אוניברסיטת בן-גוריון בנגב
Ben-Gurion University of the Negev

הפקולטה למדעי ההנדסה
המחלקה להנדסת מערכות מידע

Faculty of Engineering Sciences
Dept. of Information Systems Engineering

Super-Li:
Delivery & Employee Modules

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Requirements

ID	Module	Functional / Non-Functional	Description	Priority	Risk	Status	Notes
1	Suppliers	NF	The system will allow different suppliers to supply products from the same manufacturer	NTH	Low	Done	
2	Suppliers	F	The system must allow to add supplier cards to the system which include supplier name, business number, bank account, payment details, contact communication details, delivery days, option for self-delivery	MH	High	Done	
3	Suppliers	F	The system will allow for each supplier to choose delivery days.	MH	Low	Done	
4	Suppliers	F	The system will allow the user to view items that each supplier has in his catalog	MH	High	Done	
5	Suppliers	F	The system will allow to add discounts (as part of the quantity agreement) for items based on their quantity.	NTH	High	Done	
6	Suppliers	F	The system will allow to make reports of orders done	MH	Low	Done	
7	Suppliers	F	The system will allow to save all catalog items that a given supplier has in the quantity agreement				
8	Suppliers	F	The system must allow to make quantity agreement for each supplier	MH	High	Done	
9	Suppliers	F	The system must allow the supplier manager to save the suppliers preference: self-delivery or pickup (so SuperLi will arrange the pickup)	MH	Low	Done	
10	Suppliers	F	The system must allow to order from suppliers	MH	Low	Done	
11	Suppliers	F	The system must allow to update bank account, payment details, pickup	NTH	Low	Done	

			option, contact communication details				
12	Suppliers	F	The system will allow to make a routine order from suppliers (only from the delivery days of the supplier)	MH	Low	Done	
13	Suppliers + Inventory	F	The system will allow to check for items that are out-of-stock and order them from the supplier with the lowest price	MH	High	Done	
14	Suppliers	F	The system will show the routine orders of tomorrow at start-up and will allow the user to alter those orders.	MH	High	Done	
15	Suppliers	F	The system will allow to view all suppliers and their details.	MH	Low	Done	
16	Suppliers	F	The system will allow to view all the routine orders	MH	High	Done	
17	Suppliers	F	The system will allow to view all orders of a specific supplier	MH	Low	Done	
18	Inventory	F	The system MUST send reports regarding products in stock when the user request it.	MH	LOW	Done	
19	Inventory	F	The system MUST keep information about each product in stock: name, quantity, location, producer, category, quantity in store, quantity in warehouse, and discounts.	MH	LOW	Done	
20	Inventory	F	The system MUST keep and track the cost price and the selling price of each product.	MH	LOW	Done	
21	Inventory	F	The system CAN have an option to update discount on specific products or category by given dates.	NTH	HIGH	Done	
22	Inventory	F	The system CAN categorize each product	NTH	LOW	Done	
23	Inventory	F	The system MUST have an option to generate Inventory report including all information about products about to run out of stock.	MH	HIGH	Done	
24	Inventory	F	The system MUST have an option to generate Inventory report including all	MH	HIGH	Done	

			information about expired products.				
25	Inventory	F	The system MUST have an option to generate Inventory report including all information about defective products.	MH	HIGH	Done	
26	Inventory	F	Inventory report CAN be filtered by category.	NTH	HIGH	Done	
27	Inventory	F	The system MUST track expired items in the stock	MH	HIGH	Done	
28	Inventory	F	The system MUST be able to track defective items when a user reports about finding one.	MH	HIGH	Done	
29	Inventory	F	The system MUST have an option to generate periodical reports about defective or expired items in the stock.	MH	HIGH	Done	
30	Inventory	F	The system MUST have an option to generate out of stock products report.	MH	HIGH	Done	
31	Employee	NF	The system will save in an SQLite database for each employee their: Name, Id, Bank account details, Salary, work starting date and Working conditions containing their working hours, qualification as well as additional text information.	MH	High	Done	
32	Employee	F	The system will allow the HR manager will be able to manage each employees' data.	MH	High	Done	
33	Employee	NF	The system will save a day and night shift for each day.	MH	Low	Done	
34	Employee	NF	The system will allow assigning a shift manager for each shift.	MH	High	Done	
35	Employee	F	The system will allow the shift manager to manage his workers.	MH	High	Done	
36	Employee	NF	The default system's roles will consist of: HR manager, Cash registry manager, Storekeeper, Driver.	NTH	High	Done	
37	Employee	F	The system will support adding additional roles.	NTH	Low	Done	

38	Employee	F	Each worker will have his own qualifications and permissions to use specific functionality of the system (e.g. the Storekeeper won't be able to work in the registry or manage employees like the HR manager).	MH	High	Done	
39	Employee	F	The HR manager will be able to choose which roles are needed for each shift.	MH	High	Done	
40	Employee + Delivery	F	The system will allow adding drivers to shifts.	MH	Low	Done	
41	Delivery	F	The system must support the management (adding, deleting, viewing, editing) of delivery sites (branches and supplier warehouses): delivery zone, address, contact name and phone number.	MH	High	Done	
42	Delivery	F	Upon adding a new delivery site, the system will generate a unique id for it.	MH	Low	Done	
43	Delivery	F	Deleting a site will be possible only if there aren't any upcoming deliveries which have this site as their origin or destination.	MH	Low	Done	
44	Delivery	F	The user will be able to view the different delivery sites of a specific delivery zone.	NTH	Low	Done	
45	Delivery	F	The user will be able to search a site according to its id number.	NTH	Low	Done	
46	Delivery	F	The system must support the management (adding, deleting, viewing, editing) of Super-Lee's trucks: plate number, model, max weight.	MH	High	Done	
47	Delivery	F	The system will display an error if the user is trying to edit the max weight of a truck when it is assigned to an upcoming delivery with a driver whose license type does not allow driving a truck with the new max weight.	MH	High	Done	

