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CS 4750

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Database Project Final Documentation

Project Information

Introduction

In the world today, movies are one of the staples of human leisure. People go to the movies in romantic scenarios, for birthday parties, and for friend gatherings. There is no doubt that movies are an important aspect of every country's culture. For example, in America, Hollywood is the hub for movies; whereas, in India, Bollywood is the hub for movies. Since movies are such an important part of many individuals' lives, they most likely want to watch the best movies. Someone would not want to watch a poorly made movie. This is where Spoiler Alert, the application and database described in this report, shines. Spoiler alert allows users to see reviews of movies from a designated movie critic. This movie critic will write reviews about particular movies. Therefore, normal users can effectively see which movies are in the database, and the ones that are highly valued or rated by this movie critic. This makes choosing a movie easy since users can choose to watch movies that are rated well. Additionally, the movie critic can add new movies and reviews to movies. If the movie critic changes his thoughts about a movie after watching it again, he can change his review. This database will serve as a great resource for movie-lovers: containing both movie reviews, and movie statistics.

Our database contains the key entities in the movie world. It has tables detailing important attributes for movies, directors, actors, production companies, and sponsors. Our database also contains tables show the relationship between these entities. This includes directors hiring actors, directors directing movies, actors acting in movies, production companies producing movies, and sponsors sponsoring movies.

Requirements

Functions:

- View all Reviews: Under the “All Reviews” page, normal users can view information about all movies stored in our database. A table with the title, duration, genre, gross amount made, language and review for each movie are displayed.
- Add/Update Review: Under the “Add Review” page, only the movie critic can update or add a review for a specific movie in the database. The movie has to already be in the database for the movie critic to add to it. In order to add or update a review, the user must login to our site. Temporary login credentials are below:
 - Username = user
 - Password = pass
- Add Movie: Under the “Add Movie” tab, only the movie critic can add a movie that is missing from the database. The movie critic must input all of the following required information: title, duration, genre, gross amount made, language, and movie review. In order to add a movie, the user must login to our site. Temporary login credentials are below:
 - Username = user
 - Password = pass
- Download Reviews: Under the “Download Reviews” page, normal users can download and save a copy of all movies and their information as a CSV file.

Requirements:

- For this application, users should be able to log in using a username and password. There should be authentication to determine whether the user is a movie critic or regular user because the requirements differ for both.
 - Add a Record: If the user is a movie critic, then they should be able to add a movie review by adding input into the given text boxes. Once all text boxes are

filled, then the movie critic should be able to submit the information and their input gets added to the database. A stored procedure was created to easily insert records.

- Update a Record: Similarly, the movie critic should be able to update a review through text input, if necessary, and submit. Updating the record uses a trigger to ensure that any updated review is not more than 1000 characters.
- Export Data: All users should be able to export data/reviews by clicking a button. Once pressed, it should download the data as a CSV file.
- Interactivity: All users have access to the navigation bar and should be able to click each link in the bar. Once clicked, they will be redirected to the corresponding page. Movie critics should be able to click the submit button on the “Add review” and “Add movie” pages to have their data added to the database.

User Stories:

- As a user, Bob is searching for a movie to watch on Friday. Using Spoiler Alert, Bob browsed movies and decided to watch Fantasia, based off of the review.
- Bob’s friend Melissa wants to browse a movie list on her 30-minute plane flight to see Bob. Once she lands she plans to see a movie with Bob. Bob downloaded the movie list from Spoiler Alert and sent it to Melissa, so Melissa could pick the movie to watch.
- Mike is a movie critic trying to reach a large audience. With Spoiler Alert, Mike is able to write reviews that are easily accessible in one place by a large audience.
- Mike, a movie critic, watched Lion King one year ago and hated it. He recently rewatched the movie this week and realized he wrote an overly harsh review. Using Spoiler Alert, Mike is easily able to change his review.

Our application has one page that outputs the Movie table. This page is open to all users. Our application can export the Movie table as a CSV. Any user can export the movie table. We planned for our application to have a login feature for the movie critic. Unfortunately, because the server was down we were not able to make the feature fully functional. This allows the movie critic to access the “Add Review” and “Add Movie” pages. Our application can insert new movie

data into the Movie table. This function uses a stored procedure. This function is only accessible by the movie critic. Our application can update the review of a movie. This function is only accessible by the movie critic.

