Software Engineering Project

Shopping Guide Application

College Of Computer Science and Engineering, University of Jeddah

CCSW 223: Principles of Software Engineering

Class: (10763) YAL

Dr. Omniya

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Introduction

Many people around the world defer going to malls for a number of reasons, the most important of which is not knowing whether a particular store is open or closed and customers may have difficulty finding stores.

 To facilitate access to stores, we have developed an app based on coverage of all shopping malls and malls. The app as a shopping guide will be a comprehensive guide that every shopper needs to access what they are looking for to buy easily and quickly and get a full view of the mall without having to resort to specialized apps for stores. The app contains offers and discounts that each store or trading company has within the mall and provides users with knowledge of all stores, products and goods in the mall.

So the main goal of our app is that the developer makes it easier for users to shop and it surrounds users with knowledge of all the shops, restaurants and cafes in the mall. It also focuses on helping customers learn about sale offers and sending them notifications to renew offers in stores.

Lab 1

Description of Application

An application based on covering all shopping centers and commercial malls. Indeed, the Shopping guide application is a comprehensive guide that every shopper needs to reach what he is looking to buy easily and quickly and have a full insight of the mall without the need to resort to specialized applications for stores.

Lab 2

Interviews

First interview by (Shahd Ali Alshikhi 2111228)

a) Interviewee information

Name: Maram Almalki
Job title: Customer support
Email: malmal2@hotmail.com
Interview date: 27 Dec 2022

b) Questions

1) *What do you think of the application?*
As a customer supporter working in the mall, I've faced multiple issues with customers. As mall is large marketing place customers most of the time are not aware of the events and sales that the mall provides, they often ask for a news coverage about that. Due to the large number of customers most of the time the customers with critical problems such as lost personal item or lost credit card, and such don't get the time to report for the line is busy serving others. Having an application that covers their questions would serves us and the customers more affectively.

2) *What service do you wish the system would provide?*
I would like the application to maintain and demonstrate most customers question such as events mall holds and provide ability for other customers to share their reviews.

3) *How will the application affect Customer support and customers?*
I believe it would decrease the pressure on customer service line additional to serve the customers more affectively and provide efficiency to the malls administration.

c) Analysis

After listening to Maram thoughts, I've noticed the importance of serving customers and meet their needs in short amount of time and with one click would rapidly change the quality of serving the customers. The problem of achieving high standers customer service is not easy to maintain all the time. An application is needed to help solve the problem. Additionally, the application should provide an additional service that Maram liked ability to view other customers reviews. Not to mention that notifications are needed.

Second interview by (Shahad Ahmed Alqarni 2111214)

a) Interviewee information

Name: Ibtehaj Alqarni
Job title: Employee in a perfume shop
Email: Ibtehaj.77@gmail.com
Interview date: 26/12/2022

b) Questions

1) *What problems do you face in the absence of this application?*
   Some visitors have a short time shopping, so I can't explain the products and the latest offers and discounts enough to convince them to buy. In addition to the difficulty of responding to customer inquiries through the phone number due to the large number of contacts.

2) *How can this application serve you as an employee inside the mall?*
   It helps me as an employee to easily respond to customer inquiries through the application and benefit from visitors' opinions and evaluation for the development of our products, and one of the most important features that attracted me is that the visitor comes and has a background on the products and offers without the need to tell him about it.

3) *What are the improvements that can be added to the application to make it more effective?*
   It is better to add a map of the mall inside the application to help visitors reach the desired store without asking an employee and disrupting him from his work.

c) Analysis

After the interview, it became clear that there are problems facing the employees, the most important of which is the lack of time for the visitors to explain the products and offers to them, which reduces the profit. Thus, the application helps them solve these problems by having a prior background among visitors about the store and knowing their impressions.

Third interview by (Elaf Almalki 2111732)

a) Interviewee information

Name: Noura Aljabri
Job title: Customer
Phone:0561336611
Interview date: 29 Dec 2022

b) Questions

1) *What are the problems that you may encounter while shopping?*
   Sometimes I may want to try on clothes before I leave the mall, but I may not know where the fitting rooms are, or it may take a long time to find them. Also, if I want to go to a specific restaurant or shop it will take a long time to find it and it's a waste of time. Or maybe I want to buy from a certain store, but after I get to the mall, I find that store is not in that mall

2) *What services can be added to solve these problems?*
   I suggest adding the locations of all the stores in the mall, as well as the mosque and fitting rooms, to make it easier for customers to access them

3) *How will the application affect the usual shopping process?*
   The application is very useful and will definitely make your shopping process more fun, easier and faster

c) Analysis

After the interview with Noura, I found that she liked the application because it would solve many problems that make the shopping process difficult, and she suggested adding locations for each store in the mall, and this is in addition to many features in the application that facilitate and speed up the shopping process and thus save a lot of time and effort for customers

Fourth interview by (Atheer Alotaibi 2111266)

a) Interviewee information

Name: Sara Ahmad
Job title: Customer
Email: Sara23@gmail.com
Interview date: 28 Dec 2022

b) Questions

1) *what are the most prominent features that you seek to obtain as a customer?*
The most prominent features that I seek is the application that displays the centers and malls through a list arranged by name, or category, and the best offers and discounts, which facilitates the shopping process quickly and it saves the trouble of searching or aid in reaching the center or mall, and famous stores.

2) *Do you recommend the rest of the customer to use our application?*
Yes, with pleasure, because it saves time and effort by searching for the stores available in the mall, and because it is a comprehensive and integrated shopping application, as it covers everything that comes to my mind, and shopping in it has become more enjoyable for me.

