Homework – 2 (AXK180025)

Q1. Perform brainstorming and classification and draw a UML class diagram as a Domain Model based on the classification results.

Classification:

1. Company
   - Location for pick up and drop
   - Cars
   - Salesperson

2. Car
   - Car
   - Manufacturer
   - Model
   - Make

3. Reservation
   - Location
   - Rental Plan
   - In Person
   - Online
   - Void
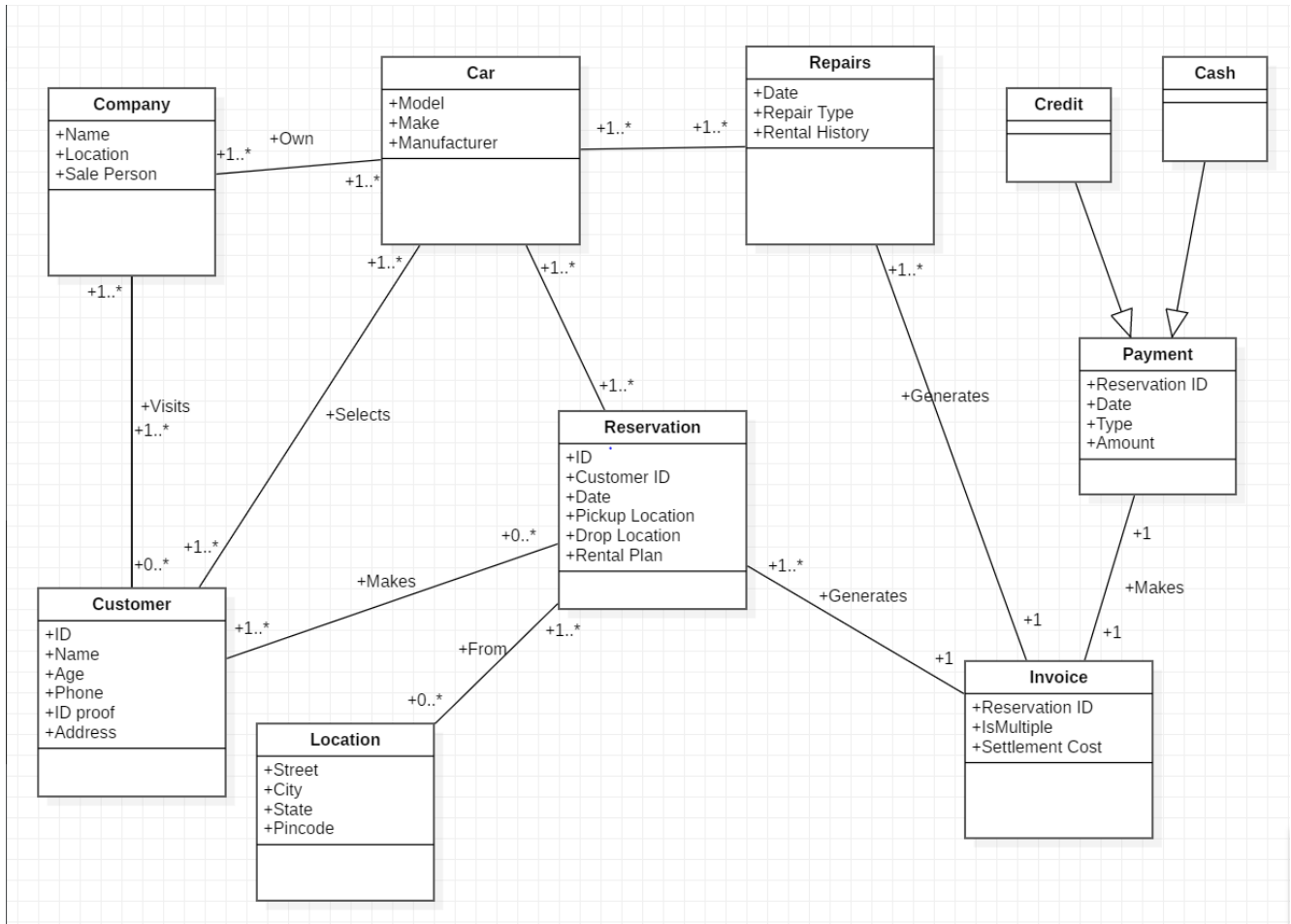
4. Invoice
   - Multiple Rentals
   - Settlement
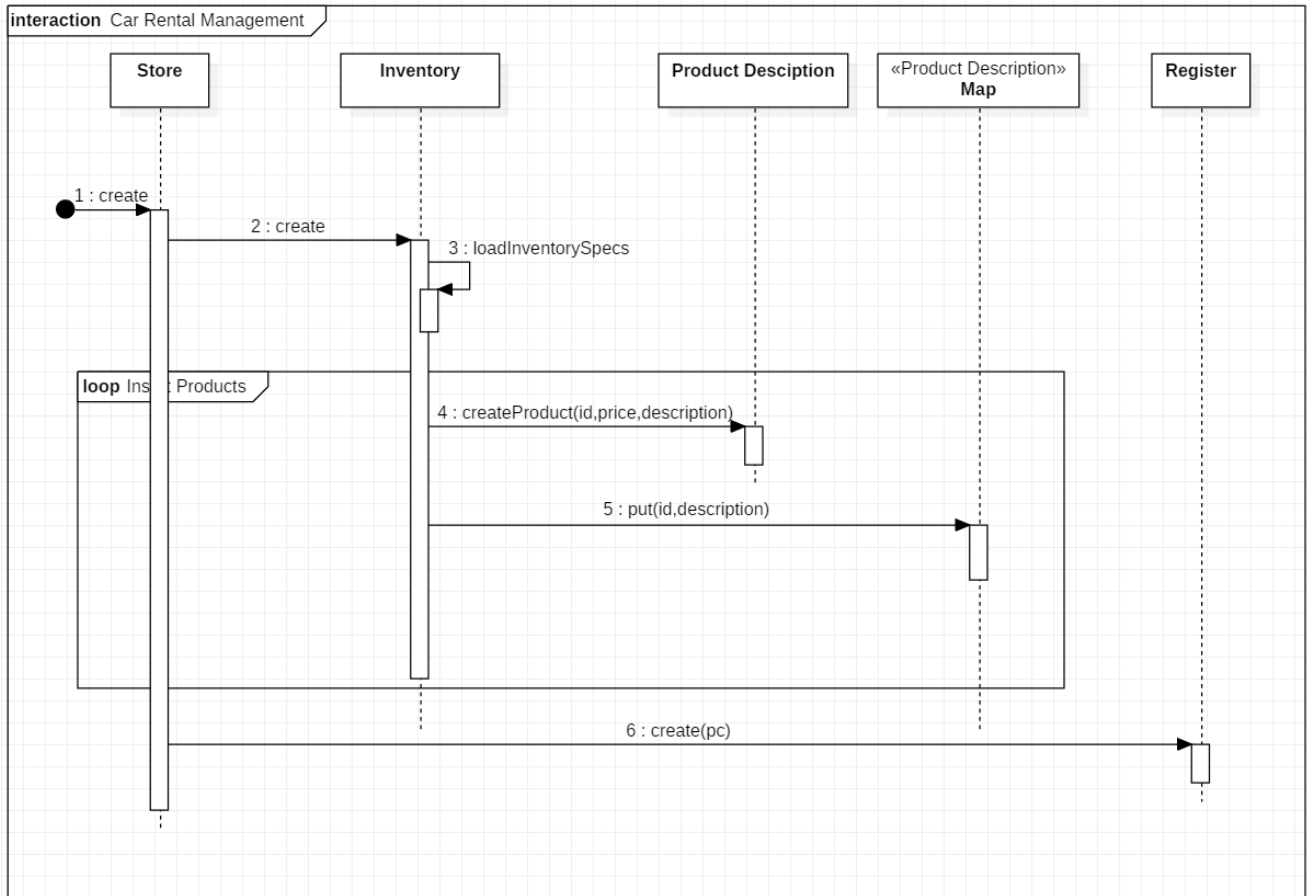
5. Payment
   - Cash
   - Credit card

