CST2355 – Database Systems Group Lab Assignment 1

# Assignment Overview:

Group Lab Assignment 1 will give you a chance to work in a team of 3 students to create a database application consisting of a Microsoft Access application that uses a separate Microsoft SQL Server database to store application data in linked tables rather than in the Microsoft Access file itself.

You will need to pick a topic for your database to record data for some objects and events that has some real-life complex relationships in the data. You need to have the following types of real-life relationships (which will get implemented using database relationships).

1. ‘hierarchies’: for example the items are grouped into categories.
2. ‘is-a’: there are some items that are sub-types of another; for example a ‘musician’ is a type of artist” or a power-tool is a special type of tool. Usually the sub-types will require additional fields to contain the data that is specific to that sub-type.
3. ‘contains’: for example an invoice contains a list of line items.
4. ‘related-to’: for example a student is enrolled in a course. There is a relationship (maybe many-to-many) between two objects or events for which data has been recorded.

# Steps:

1. The first step is to form a group and get approval of the topic and approach. **A one page proposal describing your assignment topic is required to be submitted at the end of week 3**. It should clearly state who is responsible for which components of the solution, and describe the data in some detail. It will be edited to become the application description and usage instruction documents in the final submission of the assignment.
   1. Group Membership:
      1. All group members MUST be in the same lab section.
      2. Discuss topics in the lab and then after agreeing to work together, all members enroll in the same group # in Brightspace.
   2. List of topic suggestions:
      1. Vinyl recording collection management
      2. Spotify streaming data (XML download for individuals, import data, …)
      3. Knitting supplies management
      4. Tool rental management
      5. Doll collection management
      6. Guitar collection management
      7. Appointment scheduling for piano tuners
      8. Appointment scheduling for appliance repair
      9. Safety inspection scheduling in apartment buildings
      10. Any interesting example that has the required types of relationships….
2. Proposal Template: (1 or more pages)

Section 1: Introduction:

* Describe the topic; for example, an application to manage a personal vinyl recording collection. Some details of the information to be stored and how ‘hierarchies’, ‘is-a’, ‘contains’, and ‘related-to’ relationships are dealt with in the data. Try to limit the number of tables but cover all the required relationship types.

e.g. For a vinyl recording management application: a list of artists, each artist is-a ‘type’ of artist (e.g., song-writer, musician, singer, …), artists are related-to vinyl albums, each vinyl album contains recordings, individual musicians, singers, etc are related-to each recording. A song can be recorded by several musicians on different vinyl recordings. Etc. etc, You will need to build a precise model later, but at least give the professor an idea of what you are planning to store and manage,

Section 2: Group Membership and Tasks:

* List of members and email addresses;
* Table showing who will do which pieces of the assignment. You need to have only one individual per piece.

1. The demo will be during the last lab session before the break. The lab professor will spend 5 or 10 minutes to have a quick look at the application and ask you any questions they might have about the application and how you implemented it. PLEASE plan your demo carefully so that you are able to show the deliverables quickly and demonstrate that you should receive full marks. After the demo, one of your group members should submit the 6 files to Brightspace for grading.
2. You will need to plan your time carefully, and not leave too much for the last couple of weeks. In the end, there will be 6 files to hand in (see below). The files should be submitted using Brightspace by one of the group members, in a single submission .zip format. Normally, all team members should have a chance to review the files before they are submitted, and all team members will receive the same grade,

Marking Scheme:

The assignment will be graded out of 15 points, using the following breakdown:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| TASK | | | | | | MAX |
| Front End | |  |  |  |  |  |
|  | • 2 points for set of forms to update ALL underlying tables | | | | | 2 |
|  | • 2 points for set of reports to navigate and display relevant data (esp. hierarchies) | | | | | 2 |
|  | • 1 point for set of reports &/or forms for convenient updates/inserts/imports | | | | | 1 |
|  |  |  |  | Task Total |  | 5 |
| Physical model | |  |  |  |  |  |
|  | o 2 points – Covered all the minimum required entities; hierarchies, is-a, contains, related-to | | | | | 2 |
|  | o 1 point – appropriate use of surrogate keys | | | | | 1 |
|  | o 1 point - Relationships match business rules; with correct cardinality | | | | | 1 |
|  |  |  |  | Task Total |  | 4 |
| **Data logistics** | |  |  |  |  |  |
|  | **• 1 point - test data complete, useful** | | | | | 1 |
|  | **• 1 point - Backup created** | | | | | 1 |
|  | **• 1 point - backup/restore instructions identified, concise, clear**   1. **SCENARIOS:**   **Add album, song, artist**  **Delete album, song, artist**   1. **Backup**   **Backup in a different database**  **Backup in the same database**   1. **Instructions to restore DB.** | | | | |  |
|  |  |  |  | Task Total |  | 3 |
| Demo/Documentation | | |  |  |  |  |
|  | • 1 point - planning - 6 Files: | | | | | 1 |
|  |  | MS-Access, **SQL Server backup, SQL** **Server Management Studio Model** | | | |  |
|  |  | **1 pager installation/backup instructions**, 1 pager application description, 1 pager usage instructions; | | | |  |
|  | • 2 points - execution | | | | | 2 |
|  |  |  |  | Task Total |  | 3 |