3) *Was it easy to find what you were looking for in our app after hearing about our app idea?*
Yes, because I can see other people's evaluations of shops and malls and their impressions of them, and I can also record my evaluation while shopping, provide tips and notes to others, and get the most accurate details and information about malls and malls and their restaurants, places of entertainment and entertainment for me and the family, and save me the hardship of going to the mall and being surprised the store is closed. I can see when the store opens and get what I want in record time and make my life easier for me.

c) Analysis

After the interview, it become clear that the customer are happy with the features that make his life faster and easier, I see that we are in a time of speed and technology, so that the Shopping guide application saves him the hardship of the road and obtaining the service that satisfies him, such as adding features to the application such as notifications when he gets offers in his favorite store.

Fifth interview by (Jana Samir 2111825)

a) Interviewee information

Name: Layan Mohammed
Job title: Customer
Email: Layann990@gmail.com
Interview date: 29 Dec 2022

b) Questions

1) *What do you think of the idea of the application?*

I liked the idea of the application. I think it's a very useful app that saves us time and effort, I also liked it allows us to know all the services that will be available in the mall in the future, and I think it will make it easier for customers a lot.

2) *What are the suggestions that can be added to the application from your point of view?*

I suggest that the application include information that clearly describes the store's location through the nearest gates of each store, and that services are constantly updated, and seasonal discounts are displayed.

3) *What are the features that you like the most as a customer?*

The most admired thing is that it encompasses all the interests of people from shops, cafes, restaurants, events, amusement parks and cinemas.

c) Analysis

After the interview, Layan was very welcoming and impressed with the idea of the application because it saves her time and effort and makes her look forward to the latest news of her favorite stores and announce the discounts that always exist. Layan also praised that she wants to accurately describe the location of the stores depending on the nearest portal to the store.

Lab 3

The purpose of the project

a) **The User Business or Background of the Project Effort**

- *Content*

    Shopping guide is a comprehensive integrated shopping app that represents one gateway to access many commercial markets. It provides users the knowledge of all stores, products, and goods in the mall. Also, the app contains offers and discounts that each store holds or trading company within the mall.

- *Motivation*

    Developing an application that is a guide to shopping inside commercial centers and large malls.

- *Considerations*

    To take tour within one of the city's malls it requires a lot of effort as well as a lot of time to find store or product customers are looking for. Additionally, there is no guarantee that customers may find what they are looking for or what they want to buy. However, with technology intervention and using the Mall guide app to take tours remotely through devices before going to the mall will make shopping easier and faster.

b) **Goals of the Project**
- The main goal is for the user to obtain the most accurate details and information about the malls and their restaurants, entertainment places, and working hours for each of them.
- Reduce the trouble of searching for access to the mall, and the famous shops inside it.
- Know the offers and discounts offered by each store inside the mall.
- Developing the mall through officials by reading the reviews of visitors and solving the problems they encountered during their visit to give them a better visit in the future.

Preliminary report

1) **The problem:**

There are a lot of shopping applications on smart phone application stores, but often if you need to buy several products from different exhibitions, you need several applications for each exhibition if it exists.

2) **Findings:**
   - Difficulty communicating with customer service.
   - Not knowing the exact locations of the stores inside the mall, thus wasting time and effort
   - Not knowing the stores inside the mall
   - Not knowing the discounts and offers available o Not knowing the times Opening and closing store.

3) **Recommendation or proposed solution:**
   - Using modern technology in our app to reduce the time and effort on users to make their life easier and faster by reaching the stores they want to go to.
   - Make it easier for users to see the stores they want to go to if they are open or closed.
   - Our application provides opportunities to view the list of shops and stores according to several factors, such as alphabetical sequence, evaluation, classification, or user selection. There is a tab for restaurants and cafes to facilitate browsing away from stores, and there is a tab for entertainment as well.

4) **Cost & schedule estimates:**

Phase	Description	Cost	Time
Specification	Customer and engineer define the app and set constrains	10.000 RS	7 days
Development	Design and program the app	20.000 RS	14 days
Validation	Check the app to ensure it meets the customer requirements	5000 RS	5 days
Evolution	Modify app to meet customer and market changing requirement	15.000	10 days
Total		50.000	Month and 6 days

Lab 4

1) Problem Definition

There are a lot of shopping applications on smart phone application stores, but often if you need to buy several products from different exhibitions, you need several applications for each exhibition if it exists.

2) Scope Objectives of "new system"

Developing an application that is a guide to shopping inside commercial centers and large malls to make shopping easier and faster.

3) Alternative Solutions

- Replace the app with the website instead.
- Replacing the map in the application with a link embedded in the name of the mall that opens Google Map to the location to be obtained

- Placing electronic screens displaying the mall map inside the mall

4) Cost and benefits of Alternatives

Phase	Description	Cost	Time
Specification	Customer and engineer define the app and set constrains	10.000 RS	7 days
Development	Design and program the app	15.000 RS	14 days
Validation	Check the app to ensure it meets the customer requirements	5000 RS	5 days
Evolution	Modify app to meet customer and market changing requirement	10.000	10 days
Total		40.000	Month and 6 days

Benefits
- Reduce time and effort consumed.
- Quick and easy access to detailed mall information .
- Knowledge of the place remotely.
- Simplicity of locate mall.
- Improve customer service and support.

5) Software impacts:
- Support for all languages in the application so that tourists can also benefit from it easier.
- The application continues to work even when the internet is out.
- Add a map of the store inside the application.

6) Potential Changes in the Organization:

- The application will help customers to get the most accurate details and information about shopping centers, so it will save their time, effort, and the trouble of searching, as the application provides them with a shopping guide to get the service that satisfies them.

- It will also reduce the pressure on the employees inside the mall through the application, They can easily respond to customer inquiries and there's also a page for frequently asked questions or the FAQ page about viewing and answering the most frequently asked questions.

7) Recommended Alternative of the course of Action:

Replace the app with the website instead.