48	Delivery	F	The user will be able to view the different trucks ordered according to their max weight.	NTH	Low	Done	
49	Delivery	F	Deleting a truck will be possible only if there aren't any upcoming deliveries which this truck is assigned to.	MH	Low	Done	
50	Delivery	F	The user will be able to search a truck according to its plate number	NTH	Low	Done	
51	Delivery	F	The system must support adding a new upcoming delivery: start time, end time, truck, driver, origin site and destination site.	MH	High	Done	
52	Delivery	F	The system will display an error if the start time of the delivery is *invalid	MH	High	Done	
53	Delivery	F	The system will display an error if the end time of the delivery is *invalid	MH	High	Done	
54	Delivery	NF	Start and end time of a delivery will be in the format: dd-MM-yyyy HH:mm	NTH	Low	Done	
55	Delivery	F	The origin site of a delivery may be a "Super-Li" branch or a supplier's warehouse.	MH	Low	Done	
56	Delivery	F	A destination site of a delivery must be a "Super-Li" branch.	MH	Low	Done	
57	Delivery	F	A delivery must contain at least one destination.	MH	Low	Done	
58	Delivery	F	When an upcoming delivery is added the system will generate a unique identifier for it.	MH	Low	Done	
59	Delivery	F	The system will display an error if the user is trying to assign a driver without a suitable license for the chosen truck (according to the truck's max weight and the driver's license type).	MH	Low	Done	
60	Delivery & Employee	F	The system will display an error if the driver the user is trying to reserve to an upcoming delivery is not	MH	Low	Done	

			assigned to a shift at the time of the delivery				
61	Delivery	F	The system will display an error if the user is trying to reserve a truck for a delivery if it is already reserved for another delivery and their start time and end time overlap partially or completely.	MH	Low	Done	
62	Delivery	F	The system will display an error if the user is trying to reserve a driver for a delivery if he is already reserved for another delivery and their start time and end time overlap partially or completely.	MH	Low	Done	
63	Delivery	F	The system will display an error when the user is trying to edit the start time of an upcoming delivery if the new date is *invalid	MH	High	Done	
64	Delivery	F	The system will display an error when the user is trying to edit the end time of an upcoming delivery if the new date is *invalid	MH	High	Done	
65	Delivery	F	The system must support the editing of an upcoming delivery: start time, end time, truck, driver, and origin site.	MH	High	Done	
66	Delivery & Employee	F	The system will display an error if the user is trying to replace the driver of an upcoming delivery if the new driver is not assigned to a shift at the time of the delivery	MH	High	Done	
67	Delivery	F	Destinations can be added to an upcoming delivery.	MH	Low	Done	
68	Delivery	F	Removing a destination from an upcoming delivery will be possible only if it is not the only destination of the delivery.	MH	Low	Done	
69	Delivery	F	Items can be added to list of items to be supplied to a certain destination of an upcoming delivery.	MH	Low	Done	

70	Delivery	F	Items can be removed from the list of items to be supplied to a certain destination of an upcoming delivery.	MH	Low	Done	
71	Delivery	F	The quantity of a certain item to be supplied for a destination of un upcoming delivery can be edited.	MH	Low	Done	
72	Delivery	F	The system must support the deletion of an upcoming delivery.	MH	Low	Done	
73	Delivery	F	The user will be able to view the list of upcoming deliveries.	MH	Low	Done	
74	Delivery	F	The user will be able to search an upcoming delivery according to its id number.	NTH	Low	Done	
75	Delivery	F	When a delivery arrives at its destination the user will be able to "complete" the delivery.	MH	Low	Done	
76	Delivery	F	A delivery can be "completed" only if the truck's actual weight is updated to be greater than 0.	MH	Low	Done	
77	Delivery	F	Completing a delivery will add the record of the delivery to the Delivery Archive.	MH	Low	Done	
78	Delivery	F	Completing a delivery will remove it from the upcoming deliveries list.	MH	Low	Done	
79	Delivery	F	The system will display an error if the actual truck weight is higher than the max weight of the truck.	MH	Low	Done	
80	Delivery	F	A record of a completed delivery will contain the id of the delivery, driver's id, truck's plate number, start and end time of the delivery, the origin site's id, the truck's actual weight, and for each of the destination- their id and a list of the items to be delivered to that destination and the quantity from each item.	MH	Low	Done	
81	Delivery	F	A record of a completed delivery cannot be deleted.	MH	Low	Done	

82	Delivery	F	A record of a completed delivery cannot be modified.	MH	Low	Done	
83	Delivery	F	The user will be able to view the Delivery Archive.	MH	Low	Done	
84	Delivery	F	The user will be able to search a completed delivery according to its id number.	NTH	Low	Done	
85	Delivery & Employee	F	The System will display an error if the user is trying to delete a driver that is assigned to an upcoming delivery	MH	Low	Done	
86	Delivery & Employee	F	The system will display an error if the user is trying to edit a driver's license type when the driver is assigned to an upcoming delivery with a truck which the new license type doesn't allow him to drive.	MH	Low	Done	

Inventory

System assesments - inventory:

1	The minimum quantity of a product determined by the inventory manager
2	The inventory manager issue a report by manually inserting an input
3	Only the inventory manager have access to the system
4	Each products can have up to 3 categories, which managed by the inventory manager

Terms:

Explain changes:

#	Topic	Description
1	first requirement	the description was too ambiguous about when to send the reports, and also the client asked the system to send reports and not notifications.
2	second requirement	adding which information the system keeps about each product
3	6th requirement	we split this requirement to requirements 6-8 to explain what kind of reports the system should generate, moreover, the reports must include all the information about the products as described in the second requirement.
4	9th requirement (used to be the 7th)	risk changed to HIGH just like requirements 6-8 because they all talk about the same part of functionality in the system.
5	11th requirement	adding when this functionality is being called to make the requirement more clear and more specific.

suppliers

System assessments - suppliers:

1	Discounts - Discount is added by the user that is adding the supplier to the system. Discounts can be added for each item (after specifying the discount amount and item quantity for which the discount will be activated).
2	Orders - We make an Order object in the system and store all the order details in the system. We do not manage money or money transfers.
3	Supplier catalog – we can order every item in the supplier's catalog.
4	Items – different suppliers can supply the same item.
5	Out-of-stock items - The inventory manager will start the process of checking the out-of-stock items and send them to the supplier module.
6	Inventory & Supplier integration - Inventory module shouldn't know about the supplier module and should not care.

Terms:

#	Term	Description
1	Supplier	The person/company that supplies the store's items so the store can sell those items.
2	Order	The agreement of a said supplier to deliver (by himself of by SuperLi deliveries) items that are in the agreement.
3	Quantity agreement	The contract for each supplier that contains: the supplier's catalog, prices and discounts.
4	Routine order	The agreement of a said supplier to deliver (by himself of by SuperLi deliveries) items that are in the agreement on said days each week.
5	Contact	The person that SuperLi can call for communicating with a given supplier.

Explain changes:

#	Title	Description
1	Routine Order	We added a new type of order – routine order. It's described in the terms section.
2	Item ID	We now identify items by the pair of item name and item producer. This combination is unique to each item.
3	Quantity agreement	Because of the change of #2, we now have 1 less hashmap in the QA class while the functionality remains the same.

