



Summer 2011 CSCC43 Introduction to Databases Assignment 2 Sample Solution

Part I (15 points)

Part II (130 points)

1. Find actors who played in, directed, and produced the same movie.

```
SELECT DISTINCT AM.name \
FROM DirectorMovie DM, ActorMovie AM, ProducerMovie PM \
Where DM.title = AM.title and \
      AM.title = PM.title and \
      DM.name = AM.name and \
      DM.year = AM.year and \
      DM.year = PM.year and \
      AM.name = PM.name;
```

2. Find directors who were younger than all the actors they directed in a movie.

```
SELECT DISTINCT D.name AS DIRECTOR \
FROM Director D, DirectorMovie DM \
WHERE D.name = DM.name \
AND D.YOB > (SELECT MAX(A.YOB) \
             FROM Actor A, ActorMovie AM \
             WHERE DM.title = AM.title \
             AND DM.year = AM.year \
             AND A.name = AM.name);
```

3. For every decade starting with 1950-59, find the total profits made by movies produced by teams with at least one Canadian producer.

Note: It is NOT acceptable to write a query for each decade, and then take the union.

```
SELECT CAST((M.year/10)*10 AS CHAR(4)) || ''s' AS Decade, SUM(M.gross -
M.budget) AS Profit \
FROM Movie M \
WHERE M.YEAR >= 1950 AND EXISTS( \
    SELECT * \
    FROM Producer P, ProducerMovie PM \
    WHERE PM.name = P.name AND PM.title= \
          M.title AND PM.year = M.year AND \
          P.country = 'Canada') \
GROUP BY M.year/10;
```

4. Find actors who only played in comedies.

```
SELECT DISTINCT name \  
FROM ActorMovie \  
EXCEPT \  
SELECT AM.name \  
FROM ActorMovie AM, Movie M \  
WHERE M.title = AM.title AND M.year = AM.year AND M.genre <> 'Comedy';
```

5. For all producers, find the average profit (gross - budget) of movies they produced while they were in their 40s (age between 40 and 49).

```
SELECT P.name, AVG(M.gross - M.budget) AS AverageProfit \  
FROM Producer P, Movie M, ProducerMovie PM \  
WHERE P.name = PM.name \  
AND PM.title = M.title \  
AND PM.year = M.year \  
AND PM.year - P.YOB > 39 \  
AND PM.year - P.YOB < 50 \  
GROUP BY P.name;
```

6. Find directors who co-produced a movie with one of the actors they directed (not necessarily in the same movie).

```
select distinct DM.name \  
from DirectorMovie DM, ActorMovie AM, ProducerMovie PM1, producerMovie  
PM2 \  
where PM1.name=DM.name \  
AND PM2.title=PM1.title \  
AND PM2.year=PM1.year \  
AND PM2.name<>PM1.name \  
AND AM.title=DM.title \  
AND AM.year = DM.year \  
AND PM2.name=AM.name;
```

7. Find directors who have collaborated with all the producers, if they were active at the same time (meaning: a director or producer is active between his/her earliest and latest movie. For example, if director D made his first movie in 1980, and is still making movies, you only have to check if D collaborated with all the producers who made at least one movie after 1980).

Note: The query must capture all cases of overlap for the periods of activity of the producer and the director. The cases that should be covered are the following:

```
Dir_Start, Prod_Start, Prod_End, Dir_End
Prod_Start, Dir_Start, Dir_End, Prod_End
Prod_Start, Dir_Start, Prod_End, Dir_End
Dir_Start, Prod_Start, Dir_End, Prod_End
```

```
SELECT d.name AS Director \
FROM Director d \
EXCEP \
SELECT dm1.name AS Director \
FROM DirectorMovie dm1, DirectorMovie dm2, \
     ProducerMovie pm1, ProducerMovie pm2 \
WHERE dm1.name = dm2.name \
     AND pm1.name = pm2.name \
     AND dm1.year <= pm1.year \
     AND dm2.year >= pm2.year \
     AND pm1.name NOT IN (SELECT pm.name \
                          FROM DirectorMovie dm, ProducerMovie pm \
                          WHERE dm.name = dm1.name \
                          AND dm.title = pm.title \
                          AND dm.year = pm.year);
```

