Movie Database System Project

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Team Roles and Responsibilities

- Abhilash: Worked on the development of database on MySql and the connection with the driver. Also created the interface.

- Michael: Worked on simulating the data in the tables using a dataset from the Internet. Manually added data to the tables that was not included in the online source. Created some of the queries to run in the database system. Set up the Powerpoint slides.

- Hamim: Created many queries to be run in our database system. Designed the EER diagram for our database system.

Project Design - EER Diagram
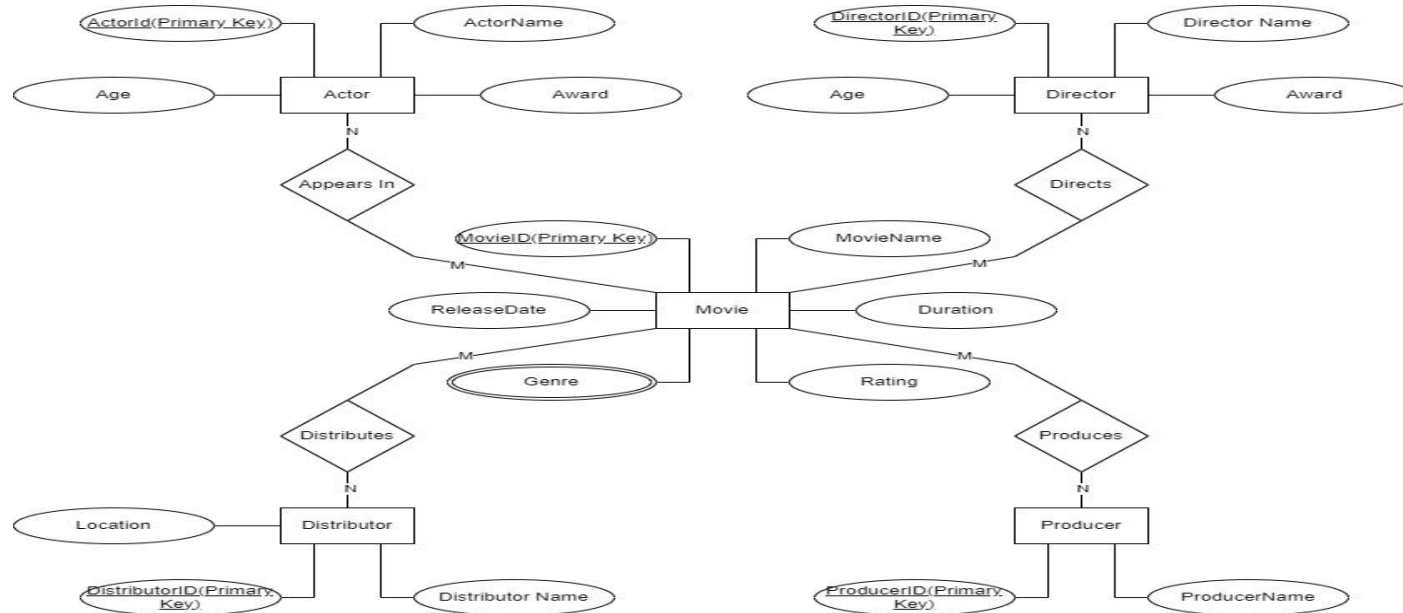
Entities & Corresponding Attributes

- **Movie**(MovieID, MovieName, ReleaseDate, Duration, Genre, Rating)
  - This entity type contains information about the movies in the database system.
- **Actor**(ActorID, ActorName, Age, Award, *MovieID*)
  - This entity type contains information about the actors and their associated movie ID.
- **Director**(DirectorID, DirectorName, Age, Award, *MovieID*)
  - This entity type contains information about the directors and their associated movie ID.
- **Producer**(ProducerID, ProducerName, *MovieID*)
  - This entity type contains information about the producers and their associated movie ID.
- **Distributor**(DistributorID, DistributorName, Location, *MovieID*)
  - This entity type contains information about the movie distributors and their associated movie ID.
- All of the attribute types for each of the entity types are simple, single valued, and non-derived.
- MovieID, ActorID, DirectorID, ProducerID, and DistributorID are all primary keys for their corresponding entity type, and MovieID is the foreign key for all of the entity types except for Movie.

