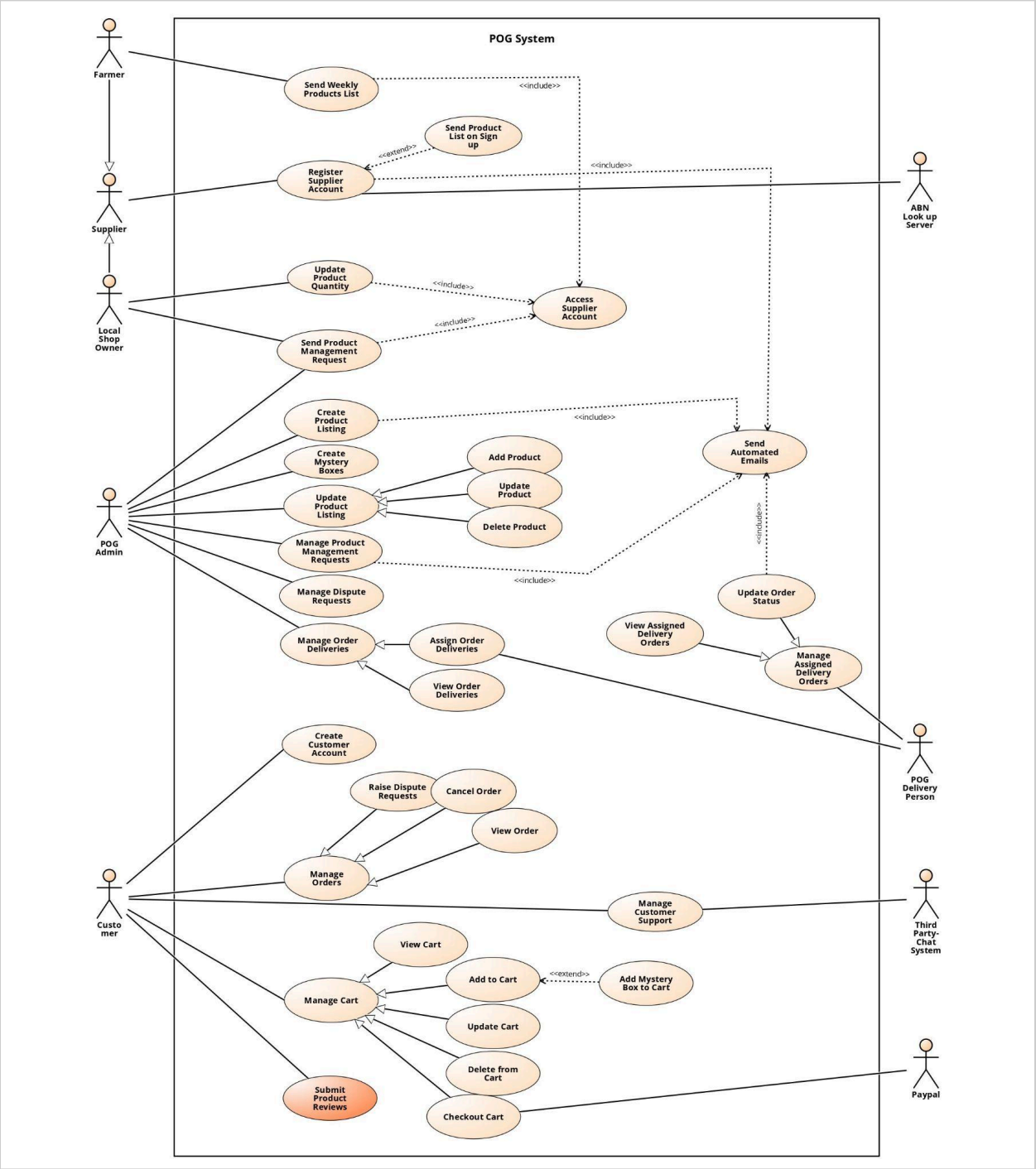
   NFR 2.1 - The system shall provide real-time geolocation, and track delivery persons ensuring location accuracy within a 15-meter radius.

4. **NFR 3 Scalability:**

   NFR 3.1 - The system shall support at least 5,000 concurrent users across all user profiles(customer, farmer, local shop owners, admins, delivery persons) without degradation in performance.

Task 4: Diagrams for different system perspectives

Q7 - Use Case Diagram



Assumptions in Use Case Diagram

- The proposal indicates that farmers and local shop owners follow the same registration process, so it's assumed they can both be represented as 'Suppliers' in the use case diagram. Consequently, a 'Supplier' actor has been added to the diagram.
- Although both farmers and local shop owners undergo a similar registration process, there is a distinctive requirement for local shop owners to add product details during sign-up/registration. To accurately represent this distinction, the "Send Product List on Sign up" use case has been extended from the "Register Supplier Account" use case. This is extended from the parent use case as it will be activated or used only when local shop owners register an account (i.e. optional use case for farmers).
- Both suppliers must access their supplier accounts to perform actions through their accounts. So 'Access Supplier Account' has been included as the common functionality or use case in the diagram.
- All emails are sent by the system via the POG Email server which is assumed to be integrated with the POG System. Hence POG Email server is not considered an Actor in the use case diagram.
- It is also assumed that all emails are triggered by the system alone and no actors are directly involved or interacting with that use case. 'Send automated emails' is the common functionality or use case that handles all types of email notifications. For example, emails with login credentials to suppliers(farmers &local shop owners), confirmation emails from admin to the local shop owner, delivery confirmation emails etc.
- It is assumed that the POG Admin addresses product management requests by manually updating the product listings, which is one of the POG Admin's primary functionalities. The proposal does not explicitly say that the update is happening in the product management request use case, hence the assumption.
- The problem statement lacks details regarding the dispute request resolution process, leading to the assumption that it is managed internally. As a result, this is not represented in the diagram. Handling dispute requests is done in the 'Manage Dispute Requets' use case.

