

Habib University  
CS355 – Databases, Fall 2020

Assignment 2 – Data Modelling

**Objective:**

The purpose of this assignment is to enable students to analyze real-world business specifications and construct their data model. This skill helps them building data management system of any business entity.

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You have to build database systems for the business domains mentioned in Q1 – Q2. Draw data model of each scenario. Your model diagram should contain the following information:

**Entities, Attributes, primary keys & foreign keys**  
**Relationship, Cardinalities**

**Note:**

Models can be developed in DB Designer or any Database Diagram tool which can generate a schema.

If you take any assumption regarding the scenario, clearly state them in a document which should be named “Assumptions”. Your assumptions should not contradict the actual scenario.

The marks distribution for each question are as follows:

Q1: Broadway Pizza Scenario	60%
Q2. Business Scenario + Data Model	40%

## Q 1 – Broadway Pizza Scenario

You are building a database system for Broadway pizza. There are different categories of items that they have such as ‘Apetizers’, ‘Pizzas’, ‘Pasta’ ‘Desserts’ etc. (as shown in left bar in the image below). Each category contains multiple items. Some items (such as pizzas) are available in multiple sizes and their prices vary depending upon the size. Different pizza flavors may also have different prices.

MENU		APPETIZER			PASTA		
Appetizer		4PCS STUFFED PEPPERS	4PCS	Rs 299	+Add	CHEDDAR MUSHROOM PASTA chicken sausage, mushroom, stuffed cheddar sauce, mozzarella cheese	Rs 429 +Add
Pizza Flavors		5PCS GARLIC BREADS	5 PCS	Rs 199	+Add		
Pasta		PIZZA FLAVORS				GARLIC RANCH PASTA chicken fajita,jalapenos,garlic mayo ranch sauce,mozzarella cheese	Rs 429 +Add
Oven Baked Sandwiches		SULTAN (KING OF PIZZA) chicken kebab, tomatoes, onions, mozzarella & special desi sauce	6 INCH FLAT	Rs 249	+Add		
Wing			20 INCH HALF	Rs 1049	+Add		
Dessert			13 INCH LARGE	Rs 1399	+Add		
Beverages			20 INCH FULL	Rs 1999	+Add		
		DANCING FAJITA chicken fajita, onions, green peppers, jalapenos, marinara,mozzarella	6 INCH FLAT	Rs 249	+Add		
			20 INCH HALF	Rs 1099	+Add		
			13 INCH LARGE	Rs 1399	+Add		
			20 INCH FULL	Rs 1999	+Add		
						MOLTEN LAVA CAKE	STANDARD Rs 249 +Add
						CHOCOLATE MALT CAKE SLICE double chocolate malt	Rs 199 +Add
						CHOCOLATE MALT FULL CAKE double chocolate malt full cake	Rs 1399 +Add

When adding a pizza to the order, the following dialog appears that asks for more details about the crust, topping and sauces.

CHICAGO BOLD FOLD OPTIONS

CRUST

☐ THIN CRUST
 ☐ STUFFED CRUST

EXTRA TOPPING

☐ MOZZARELLA CHEESE {Rs 560}
 ☐ CHICKEN TIKKA {Rs 560}
 ☐ CHICKEN FAJITA {Rs 560}
 ☐ CHICKEN SMOKE {Rs 560}

☐ CHICKEN MUGHLAI {Rs 560}
 ☐ CHICKEN SEEKH KABAB {Rs 560}
 ☐ CHICKEN SAUSAGE {Rs 560}
 ☐ BEEF PEPPERONI {Rs 560}

☐ BEEF {Rs 560}

FIRST SAUCE

☐ BBQ RANCH
 ☐ GARLIC MAYO RANCH
 ☐ JALAPENO RANCH
 ☐ SPICY BUFFALO

SECOND SAUCE

☐ BBQ RANCH
 ☐ GARLIC MAYO RANCH
 ☐ JALAPENO RANCH
 ☐ SPICY BUFFALO

THIRD SAUCE

☐ BBQ RANCH
 ☐ GARLIC MAYO RANCH
 ☐ JALAPENO RANCH
 ☐ SPICY BUFFALO

FOURTH SAUCE

☐ BBQ RANCH
 ☐ GARLIC MAYO RANCH
 ☐ JALAPENO RANCH
 ☐ SPICY BUFFALO

ADD TO ORDER

CANCEL

Deals are announced that contains multiple items in different quantities. Deals are valid for a given date range.

## PREMIUM DEALS

### PREMIUM DEAL 4

10 inch medium, half portion appetizer,  
2 small drinks, 2 sauces

Rs 799

+Add

### PREMIUM DEAL 5

13 inch large, 1 large drink, 2 sauces

R Rs 999

+Add

### PREMIUM DEAL 6

20 inch half, full portion appetizer, 1  
large drink, 3 sauces

Rs 1299

+Add

### PREMIUM DEAL 7

20 inch half splitza, full portion  
appetizer, 1 large drink, 3 sauces

Rs 1299

+Add

The customer can add multiple items/deals to the order and specify the city and to calculate delivery charges. Delivery fee will vary depending upon the city and location. Certain locations nearby a Broadway outlet will have no delivery fee.

YOUR ORDER

Karachi

Gulshan Block 5

Minimum Order Rs. 299

2 items in your order.

(Remove all items)

+

14PCS STUFFED PEPPERS

4PCS

299

+

IPHANTOM 20 INCH

FULL

1999

CRUST: THIN CRUST

FIRST SAUCE: SPICY BUFFALO

Subtotal

Rs. 2298

Delivery fee

Rs. 0

TOTAL

Rs. 2298

PROCEED TO ORDER

PROCESS ORDER

Please enter delivery information..

Full Name

Your Mobile #

Complete Address

Alternate Ph #

Nearest Landmark

Additional Request

EDIT ORDER

Draw an ERD for the above-mentioned scenario, your diagram must include:

- All Entities
- Attributes and Primary Key for each Entity
- Relationships between Entities
- Cardinalities of Relationships
- Foreign Keys

**Note:** Don't forget to clearly mention any assumptions you have taken, if you have taken an assumption which conflicts with the scenario you will lose marks. Also, if you forget to mention your assumption you might lose marks as you might not have the same logic as your instructor.

### Rubric:

Entities correctly identified	25%
All Attributes mentioned	15%
Relationships drawn and resolved correctly	20%
Correct Cardinalities	15%
PK, FK identified and FK is placed in appropriate Entity table	25%

## Q 2- A BUSINESS SCENARIO AND DATA MODEL

You need to give a detailed description of a real-world business system of your own choice and then construct its data model. The specifications must be clear enough so that its data model can be developed. Moreover, the details should also be supplemented with relevant screenshots, sample data or forms used in the business system. Some examples of real-life systems can be:

Library Management System, Hospital Management System, E-Shopping Applications, Online Taxi booking (Uber/Careem), People soft etc.

**Note:** The scenario has to be clearly mentioned in a document, which you will submit along with your diagram.

### Rubric for Q2:

Detailed description of the scenario with assumptions	25%
Entities correctly identified	20%
All Attributes mentioned	10%
Cardinalities are correct	15%
Relationships drawn correctly	20%
Primary and Foreign keys correctly identified	10%