ISYS254 2019 – Applications Modelling and Development

Requirements and Modelling

Look through the answer sheets from each workshop

Task 1 – Requirements elicitation [10 marks]

Q1) [5 marks] List 5 different requirements gathering techniques that you would use to find out more about the problem. Why would these 5 you have selected be appropriate to use in this situation?

- Document sampling
- Background Reading
- Observation
- Questionaries
- Joint Application Design (JAD)

Since this system is going to be operated on the campus, we can gather results from students and staff members through a set of questionaries, document sampling and the joint application design. Background Reading on students and staff is easily updated and available on campus. Once the prototype of the CCS is up, we get an observation of students/staff using the system, giving us the first-hand experience.

Q2) [5 marks] Outline a strategy (of between 3-4 requirements gathering stages) and detail which techniques you would use at each stage, and what data you would use from previously gathered information. Justify your approach

The system development life cycle is a safe strategy where problem identification, requirements elicitation, analysis and system design are implemented based on the research of gathered information. Identifying the problems and objectives of the CCS can be looked through background reading of Macquarie university. Doing a feasibility study can use the obtained data from a set of questionnaires and document sample from students, staff and managers who will be operating CCS. The information resulted from the Joint Application Design can help analysing the needs of the system to get a consumer perspective of the system to cater their needs when using the system. With the students/staff's observation of the system, how they use the system, can shape the system's design.

Task 2 – Requirements specification [20 marks] DO TONIGHT

Q3) [10 marks] Write two user scenarios that would describe a typical usage over the course of a day (one from a CCS Delivery person's perspective and another from CCS manager's perspective).

User Scenario: CCS Delivery Person

I login into the CCS using my student ID and password and register as a CCS delivery person. I wait till I get a request from the CCS by accepting order delivery and getting

restaurant's location for pick up. Once the order has been picked up, I go to the member's or non-member's location to deliver the food/beverage. Once the order has been taken by the member, I confirm to the CCS that the food has been delivered to the member and continue to do the next order request delivery.

User Scenario: CCS Manager

Every Monday I delete all events that happened in the last week. At the start the day during weekdays, firstly, I follow up with the disputed issues from members in the CCS regarding to their previously accepted event booking that by either changing the status to either postponed, cancelled or solved for the event booking. Then I look through the CSS for requested events from members and manage them through either accepting or denying the request to the event status to avoid schedule conflicts. If an event is accepted, I access the CCS to create event by adding the event name, date, time, location and status of the event, I also create event bookings by entering the same data information. The events I created should fit easily between CCS members' events in the schedule.

Q4) [4 marks] Provide four example user stories from different actors.

As a Student, I register to become a CCS Member by providing my details so I can order food and book events through the CCS. I can also register to become a CCS delivery by providing my details so I can apply for a CCS Delivery account.

As a Manager, I want to create event booking so CCS members can look or join the event. As a Manager, I change the status of an event to either deny or accept so I can manage schedule conflicts.

As a CCS Delivery person, I login into the CCS look at the requested deliveries/pickups through the system so I can accept an order delivery. Once I picked up the order, I change the order status to either 'delivering' to the CCS Member, 'cancelled' if there was something wrong with the order or 'delivered' once the order has been dropped off so I can finish the delivery.

As a Restaurant Employee, I look the requested orders that were chosen on the CCS so I can produce the order. I change the status of the order to picked up when CCS Delivery person picks up the order so I can let the CCS Member know that the order has been picked up.

Q5) [3 marks] Write three functional requirements for the proposed system for different actors (1 example for each actor)

The CCS system shall allow a student to register for CCS Member account or for CCS Delivery Person.

The CCS system shall allow CCS Members to order food or book spaces in the Campus Common to hold events.

The CCS system shall allow Restaurant to change the status of an order to order picked up.

Q6) [3 marks] Write three non-functional requirements for the proposed system (include the measures / limitations as part of the requirement, not just the heading).