6. Repairs
   - Repairs and Maintenance
   - Rental History

Homework – 2 (AXK180025)

Homework – 2 (AXK180025)

Q2. Identify the type of the system and sketch an architectural design.

interaction Car Rental Management

Store	Inventory	Product Desciption	«Product Description» Map	Register

1 : create

2 : create

3 : loadInventorySpecs

loop Insert Products

4 : createProduct(id,price,description)

5 : put(id,description)

6 : create(pc)

Q3. Derive use-cases from the requirements and draw use case diagrams.

UC1: Customer can choose a rental plan.
UC2: Customer can make a reservation.
UC3: Customer can rent a car.
UC4: Customer can view availability of car.
UC5: Customer can make payment.
UC6: Staff can update availability of car.
UC7: Staff can view location details.
UC8: Staff can update reservations.
UC9: Staff can generate invoice.
UC10: Staff can save the repair details.
UC11: Customer can settle invoice.
UC12: Staff can update the car information.

Online Car Rental System

- Choose Rental Plan
- Make Reservation
- Rent Car
- View Car Availability
- Make Payment
- Settle Invoice

Customer

Online Car Rental Systems

- View Location Details
- Update Reservations
- Update Car Availability
- Update Car Information
- Handle Invoices
- Save Repair Details

Staff
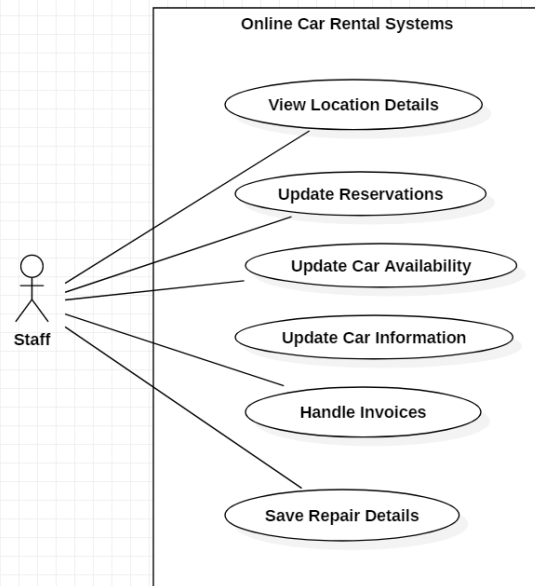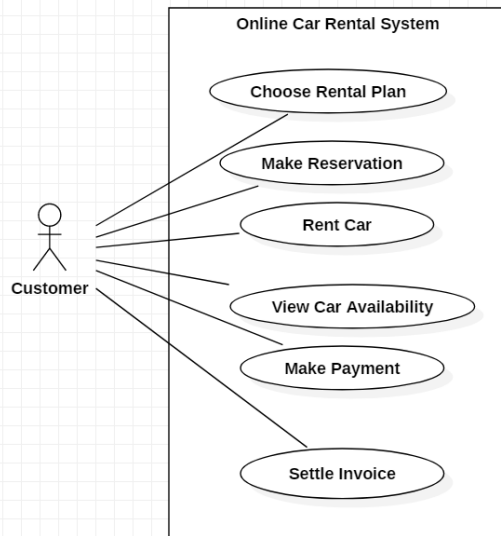
Homework – 2 (AXK180025)

Q4. Construct a requirement use-case traceability matrix.

