CITS1402 – Relational Database Management Systems

Project, Semester 2 (2018)

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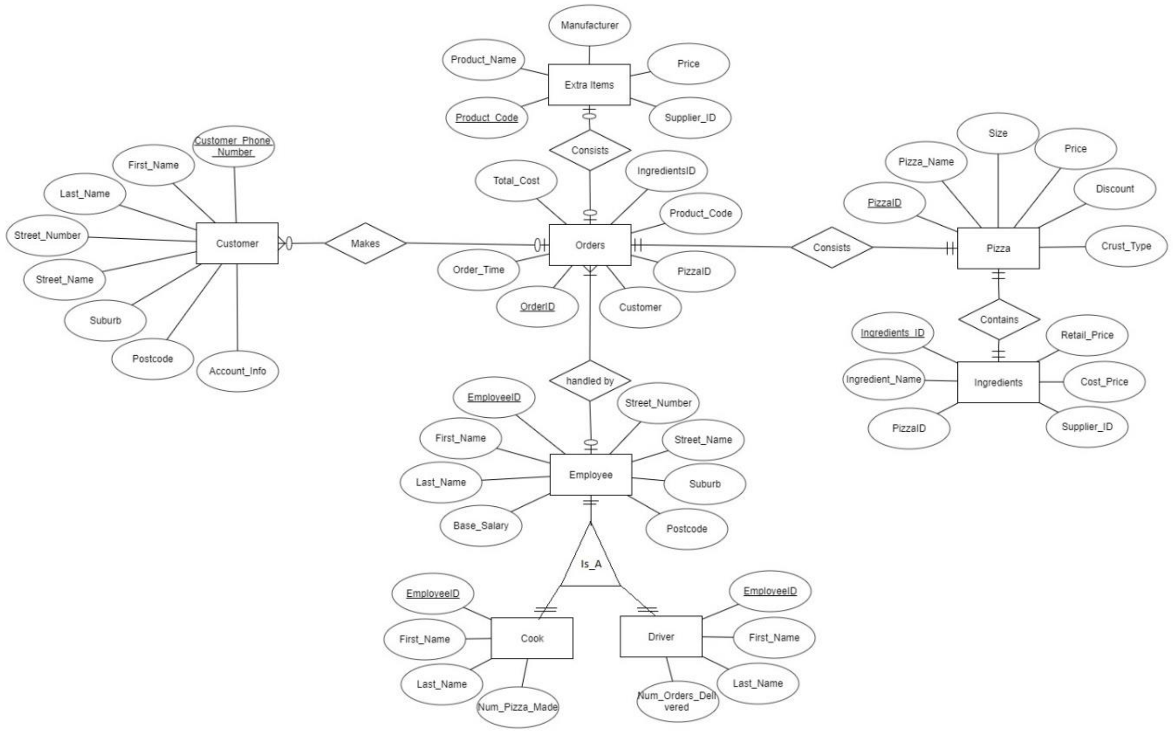
Task 1A & 1B: ERD Diagram



Task 1C:

The entities that were used for this online pizza restaurant are described as follows:

- Customer – The customer entity has attributes: Customer phone number, first name, last name, street number, street name, suburb, postcode and account information. In this database, customers are uniquely identified by their mobile phone numbers. The addresses of customers have been broken down into street number, street name, suburb and postcode to allow for easier querying. The account information attribute indentifies the customer's preferred method of payment, either cash or card.

- Orders – The orders entity has the following attributes: OrderID, Order time, Customer, PizzaID, Product Code, Ingredients ID and Total Cost. OrderID is the unique identifier for all orders made by customers. The order time attribute allows for customers to order multiple items at a specific time, under the same OrderID. Customers, identified by their phone numbers, choose the pizza and extra items which they would like to order, and their choices are represented in the PizzaID and Produce Code attributes. Customers are allowed to either choose the default ingredients for the pizza, or they may wish to have different ingredients, hence why and IngredientsID attribute, where the ingredients are listed by their IDs. The total cost attribute represents the cost of the customer's order.

