CS 4700/6700 Introduction to Database Management System

Database Design Project
'Movie Database'

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Description of the problem

Today we live in a world where everybody enjoys watching movies. Millions of dollars are spent into making a movie which is worth watching. Several people are involved who work very hard to make these great pieces of entertainment. The people involved and the movies themselves are rewarded for their work in several award shows and functions.

Sometimes the people watching the movie want know more than watching the movie. They want to know who directed it, how much did It cost, which award did it win, is it really worth spend $20 to watch the movie and many more such questions ponder them.

The problem at hand is to design a movie information database such as the world renowned Internet Movie Database (IMDB). This database should consist of the information about movies, their directors, their producers, the award shows for which the movie and the actors involved were nominated for. Hence I have chosen to create a simple query based database which would yield the desired result.

The 'Movie Database' which is developed below consists of only a few accepts of the movie world. We take into consideration the actors involved in the movies, the director and the producer. We also take into consideration the production company which is owning the movie and also the genre to which the movie belongs to. The movies, actor and directors can be considered for award shows. So we describe a few category of awards for which they can be nominated.

There are a lot more areas which can be covered but these are for future work and are not considered as scope of this project.

Data requirements

Every database which is under development has some specific data requirements which will lead to the structure of the database. These are also known as the assumption of the database. Each entity is described below as well as the relationships used for connecting these entities. Below are the data requirements of the Movie database

1. The database consists of movies which are unique and can be distinguished using the primary key movie_id. The movies have budget and box office records which are both described in millions of dollars. The runtime of the movies in minutes.
2. It is assumed that every movies is directed by only 1 director and only 1 producer and also that only one production company owns the movie
3. Every director can only direct movies. He cannot be an actor or a producer. One director can director more than one movie.
4. Every producer can only produce movies. He cannot be an actor or a director. One producer can produce more than one movie. Producers cannot be considered for any award nominations.
5. Production companies are differentiated by their id and one production company can own more than one movie.
6. The actors are differentiated by their id's and each actor has a net worth which is defined in millions of dollars.
7. The actors who are cast in movies can act in more than one movie and vice versa, one movie can have more than one actor.
8. The genres are differentiated by their id's and one movie can be belong to more than one genres
9. The awards table only consist of the name of the award shows and the companies producing them, differenced by the primary key award_id.
10. One actor can only be nominated for one movie and for one award which is descried in the actor_nomination table.
11. One director can only be nominated for one movie and for one award which is described in the director_nomination table.
12. A movie can be nominated for more than one category of award in an award show which is described in the movie nomination table.

Entity Relationship Model Design & Relational Database Schema

An Entity–Relationship Model (ER model) is a data model for describing the data or information aspects of a domain or its process requirements, which ultimately can be implemented in a database such as a relational database. The main components of ER models are entities and the relationships that can exist among them.

A database schema of a database system is its structure described in a formal language supported by the database management system

The entities which are being considered in this database are as follows are as follows

Movies – This entity gives information about the movies which are a part of the database. They have information such as the title, run time, release date, language.

Actor – This entity gives us information about the actors involved in the movies such as the Name, age, net worth and so on

Director – This entity gives us information about the director who directed the movies such as the Name, age, marital status and so on

Producer – This entity gives us information about the producer who produced the movies such as the Name, age, marital status and so on

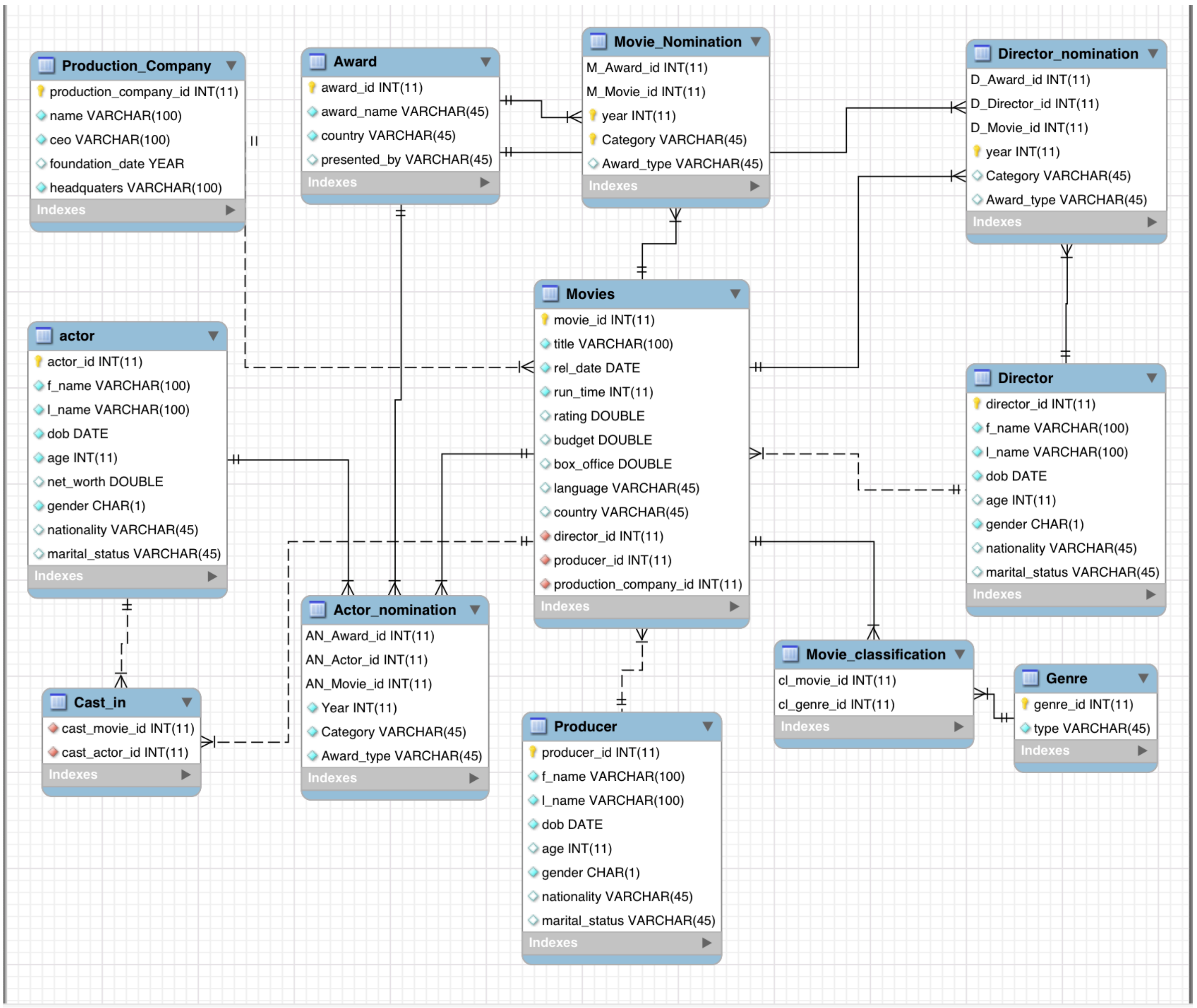
Production Company – This entity describes the companies which own the movies or under whose banner the movie was made.

Genre – Movies belongs to several genres'. This entity describes the several available genres'.

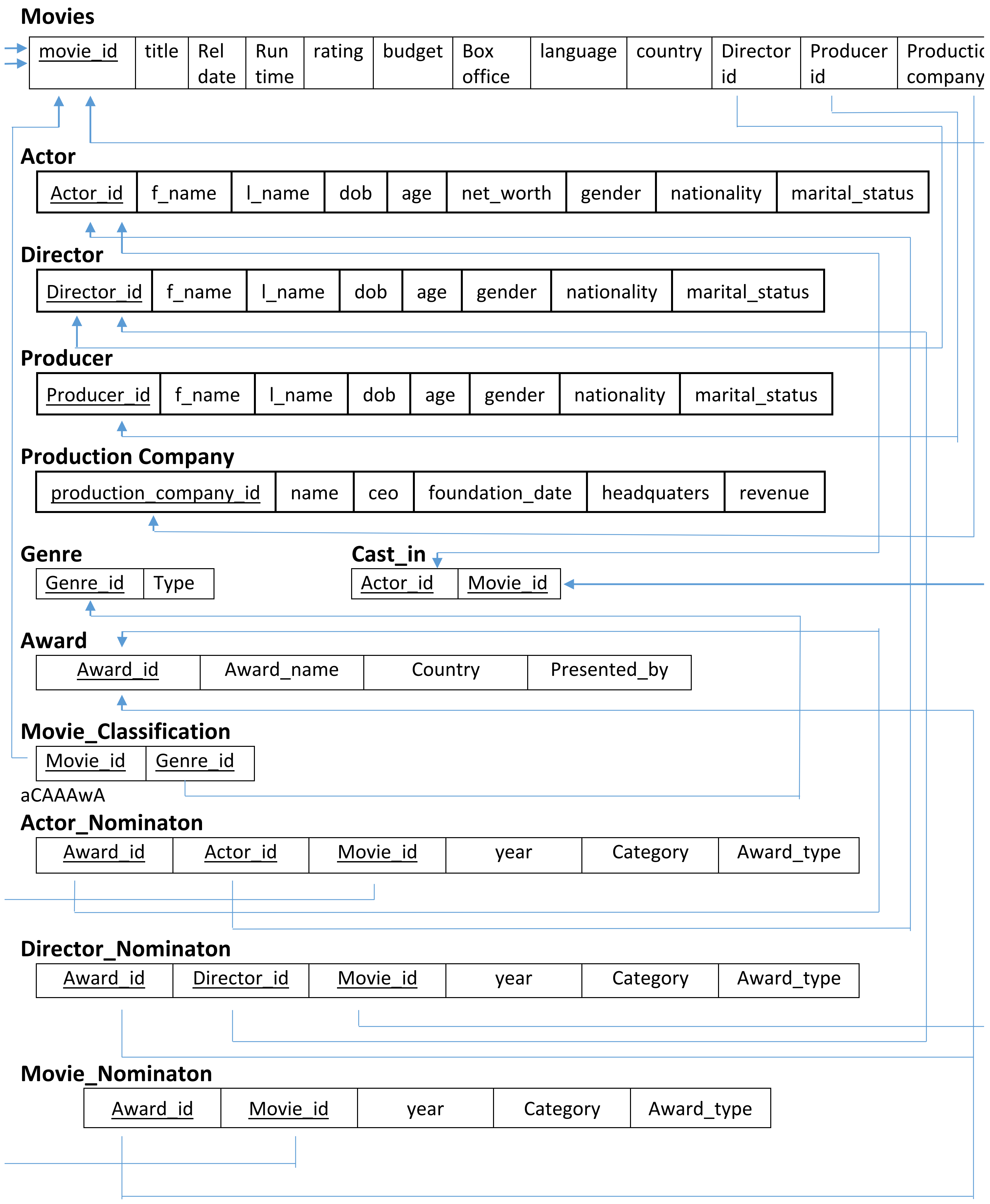
Awards – There are many award shows which are involved in rewarding and recognizing the incredible effort of making a movie. Here we can find the information regarding a few.

