National University of Computer and Emerging Sciences, Lahore Campus

Course:	**Database Systems**	**Course Code:**	**CS219**
Program:	**BS (Computer Science)**	**Semester:**	**Spring 2021**
Out Date:	**07-Jun-2021**	**Total Marks:**	
Due Date:	**~~Fri 11 Jun 2021~~ Sun 13-Jun-2021**	**Weight:**	
Section	**BCS-4A & BCS-4B**	**Page(s):**	**2**
Assignment:	**7 (EER Model)**		

Instructions:

- This assignment is an individual assignment.
- Clearly mention any assumption you have made.
- Show all steps, working, and reasoning to answer the questions.
- Please upload your solution in PDF format with your 8 digit Roll No (19L-1234) as file name.

TOPIC: Conceptual Data Modeling using Enhanced Entity Relationship (EER) Data Model

*You are required to draw **EER diagrams** for the following questions. Specify key attributes of each entity type and structural constraints on each relationship type. Note any unspecified requirements, and make appropriate assumptions to make the specification complete but clearly state your assumptions along the diagram.*

Q1.

Consider the following requirements for a database of a canteen:

- The canteen has a certain features of menus it can produce. Each menu has an identifying number, a name, and a price. The name is used for advertising the menu.
- Each day, the canteen offers several menus. It wants to store which menu was offered on which day and how often it was sold.
- Internally, the menus are constructed from a main course (usually meat) and several side dishes (such as soup, salad, vegetables, dessert). In this canteen the customer cannot choose the side dishes. The composition of menu is used only for the preparation, because every component (main dish or side dish) can be prepared independently. Also, if some component is used in different menus, the information about it does not have to be stored redundantly.
- For every menu component, the recipe has to be stored (how to cook this part of the meal). It is important that the type distinction (main course or side dish) is represented and that every menu consists of exactly one main course.
- Finally, the ingredients of the menu components have to be stored (e.g. potatoes, carrots, cheese,). For each ingredient, the name and number of calories per 100g are stored. An ingredient can be used for several menu components.
- You also have to store how many grams of each ingredient are used for a menu component.

Q2.

Consider the following requirements for a database of the fund-raising activities of a political campaign:

We keep track of all donors to the campaign. We keep track of their name, address, employers, profession, and email. A donor can have multiple employers, and we need to keep track of all of them. Each donor must have made at least one donation.

Some donors have referred other donors to us. A donor can refer many donors to us, but need not have referred any. A donor can be referred by one other donor, but need not have any referrer.

We keep track of all donations to the campaign. Each donation is from just one donor. Each donation includes the amount and the date. We also keep track of whether the donation was made by phone, by mail, or by using the campaign website. A donation is made by either check or credit card. For checks, we keep track of the bank, check number, account number, and routing number. For credit card donations, we keep track of the credit card number and expiration date.

We also keep track of events for our donors. A donor can attend multiple events, but need not have attended any. An event might not have had any donors attend yet, but might have many donors attend. For each event, we keep track of the date, location, and description. We also keep track of all tasks that a particular donor might have helped with at a particular event (for example, making food or cleaning up afterwards).