Employees

System assessments - employees:

ID	Topic	Issue	Answer
1.	Roles	What roles will exist in the system by default?	The system will initially have the following roles: HR manager, Cashier, Driver, Branch Manager, Shift Manager, Stock Clerk, Warehouse Worker, Cleaner, Inventory Manager. Adding/removing roles will be implemented.
2.	Workers	Which workers should be on every shift?	Each shift needs to have: Cashier, Warehouse Worker, Stock Clerk, Driver. Management staff – branch manager, HR manager, inventory manager - work only in DAY shifts.
3.	Availability of functionality	Which parts of the system can each employee use?	HR manager can view and employee data, view and manage qualifications. Branch manager can manage his branch, shifts on his branch and view qualifications.
4.	Adding shift	What data about an employee should the branch manager see while adding employees to a shift?	He will see their names and how many DAY or NIGHT shifts (depends on the current shift) the have already made.
5.	Branches	Can the branches work with the same system?	Yes
6.	Shifts	Can a shift be opened without all workers that must be on the shift?	No
7.	Multiple jobs	Can an employee fill several roles during the shift?	Yes

Terms:

ID	Term	Description
1.	Bank account details	Consist of bank id, branch id, account id, bank name, branch name, account owner name
2.	Worker/Employee	A person that works in SuperLi
3.	Role/Job	A position of an employee at work
4.	Working hours	A time interval that an employee adds into the system to mark the time when he can work

Delivery

System assessments - delivery:

ID	Topic	Issue	Answer
1	Delivery zones	What delivery zones are there?	North, Center, South
2	Delivery zones	How do the delivery zones limit the reservation of deliveries?	They don't. The user can view the delivery zone of every site for easier and reasonable planning of the delivery
3	Truck's weight	What is the unit of measurement for a truck's weight?	kg
4	Actors	Who are the relevant actors?	Delivery coordinator
5	Delivery time	When can a delivery take place?	A delivery can take place within a single shift

Terms:

| ID	Term	Description
1.	Delivery	Carries items from an Origin site to a Destination site.
2.	Site	Either a supplier's warehouse or a Super-Li branch.
3.	Origin	Either a supplier's warehouse or a Super-Li's branch.
4.	Item	A product supplied by a Super-Lee's supplier.
5.	Destination	A Super-Li's branch.
6.	License Type	C1- permits driving a truck with max weight is equal or below 12000 kg C- permits driving all trucks
7.	Invalid delivery start time	Date has passed.
8.	Invalid delivery end time	1) End time is earlier then start time 2) Is in different shift than start time

