

A
Project Report
on
Movie Database

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CERTIFICATE

This is to certify that the project entitled “Movie Database” is a bonafide report of the work carried out by

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of Department of Information Technology, semester V, under the guidance and supervision for the subject Database Management System. They were involved in Project training during academic year 2018-2019.

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ACKNOWLEDGEMENT

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SYSTEM OVERVIEW

1.1 CURRENT SYSTEM

This project is a database that stores data for an app that enables users to discover new movies, get information about various movies, search movies using different filters, etc. The database stores information of users such as emails, passwords, favorite genres, country, DOB, identity, name, profile picture path, etc. Moreover, it stores information of movies which include but not limited to movie title, runtime, genres, plot, release date, path of poster and information of people who worked to create the movie. Furthermore the database also stores the data of the reviews and rating that are posted by individual users for any movie.

1.2 OBJECTIVES OF THE PROPOSED SYSTEM

The objective of the proposed system should be as follows:

It should allow users to search for movies using detailed and vivid search filters. The application should also recommend the user movies based on their previously watched and like movies, and based on ratings and reviews of other users. These recommendations get better with increase in the use of application by the user. It also allows users to read reviews and ratings posted by other users.

1.3 ADVANTAGES OF CURRENT SYSTEM

The system enables users to discover movies of their choice using the search filters. The recommendations that users get are also helpful in discovering new movies. Moreover, users can read reviews of other movies online. This application can further be scaled to store and retrieve data for music in a similar fashion. All the current uses can be implemented to the newly added music data.

