UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

COS 301 - Indoor Mall Navigation SRS document

Brute Force

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NAMES:	STUDENT NUMBER:
Thomas Honiball	15348751
Thabo Ntsoane	15107532
Mpho Mashaba	14309999
Munyadziwa Tshisimba	11034531
Bandile Dlamini	14402425

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1 Introduction

The scope of the project is to create a fully interactive mall guide of sorts which will allow users to easily find shops as well as act as a shopping companion, providing a list of available specials within a store based on location as well as allowing users to add items to a shopping cart to purchase and have delivered later. This system also aims to replace electronic maps using augmented reality to guide users to a selected store.

2 Glossary

Abbreviation	**Description**
AR	Augmented Reality
IoT	Internet Of Things
API	Application Program Interface
AOA	Angle of arrival
TOA	Time of arrival
QR	Quality Requirements

3 Domain Model

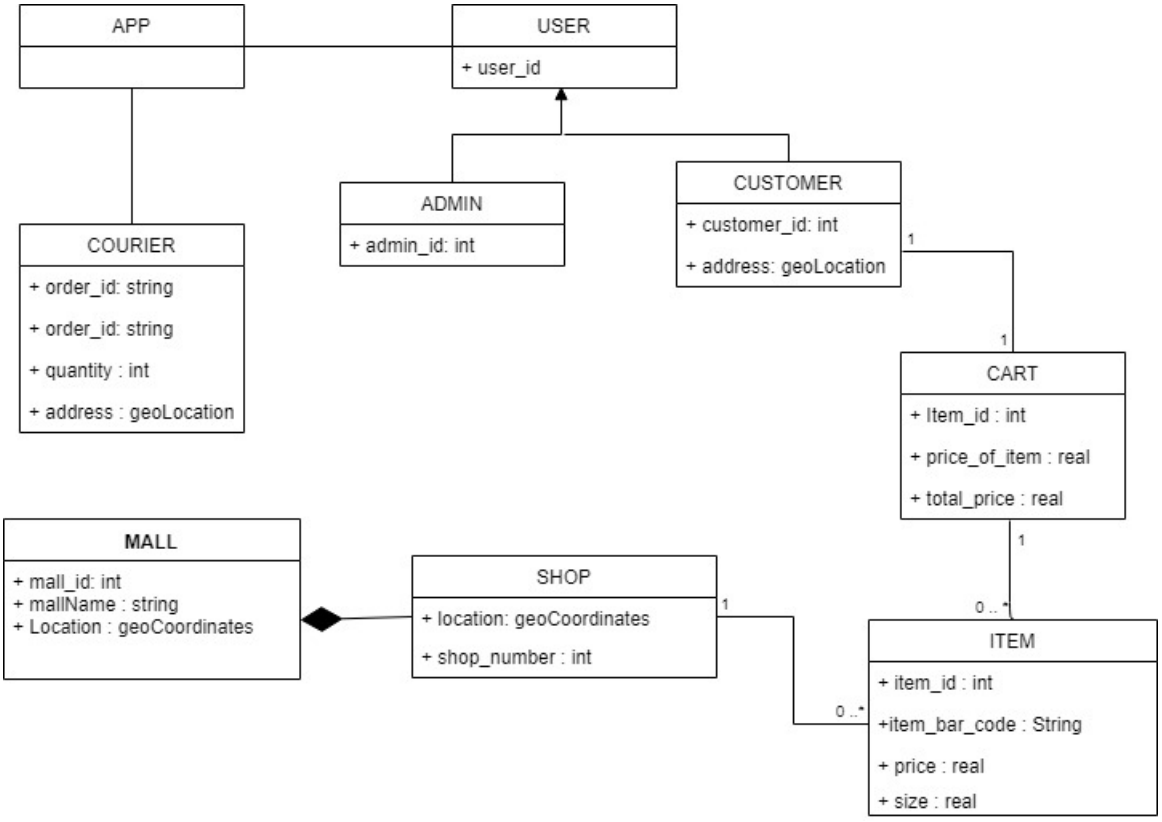

Figure 1: Domain Model.

4 User characteristics

4.1 Customer

This User will interact with the system in order to find a specific shop in a specific mall. The user will be navigated to the specific shop by use of AR. Depending on where the user is in the mall, items on special will be pushed onto the interface for them to see.