The CCS system shall use an account login for members to keep their information secured. (Security)

The CCS system shall support up to 100 orders per day with several ordered at the same time. (Performance)

The CCS system shall use an online tracking for Member's order to confirm that the order has been processed, just a couple seconds ordering. (Responsiveness)

Task 3 – Diagrams for different system perspectives [55 marks]

Q7) [5 marks] Draw a Context Diagram (**Level 0 DFD**) for CCS.
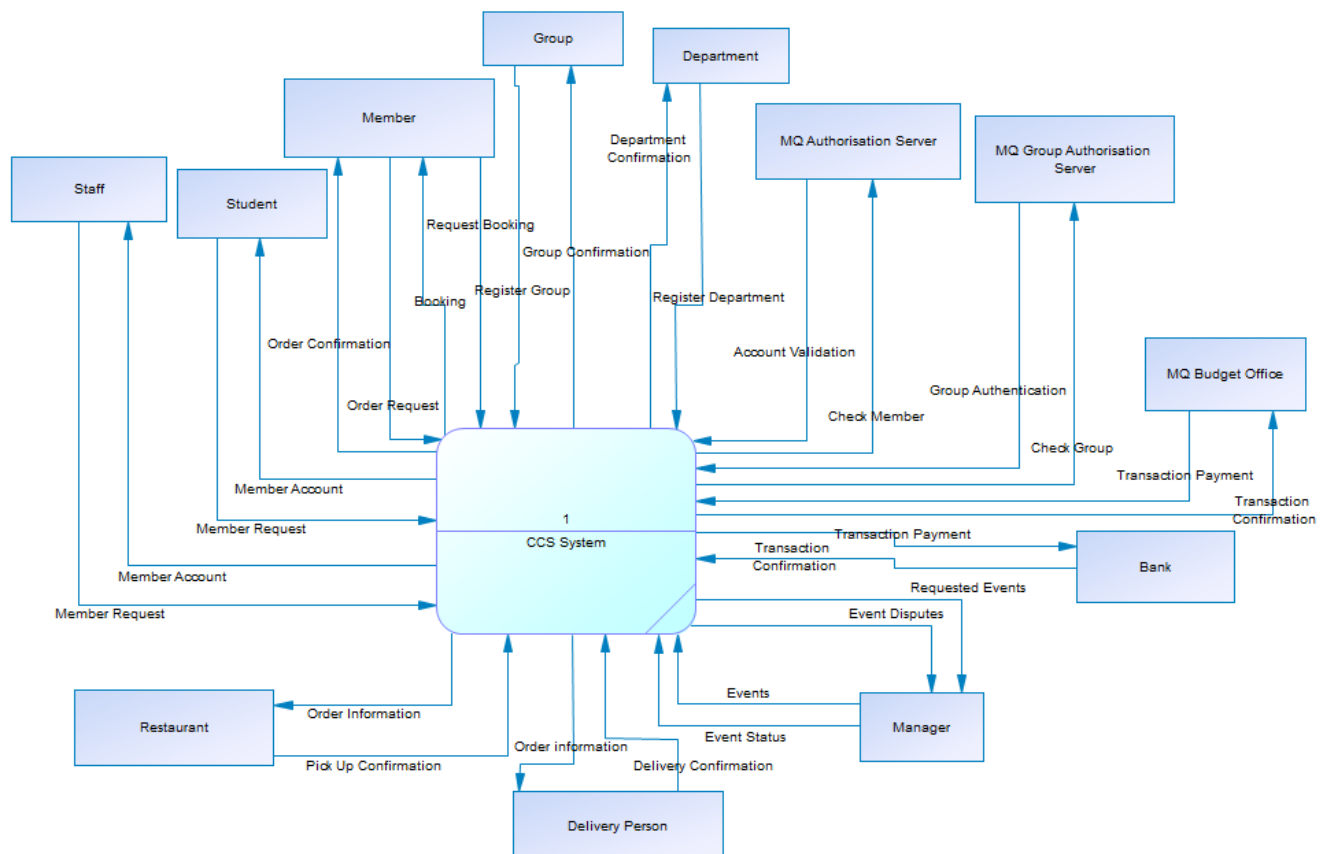
Q8) [15 marks] Draw a Use Case Diagram for CCS based on the problem statement and extract Also: You need to add two more use cases for a CCS Delivery Person and add that to your diagram. Please add few sentences underneath the diagram explaining the newly added use cases.
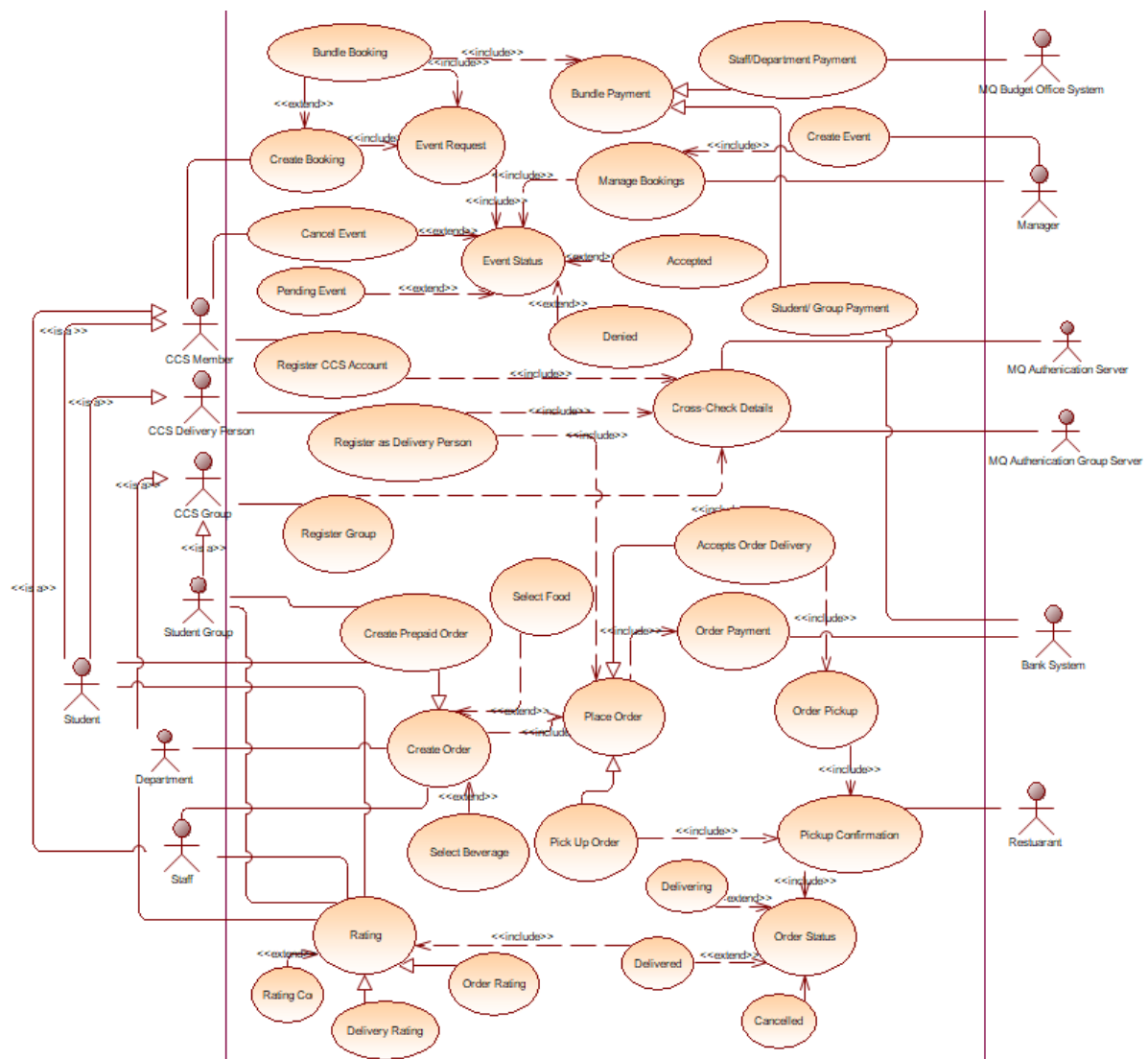