Relationships & Constraints

- There are 4 relationships in our database system. These relationships are as follows:
    - Actor-Movie: **Appears_In**
    - Director-Movie: **Directs**
    - Producer-Movie: **Produces**
    - Distributor-Movie: **Distributes**
    - All 4 of these relationships have cardinality M:N, i.e., many-to-many relationships.

- In terms of the participation constraint, all 4 of the entity types in each of the 4 relationships are partial participation. This is because only some of the entities in Actor, for instance, participate in the Appears_In relationship (since there are null values in the Movie ID foreign key in the Actors entity type).
- In terms of the disjointness and completeness constraints, we do not have any disjoint, overlap, total, or partial specializations.

Interesting Questions & Queries

- In the query below, we are interested in the following question: What movies are directed by Joe Johnston?

- The query returns the name of the movies where Joe Johnston is the director.

SELECT Movie.MovieName
FROM Movie
JOIN Director ON Movie.MovieID = Director.Movie_ID
where Director.DirectorName = 'Joe Johnston';

Interesting Questions & Queries

- In the query below, we are interested in the following question: **What movies are produced by Terrence Malick and distributed by Warner Bros.?**

- The query returns the name of the movies produced by Terrence Malick and distributed by Warner Bros.

```
SELECT Movie.MovieName
FROM Movie
JOIN Producer ON Movie.MovieID = Producer.Movie_ID
JOIN Distributors ON Movie.MovieID = Distributors.Movie_ID
WHERE Producer.ProducerName = 'Terrence Malick' AND Distributors.DistributorName = 'Warner Bros.';
```

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Interesting Questions & Queries

- In the query below, we are interested in the following question: **What actors have appeared in movies distributed by Warner Bros.?**

- The query returns the name of the actors that appeared in movies distributed by Warner Bros.

```
SELECT Actors.ActorName
FROM Actors
JOIN Distributors ON Actors.Movie_ID=Distributors.Movie_ID
WHERE Distributors.DistributorName = 'Warner Bros.';
```

Interesting Questions & Queries

- In the query below, we are interested in the following question: **What distributors have distributed more than 1 movie?**

- The query returns the name of the distributor and the number of movies that they have distributed, where the number of movies is greater than 1.

```
SELECT Distributors.DistributorName, COUNT(Distributors.Movie_ID) AS MovieCount
FROM Distributors
GROUP BY Distributors.DistributorName
HAVING MovieCount > 1;
```

Interesting Questions & Queries

- In the query below, we are interested in the following question: **What is the oldest actor to receive an award in movies released in the 21st century?**

- The query returns the name and age of the oldest actor who has received an award in movies released in the 21st century.

```
Select Actors.Actorname, Actors.Age
from Actors where Actors.Age =
(SELECT max(Actors.Age)
FROM Actors
join Movie on Actors.Movie_ID = Movie.MovieID
WHERE Movie.ReleaseDate > '2000-01-01'
AND Actors.Award IS NOT NULL);
```

Interesting Questions & Queries

- In the query below, we are interested in the following question: **What producers have worked with actors who appeared in movies distributed by Sony Pictures?**
- The query returns the name of producers who worked with actors in movies distributed by Sony Pictures.

```
SELECT DISTINCT Producer.ProducerName
FROM Producer
JOIN Actors ON Actors.Movie_ID=Producer.Movie_ID
WHERE Actors.ActorName IN
(
SELECT Actors.ActorName
FROM Actors
JOIN Distributors ON Actors.Movie_ID=Distributors.Movie_ID
WHERE Distributors.DistributorName = 'Sony Pictures'
);
```

Interesting Questions & Queries

- In the query below, we are interested in the following question: **What distributors have distributed more than 1 film and have worked on movies with actors Morgan Lily or Will.**
- The query returns the name of the distributors who have distributed more than one film and the number of movies they have distributed, and the distributors have worked on movies with actors Morgan Lily or Will.

```
Select Distributors.DistributorName, COUNT(Distributors.Movie_ID) AS MovieCount
FROM Distributors
GROUP BY Distributors.DistributorName
HAVING MovieCount > 1 and Distributors.DistributorName in
(
Select Distributors.DistributorName
from distributors
inner join Actors on Distributors.Movie_ID=Actors.Movie_ID
where Actors.ActorName like '%Morgan Lily%' or Actors.ActorName like '%Will%');
```

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3

Interesting Questions & Queries

- In the query below, we are interested in the following question: **What is the average age of actors in movies released in the 21st century?**