We have 7 entities at hand. Next we can see the relationship which exists among these entities described clearly in an E-R Model.

Following which we can see the equivalent Relation Database Schema which is derived from the E-R Model


Production_Company
production_company_id INT(11)
name VARCHAR(100)
ceo VARCHAR(100)
foundation_date YEAR
headquaters VARCHAR(100)
Indexes
Award
award_id INT(11)
award_name VARCHAR(45)
country VARCHAR(45)
presented_by VARCHAR(45)
Indexes
Movie_Nomination
M_Award_id INT(11)
M_Movie_id INT(11)
year INT(11)
Category VARCHAR(45)
Award_type VARCHAR(45)
Indexes
Director_nomination
D_Award_id INT(11)
D_Director_id INT(11)
D_Movie_id INT(11)
year INT(11)
Category VARCHAR(45)
Award_type VARCHAR(45)
Indexes
Movies
movie_id INT(11)
title VARCHAR(100)
rel_date DATE
run_time INT(11)
rating DOUBLE
budget DOUBLE
box_office DOUBLE
language VARCHAR(45)
country VARCHAR(45)
director_id INT(11)
producer_id INT(11)
production_company_id INT(11)
Indexes
actor
actor_id INT(11)
f_name VARCHAR(100)
l_name VARCHAR(100)
dob DATE
age INT(11)
net_worth DOUBLE
gender CHAR(1)
nationality VARCHAR(45)
marital_status VARCHAR(45)
Indexes
Director
director_id INT(11)
f_name VARCHAR(100)
l_name VARCHAR(100)
dob DATE
age INT(11)
gender CHAR(1)
nationality VARCHAR(45)
marital_status VARCHAR(45)
Indexes
Actor_nomination
AN_Award_id INT(11)
AN_Actor_id INT(11)
AN_Movie_id INT(11)
Year INT(11)
Category VARCHAR(45)
Award_type VARCHAR(45)
Indexes
Cast_in
cast_movie_id INT(11)
cast_actor_id INT(11)
Indexes
Movie_classification
cl_movie_id INT(11)
cl_genre_id INT(11)
Indexes
Genre
genre_id INT(11)
type VARCHAR(45)
Indexes
Producer
producer_id INT(11)
f_name VARCHAR(100)
l_name VARCHAR(100)
dob DATE
age INT(11)
gender CHAR(1)
nationality VARCHAR(45)
marital_status VARCHAR(45)
Indexes

The Relation Database Schema



Movies

movie_id	title	Rel date	Run time	rating	budget	Box office	language	country	Director id	Producer id	Productic company

Actor

Actor_id	f_name	l_name	dob	age	net_worth	gender	nationality	marital_status

Director

Director_id	f_name	l_name	dob	age	gender	nationality	marital_status

Producer

Producer_id	f_name	l_name	dob	age	gender	nationality	marital_status

Production Company

production_company_id	name	ceo	foundation_date	headquaters	revenue

Genre

Genre_id	Type

Cast_in

Actor_id	Movie_id

Award

Award_id	Award_name	Country	Presented_by

Movie_Classification

Movie_id	Genre_id

aCAAAwA

Actor_Nominaton

Award_id	Actor_id	Movie_id	year	Category	Award_type

Director_Nominaton

Award_id	Director_id	Movie_id	year	Category	Award_type

Movie_Nominaton

Award_id	Movie_id	year	Category	Award_type

Software Requirements

Below are the software's used during the development of this project

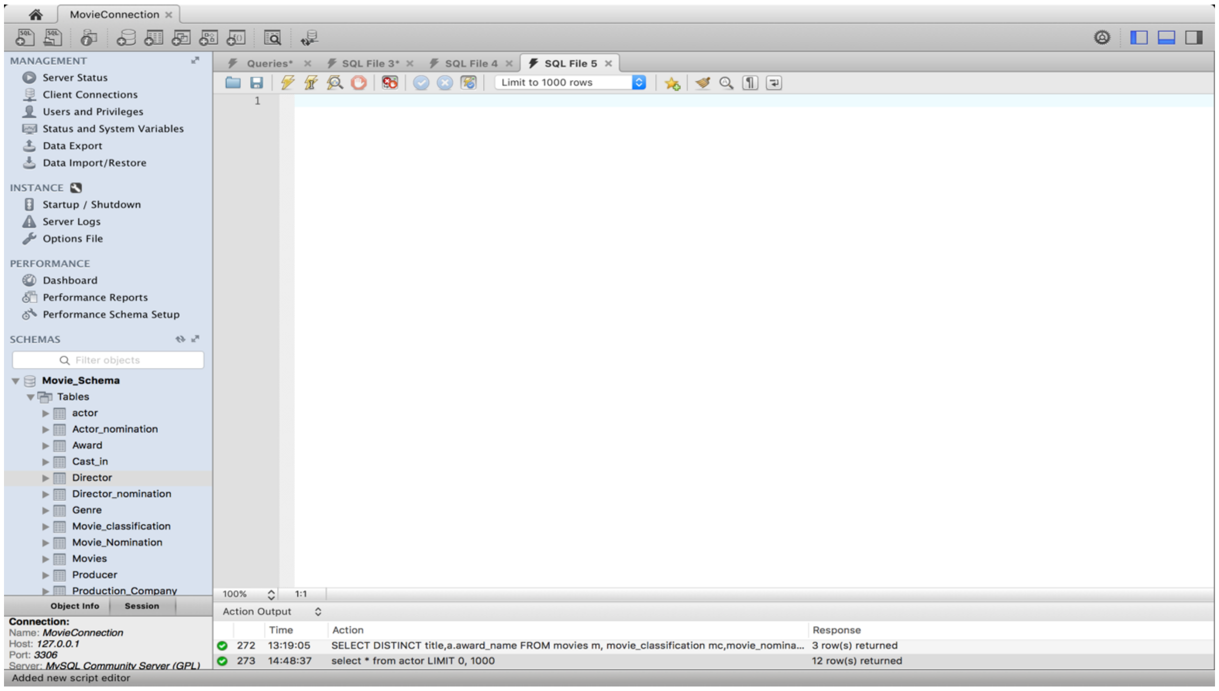
Operating System : Mac OS El Capitan
Sql Server: SQL Community Server 5.2
Sql Client: SQL Workbench 6.3 Community Edition
Other Software's: Microsoft Excel

SQL Workbench 6.3

MySQL Workbench is a visual database design tool that integrates SQL development, administration, database design, creation and maintenance into a single integrated development environment for the MySQL database system

Prominent features of MySQL Workbench are:

- Database Connection & Instance Management
- SQL Editor
- Data modeling
- Database administration
- Performance monitoring
- Database migration

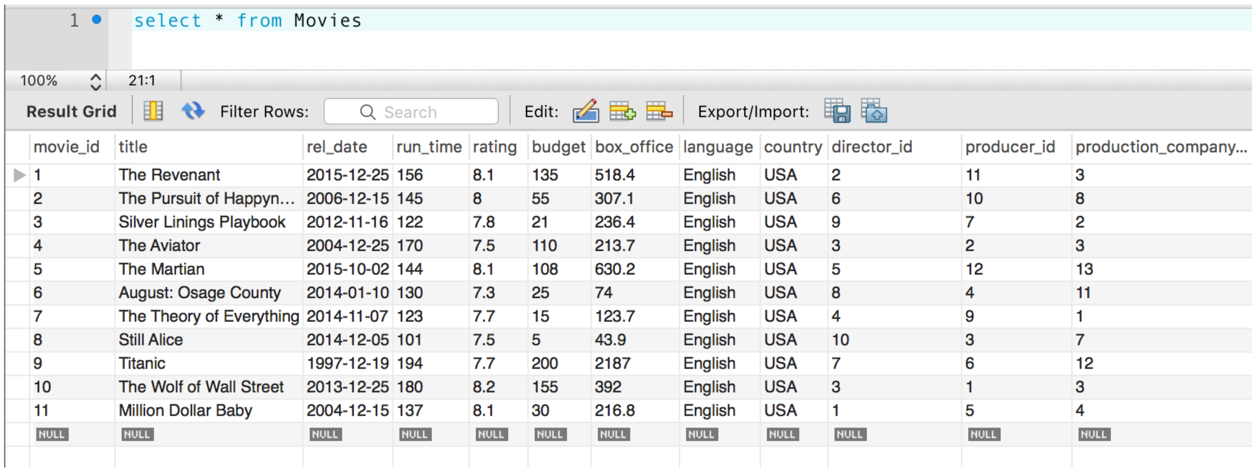


Connection:
Name: MovieConnection
Host: 127.0.0.1
Port: 3306
Server: MySQL Community Server (GPL)

```
     Time      Action                                                                         Response
272  13:19:05  SELECT DISTINCT title,a.award_name FROM movies m, movie_classification mc,movie_nomina...  3 row(s) returned
273  14:48:37  select * from actor LIMIT 0, 1000                                              12 row(s) returned
```