- "Manage Order" is assumed as the principal use case for order management, facilitating the viewing, and cancellation of orders, alongside the submission of dispute requests concerning orders.
- "Manage Cart" is assumed as the principal use case for facilitating order purchases, encompassing actions such as viewing the cart, adding items or mystery boxes (extends from add to cart use case), updating the cart, deleting items from the cart, and proceeding to checkout. The checkout process enables payment processing and confirms orders.
- The name 'Veggie Box' is assumed to just be a label for the cart where customers place fresh vegetables.
- It is also presumed that all the use cases performed by the Customer are after accessing his customer account. This is not explicitly mentioned in the use case and hence not represented in the diagram.
- Since it is mentioned in the proposal that the product management request is sent by the local shop owner to the POG admin, the use case ‘Send Product Management Request’ is connected with a communication line to the local shop owner and the POG admin. The use case is assumed to be completed only when the Product Management Request reaches the POG admin.

New Use case: Submit Product Reviews (Actor: Customer)

Objective:

The 'Submit Product Reviews' use case allows any registered customer of the POG system to write and submit a review for a product listed on the application. Within this feature, customers can access the review form, rate the product, and provide their comments. Upon submission, the system conducts an automated review for compliance with content guidelines. Validated reviews are then published on the respective product page. This use case is independent of the customer's purchase history and does not interact with any order management functionalities. This use case is highlighted in a different colour in the diagram.

Q8 - Use Case Descriptions

From problem statement

Use Case	**Register Supplier Account**	
Goal	To allow suppliers to register and sell their produce through POGS by creating a POG Supplier account.	
Preconditions	- The supplier has decided to register with POGS to sell their products and has a valid Australian Business Number (ABN). - The POGS is accessible and operational.	
Success End Condition	The supplier is registered successfully and login credentials are generated.	
Failed End Condition	The supplier account registration is unsuccessful.	
Primary Actors; **Secondary Actors**	Supplier Government ABN Lookup Server	
Trigger	The supplier initiates the registration process by selecting the option for account registration.	
Description /Main Success Scenario	**Step**	**Action**
	1	The user accesses the POGS platform to create an account and complete registration.
	2	The user selects the option to ‘Register an Account’.
	3	The user is prompted to enter their personal and business details, including their ABN.
	4	Once all the details are entered, the user submits the form. The POGS validates the input data formats and their correctness.
	5	The POGS sends a request to the Government ABN Lookup Server to verify the ABN.
	6	The Government ABN Lookup Server responds with a verification acknowledgement.
	7	The POGS creates an account for the user and generates log-in credentials.

Alternative Flows	Step	Branching Action
	4.a	If the data entered by the user is invalid or incorrect, the system prompts the user to correct the information provided in the fields.
	4.b	The user corrects the details entered in the fields.
	4.c	The flow returns to step 4 and continues till step 7
	5.a	The system is unable to connect with the ABN server and displays an error message that ‘ABN server unavailable, Try again later’
	5.b	The system prompts the user to contact support for assistance if needed.
	5.c	Steps 6 to 7 are ignored.
	6.a	ABN Lookup server responds with an error message stating, invalid or incorrect ABN
	6. b	The system notifies the user about invalid or incorrect ABN and prompts them to try again after entering rechecking ABN.
	6.c	The user checks the ABN entered and attempts to resubmit the form.
	6.d	The flow returns to step 4 and continues till step 7
	7.a	The system is unable to create an account and generate log-in credentials
	7.b	The system notifies the user about the technical difficulties faced and prompts the user to try again later.

Newly added use case

Use Case	**Submit Product Reviews**	
Goal	Enable customers to submit reviews for any product listed in the POG system.	
Preconditions	The customer is registered and logged into the POG system.	
Success End Condition	The review is published with the product details.	
Failed End Condition	The customer is informed of the failure to publish the review.	
Primary Actors; **Secondary Actors**	Customer -	
Trigger	The customer chooses to provide feedback on a product by writing a review.	
Description/Main Success Scenario	**Step**	**Action**
	1	The user accesses the POGS platform and logs in to the system.
	2	The user searches to find the product they wish to review.
	3	The customer clicks on the “Write a Review” option in the product’s detail section.
	4	The system displays review guidelines to the user to ensure quality reviews.
	5	The customer fills in all the fields in the review form, including rating and text feedback.
	6	The customer submits the review for system validation and processing.
	7	The system performs an automated check for the review submitted.
	8	The system confirms the review submission to be valid to the customer.
	9	The review is published along with the product details.

Alternative Flows	Step	Branching Action
	5.a	The system notifies the customer that all fields are not filled in and it must be completed for submission.
	5.b	The customer checks and fills in all the required information and attempts to submit the review.
	5.c	The flow returns to step 6 and continues till step 9
	6.a	The system notifies the customer of the technical error during submission.
	6.b	The customer is prompted to attempt submission later.
	6.c	Steps 7 to 9 are ignored.
	7.a	The system notifies the customer of the specific guideline violation in the review submitted.
	7.b	The customer is prompted to edit and resubmit the review.
	7.c	The flow returns to step 6 and continues till step 9
	9.a	The review publishing was not completed successfully due to a technical error.
	9.b	The customer is notified to attempt submission later.

References

Abdullah, A. (2017) ‘Advanced Encryption Standard (AES) Algorithm to Encrypt and Decrypt Data’.

Parmar, H. and Gonsai, A. (2015) ‘Analysis and Study of Network Security at Transport Layer’, International Journal of Computer Applications, 121, pp. 35–40. Available at: https://doi.org/10.5120/21604-4716.