- Pizza – The pizza entity has the following attributes: PizzaID, Pizza Name, Size, Price, Discount and Crust Type. Each pizza available for order in the restaurant has its own ID, and is listed in the PizzaID column. The pizza name attribute is the corresponding name for each PizzaID. Pizzas come in a choices of 3 sizes, namely, small, medium and large. Each pizza has a price and is sold at a discounted price. Different pizzas have different prices and discounts. Customers may select between a thick crust or a thin crust, for their pizzas and this is reflected in the crust type column.

- Extra Items – The extra items entity has the following attributes: Product Code, Product Name, Price, SupplierID, and Manufacturer. These are the items customers can order along with their pizzas. Each product is identified by the ProductID and its Product name. Each product is manufactured by a company and supplied to this restaurant by a different supplier. The price attribute represents the price of the item, sold by the restaurant.

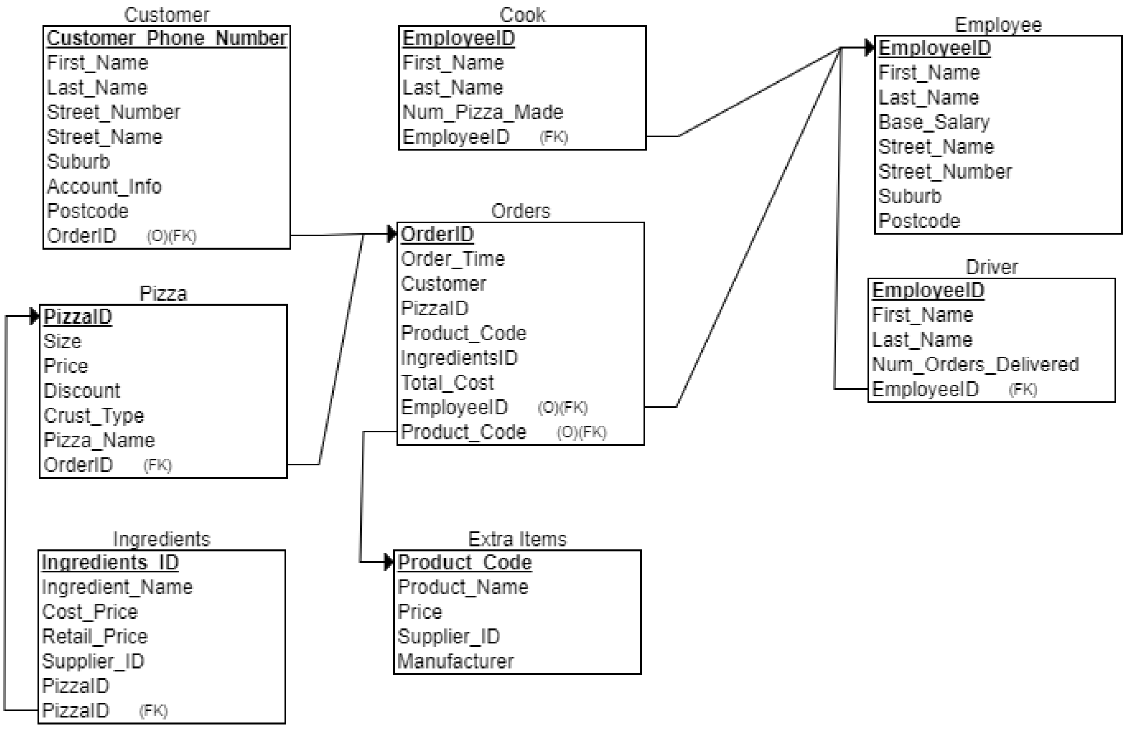
- Ingredients – The ingredients entity has the following attributes: IngredientsID, Ingredients Name, PizzaID, Cost Price, Retail Price and SupplierID. Each ingredient available is identified by its IngredientsID. The ingredients name column represents the name of the ingredient, corresponding to its ingredientsID. The pizzaID column identifes which pizza this particular ingredient will be used in. Ingredients have a cost price, as listed by their supplier and a retail price, at which the restaurant sells them at. The supplierID column represents the supplier that is responsible for providing this ingredient.