Data Tables for the Movie Database

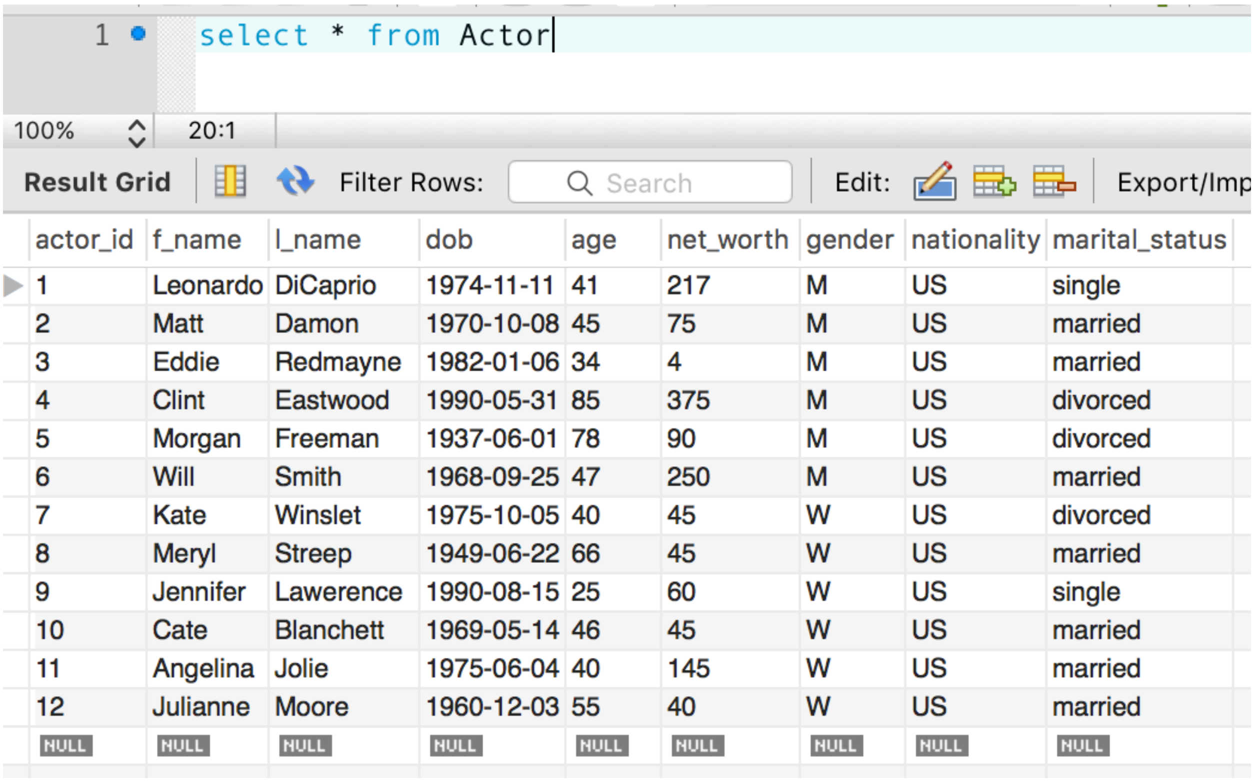
Movies



```sql
select * from Movies
```

movie_id	title	rel_date	run_time	rating	budget	box_office	language	country	director_id	producer_id	production_company...
1	The Revenant	2015-12-25	156	8.1	135	518.4	English	USA	2	11	3
2	The Pursuit of Happyn...	2006-12-15	145	8	55	307.1	English	USA	6	10	8
3	Silver Linings Playbook	2012-11-16	122	7.8	21	236.4	English	USA	9	7	2
4	The Aviator	2004-12-25	170	7.5	110	213.7	English	USA	3	2	3
5	The Martian	2015-10-02	144	8.1	108	630.2	English	USA	5	12	13
6	August: Osage County	2014-01-10	130	7.3	25	74	English	USA	8	4	11
7	The Theory of Everything	2014-11-07	123	7.7	15	123.7	English	USA	4	9	1
8	Still Alice	2014-12-05	101	7.5	5	43.9	English	USA	10	3	7
9	Titanic	1997-12-19	194	7.7	200	2187	English	USA	7	6	12
10	The Wolf of Wall Street	2013-12-25	180	8.2	155	392	English	USA	3	1	3
11	Million Dollar Baby	2004-12-15	137	8.1	30	216.8	English	USA	1	5	4
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

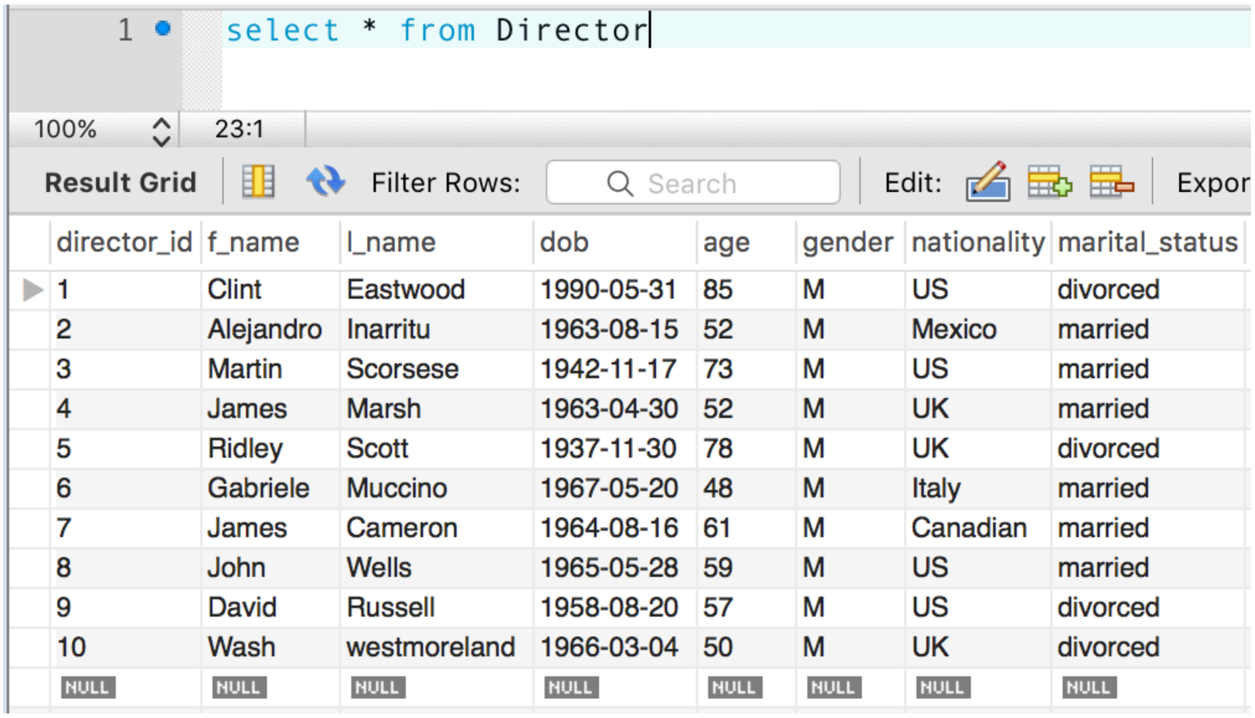
Actor



```sql
select * from Actor
```

actor_id	f_name	l_name	dob	age	net_worth	gender	nationality	marital_status
1	Leonardo	DiCaprio	1974-11-11	41	217	M	US	single
2	Matt	Damon	1970-10-08	45	75	M	US	married
3	Eddie	Redmayne	1982-01-06	34	4	M	US	married
4	Clint	Eastwood	1990-05-31	85	375	M	US	divorced
5	Morgan	Freeman	1937-06-01	78	90	M	US	divorced
6	Will	Smith	1968-09-25	47	250	M	US	married
7	Kate	Winslet	1975-10-05	40	45	W	US	divorced
8	Meryl	Streep	1949-06-22	66	45	W	US	married
9	Jennifer	Lawerence	1990-08-15	25	60	W	US	single
10	Cate	Blanchett	1969-05-14	46	45	W	US	married
11	Angelina	Jolie	1975-06-04	40	145	W	US	married
12	Julianne	Moore	1960-12-03	55	40	W	US	married
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

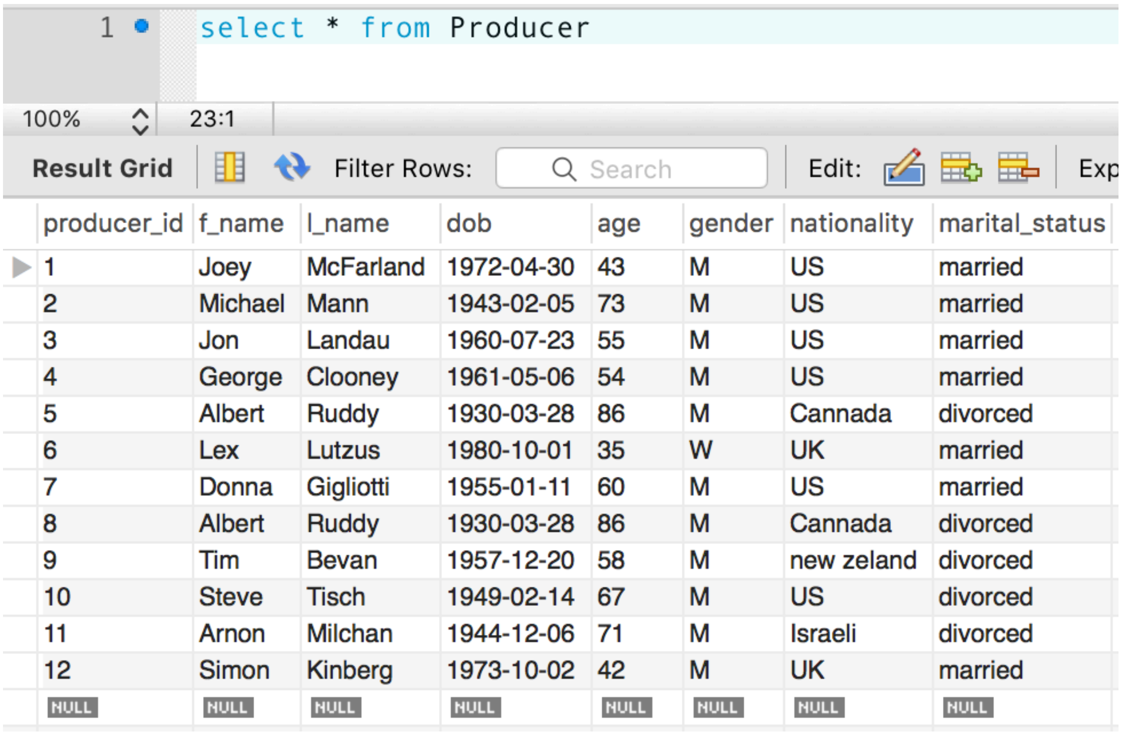
Director



```
select * from Director
```

	director_id	f_name	l_name	dob	age	gender	nationality	marital_status
▶	1	Clint	Eastwood	1990-05-31	85	M	US	divorced
	2	Alejandro	Inarritu	1963-08-15	52	M	Mexico	married
	3	Martin	Scorsese	1942-11-17	73	M	US	married
	4	James	Marsh	1963-04-30	52	M	UK	married
	5	Ridley	Scott	1937-11-30	78	M	UK	divorced
	6	Gabriele	Muccino	1967-05-20	48	M	Italy	married
	7	James	Cameron	1964-08-16	61	M	Canadian	married
	8	John	Wells	1965-05-28	59	M	US	married
	9	David	Russell	1958-08-20	57	M	US	divorced
	10	Wash	westmoreland	1966-03-04	50	M	UK	divorced
	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

