CST8215 - Database

Assignment 2

Preparation

Download all documents attached to this assignment. The assignment 2 PDF contains the same information as this description.

Form groups of 2 or 3 if possible. You must join a group even if you are working individually. Otherwise, you will not be able to submit.

Submission

There will be 4 files submitted as part of this assignment. You must submit all 3 files at the same time. The files are as follows:

- A text file that contains DDL statements to create the database structure.
- A text file that contains test data
- A text file that contains the queries as defined.
- A text file that contains the views as defined.

Directions

Based on the submission for Assignment 1, you will create, populate and query the design you submitted.

Grading overview

This assignment has a maximum score of 75 points graded in 4 parts as follows:

- 17 point - DDL
- 17 points - Test data
- 35 points - Queries
- 6 points - View

Detailed grading is included in each of the tasks.

Tasks

DDL command file

Abstract

When creating a database, it is not always possible to use generated DDL files from a design tool. This task will have you creating a database by hand.

CST8215 - Database

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Learning objectives

This task will allow you to demonstrate your understanding of the DDL commands involved with creating a database. The include CREATE TABLE and CREATE CONSTRAINT

Requirements

You will submit a text document that has the following items in it.

- A comment block at the top that lists the following items
  - Filename
  - Author(s) – group members
  - Short description
- The commands to:
  - Create the tables
  - Create the constraints including primary key, foreign key and check constraints

Grading

This task has a total of 17 points broken down as follows:

- 2 points for the comment block
- 10 points for the table create commands
- 5 points for the constrains

Test Data

Abstract

A data structure cannot be tested without data. There are many tools and methods available to create test data.

Learning objectives

You will demonstrate an understanding of the database structure by supplying functional (as in working) test data. There are several ways to create this data whether you craft it by hand or use a tool like https://generatedata.com

Requirements

You will submit a text document that has the following items in it.

- A comment block at the top that lists the following items
  - Filename
  - Author(s) – group members
  - Short description
- The commands to:
  - Populate the database

Grading

This task has a total of 17 points broken down as follows:

- 2 points for the comment block
  - 10 point - functional insert statements
  - 5 point – data coverage. i.e. did you populate all of the tables

CST8215 - Database

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Queries

Abstract

After creating a database and populating it, you must be able to run various test queries against it. As every design is different, you will be require to come up with your own "test" queries.

Learning objectives

This task will have you demonstrate your understanding and skills for creating queries that demonstrate topics such as aggregates, joins, etc.

Requirements

You will submit a text document that has the following items in it:

- A comment block at the top that lists the following items
  - Filename
  - Author(s) – group members
  - Short description
- A series of queries as follows. You must include a comment above the query that explains what query number it is and what it is supposed to be doing.
  1. A simple query that pulls all columns and rows from a table
  2. A query that displays a subset of columns
  3. A query that displays a subset of columns with a single clause (predicate) WHERE statement
  4. A query that displays a subset of columns with a multi-clause (predicate) WHERE statement using AND/OR
  5. A query that performs a single table join. In other words, you are joining 2 tables.
  6. A query that performs a multi-table join. In other words, you are joining 3 or more tables.
  7. A query that performs an aggregate (count, min, max, sum, avg, etc.).
  8. A query that performs an aggregate (count, min, max, sum, avg, etc.) with a GROUP BY.
  9. A query that performs an aggregate (count, min, max, sum, avg, etc.). with a GROUP BY and a HAVING clause
  10. A query that performs a subquery either as part of the WHERE clause or as a derived/virtual table.
  11. A query that performs an aggregate with a join and a group by.

Grading

This task has a total of 35 points broken down as follows:

- 2 points for the comment block
- 3 points for every query. Points are broken down as follows:
  - 1 point for submitting a query
  - 1 point for successful execution
  - 1 point for a valid query (i.e. does it actually do what it's supposed to do.)

Views

Abstract

Views are good way to abstract complex queries and hide data structures.

CST8215 - Database

Learning objectives

This task will have you demonstrate your understanding and skills both dynamic and materialized views

Requirements

You will submit a text document that has the following items in it:

- A comment block at the top that lists the following items
  - Filename
  - Author(s) – group members
  - Short description
- 2 views listed as below:
  1. A dynamic view for query 4 in the previous task
  2. A materialized view for query 9 in the previous task

Grading

This task has a total of 6 points broken down as follows:

- 2 points for the comment block
- 2 points for each view broken down as follows
  - 1 point for submitting the commands to create the view
  - 1 point for successful execution