Design Process

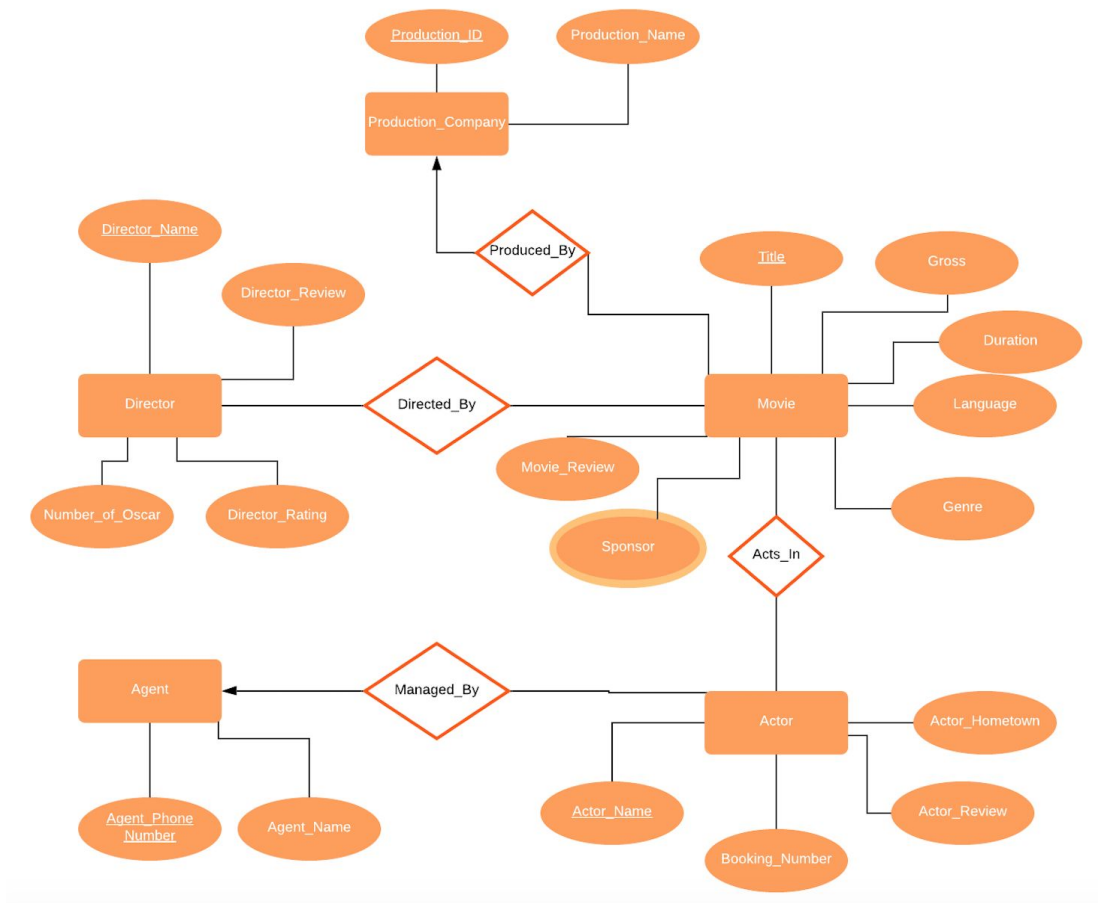
Design Decisions

First, we chose to focus on movies since we all enjoy them and think they are relevant in society. As described in the introduction, people enjoy rating movies, movies are important within cultures, and people like viewing reviews on movies. We chose to make a website to easily display the actions the database performs. Using a website, will also allow a wide audience to access the database without needing any specific hardware (a type of phone) or software (windows compared to Linux). On the website, there is a “Homepage” page, “All reviews” page, “Add review” page, “Add movie” page, and “Download reviews” page. The homepage allows common users to get a feel for what they can use the website for.

Our database maintains security measures by restriction permissions to alter tables to administrative users. This was done so that only select users can change tables to avoid functional errors and losses in integrity. This page has a login button for the critic to add security to our application and database. The critic’s account is only given permission to update and insert. In the case that someone hacked into the critic’s account, they would not be able to drop tables and destroy the database. You have to be logged in to the website to write to the database, adding a step of security to our database. The “Add movie” page allows only the critic to add a new movie to the database. In addition, there is also an excess of other information available to the critic including information about directors and actors for their reference in writing movie reviews. Normal users will not be able to access the “Add movie” page since they could add incorrect information to the database. Similarly, normal users cannot access the “Add review” page because they could overwrite the critics’ reviews. The “All reviews” page allows users to see all of the movies and their reviews. Once the users click the button to access the movies, they get redirected to a page that displays them. The “Download reviews” page allows users to download the data in the database in CSV format.