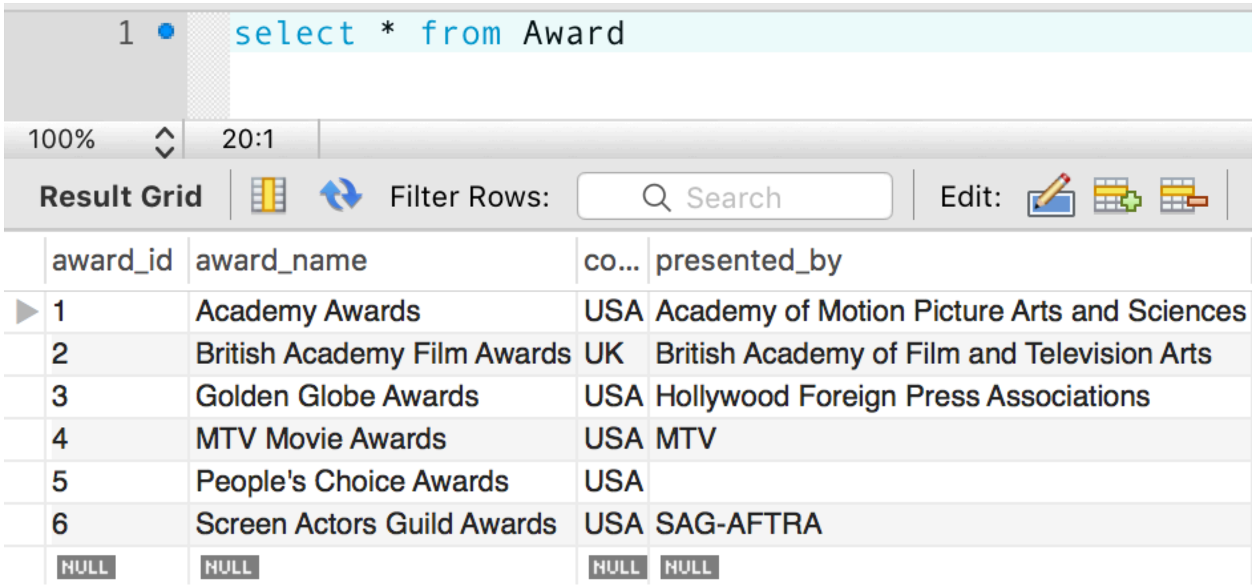
Producer



```
select * from Producer
```

	producer_id	f_name	l_name	dob	age	gender	nationality	marital_status
▶	1	Joey	McFarland	1972-04-30	43	M	US	married
	2	Michael	Mann	1943-02-05	73	M	US	married
	3	Jon	Landau	1960-07-23	55	M	US	married
	4	George	Clooney	1961-05-06	54	M	US	married
	5	Albert	Ruddy	1930-03-28	86	M	Cannada	divorced
	6	Lex	Lutzus	1980-10-01	35	W	UK	married
	7	Donna	Gigliotti	1955-01-11	60	M	US	married
	8	Albert	Ruddy	1930-03-28	86	M	Cannada	divorced
	9	Tim	Bevan	1957-12-20	58	M	new zeland	divorced
	10	Steve	Tisch	1949-02-14	67	M	US	divorced
	11	Arnon	Milchan	1944-12-06	71	M	Israeli	divorced
	12	Simon	Kinberg	1973-10-02	42	M	UK	married
	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

Award



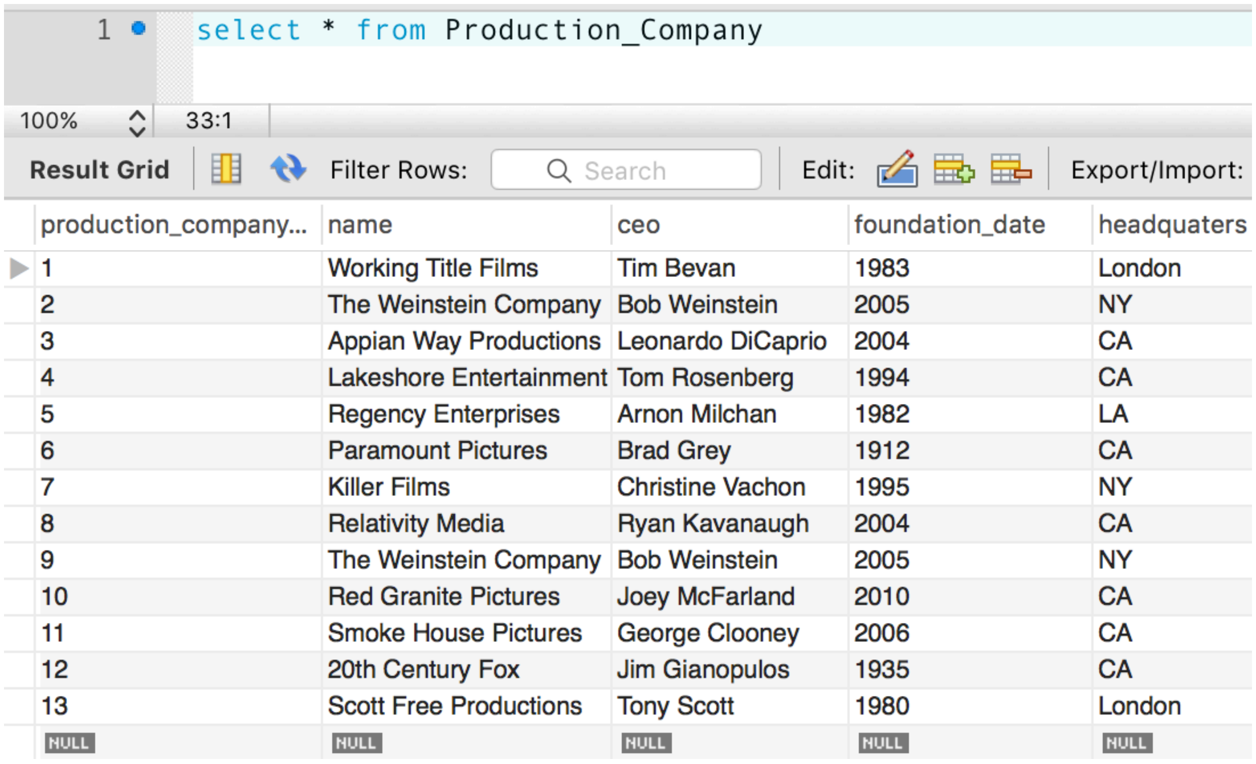
```
select * from Award
```

100% 20:1

Result Grid Filter Rows: Search Edit:

award_id	award_name	co...	presented_by
1	Academy Awards	USA	Academy of Motion Picture Arts and Sciences
2	British Academy Film Awards	UK	British Academy of Film and Television Arts
3	Golden Globe Awards	USA	Hollywood Foreign Press Associations
4	MTV Movie Awards	USA	MTV
5	People's Choice Awards	USA	
6	Screen Actors Guild Awards	USA	SAG-AFTRA
NULL	NULL	NULL	NULL

Production Company



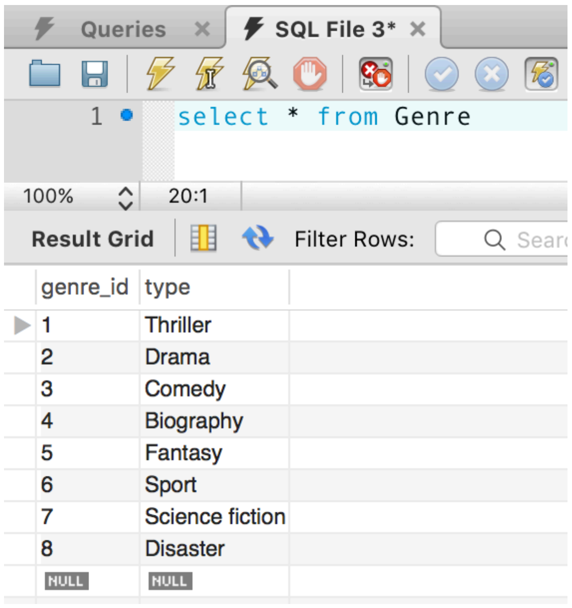
```
select * from Production_Company
```

100% 33:1

Result Grid Filter Rows: Search Edit: Export/Import:

production_company...	name	ceo	foundation_date	headquaters
1	Working Title Films	Tim Bevan	1983	London
2	The Weinstein Company	Bob Weinstein	2005	NY
3	Appian Way Productions	Leonardo DiCaprio	2004	CA
4	Lakeshore Entertainment	Tom Rosenberg	1994	CA
5	Regency Enterprises	Arnon Milchan	1982	LA
6	Paramount Pictures	Brad Grey	1912	CA
7	Killer Films	Christine Vachon	1995	NY
8	Relativity Media	Ryan Kavanaugh	2004	CA
9	The Weinstein Company	Bob Weinstein	2005	NY
10	Red Granite Pictures	Joey McFarland	2010	CA
11	Smoke House Pictures	George Clooney	2006	CA
12	20th Century Fox	Jim Gianopulos	1935	CA
13	Scott Free Productions	Tony Scott	1980	London
NULL	NULL	NULL	NULL	NULL