The newly added use cases are Delivering and Cancelled. Delivering gives the CCS Member an indicator that their order is coming so they can be prepared for an arrival by the driver. The cancelled option gives a quick indicator that the order has been cancelled by the driver in case if the driver was in an accident or brought the wrong order to the CCS Member.
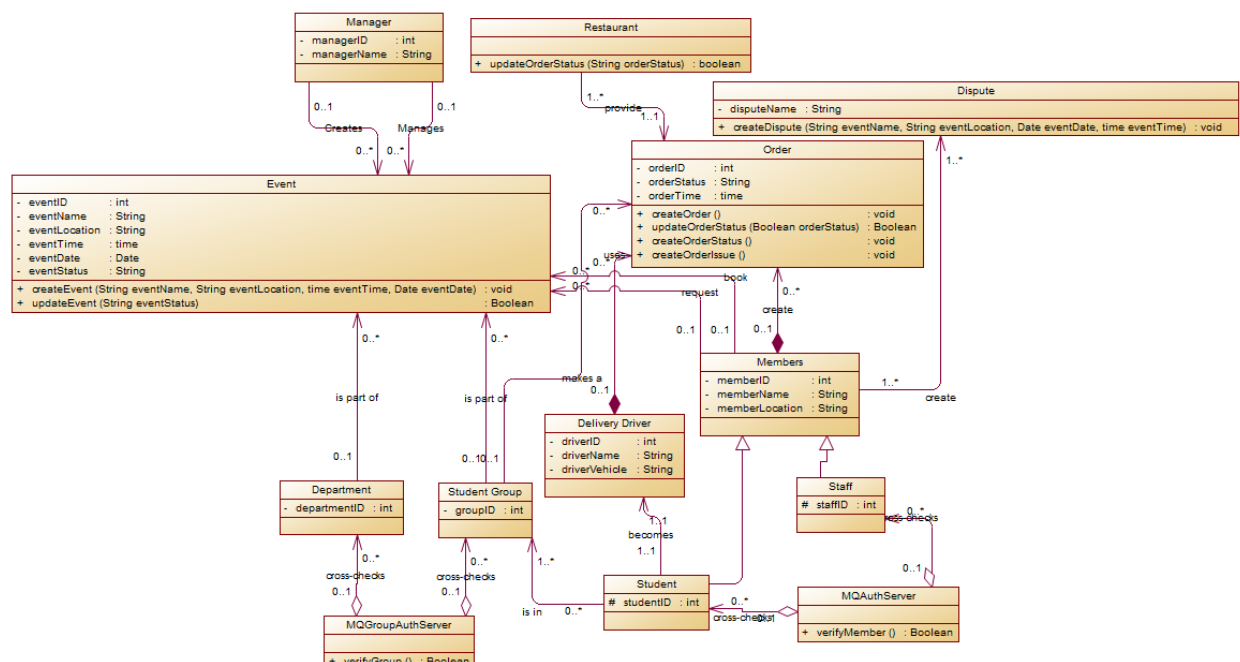
Q9) [10 marks] Write a use case description for one of the use cases you created (choose one that meets the criteria in Q10).

Use Case	Changing Delivery Order Status
Goal	To notify the CCS Member about their order by giving a detailed online tracker to get them updated on small events during the delivery, allowing the CCS member to be notified how soon the delivery will arrive.
Preconditions	CCS Delivery Person has details about what's happening for the Member's delivery.
Success End Condition	The status of the order being changed to either delivered, delivering or cancelled
Failed End Condition	Delivery status would appear as picked up.
Primary Actors; **Secondary Actors:**	CCS Delivery Person CCS System
Trigger	CCS Delivery Person gets a request from CCS.