8) Plan of project:
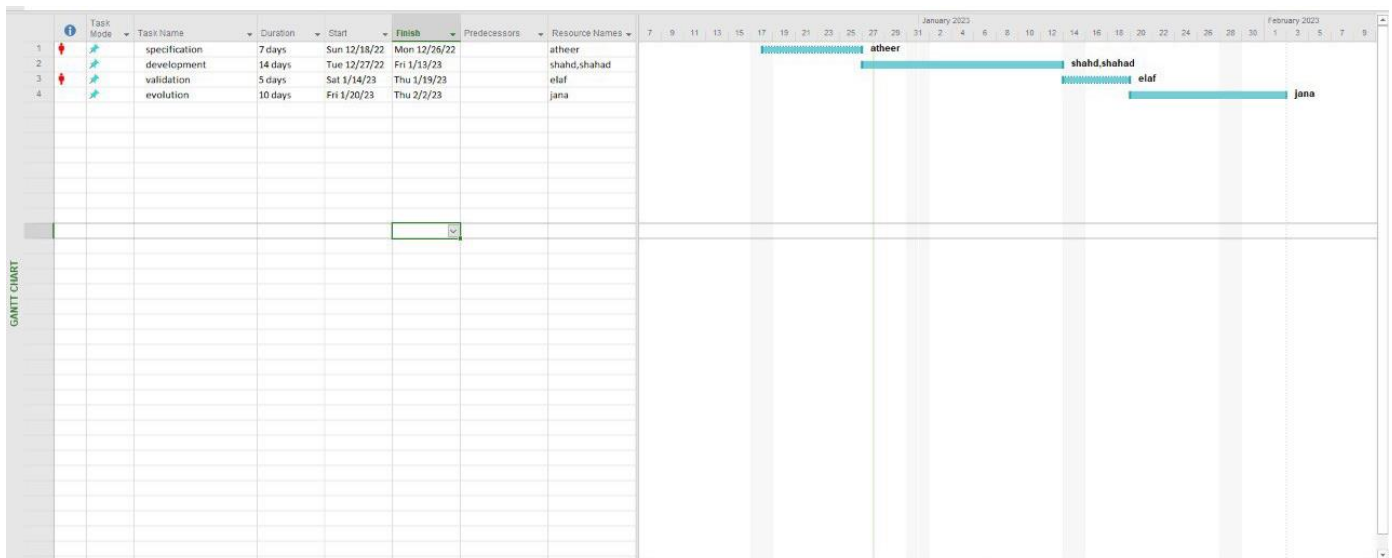
Lab 5

Stockholder definition

a) **Client**

Shopping center or malls, which are designed to serve a community or neighborhood.

b) **Customer**

Shoppers inside the mall.

c) **Other stockholder**

- The employees
- Administrators
- Ministry of Commerce
- Security officers and guards

Scope

a) Current situation

- **Content**

Nowadays, people go to shopping centers without a guide to the mall, which may lead to them not knowing the stores in the mall or the working hours of some stores or locations of some stores or the location of the mosque or fitting room, which leads to wasting time and effort to find them.

- **Motivation**

Developing an application (Shopping Guide) that would solve the problem of wasting time in malls by providing an accurate description of the location of each store inside the mall, thus facilitating the shopping process and saving a lot of time and effort for customers.

b) Context of the work

- **Content**

We see that the shopping guide has achieved all the required goals and reached to a point of making shopping easier in all aspects. Also, is compatible with the work plan so that it is completed in a timely and efficient manner.

- **Motivation**

We can make the program limited to Jeddah mall at first until it is fully implemented.

Context diagram

Business event list

Event Name	Input and Output	Summary
1. System configuration data	System configuration data (in)	Administrators configure system data for Application
2. Update stock	Update stock (in)	Warehouse management provides update stock for stores
3. Add/modify items	Add/modify items (in)	Warehouse management add/modify items to the stores
4. Sales announce	Sales announce (in)	Sale management produces sales announce to the stores
5. Customer registration	Registration (in)	The customer registers in the application
6. Search store	Search store (in)	The customer search for store from the application
7. Ask store location	Ask store location (in)	The customer asks for store's locations from the application
8. Give review	Give review (in)	The customer give review about the stores in the application
9. Show reviews	Show reviews (out)	The customer gets the review of other customers in the application
10. Store location	Store sales (out)	The customer gets store's locations from the application
11. Store sales	Store sales (out)	The customer gets store's sales from the application

Lab 6

Functional Requirements:

ID	Requirement Definition
FR1	User account
FR1.1	The system shall enable a user to create an account and login the system by entering supposed username and password.
FR2	Announce discount
FR2.1	The system shall enable a user to know the discounts.
FR3	Select mall center
FR3.1	The system shall enable a user to choose a mall from the available ones.
FR4	Search service
FR4.1	The system shall enable a user to search for store or restaurant or product.
FR5	Lookup mall map
FR5.1	Displaying the mall map that shows stores, restaurant, cafes, restroom places.
FR6	Show reviews
FR6.1	The system shall enable a customer to get the review of other customers and place their opinions.
FR7	Evaluate the services
FR7.1	The user can evaluate the service they receive.
FR8	Notification
FR8.1	The user can get notified when stores provide discounts and offers and events mall may accommodate.
FR9	Working hours
FR9.1	The user can show mall, stores, restaurant, cafe working hours.
FR10	Configure data
FR10.1	The administrator collects and configure data of system.

Non-Functional Requirements:

▪ **User Interface**

UI1: the system must deliver specific functionalities in the user interface.

UI2: The system shall provide the user interface in an understandable way.

UI2.1: The user interface shall be as GUI.

▪ **Hardware Interface**

HI1: The system shall support all operating systems such as IOS, Android

▪ **Software Interface**

SI1: The system developer shall interact with the programming language used in the system and choose the appropriate programming language to allow the developer to modify the interfaces and add images.

▪ **Security Requirements**

SE1: The system shall provide a log in page.

SE2: Only the services that the user has authorized to access will be available to them by the application.

SE2.1: Only authorized users shall be able to delete, edit, and confirm in the system.