- Employee – The employee entity has the following attributes: EmployeeID, First Name, Last Name, Base Salary, Street Number, Street Name, Suburb and Postcode. Each employee for the restaurant is uniquely identified by their EmployeeID. Their names are listed in the first name and last name columns. Employees total income is based on their base salary and their workload. Their base salary is represented in the base salary column in this table. Once again, addresses are broken down into street number, street name, suburb and postcode for easier querying.

- Cook – The cook entity has the following attributes: EmployeeID, First Name, Last Name and Number of Pizzas made. In this restaurant, employees are either cooks, drivers or even both. This table represents the employees that have roles as cooks. They are identified by their EmployeeID, as they are in the Employee table. The table also lists the first names and last names of those cooks. Finally, the number of pizzas made attribute identifies the number of pizzas made by each cook, which is used in the calculation of their total income.

- Driver – The driver entity has the following attributes: EmployeeID, First Name, Last Name and Number of Orders Delivered. This table is similar to the Cook entity, the only difference being that this table represents the employees whose roles are as drivers.

Task 2A: Relational Schema Diagram



Task 2B:

The data types for each table and attributes are listed and briefly described below.

- Customer Table
  - Customer phone number – int – To maintain the legitimacy of the data. Customers cannot input text as their phone number, which will make their entry invalid.
  - First name – varchar(20) – Variable character has been selected over character (char) to allow for customer with special characters in their first names.
  - Last name – varchar(20) – Variable character has been selected over character (char) to allow for customer with special characters in their last names.
  - Street number – int – To maintain the legitimacy of the data. Customers cannot input text as their street number, which will make their entry invalid.
  - Street name – varchar(20) – Variable character has been selected over character (char) to allow for customer with special characters in their street names.
  - Suburb – varchar(20) – Variable character has been selected over character (char) to allow for customer with special characters in their suburb names.
  - Postcode – int – To maintain the legitimacy of the data. Customers cannot input text as their postcode, which will make their entry invalid.
  - Account information – Enum(‘cash’, ‘card’) – Customers are only allowed to chose between cash or card payment methods.

- Orders Table
    - OrderID – int – To maintain the legitimacy of the data. OrderID cannot be input text, which will make the entry invalid. A simple interger allows each order to be uniquely identified.
    - Order time – time – Most appropriate data type for representing time values.
    - Customer – int – To maintain the legitimacy of the data. Customers phone number cannot be input as text, which will make the entry invalid. To maintain consistency will the customer phone number attribute in the customer table.
    - PizzaID – int – To maintain the legitimacy of the data. PizzaID cannot be input as text, which will make their entry invalid. A simple interger allows each pizza to be uniquely identified.
    - Product Code – int – To maintain the legitimacy of the data. Product Code cannot be input as text, which will make the entry invalid. A simple interger allows each pizza to be uniquely identified.
    - IngredientsID – int – To maintain the legitimacy of the data. IngredientsID cannot be input as text, which will make the entry invalid. A simple interger allows each ingredient to be uniquely identified.
    - Total Cost – decimal(5,2) – To represent currency.

- Pizza Table
    - PizzaID – int – To maintain the legitimacy of the data. PizzaID cannot be input as text, which will make their entry invalid. A simple interger allows each pizza to be uniquely identified.
    - Pizza Name – varchar(35) – Variable character has been selected over character (char) to allow for pizza names with special characters.
    - Size – Enum(‘Small’, ‘Medium’, ‘Large’) – Pizzas are only available in 3 sizes, small, medium and large.
    - Price – decimal(5,2) – To represent currency.
    - Discount – decimal(4,2) – To represent currency.
    - Crust Type – Enum(‘Thick’, ‘Thin’) – Pizzas are only available in 2 crust types, thick and thin.

