



DATABASE SYSTEMS (DS) Spring, 2024 ASSIGNMENT # 2

Due Date: 10-April-2024

1. **Failure to submit according to the above format would result in a deduction of 10% marks. Submissions other than the Google Classroom (e.g., email, etc.) will not be accepted.**
2. **Deadline:** The deadline to submit the assignment is **10th April 2024**. No late submission will be accepted. Correct and timely submission of the assignment is the responsibility of every student; hence no relaxation will be given to anyone.
3. **Grading Policy:** A rubric is on the last page; you may refer to it for the grading criteria.
4. **Honor Policy:** This assignment is a learning opportunity that will be evaluated based on your ability. Plagiarism cases will be dealt with strictly. If found plagiarized, both the involved parties will be awarded zero marks in this assignment, all the remaining assignments, or even an F grade in the course.
5. **TOOLS: MySQL**

Part 1: ERD to Relational Schema

Objective

Enable the student to design and develop a database. In this assignment, the student is required to show their abilities of

- 1) Analyzing the System Requirement. (Already done)
- 2) Represent the requirement in logical design using an Entity Relationship (ER) or/an Enhanced Entity Relationship (EER) model. (Already done)
- 3) **Mapping the designed model into relational schemas (Problem 1 of assignment 1)**
- 4) **Writing SQL statements to create the tables including all applied integrity constraints.**
- 5) **Writing SQL statements to populate the initial records of each table.**
- 6) **Writing SQL queries to get insights from the database.**

Note: You can change or modify your schemas according to the updated ERD in this assignment. There is no restriction.



Case Study of Problem 1 of Assignment 1

You're employed by an airline company to create a centralized database for its new booking and management system. The booking system involves multiple airlines. Each airline has a code, name, and headquarters address. Airlines also offer various mileage programs, each with its code, description, and start date. Airlines provide different types of flights, each with a unique number, day of the week, departure and arrival times, origin, destination, and any stops along the way. Passengers booking flights are identified by number, name, address, gender, and age. Passengers can sign up for a mileage program offered by an airline. The system keeps track of passenger information for each flight, including the date, seat number, pilot's name, and crew members. It also records the miles earned by passengers on each flight. Booking can be done through travel agencies, which have their code, name, address, contact person, and phone number. Each passenger on a flight is offered a menu with different options, each with a code and description. Menu options include vegetarian, low-fat, and kosher meals. Details such as protein level and calorie count are recorded for vegetarian and low-fat meals. Kosher meals require approval from the kosher community.

To do Task and submission details:

Do not zip your file, the naming convention should be like this (i22_xxxx_AI_section.docx / i22_xxxx_AI_section_Part_A.sql)

1. A single word document inclusive of the following items in the appropriate format:
 - a. You can make minor changes in your previously submitted ERD (major changes NOT ALLOWED) along with its necessary assumptions
 - b. Relational schemas/ Mapping
 - c. Description of all tables
 - d. Dataset
2. One .sql file for the following separate sections along with comments:
 - a. SQL statements used to create tables (DDL)
 - b. SQL statements used to populate tables (insert statements) (DML)
 - c. SQL statements as the answer to the needed 5 queries (of your choice)

RUBRICS

Criteria (Total Marks: 100)	Marks
Relational schemas/ Mapping	05
Description of all tables (Should apply possible constraints)	10
Dataset (should be diversity and variability in the dataset)	15
SQL statements used to create tables (DDL)	10
SQL statements used to populate tables (DML)	10



SQL statements as the answer to the needed 5 queries (Of your choice)	40
Query Quality	10

Detail of each part

1) Example of Table Description

You can get it by using “Desc Tablename” SQL command

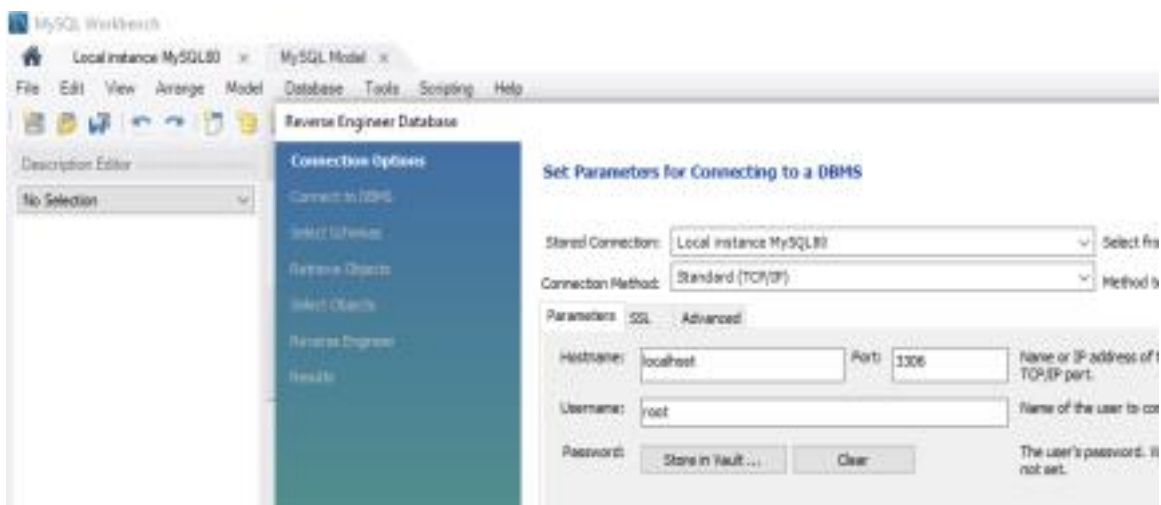
TABLE DESCRIPTIONS

Guardian:

Attributes	Description	Constraints	Type	Example
G_ID	Guardian identifier	INDX	varchar2(9)	G_1, G_2,etc
G_Name	Name of guardian	NOT NULL	varchar2(30)	Ali,ayesha,etc
g_cnic	Guardian CNIC	NOT NULL	varchar2(13)	XXXXXXXXXXXXXX
g_gender	Gender of guardian	NOT NULL	varchar2(1)	M or F
g_num	Contact Number	NOT NULL	Number (11)	XXXXXXXXXXXXX
g_address	Address of guardian	NOT NULL	varchar2(100)	House#123, Street#123, Islamabad,etc

Example of Relational Schema:

- You can do it automatically after writing DDL in MYSQL. **Database > Reverse Engineering**





2) Example of Dataset:

You have to use “**select * from tablename**” from each of the tables of your database after insertion

Part 2: EERD Design

Consider a case Study:

A televised battle,

known as 'Witch Us,' organized by the CD Projekt agency, will take place in your country every year as a means of exerting control and instilling fear in the population by the ruling Capitol. You, as the night courier with the code name 'Healer,' have been contacted by the agency to design a confidential Enhanced Entity-Relationship Diagram (EERD) for efficiently storing 'Witch Us' information in the 'Witch Us' Website Database.

In the WS battle participants are collected for training in D1, D2, D4, D4, and D5 districts which have no contact with the outside world. WS is known for its open rules, vast and immersive open world that is rich in detail and offers a high level of freedom in exploration and decision-making, having players from all over the country, placed in the district. Each player in this war-torn world has skills, gender, and Race to which it belongs. The district contains the district name and training time that each player takes. As far as race is concerned, players can be either human or elf or dwarfs having a faction which is defined as a group or team. The human, elf, or dwarf can exclusively belong to a faction or can appear as independent i.e. not part of any faction, meaning can belong to a neutral faction and Lodge of Sorceresses or no faction at the same time. Who are the players? Players fight for their life having a unique code name, age, and district to which they belong.

Each district has unique items which include the item name, its type(Weapon, crystal skull, Armor, Potion, etc.), value, weight and each item is associated with factions as every group must have an item and as you get further you can collect more items as u score more weight. If the player is a dwarf, then he must have a potion or skull. The potion has quantity, and effects such as healing, stamina, and boost. In this brooding hunt to win the battle each player takes many quests and fights to death until only one player remains. For factions and districts using weapons, the weapon has damage and durability through which we can find the quality of the weapon. Crystal skull is an eye of the spirit

Course

<u>CourseId</u>	CourseName	CourseStartDate	CourseEndDate
1	Computing	2019/01/01	2019/02/01
2	English	2019/02/01	2019/02/15
3	History	2019/02/16	2019/03/02
4	Mathematics	2019/03/03	2019/04/03
5	General Science	2019/04/04	2019/04/20



that predicts future scenarios. Before each quest, the players are provided with the quest's name, description, rules, and rewards, and for each quest there is an associated time. For each quest, you can choose one of three fighting styles to use in different situations and against different foes. The fast style allows for more rapid, less-damaging attacks with a higher chance of hitting faster enemies; the strong style deals more damage in exchange for a slow attack speed, and a lower chance to hit faster enemies; and the group style features sweeping attacks best used if foe is surrounded. The player during the quest can switch between the styles at any point. The rules of the game are simple, it forces people to select youth to take part in this and you can only rely on your hunting skills and sharp instincts, in an arena where one must weigh survival against sympathy for others. Keep in mind, armor belongs to group style which has attack style of course, duration, stealth, moves such as strategy and intelligence, Camouflage, Weapon Proficiency, and effectiveness through which we can find effectiveness score by strength agility, and opponent weight and value. Each quest is part of an arena that has its controlled environment with its unique features and challenges, winner, loser, brutality level, time, and date. A quest belongs to an arena. According to the plan of CD Projekt agency, this arena will be set up every year and players will be increasing every year which means more and more data is coming. Your Database design should tackle all these scenarios and will be able to scale efficiently with new data.

What to do

You are required to design an Enhanced Entity-Relationship Diagram (EERD) for the “WITCH US” never-ending maze. Keeping the above scenario in mind, create an EERD diagram that clearly shows all entities, their attributes, relationships where needed, cardinalities, basic constraints such as membership constraints, and completeness of participation. Be as creative as possible, as your level of creativity and attention to detail can result in higher marks.

Submission Detail

Paste your Final EERD in the same Word document for part 1 titled “PART 2” and write your assumption if any.

Rubrics

Criteria	Problem (75 Marks)
Entity Identification	5
Attribute identification	5
Relationship Identification	10
Cardinalities identification	5
Creativity	10



Diagram Quality	5
Completeness of Participation	10
Membership constraints	10
Identify super classes and sub classes	5
What are the Attributes you think can be inherited from super to sub class?	10