▪ **Help System**

HS1: The system shall provide a malfunction alert.

HS2: The system shall Accepting and resolving user complaints.

Lab 7

Use case diagram
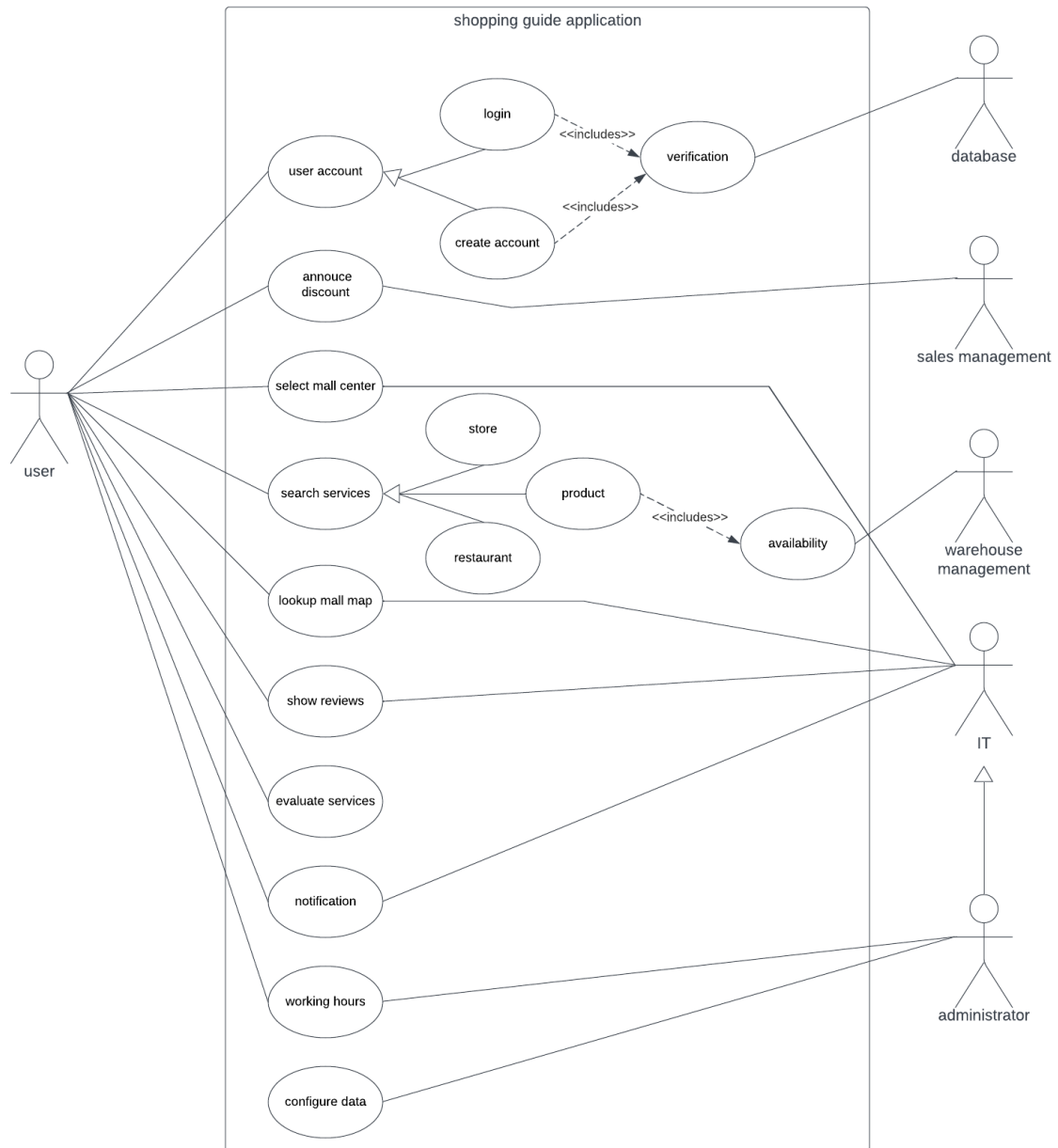
UC1: User Account

Scope: database.

Level: primitive.

Primary Actor: user.

Precondition: User have valid account.

Stakeholders and Interests:

Users.

database.

Scenario UC1:

1-User have an account by creating one.

2-After users account exists in database.

3-They will have the ability to login to the account at any time.

4-They will gain ability to access application and perform activity.

UC2: Sales management release discount announces.

Scope: Sales management.

Level: Sales management announce discount stores and restaurant holds to users.

Primary Actor: User.

Precondition: Authorized access to application and registered users.

Stakeholders and Interests:

Users.

Sales management.

Warehouse management.

Scenario UC2:

1-Sales management require authorized access.

2-After having the authorization.

3-Management will gain ability to announce discounts.

4-Users will be able to receive notification and search discounts.

UC3: Users select mall center from application.

Scope: IT person.

Level: Take user selection and provide services upon the selection.

Primary Actor: User.

Precondition: Account access.

Stakeholders and Interests:

Users.

IT person.

Administration.

Scenario UC3:

1-Users accessed account.

2-They select the mall they question about.

3-The application will provide different services concerning the mall selected.

UC4: Search services

Scope: warehouse management.

Level: Take user selection or input and provide services upon the selection.

Primary Actor: user.

Precondition: The product you are searching for is available.

Stakeholders and Interests:

Users.

warehouse management.

Scenario UC4:

1-User access to account.

2-They select what they search for and enter the name of store, restaurant, or product.

3-the application will provide the searched element.

UC5: Lookup mall map

Scope: IT person.

Level: Take user selection and provide Map upon the selection.

Primary Actor: user.

Precondition: Account access.

Stakeholders and Interests:

Users.

IT person.

Scenario UC5:

1- User access to account.

2- They select the map after accessing the specified mall.

3- The application provides the map of stores, restaurants, cafes, and restroom inside the mall.