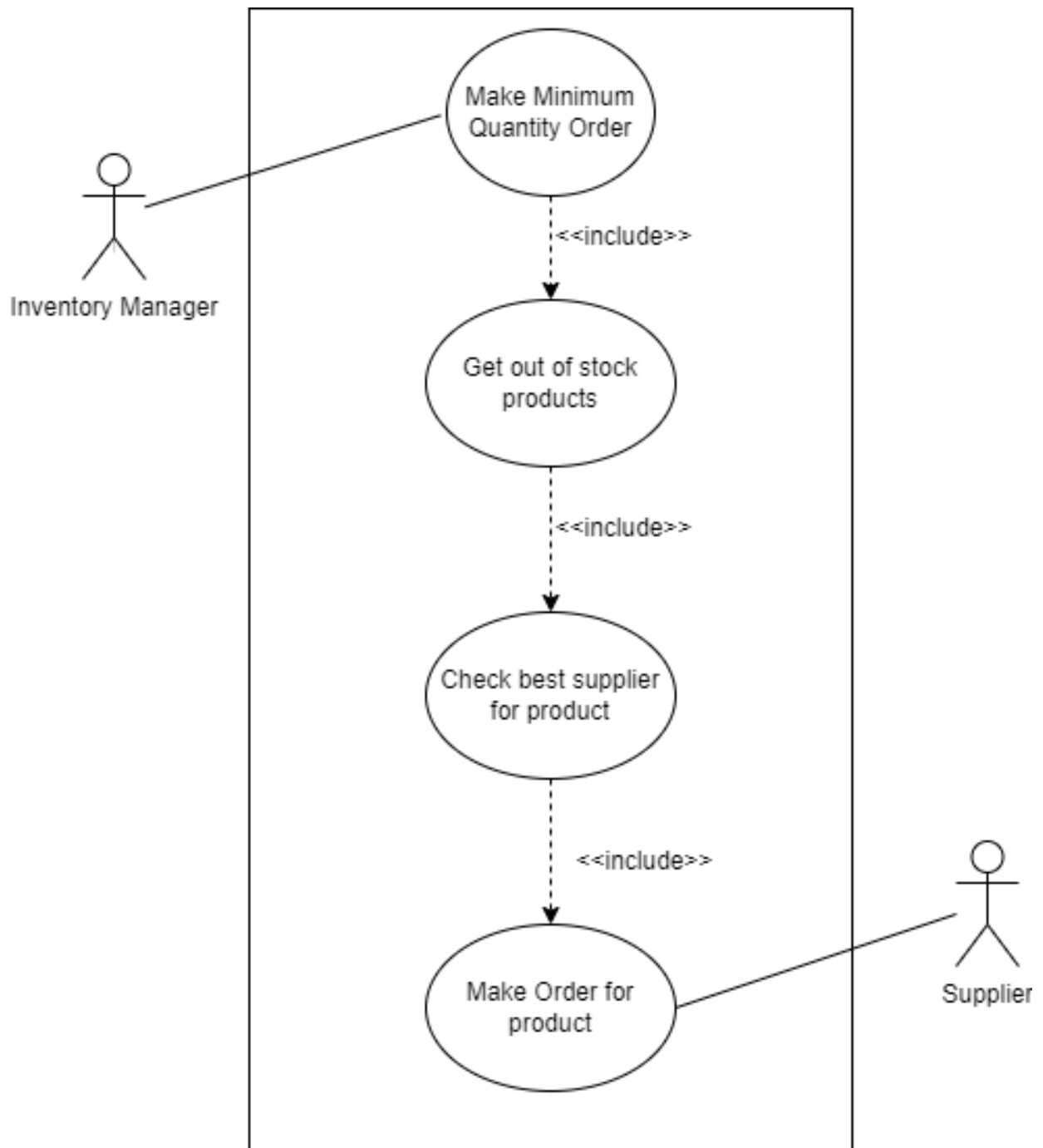**a) Adding new employee**
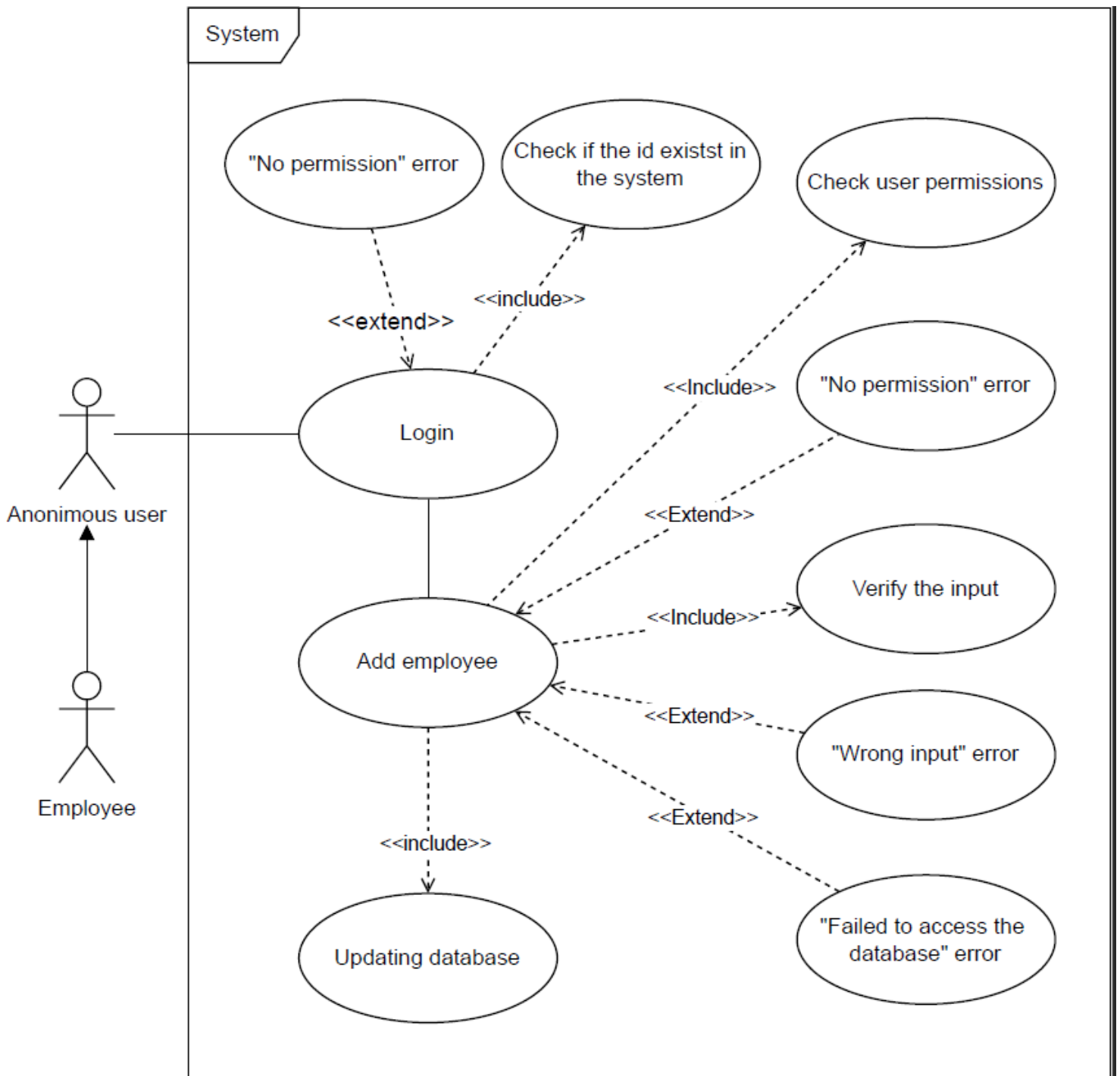
b) Updating employee data