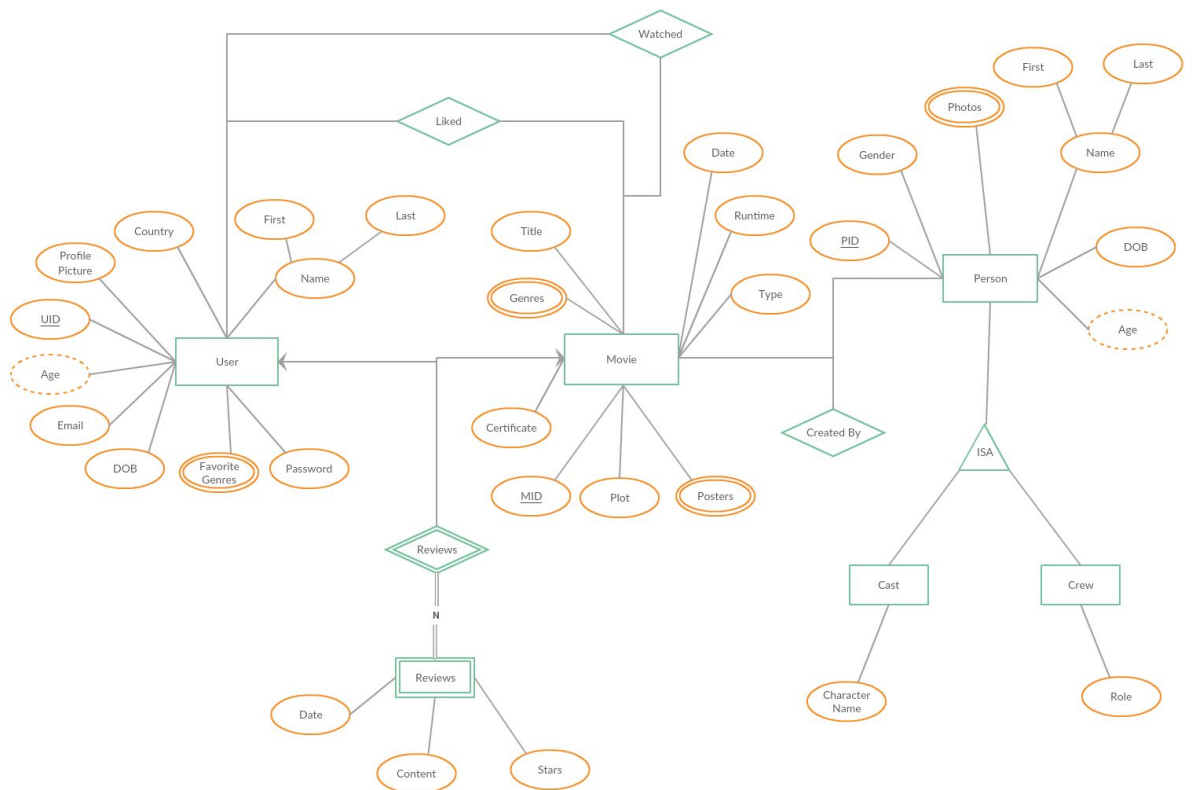
FUTURE ENHANCEMENTS OF THE SYSTEM

This system can further be scaled to store and retrieve data for music in a similar fashion. All the current uses can be implemented to the newly added music data. Moreover it can be scaled to store more information for individual movies.

BIBLIOGRAPHY

- Database System Concepts - Fourth Edition by Silberschatz-Korth-Sudarshan

E-R DIAGRAM



2.1 ENTITIES

- User
- Movie
- Review (weak)
- Person
- Cast
- Crew

2.2 RELATIONSHIPS

- Liked (User - Movie)
- Watched (User - Movie)
- Reviews (User - Movie - Review)
- Createdby (Movie - Person)

- ISA (Person - Cast)
- ISA (Person - Crew)

2.3 MAPPING CONSTRAINTS

- Liked :- Many to Many
- Watched :- Many to Many
- Review - Movie :- Many to One
- Review - User :- Many to One
- Createdby :- Many to Many

DATA DICTIONARY

cast

Column	Type	Null	Default	Links to	Comments	MIME
MID (<i>Primary</i>)	int(11)	No		movies -> MID		
PID (<i>Primary</i>)	int(11)	No		people -> PID		
CharacterName	varchar(255)	No				

Indexes

Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
PRIMARY	BTREE	Yes	No	MID	60	A	No	
				PID	60	A	No	
MID	BTREE	No	No	MID	60	A	No	
PID	BTREE	No	No	PID	60	A	No	

createdby

Column	Type	Null	Default	Links to	Comments	MIME
PID (<i>Primary</i>)	int(11)	No		people -> PID		
MID (<i>Primary</i>)	int(11)	No		movies -> MID		

Indexes

Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
PRIMARY	BTREE	Yes	No	PID	45	A	No	
				MID	136	A	No	
PID	BTREE	No	No	PID	45	A	No	
MID	BTREE	No	No	MID	45	A	No	

crew

Column	Type	Null	Default	Links to	Comments	MIME
MID (<i>Primary</i>)	int(11)	No		movies -> MID		
PID (<i>Primary</i>)	int(11)	No		people -> PID		
Role	varchar(255)	No				

Indexes

Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
PRIMARY	BTREE	Yes	No	PID	76	A	No	
				MID	76	A	No	
MID	BTREE	No	No	MID	76	A	No	

Movie Database

Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
PID	BTREE	No	No	PID	76	A	No	

favgenres

Column	Type	Null	Default	Links to	Comments	MIME
UID (<i>Primary</i>)	int(11)	No		users -> UID		
Name (<i>Primary</i>)	varchar(255)	No				

Indexes

Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
PRIMARY	BTREE	Yes	No	UID	34	A	No	
				Name	34	A	No	
UID	BTREE	No	No	UID	34	A	No	

genres

Column	Type	Null	Default	Links to	Comments	MIME
MID (<i>Primary</i>)	int(11)	No		movies -> MID		
Name (<i>Primary</i>)	varchar(32)	No				

Indexes

Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
PRIMARY	BTREE	Yes	No	MID	42	A	No	
				Name	42	A	No	
MID	BTREE	No	No	MID	42	A	No	

liked

Column	Type	Null	Default	Links to	Comments	MIME
UID (<i>Primary</i>)	int(11)	No		users -> UID		
MID (<i>Primary</i>)	int(11)	No		movies -> MID		

Indexes

Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
PRIMARY	BTREE	Yes	No	UID	36	A	No	
				MID	36	A	No	
UID	BTREE	No	No	UID	36	A	No	
MID	BTREE	No	No	MID	36	A	No	