UC6: Show reviews.

Scope: IT person.

Level: The customer can see the other customer review and place their review.

Primary Actor: user.

Precondition: Account access.

Stakeholders and Interests:

Users.

IT person.

Scenario UC6:

1-User access to account.

2- The user selects review service.

3-access to the reviews page for stores, restaurants, cafes, and the mall as whole.

UC7: User evaluate the services.

Scope: User.

Level: Taking the user's opinion about services.

Primary Actor: User.

Precondition: Account access and after user finish shopping.

Stakeholders and Interests:

Users.

Sales management.

Warehouse management.

Administrator.

Scenario UC7:

1- After user finish shopping evaluate the services.

2-All Stakeholders receive the evaluates.

UC8: IT send notification to users.

Scope: IT person.

Level: Notify the user of all new.

Primary Actor: User.

Precondition: Account access and active the notification feature.

Stakeholders and Interests:

Users.

Scenario UC8:

1- User accessed account and active notification feature.

2- IT send notification.

3- User received notification.

UC9: Administrator provide working hours to users.

Scope: Administrator.

Level: Take working hours of malls and inform the users.

Primary Actor: User.

Precondition: Account access.

Stakeholders and Interests:

Users.

Scenario UC9:

1- Administrator provide working hours for each mall.

2- Account access by the user.

3- Show all working hours for the user.

UC10: Administrator configure data.

Scope: Administrator.

Level: primitive.

Primary Actor: Administrator.

Precondition: After evaluating idea and collecting the services it provides.

Stakeholders and Interests:

Users.

Sales management.

Warehouse management.

Scenario UC10:

1- Administrator evaluate application idea.

2- Administrator start execution and configure data.

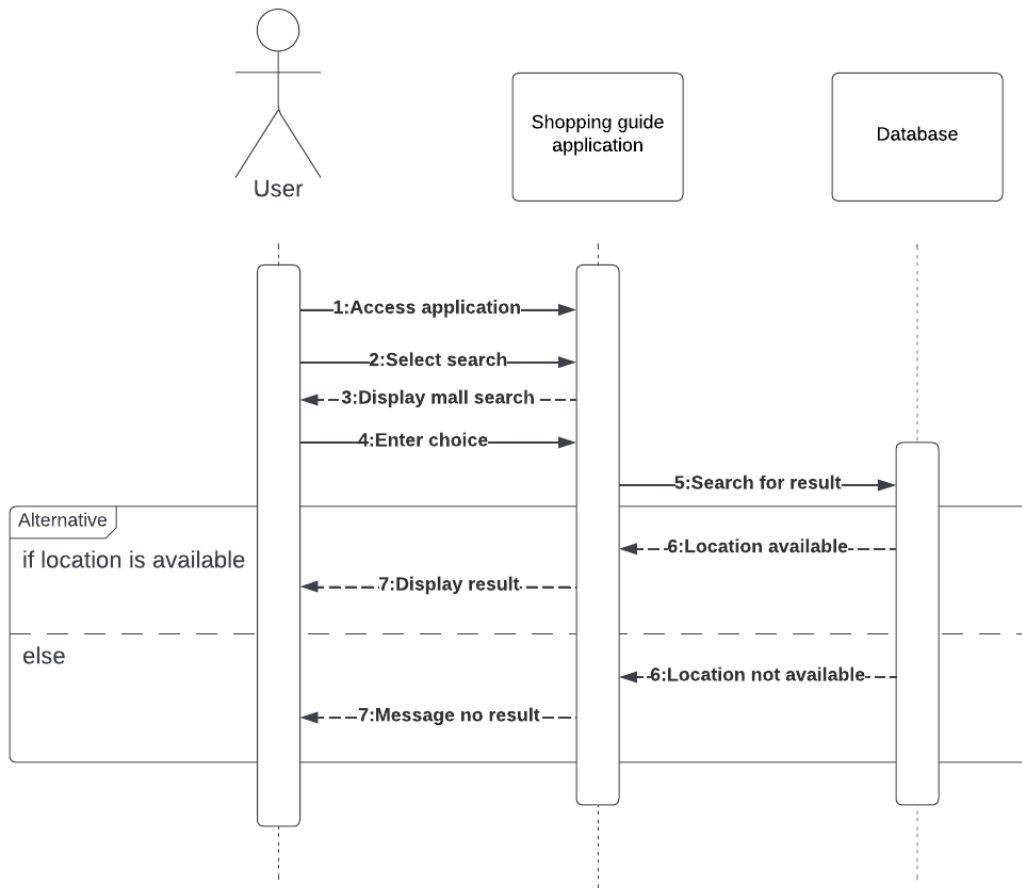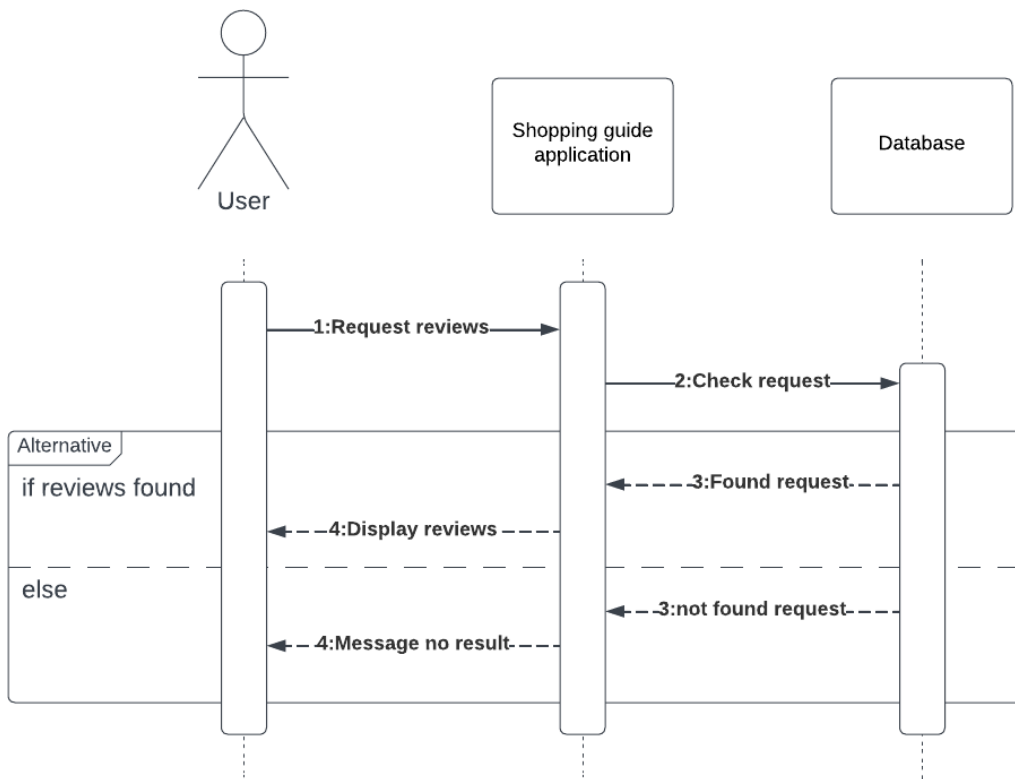3- Application is ready to use.