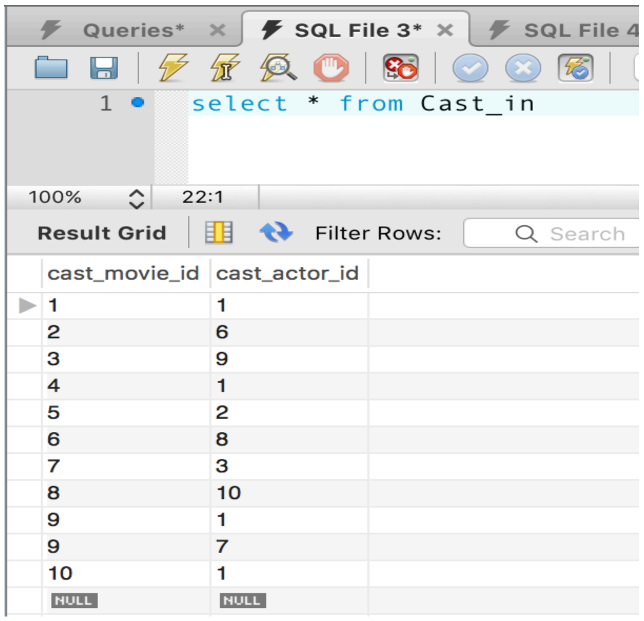
Genre



```
select * from Genre
```

genre_id	type
1	Thriller
2	Drama
3	Comedy
4	Biography
5	Fantasy
6	Sport
7	Science fiction
8	Disaster
NULL	NULL

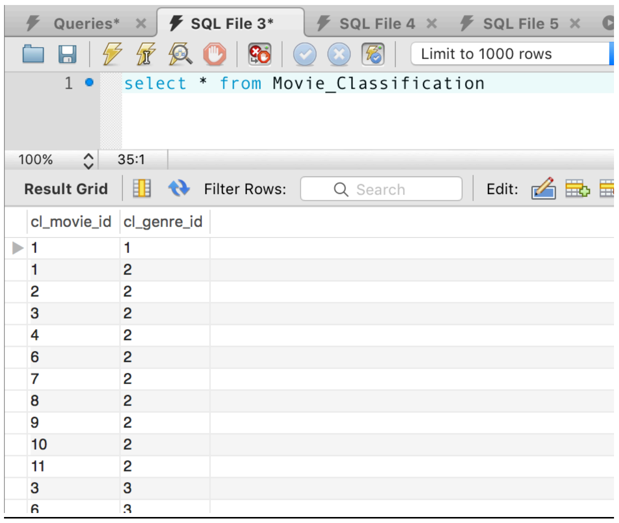
Cast_in



```
select * from Cast_in
```

cast_movie_id	cast_actor_id
1	1
2	6
3	9
4	1
5	2
6	8
7	3
8	10
9	1
9	7
10	1
NULL	NULL

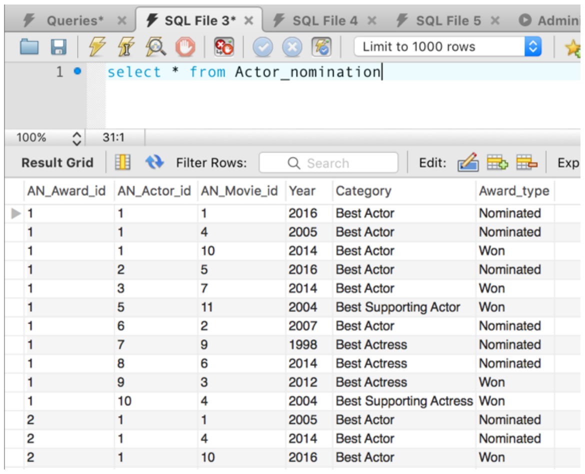
Movie_Classification



```
select * from Movie_Classification
```

cl_movie_id	cl_genre_id
1	1
1	2
2	2
3	2
4	2
6	2
7	2
8	2
9	2
10	2
11	2
3	3
6	3

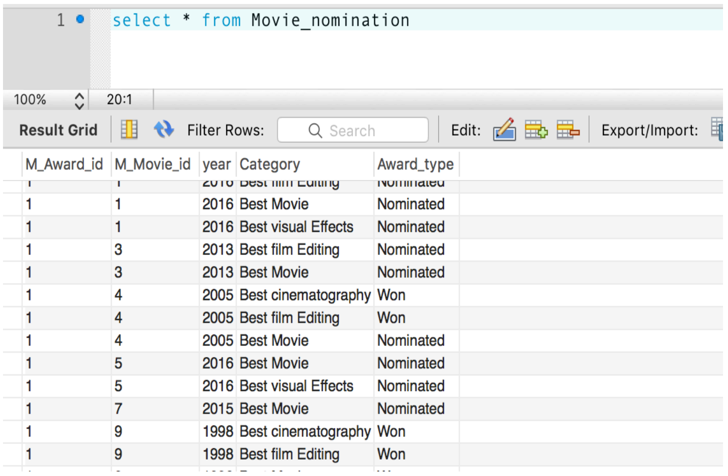
Actor_Nomination



```sql
select * from Actor_nomination
```

AN_Award_id	AN_Actor_id	AN_Movie_id	Year	Category	Award_type
1	1	1	2016	Best Actor	Nominated
1	1	4	2005	Best Actor	Nominated
1	1	10	2014	Best Actor	Won
1	2	5	2016	Best Actor	Nominated
1	3	7	2014	Best Actor	Won
1	5	11	2004	Best Supporting Actor	Won
1	6	2	2007	Best Actor	Nominated
1	7	9	1998	Best Actress	Nominated
1	8	6	2014	Best Actress	Nominated
1	9	3	2012	Best Actress	Won
1	10	4	2004	Best Supporting Actress	Won
2	1	1	2005	Best Actor	Nominated
2	1	4	2014	Best Actor	Nominated
2	1	10	2016	Best Actor	Won

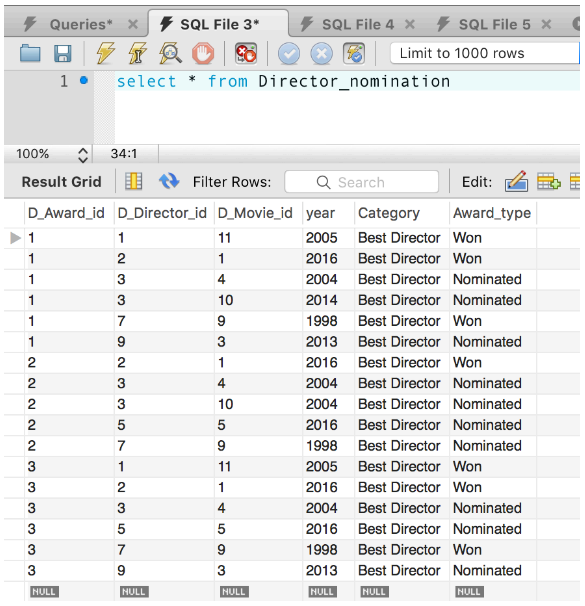
Movie_Nomination



```sql
select * from Movie_nomination
```

M_Award_id	M_Movie_id	year	Category	Award_type
1	1	2016	Best film Editing	Nominated
1	1	2016	Best Movie	Nominated
1	1	2016	Best visual Effects	Nominated
1	3	2013	Best film Editing	Nominated
1	3	2013	Best Movie	Nominated
1	4	2005	Best cinematography	Won
1	4	2005	Best film Editing	Won
1	4	2005	Best Movie	Nominated
1	5	2016	Best Movie	Nominated
1	5	2016	Best visual Effects	Nominated
1	7	2015	Best Movie	Nominated
1	9	1998	Best cinematography	Won
1	9	1998	Best film Editing	Won

Director_Nominations



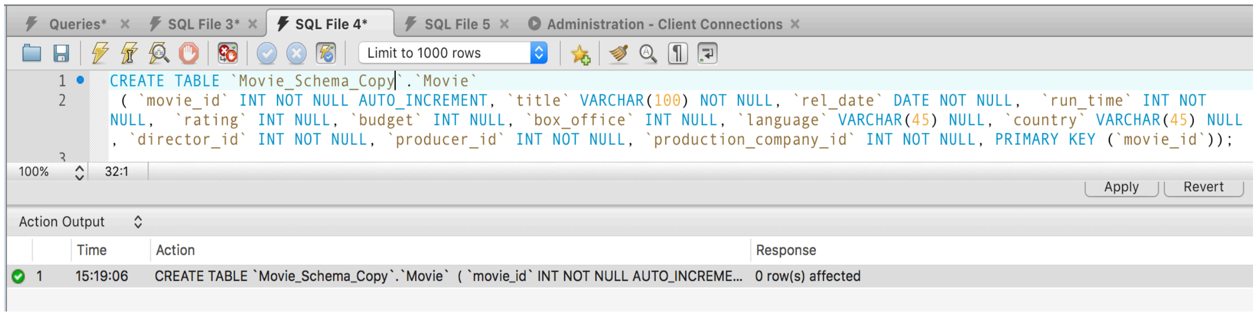
```sql
select * from Director_nomination
```

D_Award_id	D_Director_id	D_Movie_id	year	Category	Award_type
1	1	11	2005	Best Director	Won
1	2	1	2016	Best Director	Won
1	3	4	2004	Best Director	Nominated
1	3	10	2014	Best Director	Nominated
1	7	9	1998	Best Director	Won
1	9	3	2013	Best Director	Nominated
2	2	1	2016	Best Director	Won
2	3	4	2004	Best Director	Nominated
2	3	10	2004	Best Director	Nominated
2	5	5	2016	Best Director	Nominated
2	7	9	1998	Best Director	Nominated
3	1	11	2005	Best Director	Won
3	2	1	2016	Best Director	Won
3	3	4	2004	Best Director	Nominated
3	5	5	2016	Best Director	Nominated
3	7	9	1998	Best Director	Won
3	9	3	2013	Best Director	Nominated
NULL	NULL	NULL	NULL	NULL	NULL

SQL Query

1. Creating a table

CREATE TABLE `Movie_Schema`.`Movies` (`movie_id` INT NOT NULL AUTO_INCREMENT, `title` VARCHAR(100) NOT NULL, `rel_date` DATE NOT NULL, `run_time` INT NOT NULL, `rating` INT NULL, `budget` INT NULL, `box_office` INT NULL, `language` VARCHAR(45) NULL, `country` VARCHAR(45) NULL, `director_id` INT NOT NULL, `producer_id` INT NOT NULL `production_company_id` INT NOT NULL, PRIMARY KEY (`movie_id`));

