CmpE 321 Project 3 – Film Center Information System

Due: 06.08.2012 Monday, 14:00

In this project you are asked to develop a web based university film center information system which carries out the following tasks as minimum requirements:

1. The system will be able to authenticate users with different profiles such as administrator, operator and client.
2. Administrator defines basic lookups and resolves problems. Its main role is to oversee smooth operation of the system. Therefore the user of this sort should have access to all web interfaces. All lookups (e.g. actors, directors, films) should be entered via the web interface. Operators are responsible for daily transactions: check-in and check-out of films etc.
3. Clients are registered members of the system. The registration requires student ID info and a certain amount of deposit.
4. The film search should not require login to system. Search options include but not limited to
   a. Name of the film
   b. Director
   c. Names of actors/actresses
   d. Production Year
   e. Genre
   f. IMDB rank
   Every site visitor will be able to use a combination of the fields to query the film database. One could be able to list all the movies directed by a director e.g. ‘George Lucas’ or film names which contain specific wildcard words e.g. ‘beautiful’ (which might retrieve ‘A Beautiful Mind’, ‘Life is Beautiful’ etc). Further one could query the movies where specified actors/actresses appear together.
5. The client can reserve the film online (which reserves it for one day) but should come to the film center to check it out. It should also be possible to check-out an available film without reservation by any client.
   a. The check-out is done by the operator who queries the place of the film generally using the unique film code among other search options.
   b. After the check-out the client has a fixed period (may be kept on DB or a configuration file, take it 7 days by default) to return the film. 2 days prior to due date, a notification email should be sent to client.
   c. Moreover if the film is not returned in 10 days then the price of the film (which is only seen by the operators) is deducted from the deposit of the client.
   d. Note that you can list the check-outs meeting criteria mentioned above on separate pages accessible to the operators and then carry out the required processes for the items on the list upon approval of the operator.
6. When a film is being queried, the list should contain links for details of film, actors/actresses and directors. In other words there should be detail pages of each aforementioned entity. The actor/actress detail page might include the picture, some interesting notes about him/her and should contain the list of movies the person appeared so that the links takes the interested client.
to the details of the movie. Similarly the movie detail page should include links to director and the actors/actresses appeared.

7. The system should be self-consistent. The film which is already checked-out could not be checked-out for someone else before it was returned.

The project consists of two phases. In the first phase you will design and implement the database for this application. You can use a **DBMS system of your choice such as SQLite, MS SQL Server and MySql**, to implement the database. In the second phase you will design and implement the Web application. For the Web application, you can choose one of the technologies such as **PHP, ASP, ASP.Net**, or JSP. The specifications of the two phases are as follows:

**DB design and implementation phase:**

- Find out the information requirements of the Film Center Information System.
- Determine the constraints and domains. Determine the entities and relations.
- Identify the properties of the entities and their domains.
- Determine the identifier of each entity (i.e., find the primary key).
- Draw the Entity-Relationship (E-R) diagram
- Decide what the base relations are.
- Draw the Functional Dependency diagrams.
- Make sure your relations are in BCNF, if possible further normalize them to 4NF.
- Decide what the referential integrity constraints are (identify foreign keys).
- Decide which deletion integrity rules to use (restrict, set to NULL, or cascade).
- Identify user views.
- Considering frequent access, come up with a physical database schema.
- Create the database on a DBMS.
- Specify DDL statements in SQL (internal, external, conceptual level).
- Specify the queries (needed for the transactions you determined in step 1) using SQL.
- Write SQL insertion, deletion, modification and select statements (DML statements).
- Present your work in the DB design report. Submit the hard copy of your report.
- Submit the script (a.k.a. dump or back-up) of the database you have implemented in a CD. CD must also include the web application source codes.

**Web application design and implementation phase:**

- A simple web interface is adequate.
- You are recommended to use the following technologies:
  - PHP
  - Java (JSP, and JDBC) + Apache Tomcat Server (for JSP)
  - Visual Studio .NET ( ASP .NET )

**Some Useful Resources and Links:**

A manual for web database application. We suppose this manual will be very useful for you. You do not need to consider the sections about XML.

PHP Resources:
- http://www.w3schools.com/php/default.asp
- www.phpbuilder.com

Java resources:
- Sun Microsystems: http://java.sun.com
- JDBC Driver for Microsoft SQL Server Installation How-to: http://www.akadia.com/services/sqlsrv_jdbc.html
- A Complete JDBC Example: http://www.eas.asu.edu/~cse494db/IonJDBC/JDBCExample.html
- Sun’s JDBC Course on Web: http://java.sun.com/developer/onlineTraining/Database/JDBCShortCourse/jdbc/jdbc.html
- JSP & Servlet Tutorials: http://www.coreservlets.com

SQL resources:
- http://www.sqlite.org/sqlite.html
- MS SQL Constraints: http://www.mssqlcity.com/Articles/General/using_constraints.htm
- Microsoft SQL Home: www.microsoft.com/sql/

.NET resources:
- http://www.c-sharpcorner.com/
- http://msdn.microsoft.com/tr-tr/netframework