4.2 Maintenance

This User will update and maintain the system. If there are any shops being moved/renovated or the mall is being extended, this user will make sure that the system is up to date.

4.3 Delivery Personnel

This user will interact with the system in order to get the customer order from the shop and deliver it to the given location. This user will use the Google map feature integrated in our system to find the shortest route to the customers location.

5 Functional Requirements

5.1 Use cases

UC 1 Create Account
- UC 1.1 create an account upon purchase or when adding an item to the wish list

UC 2 Customer Login
- UC2.1. Registered users log in using their email and password.

UC 3 Navigate
- UC 3.1. Navigate to chosen shop
- UC 3.2. View current location
- UC 3.3. Search for Restrooms.
- UC 3.3. Find shortest path

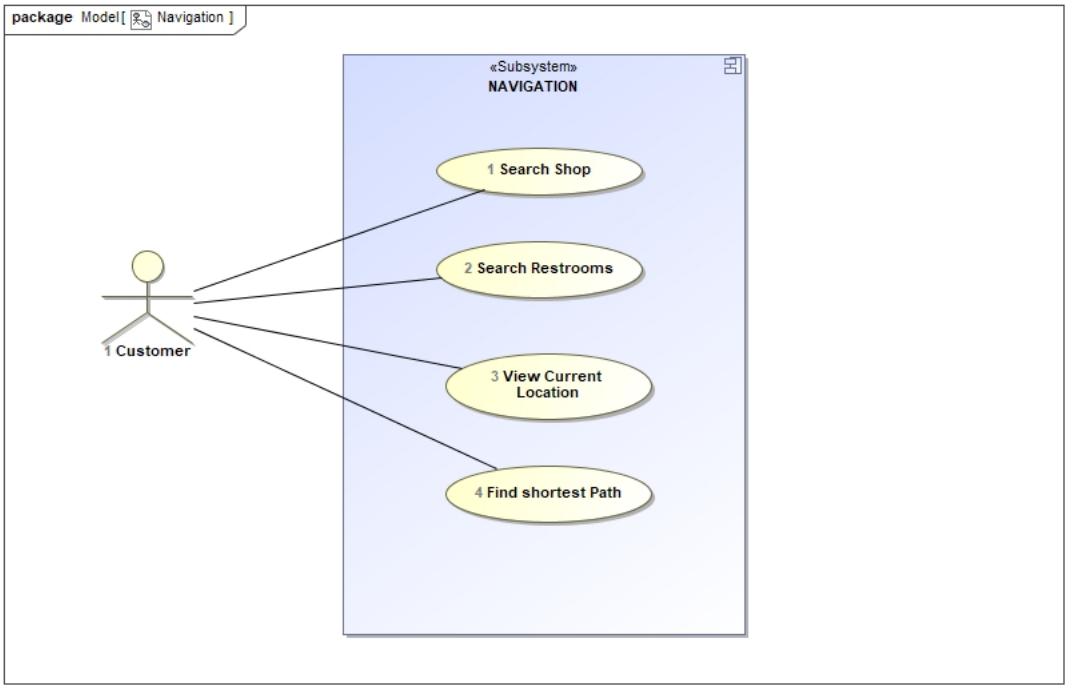

Figure 2: Navigation Use Case.

UC 4 Scan Barcode

- UC 4.1. Read product name and price from barcode
- UC 4.2. Add item to wishlist
- UC 4.3. Add item to cart

UC 5 Scan QRcode

- UC 5.1. Read product name and price from QRcode
- UC 5.2. Add item to wishlist
- UC 5.3. Add item to cart

UC 6 Customer Cart

- UC 6.1. add an item to cart.
- UC 6.2. remove an item from the cart.
- UC 6.3. checkout
- UC 6.3. Payment