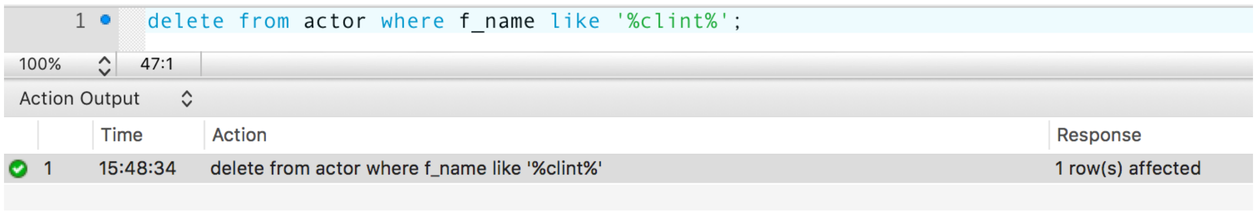


```
CREATE TABLE `Movie_Schema_Copy`.`Movie`
 ( `movie_id` INT NOT NULL AUTO_INCREMENT, `title` VARCHAR(100) NOT NULL, `rel_date` DATE NOT NULL,  `run_time` INT NOT
NULL,  `rating` INT NULL, `budget` INT NULL, `box_office` INT NULL, `language` VARCHAR(45) NULL, `country` VARCHAR(45) NULL
, `director_id` INT NOT NULL, `producer_id` INT NOT NULL, `production_company_id` INT NOT NULL, PRIMARY KEY (`movie_id`));
```

	Time	Action	Response
1	15:19:06	CREATE TABLE `Movie_Schema_Copy`.`Movie` (`movie_id` INT NOT NULL AUTO_INCREME...	0 row(s) affected

2. Deleting an entry from a table

   Delete from actor where f_name like '%clint%';

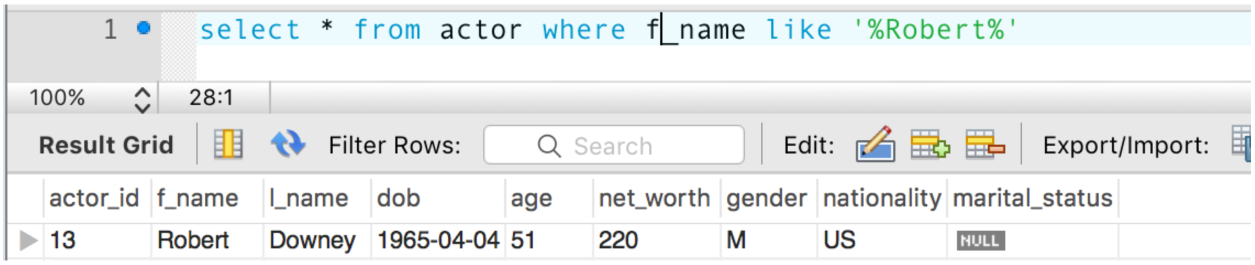


```
delete from actor where f_name like '%clint%';
```

	Time	Action	Response
1	15:48:34	delete from actor where f_name like '%clint%'	1 row(s) affected

3. Insert an entry to a table

INSERT INTO `Movie_Schema`.`actor` (`actor_id`, `f_name`, `l_name`, `dob`, `age`, `net_worth`, `gender`, `nationality`) VALUES ('13', 'Robert', 'Downey', '1965-04-04', '51', '220', 'M', 'US');

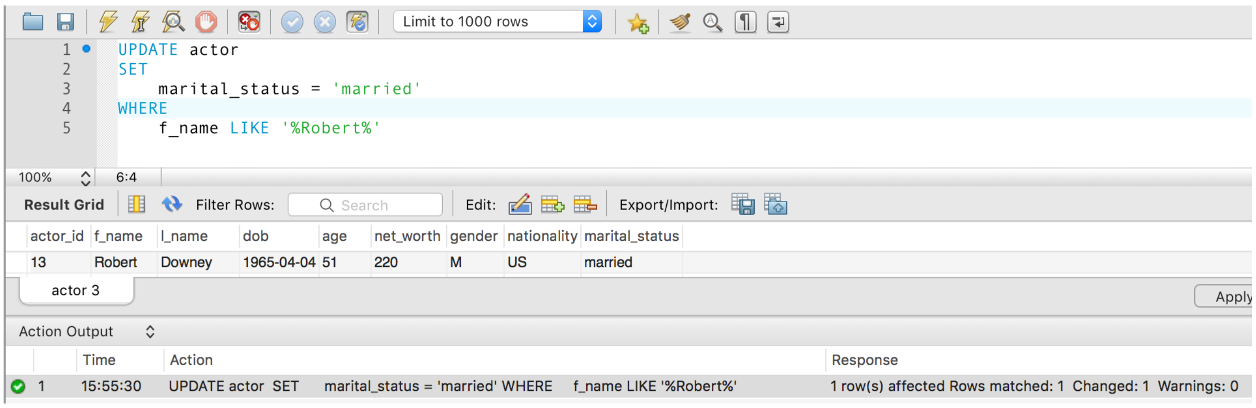


```
select * from actor where f_name like '%Robert%'
```

actor_id	f_name	l_name	dob	age	net_worth	gender	nationality	marital_status
13	Robert	Downey	1965-04-04	51	220	M	US	NULL

4. Updating a table

UPDATE actor
SET marital_status = 'married'
WHERE f_name LIKE '%Robert%'



```
UPDATE actor
SET
    marital_status = 'married'
WHERE
    f_name LIKE '%Robert%'
```

actor_id	f_name	l_name	dob	age	net_worth	gender	nationality	marital_status
13	Robert	Downey	1965-04-04	51	220	M	US	married

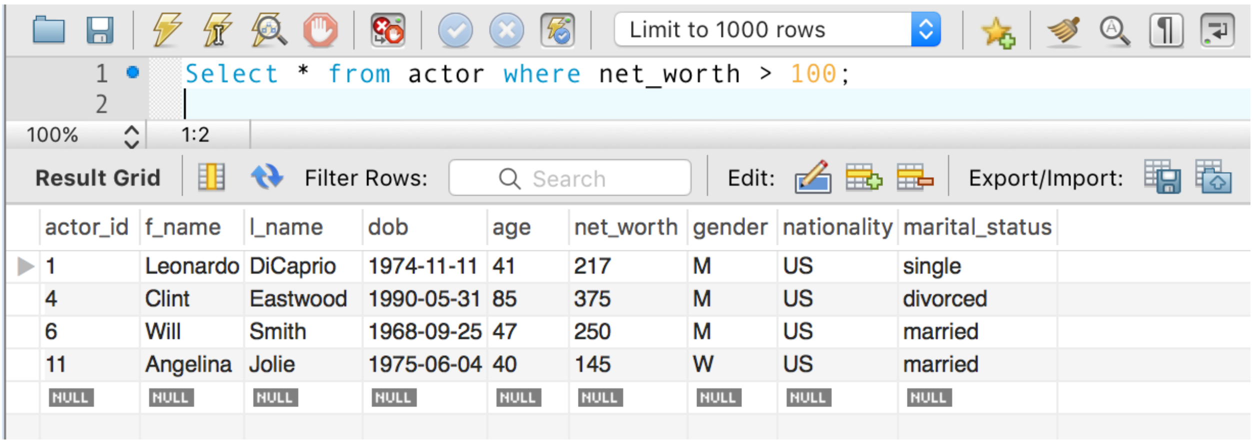
Action Output

	Time	Action	Response
1	15:55:30	UPDATE actor SET marital_status = 'married' WHERE f_name LIKE '%Robert%'	1 row(s) affected Rows matched: 1 Changed: 1 Warnings: 0

Some SELECT queries

1. Select all the actors who have net worth greater than 100 million $

Select * from actor where net_worth > 100;

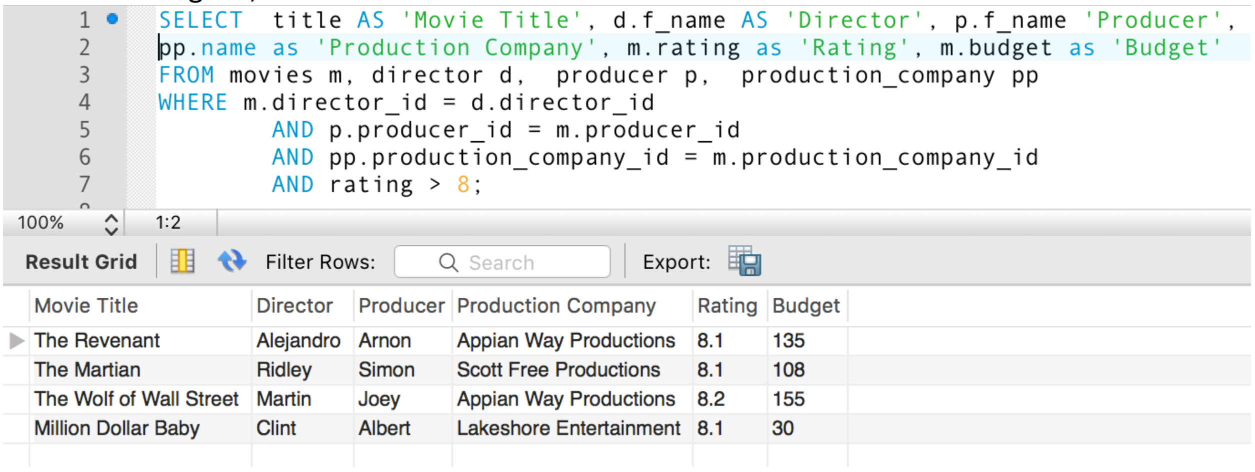


```
Select * from actor where net_worth > 100;
```

actor_id	f_name	l_name	dob	age	net_worth	gender	nationality	marital_status
1	Leonardo	DiCaprio	1974-11-11	41	217	M	US	single
4	Clint	Eastwood	1990-05-31	85	375	M	US	divorced
6	Will	Smith	1968-09-25	47	250	M	US	married
11	Angelina	Jolie	1975-06-04	40	145	W	US	married
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

2. Select the Movie Name, the Director & the producer of the movie along with the production company of the movie which have a rating greater than 8

SELECT title AS 'Movie Title', d.f_name AS 'Director', p.f_name 'Producer', pp.name as 'Production Company', m.rating as 'Rating', m.budget as 'Budget'
FROM movies m, director d, producer p, production_company pp
WHERE m.director_id = d.director_id
    AND p.producer_id = m.producer_id
    AND pp.production_company_id = m.production_company_id
    AND rating > 8;