Movie Database

movies

Column	Type	Null	Default	Links to	Comments	MIME
MID (<i>Primary</i>)	int(11)	No				
Title	varchar(255)	No				
ReleaseDate	date	No				
Plot	varchar(1023)	Yes	NULL			
Runtime	smallint(6)	Yes	NULL			
Type	varchar(255)	Yes	NULL			
Certificate	varchar(255)	No				

Indexes

Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
PRIMARY	BTREE	Yes	No	MID	20	A	No	

people

Column	Type	Null	Default	Links to	Comments	MIME
PID (<i>Primary</i>)	int(11)	No				
FirstName	varchar(255)	Yes	NULL			
LastName	varchar(255)	Yes	NULL			
Gender	varchar(1)	Yes	NULL			
DOB	date	Yes	NULL			

Indexes

Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
PRIMARY	BTREE	Yes	No	PID	20	A	No	

photos

Column	Type	Null	Default	Links to	Comments	MIME
PID (<i>Primary</i>)	int(11)	No		people -> PID		
FileName (<i>Primary</i>)	varchar(255)	No				

Indexes

Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
PRIMARY	BTREE	Yes	No	PID	40	A	No	
				FileName	80	A	No	
FileName	BTREE	Yes	No	FileName	80	A	No	
PID	BTREE	No	No	PID	40	A	No	

Movie Database

posters

Column	Type	Null	Default	Links to	Comments	MIME
MID (<i>Primary</i>)	int(11)	No		movies -> MID		
FileName (<i>Primary</i>)	varchar(255)	No				

Indexes

Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
PRIMARY	BTREE	Yes	No	MID	40	A	No	
				FileName	80	A	No	
FileName	BTREE	Yes	No	FileName	80	A	No	
MID	BTREE	No	No	MID	40	A	No	

reviews

Column	Type	Null	Default	Links to	Comments	MIME
UID (<i>Primary</i>)	int(11)	No		users -> UID		
MID (<i>Primary</i>)	int(11)	No		movies -> MID		
Date	date	No				
Stars	tinyint(4)	No				
Content	varchar(1023)	Yes	NULL			

Indexes

Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
PRIMARY	BTREE	Yes	No	UID	46	A	No	
				MID	46	A	No	
UID	BTREE	No	No	UID	46	A	No	
MID	BTREE	No	No	MID	46	A	No	

users

Column	Type	Null	Default	Links to	Comments	MIME
UID (<i>Primary</i>)	int(11)	No				
FirstName	varchar(255)	No				
LastName	varchar(255)	No				
Country	varchar(2)	Yes	NULL			
ProfilePicture	varchar(255)	Yes	NULL			
Email	varchar(255)	No				
Password	varchar(255)	No				
DOB	date	Yes	NULL			

Movie Database

Indexes

Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
PRIMARY	BTREE	Yes	No	UID	20	A	No	
ProfilePicture	BTREE	Yes	No	ProfilePicture	20	A	Yes	

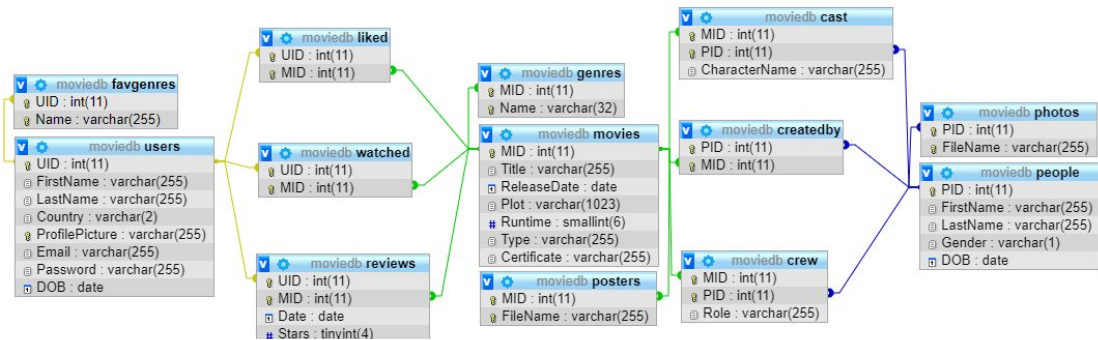
watched

Column	Type	Null	Default	Links to	Comments	MIME
UID (<i>Primary</i>)	int(11)	No		users -> UID		
MID (<i>Primary</i>)	int(11)	No		movies -> MID		