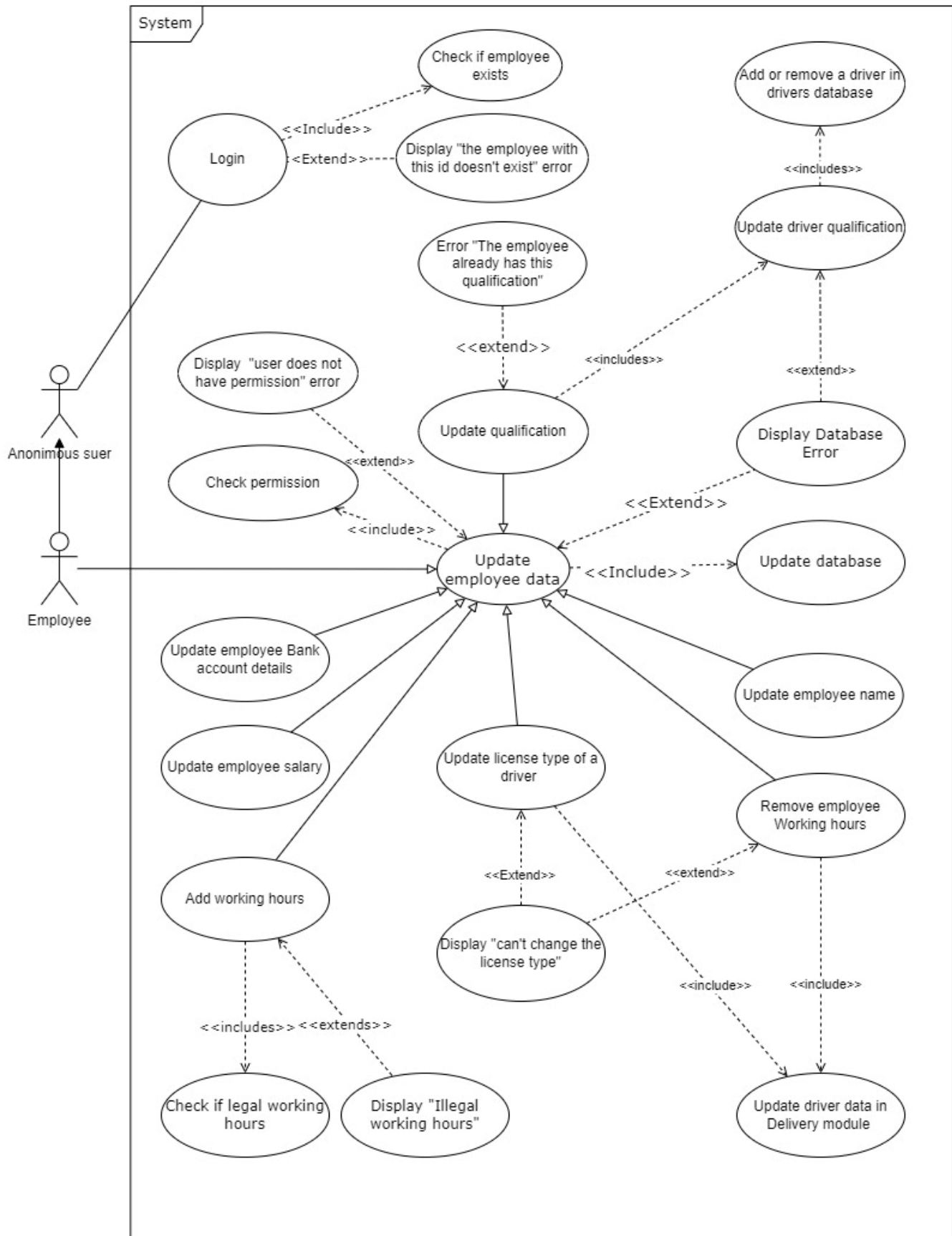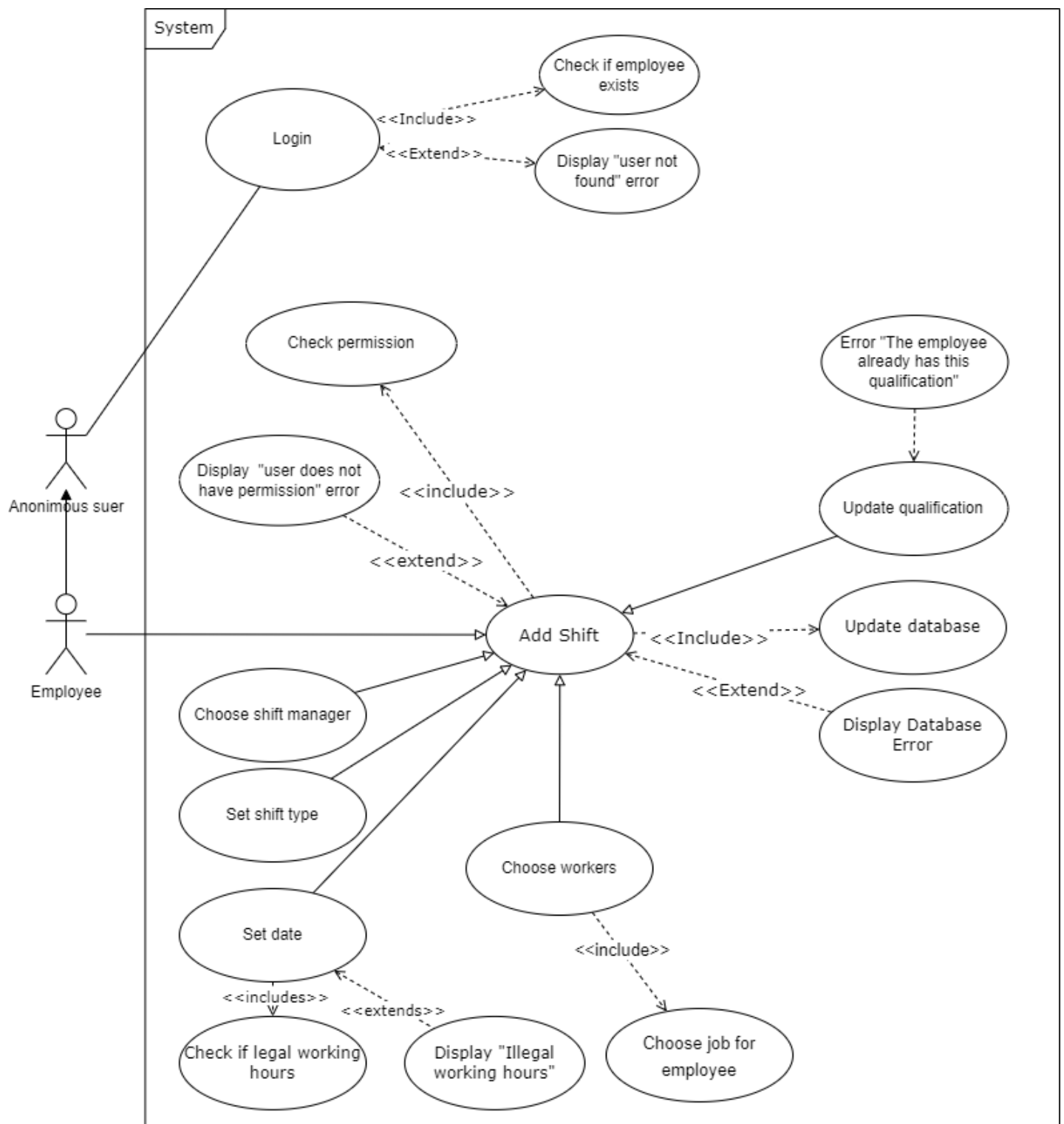
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