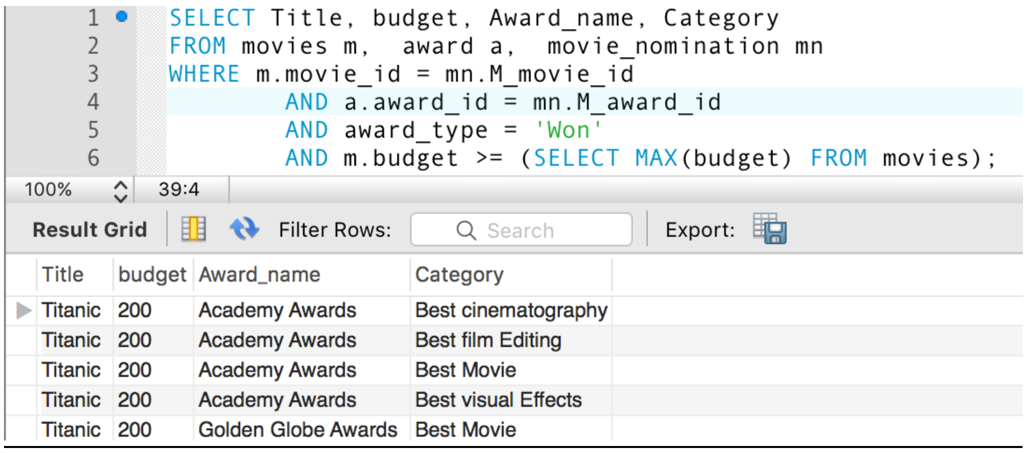


```
SELECT  title AS 'Movie Title', d.f_name AS 'Director', p.f_name 'Producer',
pp.name as 'Production Company', m.rating as 'Rating', m.budget as 'Budget'
FROM movies m, director d,  producer p,  production_company pp
WHERE m.director_id = d.director_id
        AND p.producer_id = m.producer_id
        AND pp.production_company_id = m.production_company_id
        AND rating > 8;
```

Movie Title	Director	Producer	Production Company	Rating	Budget
The Revenant	Alejandro	Arnon	Appian Way Productions	8.1	135
The Martian	Ridley	Simon	Scott Free Productions	8.1	108
The Wolf of Wall Street	Martin	Joey	Appian Way Productions	8.2	155
Million Dollar Baby	Clint	Albert	Lakeshore Entertainment	8.1	30

3. Select the movie with the highest budget and also check if that movie has won any awards

SELECT Title, budget, Award_name, Category
FROM movies m, award a, movie_nomination mn
WHERE m.movie_id = mn.M_movie_id
    AND a.award_id = mn.M_award_id
    AND award_type = 'Won AND m.budget >= (SELECT MAX(budget) FROM movies);

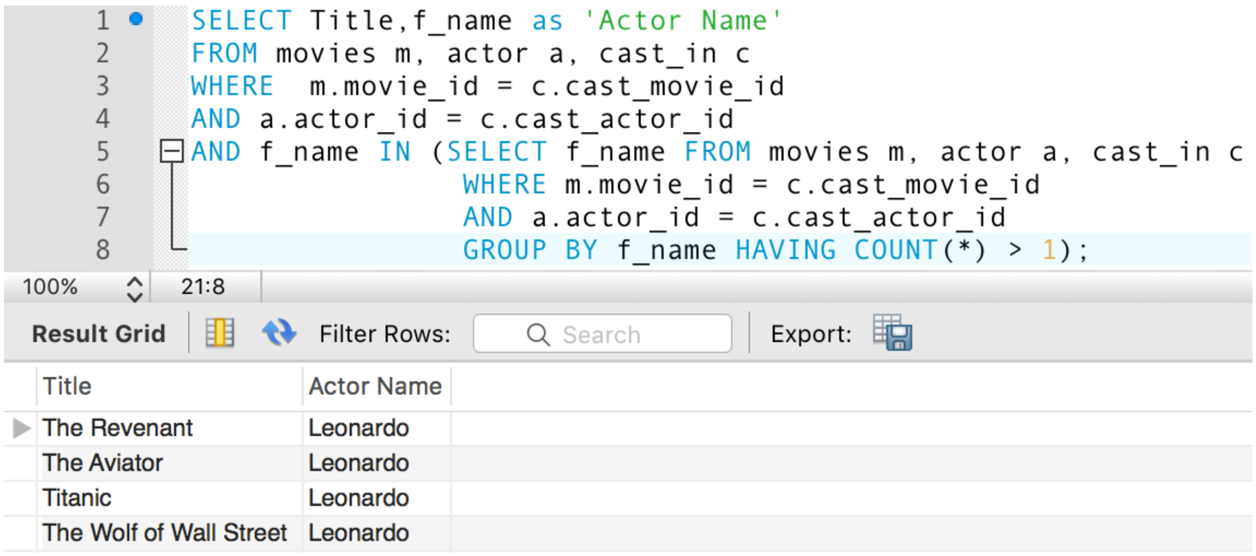


```
SELECT Title, budget, Award_name, Category
FROM movies m,  award a,  movie_nomination mn
WHERE m.movie_id = mn.M_movie_id
        AND a.award_id = mn.M_award_id
        AND award_type = 'Won'
        AND m.budget >= (SELECT MAX(budget) FROM movies);
```

Title	budget	Award_name	Category
Titanic	200	Academy Awards	Best cinematography
Titanic	200	Academy Awards	Best film Editing
Titanic	200	Academy Awards	Best Movie
Titanic	200	Academy Awards	Best visual Effects
Titanic	200	Golden Globe Awards	Best Movie

4. Select all the movies of the actor whom has acted in more than 1 movie

SELECT Title,f_name as 'Actor Name'
FROM movies m, actor a, cast_in c
WHERE m.movie_id = c.cast_movie_id AND a.actor_id = c.cast_actor_id
AND f_name IN (SELECT f_name FROM movies m, actor a, cast_in c WHERE m.movie_id = c.cast_movie_id AND a.actor_id = c.cast_actor_id GROUP BY f_name HAVING COUNT(*) > 1);

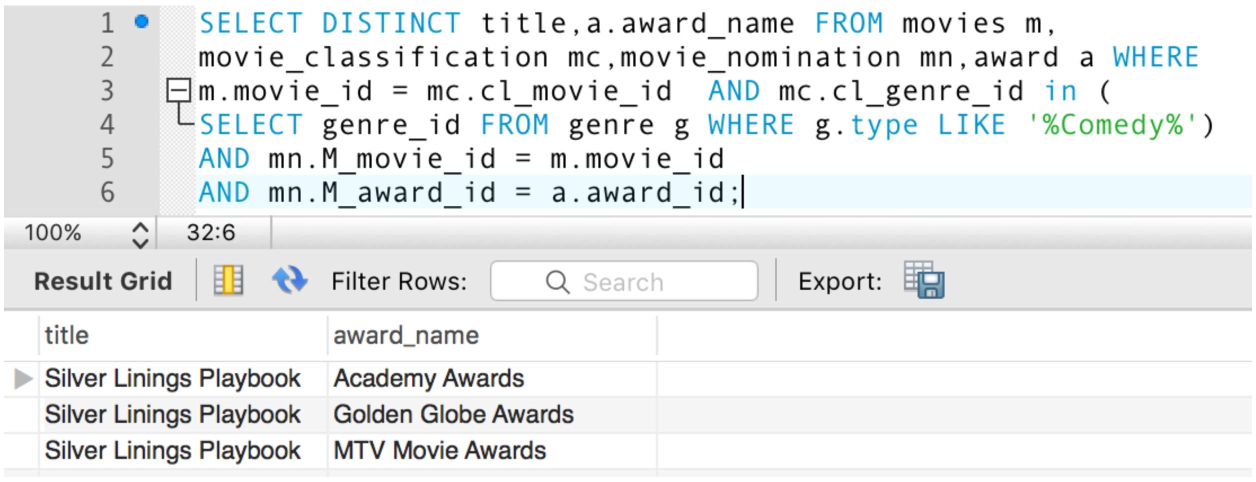


```
SELECT Title,f_name as 'Actor Name'
FROM movies m, actor a, cast_in c
WHERE  m.movie_id = c.cast_movie_id
AND a.actor_id = c.cast_actor_id
AND f_name IN (SELECT f_name FROM movies m, actor a, cast_in c
                WHERE m.movie_id = c.cast_movie_id
                AND a.actor_id = c.cast_actor_id
                GROUP BY f_name HAVING COUNT(*) > 1);
```

Title	Actor Name
The Revenant	Leonardo
The Aviator	Leonardo
Titanic	Leonardo
The Wolf of Wall Street	Leonardo

5. Select movies which belong to the genre ‘Comedy’ and have also been nominated for an award

SELECT DISTINCT title,a.award_name FROM movies m, movie_classification mc,movie_nomination mn,award a WHERE m.movie_id = mc.cl_movie_id AND mc.cl_genre_id in (SELECT genre_id FROM genre g WHERE g.type LIKE '%Comedy%')
AND mn.M_movie_id = m.movie_id AND mn.M_award_id = a.award_id