Indexes

Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
PRIMARY	BTREE	Yes	No	UID	42	A	No	
				MID	84	A	No	
UID	BTREE	No	No	UID	42	A	No	
MID	BTREE	No	No	MID	42	A	No	

1



DATABASE IMPLEMENTATIONS

5.1 CREATE SCHEMA

```
CREATE TABLE Users (  
    UID int NOT NULL,  
    FirstName varchar(255) NOT NULL,  
    LastName varchar(255) NOT NULL,  
    Country varchar(2),  
    ProfilePicture varchar(255),  
    Email varchar(255) NOT NULL,  
    Password varchar(255) NOT NULL,  
    DOB Date,  
    PRIMARY KEY (UID),  
    UNIQUE(ProfilePicture)  
);  
  
CREATE TABLE Movies (  
    MID int NOT NULL,  
    Title varchar(255) NOT NULL,  
    ReleaseDate Date NOT NULL,  
    Plot varchar(1023),  
    Runtime smallint,  
    Type varchar(255),  
    Certificate varchar(255) NOT NULL,  
    PRIMARY KEY (MID)  
);  
  
CREATE TABLE People (  
    PID int NOT NULL,  
    FirstName varchar(255),  
    LastName varchar(255),  
    Gender varchar(1),  
    DOB Date,  
    PRIMARY KEY (PID)  
);  
  
CREATE TABLE Genres (  
    MID int NOT NULL,  
    Name varchar(32) NOT NULL,  
    FOREIGN KEY (MID) REFERENCES movies(MID),
```


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```
PRIMARY KEY (MID, Name)
);

CREATE TABLE Posters (
    MID int NOT NULL,
    FileName varchar(255) NOT NULL,
    FOREIGN KEY (MID) REFERENCES movies(MID),
    UNIQUE(FileName),
    PRIMARY KEY (MID, FileName)
);

CREATE TABLE Photos (
    PID int NOT NULL,
    FileName varchar(255) NOT NULL,
    FOREIGN KEY (PID) REFERENCES people(PID),
    UNIQUE(FileName),
    PRIMARY KEY (PID, FileName)
);

CREATE TABLE FavGenres (
    UID int NOT NULL,
    Name varchar(255) NOT NULL,
    FOREIGN KEY (UID) REFERENCES Users(UID),
    PRIMARY KEY (UID, Name)
);

CREATE TABLE Watched (
    UID int NOT NULL,
    MID int NOT NULL,
    FOREIGN KEY (UID) REFERENCES Users(UID),
    FOREIGN KEY (MID) REFERENCES Movies(MID),
    PRIMARY KEY (UID, MID)
);

CREATE TABLE Liked (
    UID int NOT NULL,
    MID int NOT NULL,
    FOREIGN KEY (UID) REFERENCES Users(UID),
    FOREIGN KEY (MID) REFERENCES Movies(MID),
    PRIMARY KEY (UID, MID)
);
```

```
CREATE TABLE CreatedBy (  
    PID int NOT NULL,  
    MID int NOT NULL,  
    FOREIGN KEY (PID) REFERENCES People(PID),  
    FOREIGN KEY (MID) REFERENCES Movies(MID),  
    PRIMARY KEY (PID, MID)  
);
```

```
CREATE TABLE Reviews (  
    UID int NOT NULL,  
    MID int NOT NULL,  
    Date Date NOT NULL,  
    Stars tinyint NOT NULL,  
    Content varchar(1023),  
    FOREIGN KEY (UID) REFERENCES Users(UID),  
    FOREIGN KEY (MID) REFERENCES Movies(MID),  
    PRIMARY KEY (UID, MID)  
);
```