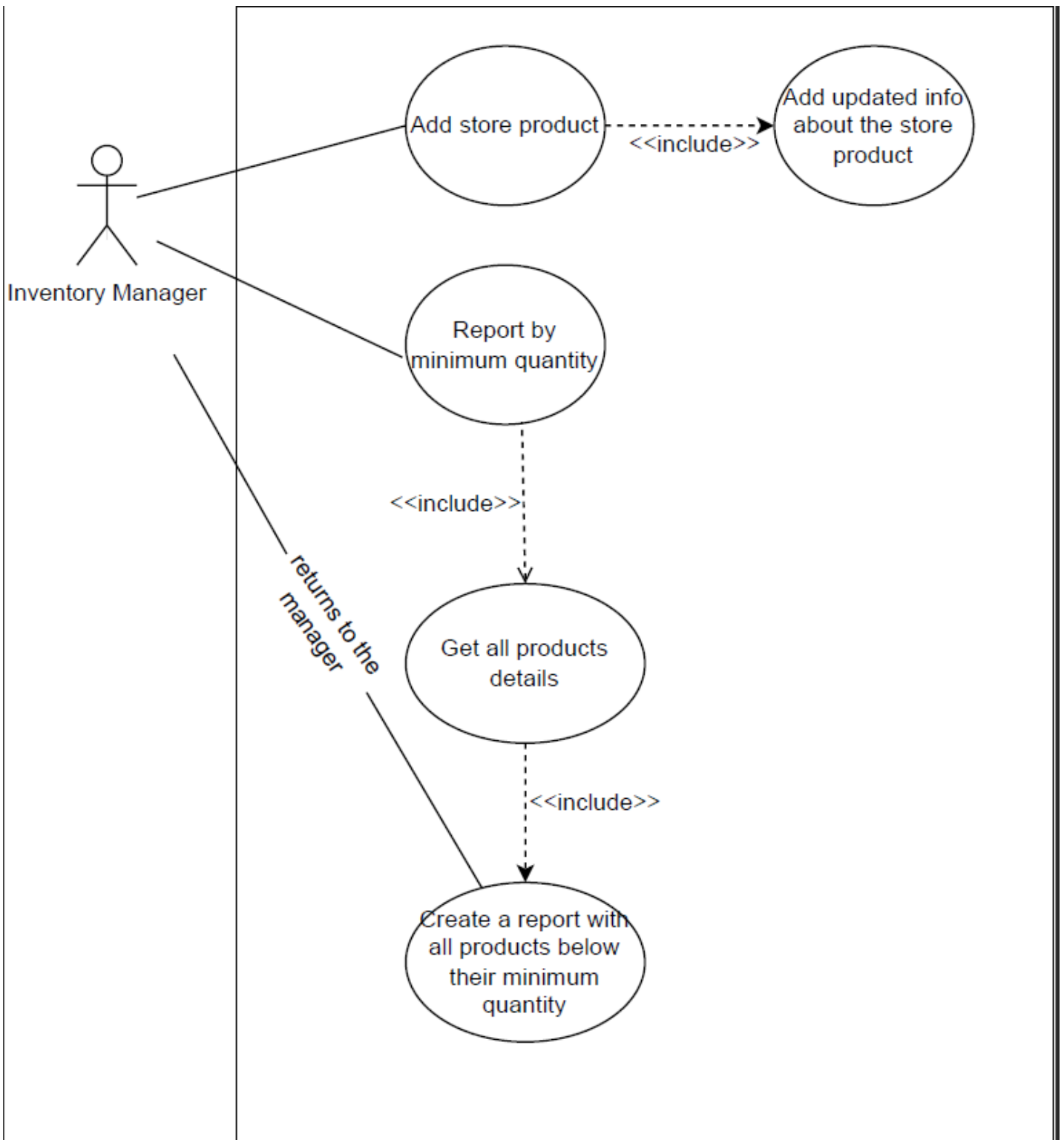
d) Add new supplier
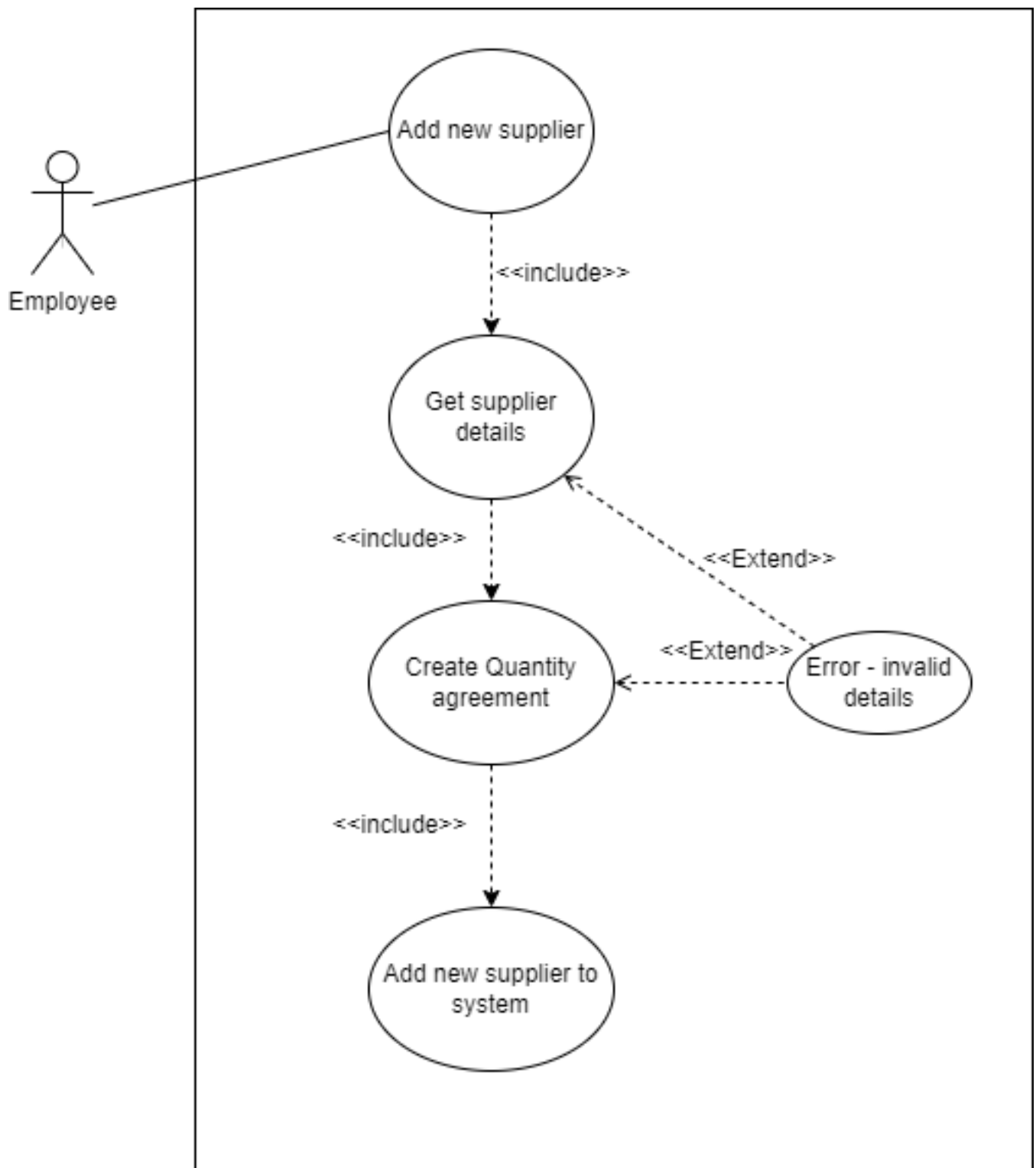
e) Make new routine order
