This project consists of separating a database project into the phases. It will consist of the following activities:

Part I of the assignment is designing and creating the database, its tables and test data

1. Describe the requirements for a database that will support a small online business. Makeup a small business scenario or use a real-life scenario. In this section you should also try to formulate the queries that you that you want to write for the database.

2. Design the conceptual database behind the described requirements. This is the ER Diagram for the small database.

3. Convert the conceptual design to a physical design. This is translating the ER Diagram into the relational schema and metadata describing the tables, attributes, and relationships.

 4. Implement the Physical Database from the physical design. This is transposing the relational schema and metadata into the series of CREATE TABLE statements with the appropriate CONSTRAINT modifiers.

5. Providing a framework testing the physical design. This includes making sure that a combination of single and multiple table queries will work properly in the design.

 You need to describe at least the following aspects of the Database:

1. What products and/or services will the database hold, the categories of products/services, approximate number of product titles in each category, what (approximately) is the product information that the customers will be able to access

2. What information is need from the database. This is what queries would you like to create to extract meaningful information from the database. This is a collection of single and multiple table queries that the group will create to test the basic functionality of the database.

In summary this is what must be created.

1. Create the EAR diagram from the information gathered in parts 1

2. Write out the schema and metadata of the database, including:

In the ER Diagram, show all relations between columns, specify the type of the relations (one-to-one or one-to- many), and what is the foreign key by which the tables are related. You can do this in the diagram by placing an FK suffix at the end of the attribute that is a foreign key.

a. All the database tables.

The Metadata

For each table column please specify: the name and the type of the column, whether the value can be null or not, and whether the values are required to be unique.

For each table, please specify which column (or columns) forms its primary key.

A few things to keep in mind when creating and finalizing the design

1. Don't try to be, too ambitious in planning your database. As much as you would want to have a lot of features in your database, you must keep in mind that they will be implemented later in the project! So please try to create a minimum design that will be easy to implement and test.

2. You may need to reduce the scope of the project to get a working version completed within the remaining time in the schedule of this course. In IT, if you cannot deliver a list of features within a given schedule, you have two choices. You can either reduce the features in order to deliver on time, or you can extend the time of the project. We are at the end of the semester, so we cannot extend the time, we can only reduce the activity in the project. In a Database Project, reducing the scope means removing tables, data, and queries from the project.

1. Create the database Container. Write the SQL statement that will create the database

2. Create Entity Tables. Write the SQL statements that will create the primary key tables described in the Schema and Metadata

3. Create Relationship Tables. Write the SQL statements that will create the Foreign Key Tables. These are the tables that on the many sides of the 1 to many relationships and the mapping tables that are a part of the many to many relationships.

4. Insert Test Data. This is the fictitious data that you created that will be used in your INSERT INTO statements to create you sample test data for the database

Designing the ER Diagram, creating the Relational Schema, creating the Metadata and inserting the Test Data. Then you must write queries to test separate segments of the database

Part II of the Assignment.

Assignment

You are to collaborate and create a Database to support sometime of business activities. You must create the ER Diagram, Relational Schema, Metadata and Test Data for the Database you have chosen. Then to create the physical database in MySQL using the appropriate Create Database and Create Table DDL statements to create the database container and create the tables for the database. Finally, you must insert the initial test data representing a current state of the test organization.

You are to take ownership of one of the primary key Entities of the database. You are to perform the following types of queries using tables of the segment of the database that you are testing in your database project.

One part of the assignment is to practice a Union, Intersection and Difference operations on one entity table in the database. For this part of the assignment, you will choose a single table from the entity tables of your database project to work with.

Relational Algebra Contributions

Then we will take the entity table that have chosen and mirror it. Once the entity table has been mirrored, you will copy a few of the instances in the entity table that you have chosen into the mirrored table.

1. Write a query that performs a Union on your main table and your duplicate mirroring table

Write an SQL statement that will combine the instances in both tables as a relational algebra union operation integration project that will merge the data from two databases. To prepare for the merger of the two databases, a number of tests have to be performed on similar data sets from both databases. Create a duplicate table to mirror the entity table you are testing. Insert a few rows from the test data of your entity table into the duplicate table mirroring it. You should then insert one or two unique rows into the duplicate table mirroring your entity table. Once you get this type of environment setup in your database for this assignment, you will be able to perform varying relational algebra operations. You will be able to perform an intersection finding common records in both tables. You will be able to perform a difference operation from both directions. You will be able to perform a Union combining both tables into one result set. That is exactly what you are to do:

2. Write a query that performs an intersection on your main table and your duplicate mirroring table.

This will produce a result set containing the instances that match in both the table that you took ownership of and the table that mirrors it.

3. Write two queries that performs a Difference on your main table and your duplicate mirroring table

This will produce a result set containing the instances from the main table that you took ownership of that do not match instances in the mirrored table

It will also produce a result set hat contains the instances from the mirrored table that do not match instances in the entity table you took ownership of.

4. You are to write a query using your table and a table that it has a relationship with:

Remember a relationship is established when two table share a common attribute. One is the primary key table the other is the foreign key table. For the multi-table select query, use the entity table as the one side of a 1-M relationship. Use one of the relationship tables created in the group segment as the many sides of a 1-M relationship.

5. Create two queries that will alter the structure of your entity table:

Normally when integrating systems, there are a few data type compatibility issues and data alignment issues that need resolution. To prepare for handling such problems, create an Alter Table command to demonstrate that you can handle these types of situations should they arise

6. Write two queries that will update two different categories of rows in your entity table

To demonstrate that you have an understanding of update queries, create an update process to update one or more existing records in your chosen table. This could be accomplished by populating the new attributes added to the table

7. Write a Query that will delete two different categories of rows in your entity table

To demonstrate that you have an understanding of delete queries, create and delete process to update one or more existing records in your chosen table. This could be accomplished by populating the new attributes added to the table.

8.   Write a few queries that will insert a few unique rows of information into Entity Table

In Conclusion, the Requirements for your Individual Segment of the Assignment

1. Copy of the EAR Diagram and Schema that the group developed. The ER Diagram should be submitted in PDF Format
2. The Metadata for the database
3. The SQL script file to create the database, tables and insert the data that the group created
4. The SQL script file containing your individual queries. This can be combined with the SQL Script from Group Assignment

Extra Credit

Create a Stored Procedure that describes the structure of the table that you took responsibility for and lists all the tuples in the table

Create a set of Stored Triggers that will automatically backup a tuple when it is deleted or updated. This will involve writing two triggers. One that inserts the older version of the tuple into a backup table before it was updated. Another trigger that will insert the tuple that was deleted into the same backup table that the update trigger uses.   Both stored triggers should be linked to the one table that you took individual responsibility for in the project.