Description / Main Success Scenario	Step	Action
	1	CCS Delivery Person gets an order request
	2	CCS Delivery Person accepts order request
	3	CCS displays the restaurant location and Order Receipt to Delivery Person.
	4	Restaurant sends a pick-up status to order status on the CCS
	5	CCS Delivery Person request changes on order status to delivering.
	6	CCS Delivery Person sends delivered confirmation to the order's status on the CCS.

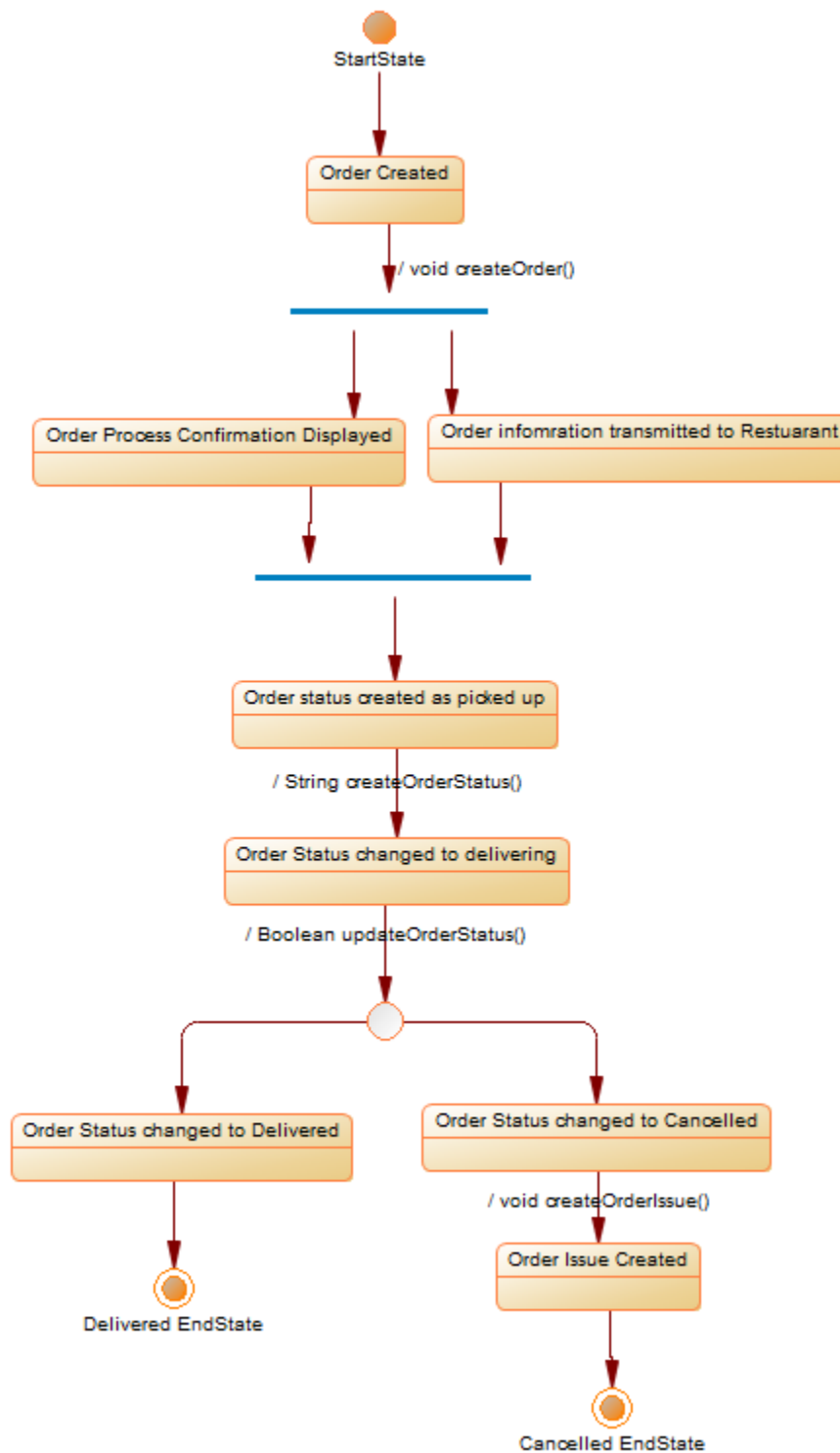| Alternative Flows	Step	Branching Action
	2.1.a	CCS Delivery Person idled too long and accepts order.
	2.1.b	CCS displays order taken message.
	2.a	CCS Delivery Person deny an order.
	5.a	CCS Delivery Person request changes on order status to cancelled with a reason message.