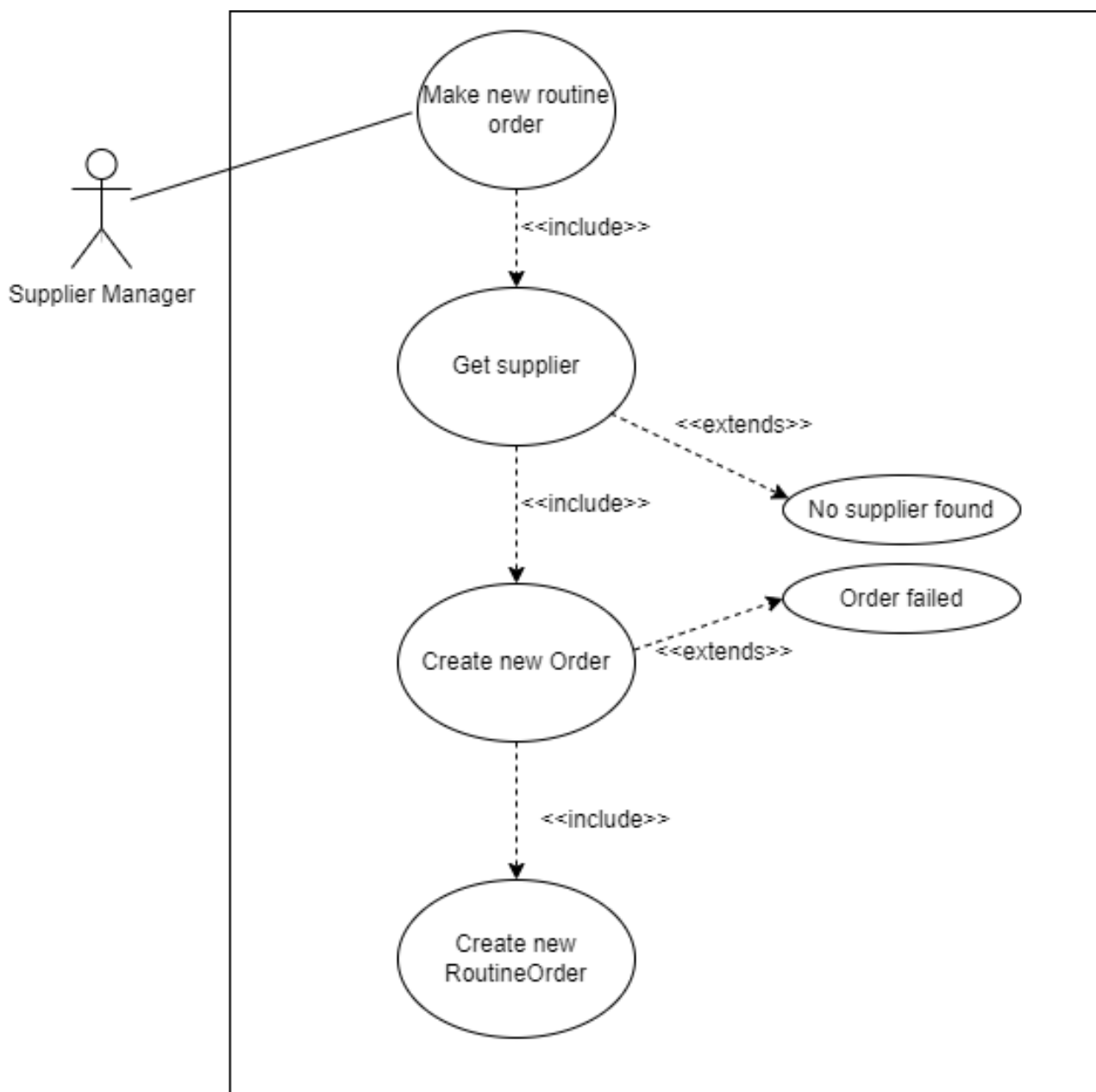
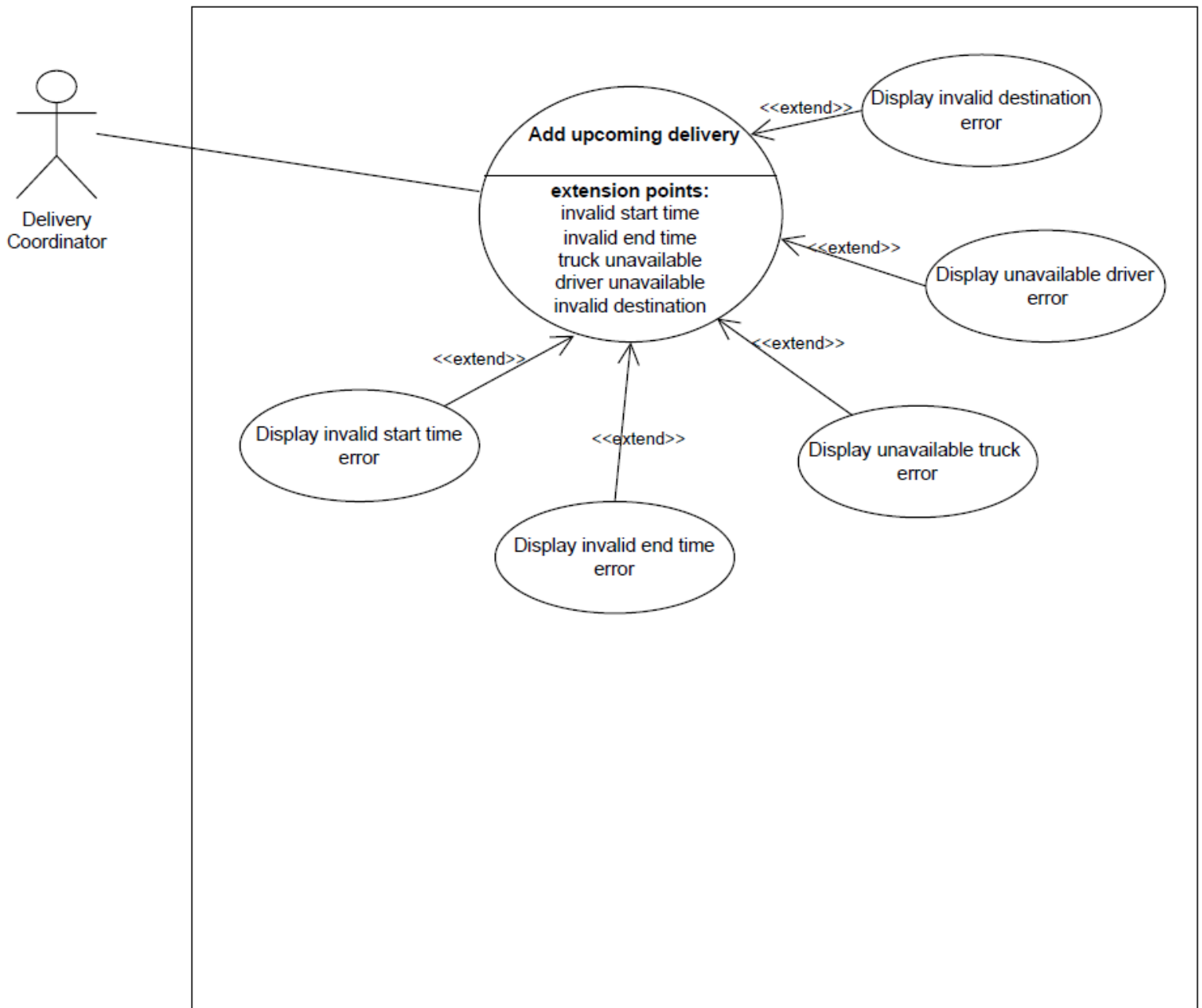**f)** <u>**Make minimum quantity order**</u>