- Extra Items Table
    - Product Code – int – To maintain the legitimacy of the data. Product Code cannot be input as text, which will make the entry invalid. A simple interger allows each item to be uniquely identified.
    - Product Name – varchar(20) – Variable character has been selected over character (char) to allow for product names with special characters.
    - Price – decimal(4,2) – To represent currency.
    - SupplierID – int – To maintain the legitimacy of the data. Supplier cannot be input as text, which will make the entry invalid. A simple interger allows each supplier to be uniquely identified.
    - Manufacturer – varchar(35) – Variable character has been selected over character (char) to allow for manufacturer names with special characters.

- Ingredients Table
  - IngredientsID – int – To maintain the legitimacy of the data. IngredientsID cannot be input as text, which will make the entry invalid. A simple interger allows each ingredient to be uniquely identified.
  - Ingredients Name – varchar(35) – Variable character has been selected over character (char) to allow for ingredients names with special characters.
  - PizzaID – int – To maintain the legitimacy of the data. PizzaID cannot be input as text, which will make their entry invalid. A simple interger allows each pizza to be uniquely identified.
  - Cost Price – decimal(5,2) – To represent currency.
  - Retail Price – decimal(5,2) – To represent currency.
  - SupplierID – int – To maintain the legitimacy of the data. Supplier cannot be input as text, which will make the entry invalid. A simple interger allows each supplier to be uniquely identified.

- Employee Table
  - EmployeeID – int – To maintain the legitimacy of the data. EmployeeID cannot be input as text, which will make the entry invalid. A simple interger allows each employee to be uniquely identified.
  - First Name – varchar(20) – Variable character has been selected over character (char) to allow for first names with special characters.
  - Last Name – varchar(20) – Variable character has been selected over character (char) to allow for last names with special characters.
  - Base Salary – decimal(8,2) – To represent currency
  - Street Number – int – To maintain the legitimacy of the data. Street numbers cannot be input text, which will make their entry invalid.
  - Street Name – varchar(35) – Variable character has been selected over character (char) to allow for street names with special characters.
  - Suburb – varchar(20) – Variable character has been selected over character (char) to allow for street names with special characters.
  - Postcode – int – To maintain the legitimacy of the data. Postcodes cannot be input text, which will make their entry invalid.

- Cook Table
  - EmployeeID – int – To maintain the legitimacy of the data. EmployeeID cannot be input as text, which will make the entry invalid. A simple interger allows each employee to be uniquely identified.
  - First Name – varchar(20) – Variable character has been selected over character (char) to allow for first names with special characters.
  - Last Name – varchar(20) – Variable character has been selected over character (char) to allow for last names with special characters.
  - Number of Pizzas made – int – To maintain the legitimacy of the data. Number of pizzas made cannot be input as text, which will make the entry invalid.

- Driver Table
    - EmployeeID – int – To maintain the legitimacy of the data. EmployeeID cannot be input as text, which will make the entry invalid. A simple interger allows each employee to be uniquely identified.
    - First Name – varchar(20) – Variable character has been selected over character (char) to allow for first names with special characters.
    - Last Name – varchar(20) – Variable character has been selected over character (char) to allow for last names with special characters.
    - Number of Orders Delivered – int – To maintain the legitimacy of the data. Number of orders delivered cannot be input as text, which will make the entry invalid.

Task 2C:

Please refer to the .sql file.

Task 2D:

Please refer to the .sql file.

Task 3A:

Please refer to the .sql file.

Task 3B:

Please refer to the .sql file.

Task 3C:

Please refer to the .sql file.

Task 3D:

Please refer to the .sql file.

Task 3E:

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Task 3F:

Please refer to the .sql file.