Lab 8

Sequence 1: Announce discounts
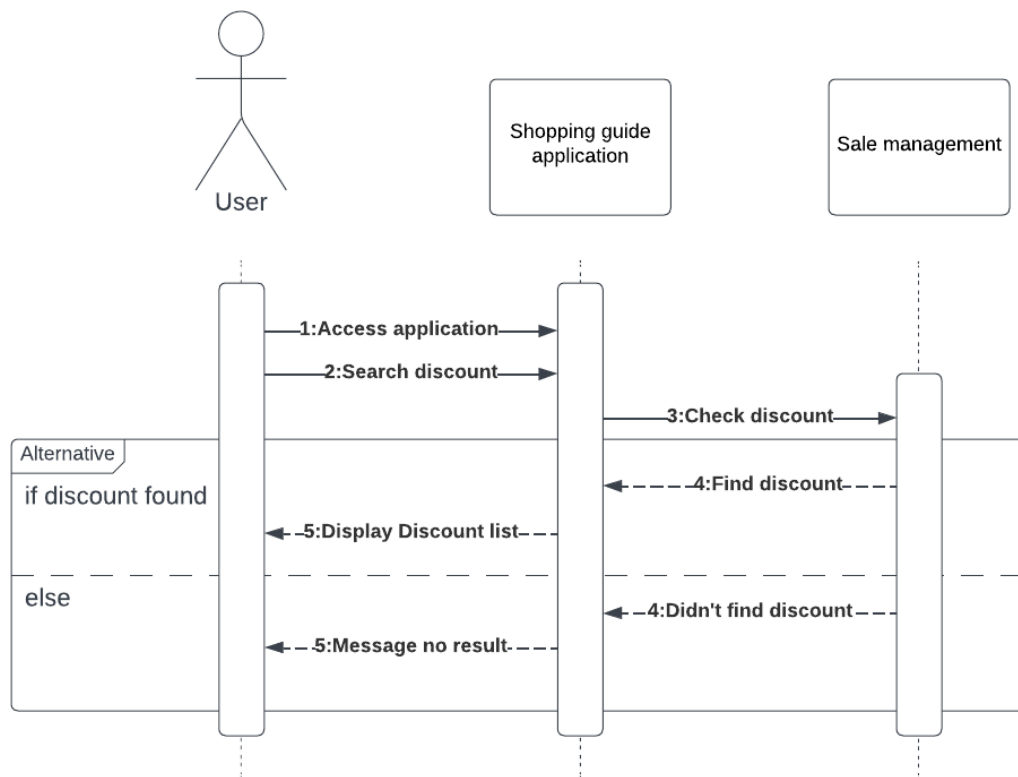
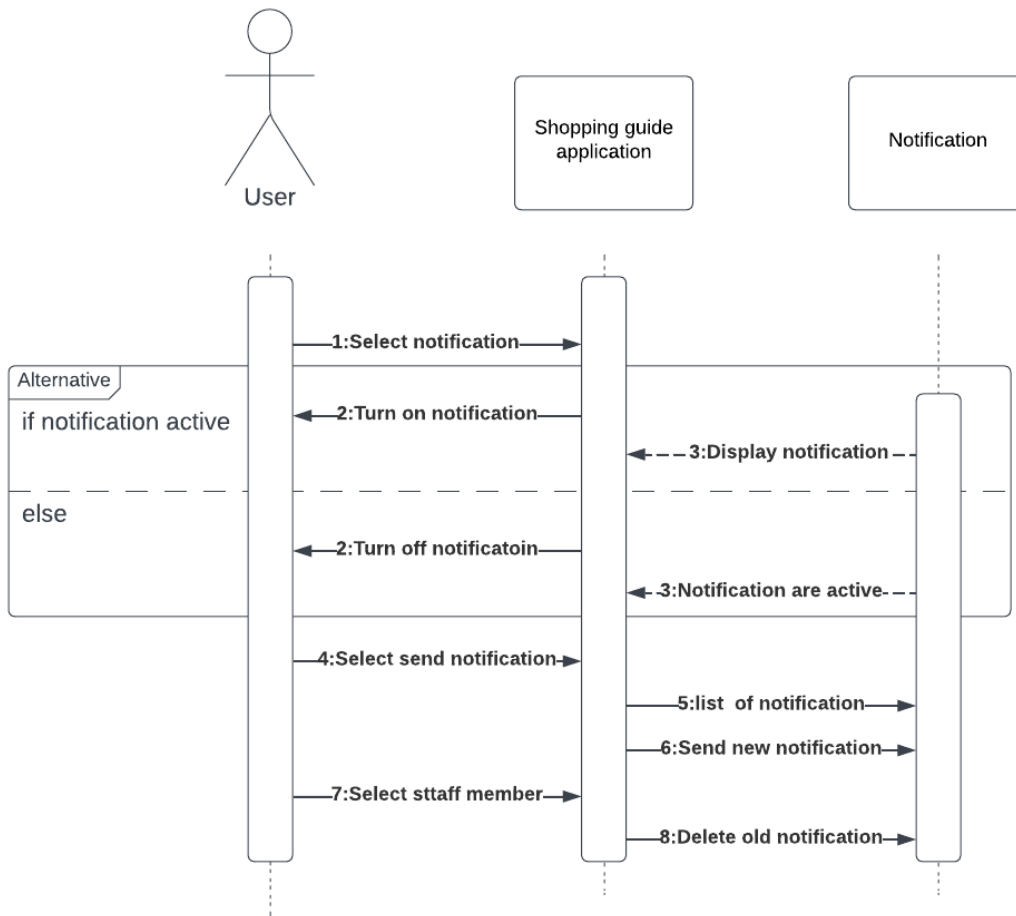**Sequence 