g) Adding a new shift

h) Add Upcoming Delivery

Use Case (g)- Scheduling workers for the shift - description

Use case name	Scheduling workers for the shift
Textual Description	The employee wants to schedule a shift. To do this he has to choose a worker for each role that has to be filled on the shift.
List of Actors	Employee of SuperLi supermarket
Pre-conditions	1.The shift can't be scheduled already 2.The shift can't be opened with the date a day (or more) prior to current date 3.There should be at least one worker that is qualified to work for each of these roles: cashier, warehouse worker, stock clerk, truck driver, branch manager, inventory manager. If it's a DAY shift there also should be an employee that can work as branch manager and inventory manager
Post-conditions	1.A new shift will be opened (nothing if pre-conditions were not met)
Main success scenario	1.A worker chooses "add shift" in the shift management menu 2.The system checks if he has a permission to add shift 3.The worker is prompted to choose the branch, date of the shift, type of the shift, choose a worker for each role to fill (explained above) 4.The worker receives a success message from the system

Alternatives/Extensions	1.If an employee doesn't have the permission to manage shifts he will receive an error message
	2.If the shift is scheduled already the shift will not be opened and the employee will receive an error message
	3.If it is to late to add the shift (explained above) the employee will receive an error message

Main case scenario + alternatives in pseudo code

Login:

Int employeeIdnumber = readline();

openShift(idNumber);

if(!hasPermissionToOpenAShift(isNumber){

      print("you don't have permission to open a shift")

      return;

Map<Employee, List<Qualification> workers = new*;

List<Qualification> mustHaveRoles = {"shiftManager", "Cashier", "Driver" …} //explained above

for each role in mustHaveRolesList:

      List<Employee> qualifiedEmployees = getEmployeesWithQualification(Qualification);

      print(qualifiedEmployees)

      int index = readline();

      Employee e = qualifiedEmployees[index];

      if(workers.containsKey(e))

            workers.get(e).add(role)

      else

            workers.put(qualifiedEmployees[index], new List<Qualification>)

Date date = readline();

If(date > Date.today)

      Print("the date is illegal")

      Return;

Int branchNumber = realine();

typeOfShift = readline();

addShift(branchNumber, workers, date, shiftType);

return;

Use Case (h)- Add upcoming delivery- description

Use case name	Add upcoming delivery
Textual Description	A delivery coordinator adds a new upcoming delivery to Super-Lee's deliveries system.
List of Actors	Delivery coordinator. (For simplicity the term "User" will be used in the Main success scenario and the Alternatives/Extensions sections)
Pre-conditions	Non.
Post-conditions	A new upcoming delivery is added to the deliveries system.
Main success scenario	1) User selects option number 3 at the Upcoming Deliveries Menu to add a new upcoming delivery. 2) User enters the delivery's start time. 3) User enters the delivery's end time. 4) The system will display a list of Super-Lee's trucks. 5) The user will enter the plate number of the desirable truck. 6) The system will display a list of Super-Lee's drivers. 7) The user will enter the id of the desirable driver 8) The system will display a list of Super-Lee's sites. 9) The user will enter the id of the desirable origin site. 10) The system will display a list of Super-Lee's branch sites. 11) The user will enter the id of the desirable destination. 12) The newly created delivery is added to the deliveries system.
Alternatives/Extensions	*) a. On Upcoming delivery addition failure: 1. The system will display an error message

2. The user will return to Upcoming Deliveries Menu.

For steps 2',3':

*) a. while date has passed:

    1. The system will display an error message.

    2. The user will enter a new date.

5') a. while a truck with the entered plate number does not exist:

    1. The system will display an error message.

    2. The user will enter a new plate number.

7') a. while a driver with the entered id does not exist:

    1. The system will display an error message.

    2. The user will enter a new id.

For steps 9',11':

*) a. while a site with the entered id does not exist:

    1. The system will display an error message.

    2. The user will enter a new site id.

12') a. The driver is not assigned to a shift at the time of the delivery

    1. Upcoming delivery addition fails

  b. End time is earlier then start time

    1. Upcoming delivery addition fails

  c. Delivery starts and ends in different shifts

    1. Upcoming delivery addition fails

  d. The driver doesn't have a license for the chosen truck

    1. Upcoming delivery addition fails

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	e. Truck is assigned to overlapping delivery
	1. Upcoming delivery addition fails
	f. Driver is assigned to overlapping delivery
	1. Upcoming delivery addition fails
	g. The destination site is not a branch site
	1. Upcoming delivery addition fails

pseudo code:

1) User selects option number 3 at the Upcoming Deliveries Menu to add a new upcoming delivery.
2) User enters the delivery's start time.
   a. while start time has passed
      1. Display an error message.
      2. The user enters the delivery's start time.
3) User enters the delivery's end time.
   a. While end time has passed
      1. System displays an error message.
      2. The user enters the delivery's end time.
4) The system displays a list of Super-Lee's trucks.
5) The user enters the plate number of the desirable truck.
   a. while a truck with the entered plate number does not exist in Super-Lee's deliveries system:
      1. The system displays an error message.

      2. The user enters a new plate number.
6) The system displays a list of Super-Lee's drivers.
7) The user enters the id of the desirable driver.
   a. while a driver with the entered id does not exist in Super-Lee's deliveries system:
      1. The system displays an error message.

      2. The user enters a new id number.
8) The system displays a list of Super-Lee's sites.
9) The user enters the id of the desirable origin site.
   a. while a site with the entered id does not exist in Super-Lee's deliveries system:
      1. The system displays an error message.
      2. The user enters a new site id.
10) The system displays a list of Super-Lee's branch sites.
11) The user enters the site id of the desirable destination site
    a. While a site with the entered id does not exist in Super-Lee's deliveries system:
       1. The system displays an error message.
       2. The user enters a new site id.
12) if one of the following occurs:
    a. The driver is not assigned to a shift at the time of the delivery
    b. End time is earlier than start time

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c. Delivery starts and ends in different shifts
d. The driver doesn't have a license for the chosen truck
e. Truck is assigned to overlapping delivery
f. Driver is assigned to overlapping delivery
g. The destination site is not a branch site
    1. The system displays an error message.
    2. The user will return to the new upcoming delivery menu.

Else the newly created delivery is added to the deliveries system.