ER Diagram

- Assumptions for ER-Diagram:
 - Movies can have at most one production company and production companies can have many movies
 - Movies can have multiple sponsors
 - Movies can have multiple actors and actors can act in multiple movies
 - Movies can have multiple directors and directors can direct multiple movies
 - Actors can have one agent and agents can represent multiple actors
 - Agents have a single unique business phone number
 - Directors have a unique name
 - Production companies have a unique identification code
 - Movies have unique titles (copyright violations!)
 - Actors have a unique name
 - Assume one production company per movie
 - Assume in our database it is possible to add a director without their movie, actor without their movie, production company without their movie, and vice-versa.
 - Assumes actor booking number is unique



Database Schema

- Actor (Actor_Name, Booking_Number, Actor_Hometown, Actor_Review)

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input type="checkbox"/> 1	Actor_Name	varchar(255)	latin1_swedish_ci		No	None			Change Drop More
<input type="checkbox"/> 2	Booking_Number	varchar(255)	latin1_swedish_ci		No	None			Change Drop More
<input type="checkbox"/> 3	Actor_Hometown	varchar(255)	latin1_swedish_ci		Yes	NULL			Change Drop More
<input type="checkbox"/> 4	Actor_Review	varchar(255)	latin1_swedish_ci		Yes	NULL			Change Drop More

☐ Check all
 With selected: Browse Change Drop Primary Unique Index Fulltext

Print Propose table structure Move columns Normalize

Add column(s)

Indexes

Action	Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
Edit Drop	PRIMARY	BTREE	Yes	No	Actor_Name	15	A	No	
Edit Drop	Booking_Number	BTREE	Yes	No	Booking_Number	15	A	No	

- Acts_In (Title, Actor_Name)

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input type="checkbox"/>	1	Title	varchar(44)	utf8_general_ci	No	None			Change Drop More
<input type="checkbox"/>	2	Actor_Name	varchar(19)	utf8_general_ci	No	None			Change Drop More

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Print Propose table structure Move columns Normalize

Add 1 column(s) after Actor_Name Go

Indexes

Action	Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
Edit Drop	PRIMARY	BTREE	Yes	No	Title	15	A	No	
					Actor_Name	15	A	No	

- Agent (Agent_Phone_Number, Agent_Name)

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input type="checkbox"/>	1	Agent_Phone_Number	varchar(18)	utf8_general_ci	No	None			Change Drop More
<input type="checkbox"/>	2	Agent_Name	varchar(22)	utf8_general_ci	Yes	NULL			Change Drop More

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Print Propose table structure Move columns Normalize

Add 1 column(s) after Agent_Name Go

Indexes

Action	Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
Edit Drop	PRIMARY	BTREE	Yes	No	Agent_Phone_Number	15	A	No	

- Managed_By(Actor_Name, Agent_Phone_Number)

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input type="checkbox"/>	1	Actor_Name	varchar(19)	utf8_general_ci	No	None			Change Drop More
<input type="checkbox"/>	2	Agent_Phone_Number	varchar(18)	utf8_general_ci	No	None			Change Drop More

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Print Propose table structure Move columns Normalize

Add 1 column(s) after Agent_Phone_Number Go

Indexes

Action	Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
Edit Drop	PRIMARY	BTREE	Yes	No	Actor_Name	15	A	No	
					Agent_Phone_Number	15	A	No	

- Directed_By (Title, Director_Name)

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input type="checkbox"/>	1	Title	varchar(44)	utf8_general_ci	No	None			Change Drop More
<input type="checkbox"/>	2	Director_Name	varchar(50)	utf8_general_ci	No	None			Change Drop More

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Print Propose table structure Move columns Normalize

Add 1 column(s) after Director_Name Go

Indexes

Action	Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
Edit Drop	PRIMARY	BTREE	Yes	No	Title	15	A	No	
					Director_Name	15	A	No	

- Director (Director_Name, Number_of_Oscar, Director_Rating, Director_Review)