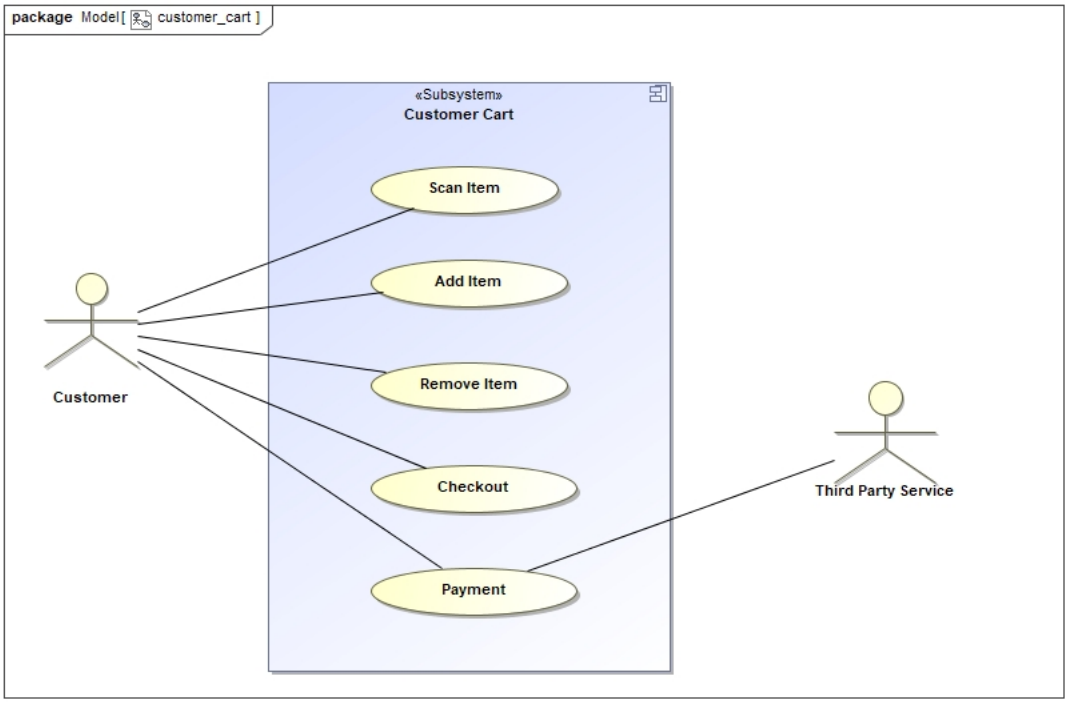

Figure 3: Customer Cart Use Case.

UC 7 Customer Wishlist

- UC 7.1. add an item to wishlist.
- UC 7.2. remove an item from the wishlist.
- UC 7.3. empty the wishlist.

UC 7.4. move an item from wishlist to cart

UC 8 Delivery

UC 8.1. accept order.
UC 8.2. check delivery status.
UC 8.3. select preferred time range.
UC 8.4. payment

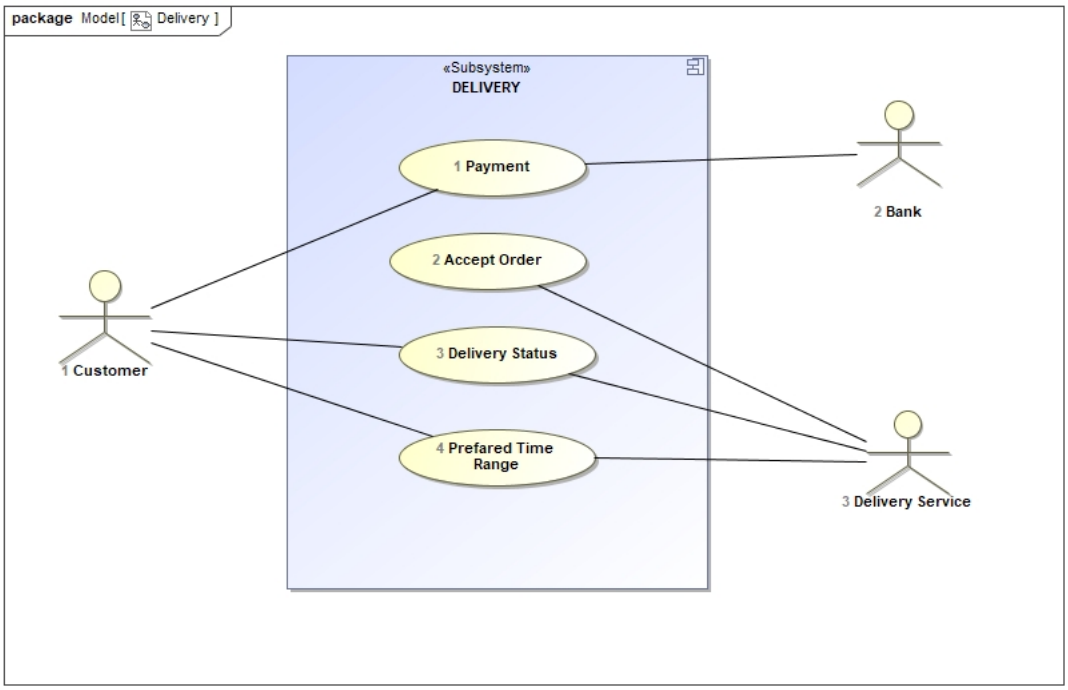

Figure 4: Delivery Use Case.