2: Search services**
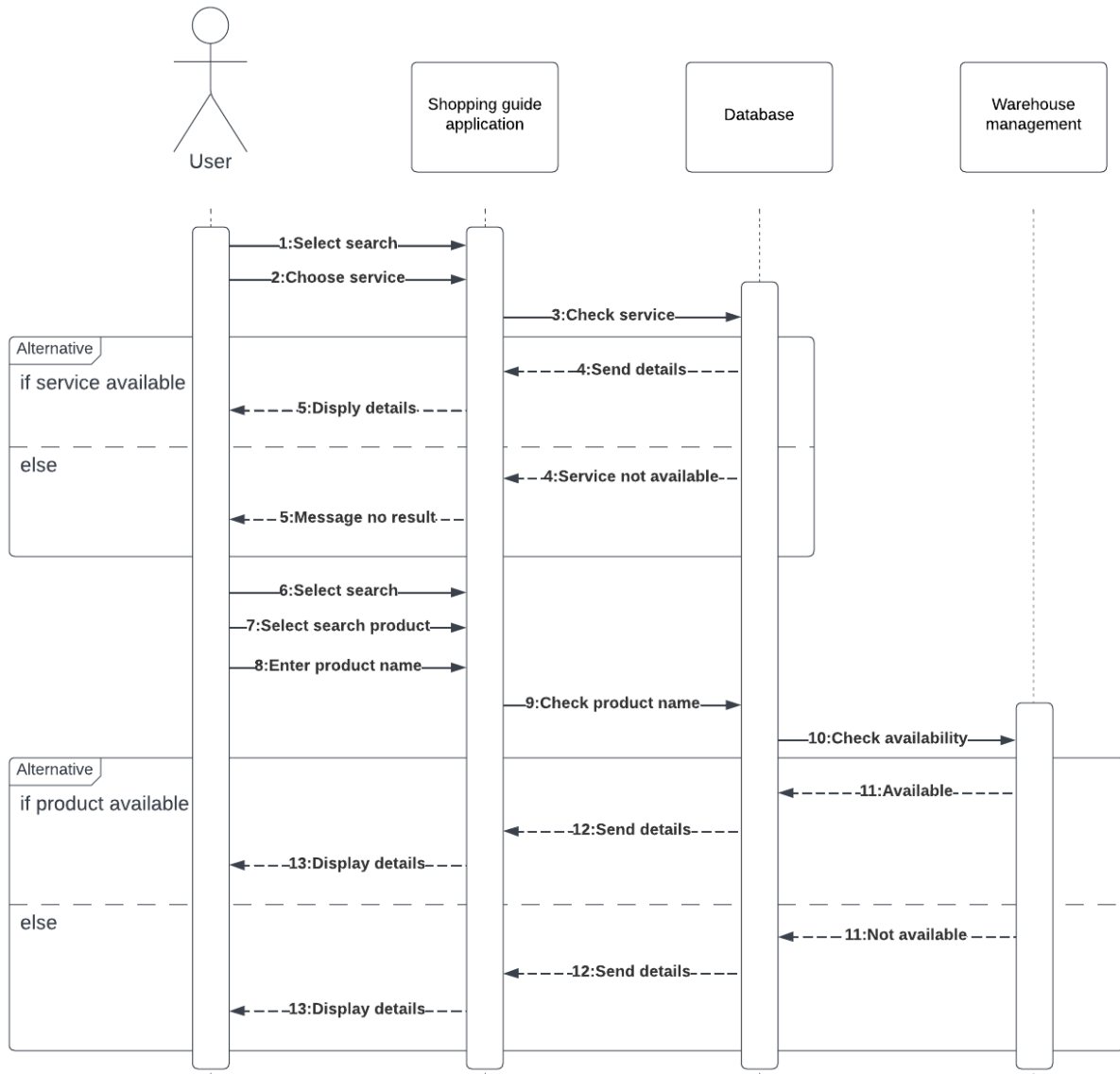
Sequence 3: Lookup mall map

Sequence 4: Show reviews.

