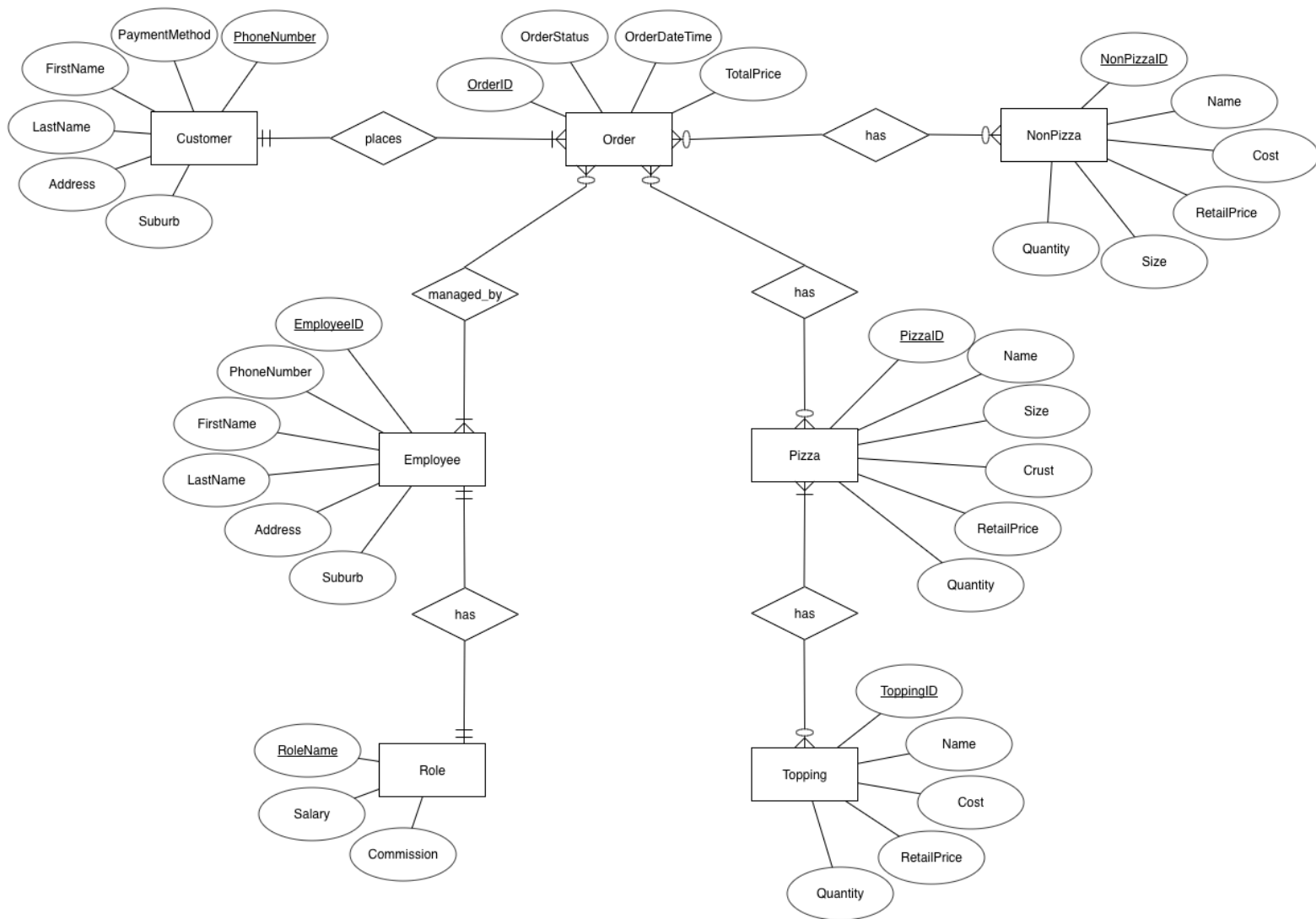CITS1402 Assignment
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#Task 1.a and Task 1.b Solution:

#Task 1.c Solution:

The ER model above displays a database framework for the pizza restaurant. It contains 7 entities and their attributes as well as relations between entities.

Customer – Customer is the entity that contains all the required data for each customer as part of the restaurant ordering system. The attributes of Customer mostly include identification and contact information such as name, address and phone number which are

essential for business practices. They can also provide valuable insight for the business such as which suburb generates the highest revenue.

Order – The most fundamental part of any business, Order allows the restaurant to sell their products to customers. Orders is especially important as it maintains a relationship between all other entities. A customer places an order which contains some quantity of pizza and/or non pizza items which are then managed by one or more employees. Without Order and its relations to other entities, there would be no business.

Pizza – The main product of the restaurant, pizza, is managed by this entity. It is possible for a customer to order a pizza with no toppings and simply choose its size and type of crust because in this restaurant, each pizza is custom made by the customer. Because of this, Pizza is related to Order and another entity, Topping.

Topping – Each customer is able to choose each and every topping on the pizza and requires its own entity because of this. A customer is also able to choose a special portion of each topping by simply choosing its quantity. Toppings can only be ordered on pizzas and so Topping is related to Pizza.

NonPizza – This entity includes all non-pizza products sold by the company. These products, such as drinks, chips and nuggets do not have the ability to be customised further than their size, so it seems rational for the business to group them into a single entity. NonPizza is related directly to Order.

All three entities above represent the products of the business, and as such all have the attribute of retail price which is essential for the restaurant to manage its revenue.

Employee – This entity contains the identification and contact information of each employee of the restaurant such as name, phone number and address. This entity is important as each order must be managed by an employee for the order to be processed and the business to run, and so Employee is related to Order. Employee does not, however, include information of an employees role as this was made into a separate entity.

Role – Role is related to Employee through the fact that each employee must have the role of either Cook, Driver or Cook/Driver. As well as this, each role contains a salary and commission amount for the employee. Role is an important part of the business due to the fact that employees can have either one or two roles, meaning that not every employee is required to manage an order if there is already an employee managing both the cooking and delivering parts of an order.

#Task 2.a Solution:

The ER model was constructed specifically so that the attributes of each entity were already functionally dependant of the primary key of that entity. Due to this, the schema is already normalised to 3NF form. This allows for more transparency and easier understanding of the employees and the database that they must use every day, which can make their work more

efficient. The creation of foreign keys, however, is also necessary for a database of this complexity. The schema for each table is outlined below where underlined text represents a primary key and text in bold represents a foreign key.

Customer (PhoneNumber, PaymentType, FirstName, LastName, Address, Suburb)

NonPizza (NonPizzaID, Name, Cost, RetailPrice, Size, Quantity)

Pizza (PizzaID, Name, Size, Crust, RetailPrice, Quantity)

Topping (**PizzaID**, ToppingID, Name, Cost, RetailPrice, Quantity)

Employee (EmployeeID, PhoneNumber, FirstName, LastName, Address, Suburb)

Role (**EmployeeID,** RoleName, Salary, Commission)

Orders (OrderID, OrderStatus, OrderDateTime, **CustomerID**, **NonPizzaID**, **PizzaID**, **ToppingID**, **EmployeeID**, **RoleName**)

#Task 2.b Solution:

The different types of data used in the system are:

VARCHAR – Good for storing personal information such as names, addresses and phone numbers

ENUM – Useful for storing a specified set of options such as pizza size, crust type and payment method

INT – Used to store various numbers such as price and cost and especially useful for identification codes alongside the AUTO_INCREMENT tool

FLOAT – Used only to store the commission amount of drivers due to its ability to store decimal numbers.

TIMESTAMP – Used specifically to calculate the order time, which stores the current time (at the time) using the NOW() command.