Al Imam Mohammad Ibn Saud Islamic University
College of Computer and Information Sciences
Computer Science Department

Course Project

CS370 – Introduction to Databases
Fall - 2015

Project Information	
Instructor (email)	Dr. Mohamed-Foued Sriti (mfsriti@ccis.imamu.edu.sa)
Project Subject	Tracking Graduation Projects
Part 1	Deadline: November 26, 2015 Deliverables: **1 file containing the Introduction, ER and Relational Model**
Part 2	Deadline: December 10, 2015 Deliverables: **1 file containing Part 1 + SQL statements** and **1 text file containing all SQL statements only**
Submission[1]	Using blackboard (no project files sent by email will be considered)
Demonstration	13/12/2015 and 15/12/2015
Software	Oracle Database 11g Express Edition or MySQL Community Edition
SQL reference	http://www.w3schools.com/sql

[1] Use **Project-Template.docx** to send the part 1 and part 2 of your project through Blackboard

Tracking Graduation Projects (TGP)

The project TGP aims to create a database that manages all data related to students' graduation projects. During this project, your are asked to design and to build a database by 1) elaborating the ER model, 2) mapping this ER to relational model, 3) creating the database using SQL commands, and, finally, 4) writing SQL queries to interrogate the database. The requirement for this project are listed below.

At the beginning of each term, every professor can propose 2 projects at most. When a new project is introduced into the database, an identifier which is a sequential number is assigned to it. You can imagine all useful data related to graduation projects such as title, description, etc. Also, a project must be specified by some keywords, at least 3. A keyword is identified by an abbreviation of 3 letters and can specify more than one project.

If the introduced project is a continuation of an old one, it should be linked to the previous project.

When all professors finish to propose their projects, every student can make choice of exactly 5 graduation projects ordered by the student himself according to his preferences. Whatever, the student makes choices or not, at the end he will see only one project assigned to him according to his GPA.

For every assigned project, the professor who proposed the project should meet 2 times per week with the student that had the project, to supervise his work. For every meeting we should save its date and hour, the project progress rate, and some remarks.

Before the end of the term, a project will has a report, a source code and a presentation. A project report has different versions and each version has a text, creation date and last modification date. A project presentation contains the text of the presentation and its date and hour. At the end of the term, the whole project is evaluated by a panel of examiners (professors) and each examiner attribute a mark to the project, the project final mark is calculated as an average of the attributed marks.

As you can see, not all information are listed. So, you have to specify the decent information to make your design complete.

Requirements

PART 1: DATABASE DESIGN

1. Entity-Relationship model

Draw a complete ER diagram for the TGP Database. Specify the key attributes of each entity type, and constraints on each relationship type (cardinalities and participation constraints). Note any unspecified requirements, and make appropriate assumptions to make the specification complete.

You should add decent attributes related to different entities and relationships. You can add a key attribute only if it is really necessary. Entities that couldn't have any attribute as a key, they may be designed as weak entities.

2. Relational model

Define a relational model for TGP Database by applying the ER-to-Relational Mapping Algorithm on the resulting ER diagram. Indicate the Primary Keys (PK), Foreign Keys (FK) and the arrows that start from the FK and end to PK.

PART 2: DATABASE IMPLEMENTATION USING SQL

3. Database definition

According to the resulting relational model, provide SQL statements for the creation of the database. Provide also all SQL statements to fill sample data that you will use for the queries.

Use SQL on Oracle Database Express Edition to create your database and to fill it with sample data.

NOTE: the implementation can be done by any SQL based DBMS (e.g. MySQL), but the SQL statements should be written manually.

4. Queries

Answer the following queries using SQL by positioning the fields (attributes) in the order that they are requested. Name the queries as specified.

1. Q1: Extract from the database information about projects proposed for the current academic year. For each project give the professor name who proposed it.

2. Q2: Show the information about projects that are not selected by any student and the name of the professor who proposed them.

3. Q3: For every project compute and display the final mark only if the mark is greater than 84.

4. Q4: List the name of students that we had assigned to them a project without they have selected it.

5. Q5: For every project which is a continuation of another one, display the project name, the following information about the old project: name, presentation date, number of report versions.

Provide a user interface for all queries.

REPORT CONTENT

Refer to the project template for a detailed description of the report content. The report content should be strictly in only one file (word or PDF).