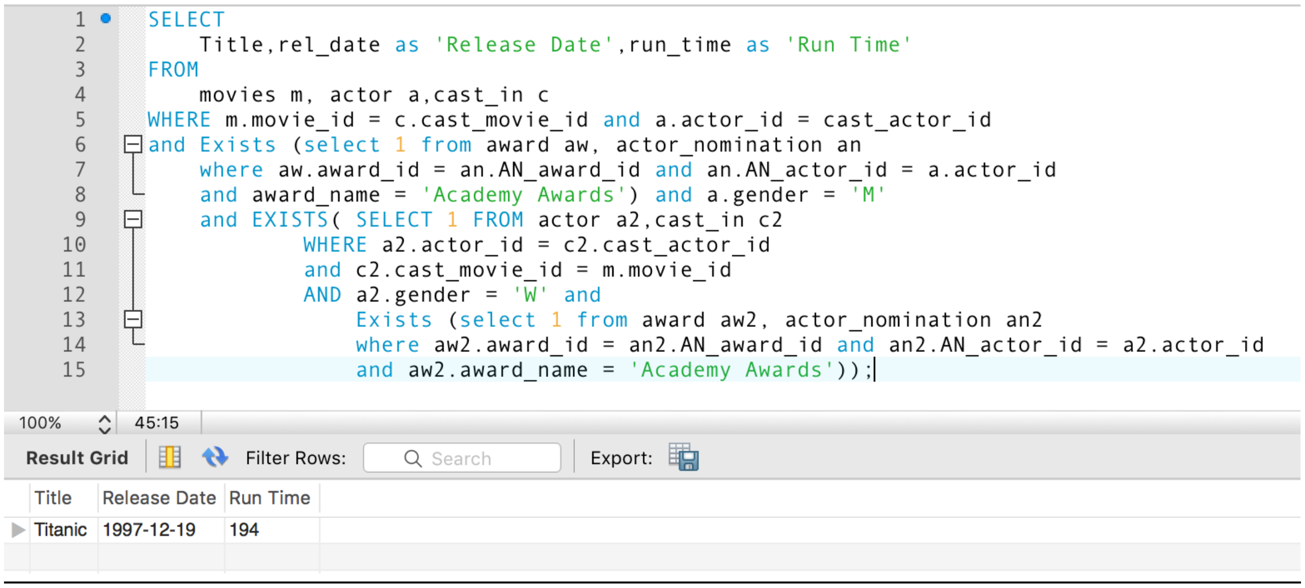


```
SELECT DISTINCT title,a.award_name FROM movies m,
movie_classification mc,movie_nomination mn,award a WHERE
m.movie_id = mc.cl_movie_id  AND mc.cl_genre_id in (
SELECT genre_id FROM genre g WHERE g.type LIKE '%Comedy%')
AND mn.M_movie_id = m.movie_id
AND mn.M_award_id = a.award_id;
```

title	award_name
Silver Linings Playbook	Academy Awards
Silver Linings Playbook	Golden Globe Awards
Silver Linings Playbook	MTV Movie Awards

6. Select the movie title, release date and run time of a movie and see if a male actor who been cast in the movie has been nominated for Academy awards. The movie should also have a female cast who has also been nominated for the Academy awards.

```
SELECT
    Title,rel_date as 'Release Date',run_time as 'Run Time'
FROM
    movies m, actor a,cast_in c
WHERE m.movie_id = c.cast_movie_id and a.actor_id = cast_actor_id
and Exists (select 1 from award aw, actor_nomination an
        where aw.award_id = an.AN_award_id and an.AN_actor_id = a.actor_id
        and award_name = 'Academy Awards') and a.gender = 'M'
        and EXISTS( SELECT 1 FROM actor a2,cast_in c2
                    WHERE a2.actor_id = c2.cast_actor_id
                    and c2.cast_movie_id = m.movie_id
                    AND a2.gender = 'W' and
                        Exists (select 1 from award aw2, actor_nomination an2
                        where aw2.award_id = an2.AN_award_id and
                        an2.AN_actor_id = a2.actor_id
                        and aw2.award_name = 'Academy Awards'));
```



```
SELECT
    Title,rel_date as 'Release Date',run_time as 'Run Time'
FROM
    movies m, actor a,cast_in c
WHERE m.movie_id = c.cast_movie_id and a.actor_id = cast_actor_id
and Exists (select 1 from award aw, actor_nomination an
    where aw.award_id = an.AN_award_id and an.AN_actor_id = a.actor_id
    and award_name = 'Academy Awards') and a.gender = 'M'
    and EXISTS( SELECT 1 FROM actor a2,cast_in c2
            WHERE a2.actor_id = c2.cast_actor_id
            and c2.cast_movie_id = m.movie_id
            AND a2.gender = 'W' and
                Exists (select 1 from award aw2, actor_nomination an2
                where aw2.award_id = an2.AN_award_id and an2.AN_actor_id = a2.actor_id
                and aw2.award_name = 'Academy Awards'));
```

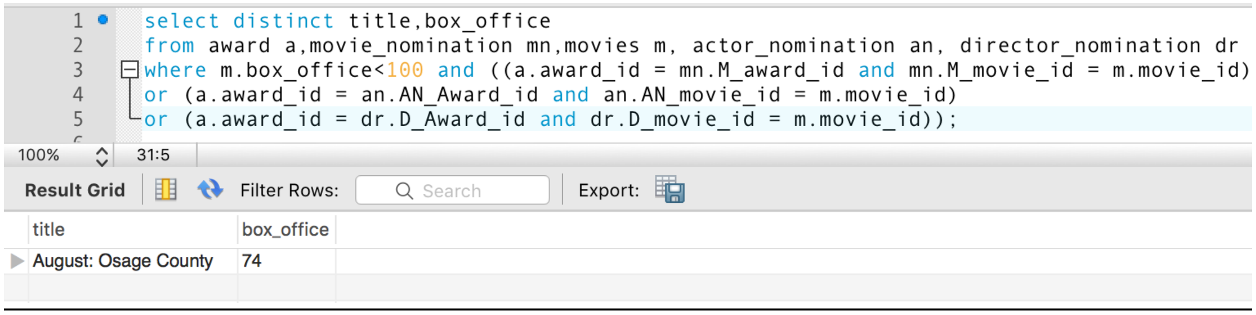
100% 45:15

Result Grid | Filter Rows: Search | Export:

Title	Release Date	Run Time
Titanic	1997-12-19	194

7. List out all the movies which have been a nominated for any award but the box office records didn't cross 100 million

select distinct title,box_office
from movie_nomination mn,movies m, actor_nomination an, director_nomination dr where m.box_office<100 and ((mn.M_movie_id = m.movie_id)
or (an.AN_movie_id = m.movie_id)
or (dr.D_movie_id = m.movie_id));

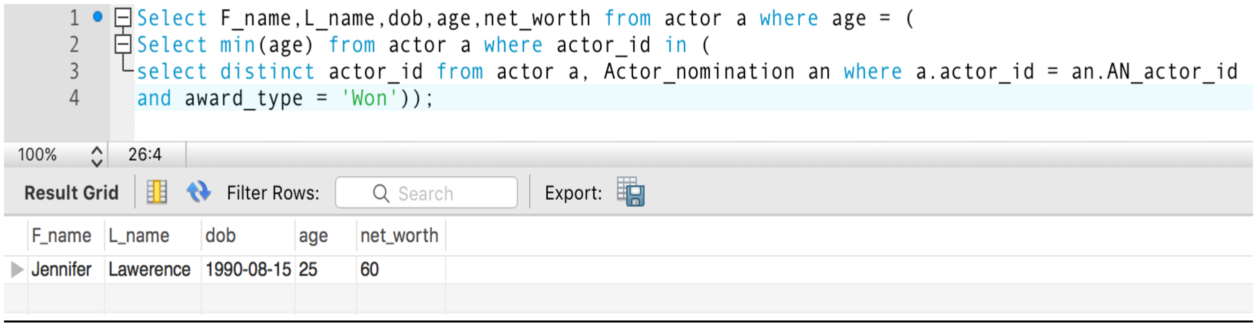


```
select distinct title,box_office
from award a,movie_nomination mn,movies m, actor_nomination an, director_nomination dr
where m.box_office<100 and ((a.award_id = mn.M_award_id and mn.M_movie_id = m.movie_id)
or (a.award_id = an.AN_Award_id and an.AN_movie_id = m.movie_id)
or (a.award_id = dr.D_Award_id and dr.D_movie_id = m.movie_id));
```

title	box_office
August: Osage County	74

8. Find the youngest actor to have won an award

Select F_name,L_name,dob,age,net_worth from actor a where age = (
Select min(age) from actor a where actor_id in (
select distinct actor_id from actor a, Actor_nomination an where a.actor_id = an.AN_actor_id
and award_type = 'Won'));



```
Select F_name,L_name,dob,age,net_worth from actor a where age = (
Select min(age) from actor a where actor_id in (
select distinct actor_id from actor a, Actor_nomination an where a.actor_id = an.AN_actor_id
and award_type = 'Won'));
```

F_name	L_name	dob	age	net_worth
Jennifer	Lawerence	1990-08-15	25	60

Discussion and Future Work

Database design is the process of producing a detailed data model of a database. This data model contains all the needed logical and physical design choices and physical storage parameters needed to generate a design in a data definition language, which can then be used to create a database. A fully attributed data model contains detailed attributes for each entity.

Logical database design is the process of deciding how to arrange the attributes of the entities in a given business environment into database structures, such as the tables of a relational database.

The goal of logical database design is to create well-structured tables that properly reflect the project environment. The tables will be able to store data about the entities in a non-redundant manner and foreign keys will be placed in the tables so that all the relationships among the entities will be supported.

Database can be implemented using software which are designed to support databases. These are called database management systems. These system consists of a server on which all the data is loaded. The data is stored in the form of tables and consist of tuples. Some examples of server are Microsoft SQL server and Oracle Server.

To interact with the database, we require a database client which will be able to retrieve the desired data in the form of queried results. The language used to interact with the server is known as structure query language or sql. Some sql software's which are popular are PL/SQL and SQL management studio.

Other languages are also being enhanced to use built in sql command and functions to aid in developing front end applications which are capable of retrieving data.

A new and popular form of data management is growing which stores the data not in form of tables but in the form of files. The data is queried with the help of key value pair's and the data is stored in most JSON format. Some examples of such databases are Couchbase and Mongo DB.

While designing a database we also need to consider the efficiency at which data can be retrieved from the database. Usually a query take some amount of time to return the data. More complex the query, more time is utilized in searching for the result. Hence we use query optimization which helps in reducing the time spent.

Query optimization helps to reduce the time taken to query a result from the data base. It also increased the efficacy of the database when we have parallel request being bombarded on the database. To understand the working of a particular query, we can use the explanation plan which provides us with the cost of using such a query. This helps us better understand the impact of the query on the database and also reduce the time spent on retrieving the result.

The above designed ‘Movie database’ considered only a small aspect of the movie world. We can further extend it to cover many more areas. We can consider the crew members who worked on the movie. We also consider the writer and the editor of the movies. We can consider the locations at which the movie was filmed and also the equipment which was used during the shooting.

The production house can also keep track of all the props which were used during the shooting of the movie. The awards for which the movies, actors and directors are nominated for can also be extended to other categories such as screenplay, music, sound, visual effects and many more categories.

We can also consider the secondary character of the movie and maintain their details. We can also extend the database to include tv shows and celerity events. We can incorporate the actors and crew of the tv shows and also the channels on which they are telecasted and so on.

I end my discussion over here with a final point; the extent of a database is dependent on the purpose of use. It can be as big or small as desirable. The main result of a db design is to deliver the purpose for which it was designed for.

References

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