Q10) [10 marks] Draw a Sequence Diagram for the use case description from Q9. Be sure to select a use case that has at least one actor, and a minimum of 3 entity objects (as lifelines) in the sequence diagram.
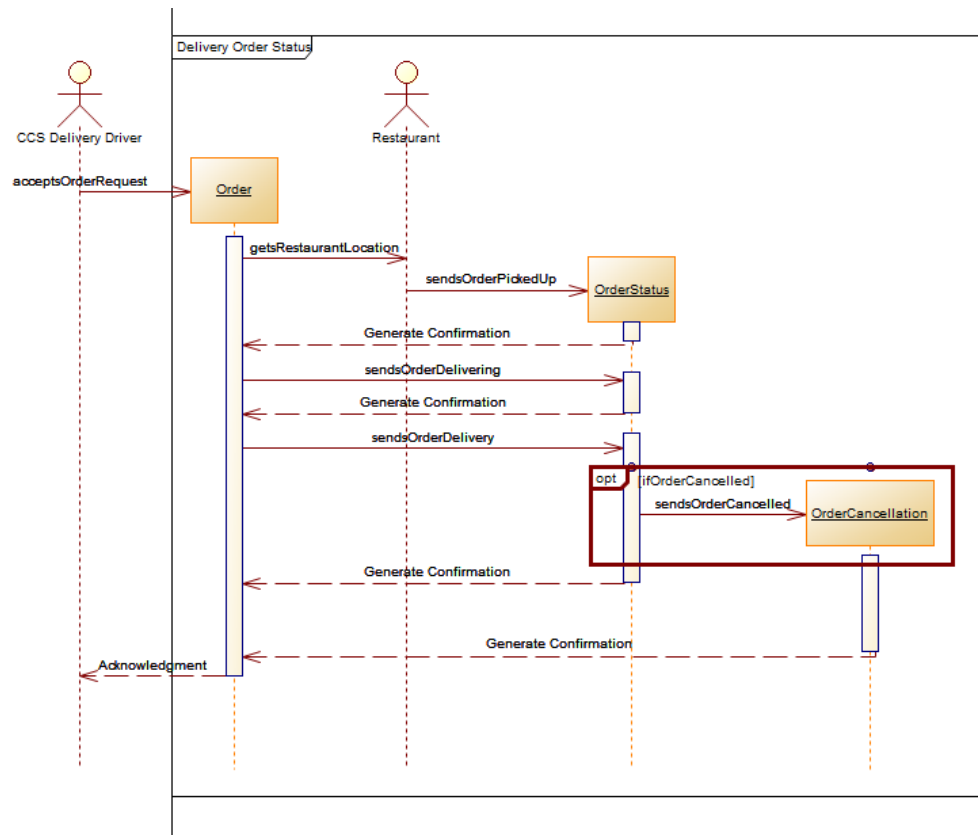
Q11) [10 marks] Draw an entity-class diagram for the entire problem statement.

Q12) [5 marks] Select one class from your class diagram and draw a State diagram for that class.

StartState

Order Created

/ void createOrder()

Order Process Confirmation Displayed

Order infomration transmitted to Restuarant

Order status created as picked up

/ String createOrderStatus()

Order Status changed to delivering

/ Boolean updateOrderStatus()

Order Status changed to Delivered

Order Status changed to Cancelled

/ void createOrderIssue()

Delivered EndState

Order Issue Created

Cancelled EndState

Task 4 – Data and storage considerations [15 marks]

Q13) [10 marks] Draw an ER diagram using one of the following set of entities.