```
CREATE TABLE Cast (  
    MID int NOT NULL,  
    PID int NOT NULL,  
    CharacterName varchar(255) NOT NULL,  
    FOREIGN KEY (MID) REFERENCES Movies(MID),  
    FOREIGN KEY (PID) REFERENCES People(PID),  
    PRIMARY KEY (MID, PID)  
);
```

```
CREATE TABLE Crew (  
    MID int NOT NULL,  
    PID int NOT NULL,  
    Role varchar(255) NOT NULL,  
    FOREIGN KEY (MID) REFERENCES Movies(MID),  
    FOREIGN KEY (PID) REFERENCES People(PID),  
    PRIMARY KEY (MID, PID)  
);
```

5.2 INSERT DATA VALUES

ADD NEW USER

```
INSERT INTO
users (UID, FirstName, LastName, Country, ProfilePicture,
Email, Password, DOB)
VALUES (1, 'Ryan', 'Mollin', 'AL', 'dQc2XWyAFqxv1QXp.jpg',
'rmollin0@xrea.com', 'UBT65gm', '2002-01-16');
```

ADD FAVOURITE GENRES OF A USER

```
INSERT INTO
favgenres (UID, Name)
VALUES
(1, 'Horror'),
(1, 'Mystery');
```

ADD REVIEW FROM A USER

```
INSERT INTO
reviews (UID, MID, Date, Stars, Content)
VALUES
(2, 4, '2018-08-06', 4, 'Duis aliquam convallis nunc. Proin at
turpis a pede posuere nonummy. Integer non velit.');
```

ADD LIKED MOVIES

```
INSERT INTO
liked (UID, MID)
VALUES
(1, 3),
(1, 9);
```

ADD WATCHED MOVIES

```
INSERT INTO
watched (UID, MID)
VALUES
(1, 1),
```

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```
(1, 3),  
(1, 9),  
(1, 17);
```

ADD PEOPLE

```
INSERT INTO  
people (PID, FirstName, LastName, Gender, DOB)  
VALUES  
(1, 'Bonni', 'Shieldon', 'F', '1989-04-09');
```

ADD PHOTOS OF PEOPLE

```
INSERT INTO  
photos (PID, FileName)  
VALUES  
(1, 'dVvC6FYupGDt69iV.jpg'),  
(1, 'JRl5Ash7ioWrMrK5.jpg'),  
(1, 'Pcg1CLV9aakEHjvs.jpg'),  
(1, 'rtfVnMVse4Tj23l0.jpg'),  
(1, 'tXH7mMbCVSjLqPd9.jpg'),  
(1, 'wzUh2EDruHhHp1Dm.jpg'),  
(1, 'YTGCH7eRMSI3gnHj.jpg');
```

ADD NEW MOVIES

```
INSERT INTO  
movies (MID, Title, ReleaseDate, Plot, Runtime, Type,  
Certificate)  
VALUES  
(1, 'The Avengers', '2016-10-26', 'Duis aliquam convallis  
nunc. Proin at turpis a pede posuere nonummy. Integer non  
velit.', 139, 'Feature', 'PG-13');
```

INSERT GENRES OF MOVIES

```
INSERT INTO  
genres (MID, Name)  
VALUES  
(1, 'Drama'),  
(1, 'Horror');
```

ADD POSTERS OF A MOVIE

```
INSERT INTO
posters (MID, FileName)
VALUES
(1, 'dVvC6FYupGDt69iV.jpg'),
(1, 'JR15Ash7ioWrMrK5.jpg'),
(1, 'Pcg1CLV9aakEHjvs.jpg'),
(1, 'rtfVnMVse4Tj23l0.jpg'),
(1, 'tXH7mMbCVSjLqPd9.jpg'),
(1, 'wzUh2EDruHhHp1Dm.jpg'),
(1, 'YTGCH7eRMSI3gnHj.jpg');
```

ADD CREDITS TO A MOVIE

```
INSERT INTO
createdby (PID, MID)
VALUES
(2, 1),
(9, 1),
(12, 1),
(13, 1),
(15, 1),
(16, 1),
(17, 1),
(19, 1);
```