R No	Requirements
1	Customer must select the location of his pick up and drop which can be same/different location.
2	An additional charge must be levied on customer if he drops the car at different location.
3	The rental plans and offers must be displayed when the customer want to select a car.
4	Different makes of car of different manufacturers must be available for customer to choose.
5	Several models of car must be made available from each make of car for customer to choose.
6	Information of each car must be displayed when user selects the specific car and prices should vary according to the type.
7	Price classes are listed must be assigned accordingly for different make and model.
8	An error message must be displayed when the customer selects a car which is not available and suggest similar car make and model.
9	Reservation must be done in person at the company.
10	Reservation must be done by using reservation form online.
11	Reservation must be voided if customer doesn't show up to sign the contract at given period.
12	The voided reservation must be accepted if the car requested is still available.
13	Block reservation must be made invoices must be handled for all the reservations.
14	The invoice must be opened when the car is checked out.
15	An invoice must be able to handle multiple rentals.
16	Any Invoice must be settled by customer.
17	Invoice must handle multiple rentals then the customer and company must settle invoice together.
18	When payment is done through credit card, it must be processed through credit card processing company.
19	Rental car must maintain a status saying available or in maintenance.
20	Car availability must be updated daily according to its status.
21	Damage/Repair of car must be handled immediately by informing the support team about its the damage/repair details.

22	Rental history, repair, maintenance, disposal, information must be tracked for each car.

	Priority Weights	UC1	UC2	UC3	UC4	UC5	UC6	UC7	UC8	UC9	UC10	UC11	UC12
R1	5		X										
R2	3							X					
R3	5	X											
R4	4	X											
R5	4	X											
R6	5												X
R7	5												X
R8	5	X											
R9	5			X									
R10	5			X									
R11	5								X				
R12	4								X				
R13	3									X			
R14	5									X			
R15	4									X			
R16	5											X	
R17	4											X	
R18	4					X							
R19	5				X								
R20	4						X						
R21	4										X		
R22	5										X		
Score		18	5	10	5	4	4	3	9	12	9	9	10

Q5. Specify the expanded use-cases (use-case text) for Search Car, Reserve Car, Edit Reservation, and Cancel Reservation use-cases.

Search Car:

Actor: User	System: Online Car Rental Management
1.TUCBW the customer browses to rent car from the Online Car Rental Management website	2. A new session is created for the user.
3.The user types in the car name he is fond of in the search	4.a. The system displays a list of search results for the customer to choose from. 4.b. In case system fids nothing relevant it gives a message "No results found".
5.a. The user selects a car from the search results displayed by the system. 5.b. The user tries to search again for different results.	6. The system highlights the car that aligns with the search term.
7. TUCEW the user finally gets the car he searches for.	

Homework – 2 (AXK180025)

Reserve Car

Actor: User	System: Online Car Rental Management
1.TUCBW the user selecting the car.	2.The system displays a form on the site for user details.
3.The user fills the form.	4a. The system further checks the data received from the form, if the information entered is valid it proceeds with the remaining process. 4b. The system notifies the user that the information is invalid and shows the fields that are invalid.
5a. The user clicks on reserve button the make a reservation. 5b. The user corrects the invalid fields.	6.The system notifies the user that the car has been successfully reserved.
7.TUCEW the user receives the success message.	

Edit Reservation

Actor: User	System: Online Car Rental Management
1.TUCBW the user opens the saved reservation.	2.The system responds by displaying the reservation made as a editable form.
3.The user edits the reservation.	4a. The system further checks whether the user entered valid information,if information is valid it proceeds to the next step. 4b. The system notifies the user that the information is invalid and informs the user about the fields that are invalid.
5a. The user clicks on reserve botton the save the changes made to the reservation. 5b. The user modifies the invalid fields.	6.The system notifies the user that the changes made have been successfully saved.

7.TUCEW the user receives the success message.	

Cancel Reservation

Actor: User	System: Online Car Rental Management
1.TUCBW the user opens the saved reservation.	2.The system responds by displaying the reservation made as a editable form.
3.The user clicks on the cancel reservation button.	4.The system prompts the user for confirmation with a dialog box.
5a. The user clicks on Yes. 5b. The user clicks the Cancel.	6.a The system notifies the user that the reservation has been cancelled and navigates them to the home page. 6.b. The system doesn't make any changes to the reservation.
7.TUCEW the user receives the success message.	