CS 364 Spring 2016

SQL 1
## Movie Table

<table>
<thead>
<tr>
<th>MID</th>
<th>TITLE</th>
<th>DIRECTOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>0001</td>
<td>It Happened One Night</td>
<td>Frank Capra</td>
</tr>
<tr>
<td>0002</td>
<td>Double Indemnity</td>
<td>Billy Wilder</td>
</tr>
<tr>
<td>0003</td>
<td>Mrs. Miniver</td>
<td>William Wyler</td>
</tr>
<tr>
<td>0004</td>
<td>The Best Years of Our Lives</td>
<td>William Wyler</td>
</tr>
<tr>
<td>0005</td>
<td>The Treasure of Sierra Madre</td>
<td>John Huston</td>
</tr>
<tr>
<td>0006</td>
<td>The Quiet Man</td>
<td>John Ford</td>
</tr>
<tr>
<td>0007</td>
<td>Some Like it Hot</td>
<td>Billy Wilder</td>
</tr>
<tr>
<td>0008</td>
<td>The Asphalt Jungle</td>
<td>John Huston</td>
</tr>
<tr>
<td>0009</td>
<td>Lawrence of Arabia</td>
<td>David Lean</td>
</tr>
<tr>
<td>0010</td>
<td>The Godfather Part II</td>
<td>Francis Ford Coppola</td>
</tr>
<tr>
<td>0011</td>
<td>One Flew Over the Cuckoo's Nest</td>
<td>Milos Forman</td>
</tr>
</tbody>
</table>
## DVD Tables

<table>
<thead>
<tr>
<th>DNUM</th>
<th>MID</th>
<th>InStock</th>
</tr>
</thead>
<tbody>
<tr>
<td>D1</td>
<td>0002</td>
<td>Borrowed</td>
</tr>
<tr>
<td>D2</td>
<td>0001</td>
<td>Available</td>
</tr>
<tr>
<td>D3</td>
<td>0007</td>
<td>Borrowed</td>
</tr>
<tr>
<td>D4</td>
<td>0003</td>
<td>Borrowed</td>
</tr>
<tr>
<td>D5</td>
<td>0007</td>
<td>Available</td>
</tr>
<tr>
<td>D6</td>
<td>0005</td>
<td>Available</td>
</tr>
<tr>
<td>D7</td>
<td>0011</td>
<td>Borrowed</td>
</tr>
<tr>
<td>D8</td>
<td>0009</td>
<td>Available</td>
</tr>
<tr>
<td>D9</td>
<td>0006</td>
<td>Borrowed</td>
</tr>
<tr>
<td>D10</td>
<td>0009</td>
<td>Available</td>
</tr>
<tr>
<td>D11</td>
<td>0002</td>
<td>Available</td>
</tr>
<tr>
<td>D12</td>
<td>0008</td>
<td>Borrowed</td>
</tr>
<tr>
<td>D13</td>
<td>0011</td>
<td>Borrowed</td>
</tr>
</tbody>
</table>
Movie/DVD Database

• CREATE TABLE Movie(mid varchar(6) primary key, title varchar(50), director varchar(40))
• CREATE TABLE DVD(dnum varchar(8) primary key, mid varchar(6) references Movie(mid), inStock varchar(20))
Tables

• **Table Definition**
  – Defines the structure of a table including the columns that are part of each row and the data types of the columns. The structure is determined when the database is designed.

• **Table Instance**
  – A collection of rows that are the current contents of a table. The table instance changes whenever rows are inserted, deleted or modified.
SQL Queries

Movie Table Structure
- Mid
  - Varchar
  - primary key
- Title
  - varchar
- Director
  - varchar

DVD Table Structure
- Dnum
  - varchar
  - primary key
- Mid
  - Varchar
  - foreign key referencing Movie
- inStock
  - varchar
• **Select Attribute_List From Table_List Where Condition**

• Find the title of movies directed by David Lean
  – Select title from Movie where director = ‘David Lean’

• Find the title of movies directed by either John Ford or John Huston
  – Select title from Movie where director = ‘John Ford’ or director = ‘John Huston’
Writing Queries

• Find the dnum of available DVDs of Lawrence of Arabia
  – Select dnum from Movie, DVD where Movie.mid = DVD.mid and title = ‘Lawrence of Arabia’ and inStock = ‘Available’
  – Select dnum from Movie M, DVD D where M.mid = D.mid and title = ‘Lawrence of Arabia’ and inStock = ‘Available’
Writing Queries

• Find the dnum of borrowed DVDs of The Empire Strikes Back
  – Select dnum from Movie M, DVD D where M.mid = D.mid and title = ‘The Empire Strikes Back’ and inStock = ‘Borrowed’
Writing Queries

• Find the number of DVDs of movies directed by John Ford
  – Select count(dnum) from Movie M, DVD D where M.mid = D.mid and director = ‘John Ford’
  – Select count(*) from Movie M, DVD D where M.mid = D.mid and director = ‘John Ford’
Practice Problems

• Find the titles of movies directed by Billy Wilder.
• Find the titles of movies directed by Elia Kazan or Frank Capra
• Find the name of the director of a movie titled *The Informer*.
• Find the number of movies directed by William Wyler
• Find the number of Available DVDs for a movie titled *Taxi Driver*
Modifying a Table Contents

• Insert
• Delete
• Update
Insert Statement

• Insert into table (optional attribute list) values (value list) ...
• Insert into Movie values (‘1234’, ‘Her’, ’Spike Jones’)
• Insert into Movie (mid, title, director) values (‘2222’, ’American Hustle’, ‘David O. Russell’)


Delete Statement

• Removes rows from **one** table that satisfy a condition

• **Delete from** `table_name` **where** `condition`
Delete Statement

• Delete DVDs that are copies of movie M001
  – Delete from DVD where mid = ‘M001’

• Delete DVDs that are copies of a movie titled Zaat
  – Delete from DVD where mid in (select mid from Movie where title = ‘Zaat’)

Delete Statement

• What is a potential problem caused by the following delete statement
  – Delete from Movie where Director = ‘Ed Wood’
Update Statement

• Modifies one or more columns of **one** table in rows that satisfy some condition

• **Update** *table_name Set A1 = Exp1, ... where condition*
Update Statement

• Change to value of inStock for DVD ‘D001’ to borrowed
  – Update DVD set inStock = ‘Borrowed’ where dnum = ‘D001’

• Change the value of inStock to borrowed for all copies of the movie ‘A Clockwork Orange’
  – Update DVD set inStock = ‘Borrowed’ where mid in (select mid from Movie where title = ‘A Clockwork Orange’)