- CCS Member, Order, Delivery Person, Restaurant

- Event Booking, Bundle Package, Department, Payment

You need to have at least 3 attributes for each of the entities. You are allowed to add extra entities, if you feel the need.
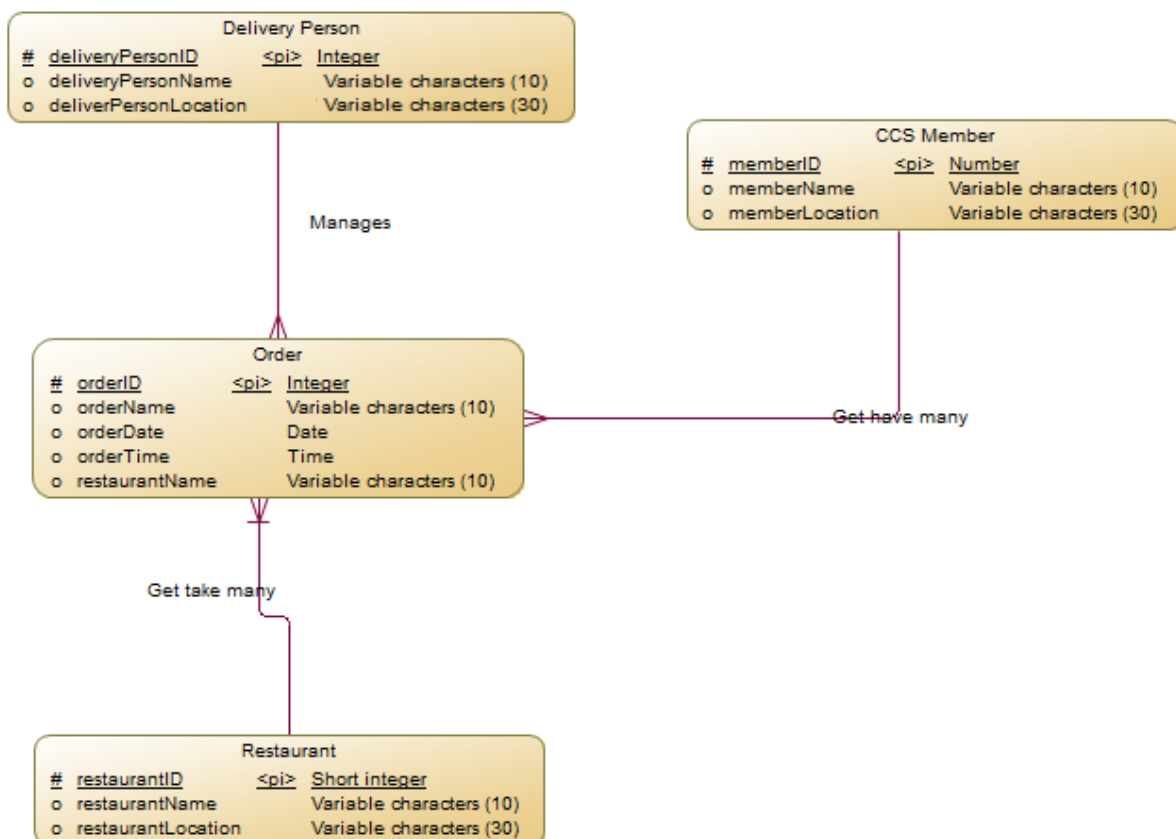
Q14) [5 marks] Provide a list of tables with their primary and foreign keys, when ER model in Task 4 is transformed into tables.

Tables:

Order(orderID <pk>, orderName, orderDate, orderTime, restaurantName <fk>)

Restaurant(restaurantID <pk>, restaurantName, restaurantLocation)

CCS Member(memberID <pk>, memberName, memberLocation)

Delivery Person(deliveryPersonID <pk>, deliveryPersonName, deliveryPersonLocation)