Sequence 5: Notification

Lab 9

Class diagram
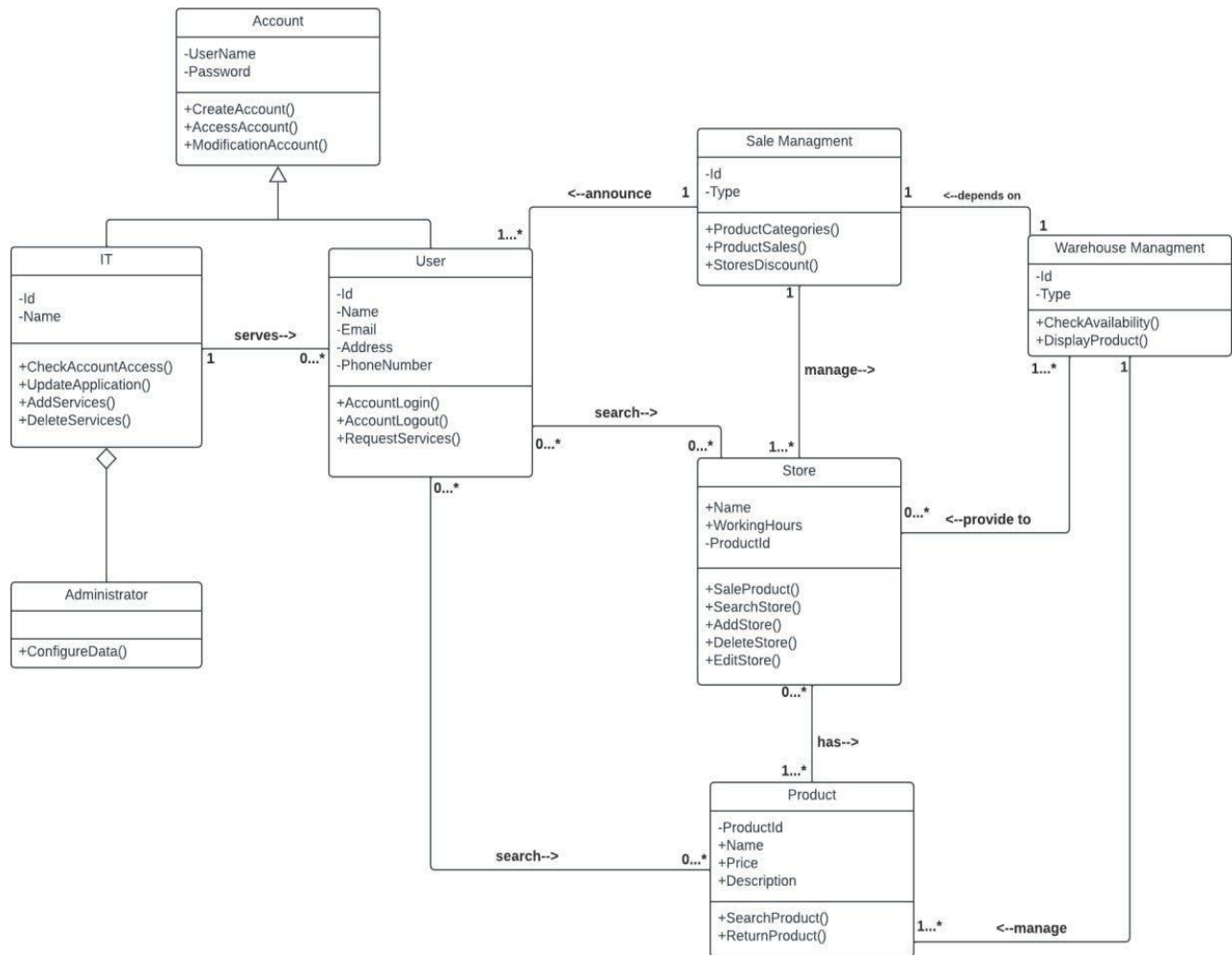
Description

Class name	Description
Account	The account has 3 basic operations, such as account creation, access, and modification. It provides different and special operations for each of the user and IT.
IT	IT provides services to one or more users, such as checking account access, updating the application, and adding many services that facilitate the user's work.
User	The user can perform several operations, such as account login and logout, requesting services from IT such as searching for stores or products, and informing him of the available discounts through the sales management.
Administrator	Administrator is responsible of configure data of application, in addition he aggregate of IT operations.
Sale management	The sales department manages stores by classifying products, as well as announcing discounts to users.
Warehouse management	Warehouse management manages many products and provides them to stores depending on the percentage of sales, constantly checking the products available in stores and presenting them to the user.
Product	Products the user can search for and provide information about them such as price and description.
Store	The store has one or more products, the user can search for the store, its working hours and the products available in it. The application provides the ability to add, delete and modify stores through IT.

Conclusion

In the end, I hope that the application has reached all categories of users who need speed to access services in our time and meet their needs, provide discounts, get an alert when they get a discount on their favorite store, access the mall, see the stores available in that mall, and help them when they Found an error through live chat.

Suggestion

- Providing devices in malls to review available stores.
- The presence of notification in the application when discounts and offers.
- a live chat assistant to talk to when they need help with something specific.
- Provides an application that helps them find all the malls and review the stores available in them.

Tasks table

	Name	ID	
1	Shahd Alshikhi (Leader)	2111228	▪ Interview ▪ Cost & schedule estimates ▪ Cost and benefits of Alternatives ▪ Context diagram ▪ Functional requirements ▪ 2 Use case ▪ Search services sequence ▪ Classes
2	Shahad Alqarni	2111214	▪ Interview ▪ Goals ▪ Software impacts, Scope Objectives ▪ Business event list ▪ Non-functional requirements ▪ 2 Use case ▪ Announce discounts sequence ▪ Drowning, Description
3	Jana Samir	2111825	▪ Interview ▪ User Business ▪ Potential Changes in the Organization ▪ Stockholder definition ▪ Non-functional requirements ▪ 2 Use case ▪ Notifications sequence ▪ Classes
4	Atheer Alotaibi	2111266	▪ Interview ▪ Proposed solution ▪ Problem Definition ▪ Scope current situation ▪ Functional requirements ▪ 2 Use case ▪ Show reviews sequence ▪ Classes relationships
5	Elaf Almalki	2111732	▪ Interview ▪ Problem ▪ Alternative Solutions ▪ Scope the context of the work ▪ Functional requirements ▪ 2 Use case ▪ Lookup mall map sequence ▪ Classes relationships