- The query returns the average age of actors who appeared in movies released after 2000.

```
SELECT AVG(Actors.Age) AS AvgAge
FROM Actors
JOIN Movie ON Actors.Movie_ID = Movie.MovieID
WHERE Movie.ReleaseDate > '2000-01-01';
```

Interesting Questions & Queries

- In the query below, we are interested in the following question: **What actors are older than the average age of actors in movies released after 2000?**

- The query returns the name of actors who are older than the average age of actors in movies released after 2000.

```
select Actors.actorname
from actors
where actors.age>
(SELECT AVG(Actors.Age) AS AvgAge
FROM Actors
JOIN Movie ON Actors.Movie_ID = Movie.MovieID
WHERE Movie.ReleaseDate > '2000-01-01');
```

Interesting Questions & Queries

select Distributorname,count(Rating)
from (select Distributors.Distributorname,Movie.Rating
from Distributors
inner join Movie on Movie.MovieID=Distributors.Movie_ID
where Movie.Rating = 'PG') as S
group by Distributorname
having count(Rating)>
(select F_rating from
(select Distributorname,count(Rating) as F_rating
from (select Distributors.Distributorname,Movie.Rating
from Distributors
inner join Movie on Movie.MovieID=Distributors.Movie_ID
where Movie.Rating = 'PG') as S
group by Distributorname
order by count(Rating) asc
limit 1) as R);

- In the query to the left, we are interested in the following question: **What distributors have distributed more PG films than the distributors that distributed the least amount of PG films**?
- The query returns the name of the distributor and the number of PG Films that distributor has distributed where the distributors have distributed more PG films than the distributor with the least PG films.

Interesting Questions & Queries

- In the query below, we are interested in the following question: **What movies have directors that won academy awards?**

- The query returns the movies with academy award winning directors, including the name of the movie, the director's name, and the academy award the director has won.

```
SELECT Movie.MovieName, Director.DirectorName, Director.Award
FROM Movie, Director
WHERE Movie.MovieID = Director.Movie_ID
AND Director.Award LIKE '%Academy Award%';
```

Interesting Questions & Queries

- In the query below, we are interested in the following question: **What distributors have distributed the highest number of PG films?**
- The query returns the name of the distributors along with the number of films they have distributed that are PG rated, in which the number of films PG rated is the highest among distributors.

select Distributorname,count(Rating)
from (
select Distributors.Distributorname,Movie.Rating
from Distributors
inner join Movie on Movie.MovieID=Distributors.Movie_ID
where Movie.Rating = 'PG') as S
group by Distributorname
order by count(Rating) desc
limit 1;

Interesting Questions & Queries

select Distributorname,count(Rating)
from (select Distributors.Distributorname,Movie.Rating
from Distributors
inner join Movie on Movie.MovieID=Distributors.Movie_ID
where Movie.Rating = 'PG') as S
group by Distributorname
having count(Rating)=
(select F_rating from
(select Distributorname,count(Rating) as F_rating
from (select Distributors.Distributorname,Movie.Rating
from Distributors
inner join Movie on Movie.MovieID=Distributors.Movie_ID
where Movie.Rating = 'PG') as S
group by Distributorname
order by count(Rating) asc
limit 1) as R);

- In the query to the left, we are interested in the following question: **What distributors have distributed the least number of PG films?**
- The query returns the name of the distributors along with the number of films they have distributed that are PG rated, in which the number of films PG rated is the least among distributors.

Interesting Questions & Queries

- In the query below, we are interested in the following question: **What movies have more than 2 producers?**

- The query returns the name of the movies and the number of producers that the movie has, and the number of producers for each movie listed is greater than 2.

```
SELECT M.MovieName, count(P.Producername) as Producers
FROM Movie M, Producer P
WHERE M.MovieID = P.Movie_ID
group by M.MovieName
Having count(P.Producername)>2;
```

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Interesting Questions & Queries

- In the query below, we are interested in the following question: **What movies have both actors and directors that have won awards?**

- The query returns the name of the movies where the actors and directors have won awards.

```
SELECT DISTINCT M.MovieName
FROM Movie M, Actors A, Director D
WHERE M.MovieID = A.Movie_ID
AND M.MovieID = D.Movie_ID
AND A.Award IS NOT NULL
AND D.Award IS NOT NULL;
```

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Thank you.