DEFINE CAST MEMBERS OF A MOVIE

```
INSERT INTO
cast (MID, PID, CharacterName)
VALUES
(1, 2, 'Joshua'),
(1, 15, 'Brooke');
```

DEFINE CREW MEMBERS OF A MOVIE

```
INSERT INTO
Crew (MID, PID, Role)
VALUES
(1, 9),
```

```
(1, 12),  
(1, 13),  
(1, 16),  
(1, 17),  
(1, 19);
```

5.3 QUERIES

FIND MOVIES OF A PARTICULAR GENRE

```
SELECT m.Title, m.ReleaseDate, m.Plot, m.Runtime  
FROM movies m  
INNER JOIN genres g ON m.MID=g.MID  
WHERE g.Name='Horror'
```

GET ALL REVIEWS OF A PARTICULAR MOVIE

```
SELECT CONCAT(u.FirstName, ' ', u.LastName) AS User, r.Stars  
AS Rating, r.Date, r.Content AS Review  
FROM reviews r  
INNER JOIN movies m ON r.MID=m.MID  
INNER JOIN users u ON u.UID=r.UID  
WHERE m.Title='The Secret Life'  
ORDER BY r.Date DESC
```

LIST ALL CAST MEMBERS OF A MOVIE

```
SELECT CONCAT(p.FirstName, " ", p.LastName) AS `Actor Name`,  
c.CharacterName AS `Character Name` FROM createdby cb  
INNER JOIN movies m ON cb.MID=m.MID  
INNER JOIN cast c ON c.MID=cb.MID AND c.PID=cb.PID  
INNER JOIN people p ON cb.PID=p.PID  
WHERE m.title='The Avengers'
```

LIST ALL CREW MEMBERS OF A MOVIE

```
SELECT CONCAT(p.FirstName, " ", p.LastName) AS `Crew Member  
Name`, c.Role AS `Character Name`  
FROM createdby cb  
INNER JOIN movies m ON cb.MID=m.MID  
INNER JOIN crew c ON c.MID=cb.MID AND c.PID=cb.PID  
INNER JOIN people p ON cb.PID=p.PID  
WHERE m.title='The Avengers'
```

LIST ALL MOVIES OF FAVORITE GENRES

```
SELECT m.Title AS Movie, g.Name AS `Genre Match`  
FROM movies m  
INNER JOIN genres g ON m.MID=g.MID  
INNER JOIN favgenres f ON f.Name=g.Name  
INNER JOIN users u ON f.UID=u.UID  
WHERE u.UID=1
```

GET ALL INFORMATION OF A MOVIE

```
SELECT m.Title, m.ReleaseDate AS 'Release Date', m.Plot,  
m.runtime, GROUP_CONCAT(g.Name) AS Genres  
FROM movies m  
INNER JOIN genres g ON m.MID=g.MID  
WHERE m.Title = 'The Avengers'  
GROUP BY m.MID
```

GET MOVIES RELEASED IN A PARTICULAR DATE RANGE

```
SELECT m.Title, m.ReleaseDate AS 'Release Date'  
FROM movies m  
WHERE m.ReleaseDate BETWEEN '2017-01-01' AND '2018-01-01'  
ORDER BY m.ReleaseDate ASC
```

FIND ALL MOVIES A PERSON HAS STARRED IN

```
SELECT m.Title AS Movie, c.CharacterName as 'Character Name'  
FROM movies m  
INNER JOIN cast c ON m.MID=c.MID  
INNER JOIN people p ON c.PID=p.PID
```

```
WHERE p.PID=1
```

FIND ALL MOVIES A PERSON HAS WORKED IN AS CREW MEMBER

```
SELECT m.Title AS Movie, c.Role  
FROM movies m  
INNER JOIN crew c ON m.MID=c.MID  
INNER JOIN people p ON c.PID=p.PID  
WHERE p.PID=1
```

ALL LIKED MOVIES OF A USER

```
SELECT m.Title  
FROM movies m  
INNER JOIN liked l ON m.MID=l.MID  
INNER JOIN users u ON u.UID=l.UID  
WHERE u.UID=1
```

