2023 U.S. Information Technology Collegiate Conference Database Design Competition

Do not put your name(s) or your school's name on anything that you turn in! This will result in disqualification of your team.   Only use your team number.

PART 1: Database Design

Draw the Entity Relationship Diagram (ERD) for the application described below. Specify the entities, the relationships between the entities, as well as the cardinality and optionality of the relationships. Primary and foreign keys should be clearly indicated. Indicate what type of notation (crow's foot, Chen, or other) you are using to show cardinality (one or many) and optionality (mandatory or optional) at the top of your ERD. You may specify surrogate primary keys as needed to simplify the database design, which should be normalized to 3NF. ***Save your ERD as a pdf document***.

Eat Well Prepared Meals, LLC.

Eat Well Prepared Meals, LLC. ("Eat Well") sells a variety of prepared meals. The prepared meals are grouped into different gourmet lines. Each prepared meal has a unique identifier, a description, flavor profile (e.g., spicy, sweet, umami, etc.), and price. Each gourmet line may contain any number of different prepared meals and each prepared meal belongs to exactly one gourmet line. The attributes of any gourmet line are the name of the line and the cuisine type (e.g., Italian, Mediterranean, Japanese, etc.).

Each meal is assembled from one or more dishes. For each dish, the attributes are a description of the dish, the dish's primary food group (e.g., fruit, dairy, protein, starch, etc.), and the unit price. Each dish may be part of several different prepared meals.

Customers submit orders for the different prepared meals. Eat Well needs to know the date when an order was placed and how the order originated (in-person, by phone, or online). A customer may submit any number of orders, but each order is submitted by exactly one customer.

Eat Well has two separate categories of customers: individuals and companies. Both types of customers have an address, consisting of the street, city, state, and zip. Individual customers have additional attributes of first name, last name, cell phone number, and email. Companies have the additional attributes company name and PO number.

An order must involve at least one prepared meal but may also involve several different prepared meals.   An important attribute associated with each meal ordered is order quantity. Any meal sold by Eat Well may show up on zero or more orders.

Eat Well has divided its market into sales regions. The company also has several salespersons, with attributes first name, last name, and cell phone number. A salesperson works in exactly one sales region. Each sales region is serviced by one or more salespersons. Salespersons are there to handle corporate customers only—they do not work with individual customers. Each salesperson is assigned to several corporate customers and each corporate customer is assigned exactly one salesperson. Mediterranean

The owners of Eat Well are optimistic that a well-designed database system will substantially improve their business processes. They are depending on you to design and develop the system, and identify areas that can benefit from this database.

Submit your ERD (saved as pdf) to Part 1, then you may proceed to Part 2.

Once you have access to Part 2, you will be able to download DDL scripts for Oracle, MySQL, and Microsoft SQL Server. Choose the appropriate script for your environment.

Run the create_EatWell SQL script in your SQL environment.
This will create the tables and insert the data into the tables.

Part 2: DDL

Save all scripts and queries in folder namedTeamNN. <u>DO NOT CREATE SUB-FOLDERS</u> that make the judges hunt to find your solutions. *Save all DDL and queries in a single script named **TeamNN_Solutions_sys** (where sys is Oracle, SQLServer, or MySQL).*

Comment your code so that each of the steps are labeled ***Step1***, ***Step2*** and ***Step3***.

1. Management wants a VIEW called **EW_MealsView**, which contains the same columns as the **EW_Meals** table, except that only sweet, salty, and spicy meals are included.
2. Write the SQL statement to increase the unit price of all sweet, salty, and spicy products by 6.5%, through the view.
3. Write the SQL statement to display all rows and columns of **EW_MealsView**. Put in order by flavor profile as primary sort key, and unit price as secondary sort key. The view will look like this:

meal_id	meal_descripti...	flavor_profile	unit_price	qourmet_line_id
03U8	Udon and Eda...	Salty	13.83	1111
15B2	Burger and Fries	Salty	12.77	5555
44P5	Chicken Parme...	Salty	11.70	3333
43B0	Buffalo Wings	Spicy	13.83	5555
67C5	Honey Glazed ...	Sweet	11.70	5555
87C4	Crepes	Sweet	7.19	4444

Part 3: Queries

Comment your code so that each of the queries are clearly labeled as
Query1, *Query2*, etc.

For all of the following queries, place the fields in the order that they are requested, and adjust the width of the columns if necessary, so that the column headings as well as the data in the results can be fully viewed. Format all data and column headings as shown and order the records as specified. The solution to each query is shown below its description.

Query1: Write a query that will calculate how much money it costs to produce the Greek Salad.

Meal	Total Cost
Greek Salad	$13.34

Query2. Eat Well plans to give a 5% loyalty credit to all commercial customers that have spent more than $500 on meals. Write a query that will provide the total amount spent on all orders that are currently in the Orders table. If the total amount is $500 or more, calculate the loyalty credit amount, formatted as shown below.   Order by credit amount from largest to smallest values.

Company Name	Total Invoice	Discount	Final Price
Meals On Wheels	$689.40	$34.47	$654.93
Dierbergs	$599.40	$29.97	$569.43

Query3.   Write the SQL code to give the number of orders along with the total number of meals that were in all orders, grouped by the order's origination ('O' for 'Online', 'P' for 'Phone', and 'M' for 'Mail'). Order the records by the number of orders in ascending order.

Origination	Number of Orders	Number of Items
Online	3	77
Mail	4	75
Phone	6	132

Query4. Create a query that lists each customer's ID number, their name (formatted as "Firstname Lastname", first letter capitalized) or the name of the company, and the customer type (Individual or Commercial) as shown in the results below. Order according to customer type and then by customer name, as shown.

ID Number	Customer Name	Type
0018	Dierbergs	Company
0198	Meals On Wheels	Company
0158	Mercy Hospital	Company
0021	Piggly Wiggly	Company
0036	Save-A-Lot	Company
0031	Texas Medical Center	Company
0001	Andrew Rodman	Individual
0187	Jennifer Thompson	Individual
0035	Jonathan Holcom	Individual
0025	Nathan Spencer	Individual
0012	Tanya LeBlanc	Individual

Query5. Select all meals with a unit price greater than the average unit price tied to their own gourmet line, ordered by meal description.

Meal Description	Gourmet Line	Meal Price	Average Gourmet Line Price
Buffalo Wings	Yummy	$12.99	$11.99
Cassoulet	Delicieux	$9.99	$8.37
Chicken Parmesean	Delizioso	$10.99	$10.49
Sushi Roll	Oishi	$13.49	$13.24

Query 6. Return the street address of any customer, such that the street address contains the number of characters in that street address. Do not hard-code the criteria just to match the resulting data.

Street Address	Number of Characters
5517 Scranton St.	17
180 Clayton Street	18
2100 East Plano Pkwy.	21

For example, there are 21 characters in the street address, and the numerical part of the address contains the string '21'

numerical part of the address contains '21'

Part 4.   SQL KNOWLEDGE:

This part of the competition tests your knowledge of SQL. Complete the Part 4 Quiz online.

TIE-BREAKER

This will be used only in case of a tie.
List the individuals that have the ***same cell phone area code*** as that of Jennifer Thompson, but do not include Jennifer Thompson in the results. You may <u>only</u> use the value 'Jennifer Thompson' in your search criteria. Do not hard code the area code '214' in the search criteria.

Customer Name	Area Code
Andrew Rodman	214
Nathan Spencer	214