UC 9 Main

5.2 Requirements

R1. A User should be able to navigate to a desired store

R2. A User should be able to register on the system by creating an account

R3. A User should be able to log in once registered to view their profile and utilize other functionality.

R4. A User should be able to view their current location and navigate to a desired location.

R4.1. User should be able to search for a store in the mall and receive the shortest path according to their location
R4.2. User should be able to search for the nearest restrooms according to their location

R5. A User should be able to scan the barcode of a product
R5.1. User should be able to view the product name and price
R5.2. User should be able to add a product to wishlist after scanning barcode
R5.3. User should be able to add a product to cart after scanning barcode

R6. A User should be able to scan the QRcode of a product
R6.1. User should be able to view the product name and price
R6.2. User should be able to add a product to wishlist after scanning barcode
R6.3. User should be able to add a product to cart after scanning QRcode

R7. A User should be able to interact with their shopping cart
R7.1. User should be able to add an item from a particular store
to their shopping cart
R7.2. User should be able to remove an item from a particular store in their shopping cart or clear the entire cart
R7.3. User should be able to edit item specifications from a particular store in their shopping cart
R7.4. User should be able to checkout from the cart

R8. A User should be able to interact with their wishlist
R8.1. User should be able to add an item from a particular store
to their wishlist
R8.2. User should be able to remove an item from a particular store in their wishlist or clear the entire wishlist
R8.3. User should be able to edit item specifications from a particular store in their wishlist
R8.4. User should be able to move an item or all times from wishlist to cart

R9. A User should be able to have checked out items delivered.
R9.1. User should be able to check their delivery status

R10. The System should allow a CRUD functionality to admin (Maintenance) regarding a Mall's map

5.3 Subsystems Traceability Matrix

	User Account Subsystem	Navigation Subsystem	Shopping Subsystem	Delivery Subsystem	Augmented Reality Subsystem
R1		X			
R2	X				X
R3	X				X
R4					
R4.1		X			
R4.2		X			
R5					
R5.1			X		
R5.2	X				
R5.3			X		
R6					
R6.1			X		
R6.2	X		X		
R6.3			X		
R7					
R7.1			X		
R7.2			X		
R7.3			X		
R7.4			X		
R8					
R8.1	X				
R8.2	X				
R8.3	X				
R8.4	X				
R9					
R9.1				X	
R10		X			

6 Quality Requirements

6.1 Reliability (Q.1)

- The system should give accurate and precise direction to the user at all times.
- The system should retrieve accurate prices and products every time the user scans or is near a specific product.

6.2 Availability (Q.2)

- The system should be available for users at most times for navigation.

6.3 Security (Q.3)

- The Application should perform transactions successfully and secure regarding transaction performed on the application.

6.4 Scalability (Q.4)

- The application should be able to accommodate a large number of users as they'll be navigating all around different malls.
- The application should be able to accommodate large volume of scanning and retrieving items from database for quotes.

7 Trace-ability matrix - Requirements VS Subsystems

	User Account Subsystem	Navigation Subsystem	Shopping Subsystem	Delivery Subsystem	Augmented Reality Subsystem
R1		X			
R2	X				X
R3	X				X
R4					
R4.1		X			
R4.2		X			
R5					
R5.1			X		
R5.2	X				
R5.3			X		
R6					
R6.1			X		
R6.2	X		X		
R6.3			X		
R7					
R7.1			X		
R7.2			X		
R7.3			X		
R7.4			X		
R8					
R8.1	X				
R8.2	X				
R8.3	X				
R8.4	X				
R9					
R9.1				X	
R10		X			
QR	Q3,Q4	Q1,Q2	Q1,Q4	Q3	Q1