Part 2.A, Design and Implementation, 15 points

Design the database based on the ERD you drew in part 1 of the project.

Implement the design using MySQL. Each table should have reasonable number of fields and have around 7 records enough for testing SQL Select statements.

The database should implement the following integrity constraints:
   a. Primary key constraints: All tables must have a primary key.
   b. Default value for a field: Define one field of your choice with a default value.
   c. Enforcing domain constraint using CHECK: define one domain constraint and test it by inserting an invalid record to trigger the error message.
   d. Enforcing referential integrity: define two referential integrity constraints and test them by inserting an invalid record to trigger the error message.

Part 2.B, Querying database, 15 points

Based on the database, define queries to produce meaningful information to support management decisions. For each query, briefly document the purpose of the query, and submit the SQL statement and the results.

1. Define a query that uses the Natural Join command to join three tables to produce useful information.
2. Define a query that uses the traditional join method (the one that use the WHERE clause to specify the key and foreign equal) to join two or three tables.
3. Define a query to perform an Outer Join. It is your choice to do a Full, Left, or Right Outer.
4. Define a query that computes useful subtotals from the results of join multiple tables.
5. Define a query that uses the HAVING clause to check the subtotals.
6. Define a query that uses the IN (or NOT IN) to check keys returned by a subquery.
7. Define a query that uses the EXISTS (or NOT EXISTS) to check whether any records are returned by a correlated subquery.
8. Define a query that uses the IF() or CASE function to create a calculated field.
9. Create a useful database view and a SQL statement to query the view.
10. Create a Common Table Expression with a SQL statement to produce some useful information.

Submit the Project Report: Write the project report with Word and organize as follows:

Part 1: Introduction

Describe the business for which you design the application.
Describe the part of business operation your database supports.
Describe the advantages of automating this operation.

Part 2: Database analysis and ERD

Describe the data requirements: Describe entities involved in the business, their attributes, and how entities are related to each other.

ERD

Part 3: Database design and implementation

Submit the screenshots of database tables’ design view.

Submit the screenshots error message of implementation requirements c and d of Part 2.A.
(Note: The requirements of a and b will show on the table design view automatically.)

Part 4: Querying database

Submit the screenshots of SQL statements and results of Part 2.B and briefly explain the purpose of each query.