8. Find actor(s) who played in the largest number of top 50 most profitable movies.

```
WITH
  TOP50(title, year) AS \
    (SELECT M.title, M.year \
     FROM Movie M \
     WHERE 50 > (SELECT COUNT(*) \
                 FROM Movie M2 \
                 WHERE (M2.gross - M2.budget) > (M.gross - M.budget))), \
  ACTORINTOP(name, number) AS \
    (SELECT AM.name, COUNT(*) AS number \
     FROM ActorMovie AM, TOP50 \
     WHERE AM.title=TOP50.title AND AM.year=TOP50.year \
     GROUP BY AM.name) \
SELECT AP.name \
FROM ACTORINTOP AP \
WHERE AP.number=(SELECT MAX(AP1.number) \
                 FROM ACTORINTOP AP1);
```

9. List the movies whose cast average age is under 30.

```
SELECT M.title \
FROM Movie M, Actor A, ActorMovie AM \
WHERE A.name = AM.name AND AM.title = M.title AND AM.year = M.year \
GROUP BY (M.title,M.year) \
HAVING AVG(M.year-A.YOB)<30;
```

10. For each year since 1960, find the percentage of profitable movies. If no movies were made in a given year, the percentage should be zero.

Note: In order to include years with no movies in the result of the query, it is necessary to create a table and populate it with the numbers 1960 to 2003.

```
CREATE TABLE Years \
(
    year int NOT NULL, \
    primary key (year));
```

```
CREATE VIEW TOTAL AS \
SELECT M.year, CAST (COUNT(*) AS NUM) AS num \
FROM Movie M \
WHERE M.year >= 1960 \
GROUP BY M.year;
```

```
CREATE VIEW PROFITABLE AS \
SELECT M.year, CAST (COUNT(*) AS NUM) AS num \
FROM Movie M \
WHERE M.year >= 1960 AND (M.gross - M.budget) > 0 \
GROUP BY M.year;
```

```
SELECT T.year AS year, (P.num / T.num) * 100 AS percentage \
FROM PROFITABLE P, TOTAL T \
WHERE P.year = T.year \
UNION \
SELECT Y.year AS year, 0.0 AS percentage \
FROM Years Y \
WHERE Y.year NOT IN (SELECT M.year \
                     FROM Movie M) \
ORDER BY year;
```

11. Find the country(ies) that produced most documentaries. A movie produced by an international team of producers counts once for each of the countries involved.

```
CREATE VIEW MOSTDOC AS \
SELECT P.country, COUNT(P.country) AS cnt \
FROM Producer P, Movie M, ProducerMovie PM \
WHERE M.title = PM.title \
AND M.year = PM.year \
AND P.name = PM.name \
AND M.genre = 'Documentary' \
GROUP BY P.country;
```

```
SELECT DISTINCT M.country \
FROM MOSTDOC M \
WHERE M.cnt = (SELECT MAX(M.cnt) \
FROM MOSTDOC M);
```

12. Find the country(ies) with the highest comedy/drama ratio.

WITH

```
ComedyCountry (country, numComedy) AS \
(SELECT P1.country, count(*) \
FROM Producer P1, ProducerMovie PM1, Movie M1 \
WHERE P1.name=PM1.name AND PM1.title=M1.title \
AND PM1.year=M1.year AND M1.genre='Comedy' \
GROUP BY P1.country), \
DramaCountry (country, numDrama) AS \
(SELECT P1.country, count(*) \
FROM Producer P1, ProducerMovie PM1, Movie M1 \
WHERE P1.name=PM1.name AND PM1.title=M1.title \
AND PM1.year=M1.year AND M1.genre='Drama' \
GROUP BY P1.country), \
RatioCountry (country, ratio) AS \
(SELECT D1.country, (C1.numComedy+0.0)/(D1.numDrama+0.0) \
FROM ComedyCountry C1, DramaCountry D1 \
WHERE C1.country=D1.country) \
SELECT RC.country \
FROM RatioCountry RC \
WHERE RC.ratio = (SELECT MAX(ratio) \
FROM RatioCountry);
```

13. Find actor(s) with the highest number of profitable movies.

```
WITH \
ActorProfitableMovie AS \
  (SELECT A.name, COUNT(*) AS number \
   FROM Actor A, ActorMovie AM, Movie M \
   WHERE A.name = AM.name AND \
         AM.title = M.title AND \
         AM.year = M.year AND \
         M.gross - M. budget > 0 \
   GROUP BY A.name) \
SELECT name \
FROM ActorProfitableMovie \
WHERE number >= ALL(SELECT number \
                    FROM ActorProfitableMovie);
```