ALL WATCHED MOVIES OF A USER

```
SELECT m.Title  
FROM movies m  
INNER JOIN watched w ON m.MID=w.MID  
INNER JOIN users u ON u.UID=w.UID  
WHERE u.UID=1
```

LIST ALL REVIEWS BY A USER

```
SELECT m.Title AS Movie, r.Date, r.Stars AS Rating, r.Content  
AS Review  
FROM reviews r  
INNER JOIN movies m ON r.MID=m.MID  
WHERE r.UID=2  
ORDER BY r.Date DESC
```

ALL CAST MEMBERS OF USER'S LIKED MOVIES

```
SELECT CONCAT(p.FirstName, ' ', p.LastName) AS Actor, m.Title  
AS Movie, c.CharacterName AS 'Character Name'  
FROM people p  
INNER JOIN cast c ON p.PID=c.PID
```


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```
INNER JOIN liked l ON l.MID=c.MID
INNER JOIN movies m ON c.MID=m.MID
WHERE l.UID=2
```

LIST ALL MOVIES WITH A RATING GREATER THAN A PARTICULAR RATING

```
SELECT DISTINCT m.Title, r.Stars
FROM movies m
INNER JOIN reviews r ON r.MID=m.MID
WHERE r.Stars > 4
```

LIST ALL PHOTOS OF A PERSON

```
SELECT p.FileName
FROM photos p
WHERE p.PID=1
```

LIST ALL FAVORITE GENRE

```
SELECT f.Name AS Genres
FROM favgenres f
WHERE f.UID=1
```

LIST ALL GENRES OF A MOVIE

```
SELECT g.Name AS Genres
FROM genres g
WHERE g.MID=1
```

LIST ALL POSTER OF A MOVIE

```
SELECT p.FileName
FROM posters p
WHERE MID=1
```

LIST OF NUMBER OF MOVIES FOR EACH CERTIFICATE

```
SELECT COUNT(MID) AS 'Number of Movies', Certificate
FROM movies
GROUP BY Certificate
```

WHICH TYPE OF CERTIFICATE OF MOVIES IS AVAILABLE IN MAJORITY

```
SELECT COUNT(MID) AS 'Number of Movies', Certificate
FROM movies
GROUP BY Certificate
HAVING COUNT(MID) > (SELECT (COUNT(MID)/2)-1 FROM movies)
```

AVERAGE RUNTIME OF MOVIES

```
SELECT AVG(Runtime) AS 'Average Runtime of Movies'
FROM MOVIES
```

SEARCH MOVIE BY SUBSTRING OF TITLE

```
SELECT *
FROM movies
WHERE Title
LIKE '%ave%'
```

LIST MOVIES OF PARTICULAR CERTIFICATES

```
SELECT *
FROM movies
WHERE Certificate
IN ('PG-13', 'PG')
```

LIST ALL NON-ADULT MOVIES

```
SELECT *
FROM movies
WHERE Certificate
NOT IN ('R')
```

LIST ALL GENRES THAT NO USER AS LIKED A MOVIE OF

```
SELECT Name AS Genre
FROM genres
WHERE Name
NOT IN (
    SELECT Name
    FROM favgenres
)
```

LIST OF ALL CAST AND CREW MEMBERS

```
SELECT CONCAT(p.FirstName, " ", p.LastName) AS `Person Name`
FROM createdby cb
INNER JOIN movies m ON cb.MID=m.MID
INNER JOIN cast c ON c.MID=cb.MID AND c.PID=cb.PID
INNER JOIN people p ON cb.PID=p.PID
WHERE m.title='The Avengers'
UNION
SELECT CONCAT(p.FirstName, " ", p.LastName) AS `Crew Member
Name`
FROM createdby cb
INNER JOIN movies m ON cb.MID=m.MID
INNER JOIN crew c ON c.MID=cb.MID AND c.PID=cb.PID
INNER JOIN people p ON cb.PID=p.PID
WHERE m.title='The Avengers'
```

RUNTIME GREATER THAN A PARTICULAR VALUE

```
SELECT Title
FROM movies
WHERE Runtime =
ANY (
    SELECT Runtime
    FROM movies
    WHERE Runtime>100
);
```