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input type="checkbox"/>	1	Director_Name	varchar(255)	utf8_general_ci	No	None			Change Drop More
<input type="checkbox"/>	2	Director_Review	varchar(255)	latin1_swedish_ci	Yes	NULL			Change Drop More
<input type="checkbox"/>	3	Number_of_Oscar	int(11)		Yes	NULL			Change Drop More
<input type="checkbox"/>	4	Director_Rating	int(10)		Yes	NULL			Change Drop More

☐ Check all With selected: Browse Change Drop Primary Unique Index Fulltext

Print Propose table structure Move columns Normalize

Add 1 column(s) after Director_Rating Go

Indexes

Action	Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
Edit Drop	PRIMARY	BTREE	Yes	No	Director_Name	15	A	No	

- Movie(Title, Duration, Gross, Language, Movie_Review, Genre)

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input type="checkbox"/>	1 Title	varchar(255)	utf8_general_ci		No	None			Change Drop More
<input type="checkbox"/>	2 Duration	varchar(20)	latin1_swedish_ci		Yes	NULL			Change Drop More
<input type="checkbox"/>	3 Gross	varchar(20)	latin1_swedish_ci		Yes	NULL			Change Drop More
<input type="checkbox"/>	4 Language	varchar(255)	utf8_general_ci		Yes	NULL			Change Drop More
<input type="checkbox"/>	5 Movie_Review	varchar(255)	latin1_swedish_ci		Yes	NULL			Change Drop More
<input type="checkbox"/>	6 Genre	varchar(255)	latin1_swedish_ci		Yes	NULL			Change Drop More

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Print Propose table structure Move columns Normalize

Add column(s)

Indexes

Action	Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
Edit Drop	PRIMARY	BTREE	Yes	No	Title	20	A	No	

• Produced_By (Production_ID, Title)

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input type="checkbox"/>	1 Title	varchar(255)	utf8_general_ci		No	None			Change Drop More
<input type="checkbox"/>	2 Duration	varchar(20)	latin1_swedish_ci		Yes	NULL			Change Drop More
<input type="checkbox"/>	3 Gross	varchar(20)	latin1_swedish_ci		Yes	NULL			Change Drop More
<input type="checkbox"/>	4 Language	varchar(255)	utf8_general_ci		Yes	NULL			Change Drop More
<input type="checkbox"/>	5 Movie_Review	varchar(255)	latin1_swedish_ci		Yes	NULL			Change Drop More
<input type="checkbox"/>	6 Genre	varchar(255)	latin1_swedish_ci		Yes	NULL			Change Drop More

☐ Check all With selected: Browse Change Drop Primary Unique Index Fulltext

Print Propose table structure Move columns Normalize

Add column(s)

Indexes

Action	Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
Edit Drop	PRIMARY	BTREE	Yes	No	Title	20	A	No	

• Production_Company (Production_ID, Production_Name)

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input type="checkbox"/>	1	Production_ID	varchar(13)	utf8_general_ci	No	None			Change Drop More
<input type="checkbox"/>	2	Production_Name	varchar(27)	utf8_general_ci	Yes	NULL			Change Drop More

☐ Check all With selected: Browse Change Drop Primary Unique Index Fulltext

Print Propose table structure Move columns Normalize

Add column(s)

Indexes

Action	Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
Edit Drop	PRIMARY	BTREE	Yes	No	Production_ID	15	A	No	

- Movie_Sponsor(Title, Sponsor)

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input type="checkbox"/>	1	Title	varchar(44)	utf8_general_ci	No	None			Change Drop More
<input type="checkbox"/>	2	Sponsor	varchar(255)	latin1_swedish_ci	No	None			Change Drop More

☐ Check all With selected: Browse Change Drop Primary Unique Index Fulltext

Print Propose table structure Move columns Normalize

Add column(s)

Indexes

Action	Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
Edit Drop	PRIMARY	BTREE	Yes	No	Title	15	A	No	
					Sponsor	15	A	No	

Proof of Normalized Tables (3NF)

Table 1: Actor (Actor_Name, Booking_Number, Actor_Hometown, Actor_Review)

Functional Dependencies:

A -> ABCD

B -> B

C -> C

D -> D

Fc:

A-> BCD

3NF:

ABCD

- ABCD is the simplest form of this table (nothing unneeded) therefore it is in 3NF.

Table 2: Acts_In (Title, Actor_Name)

Functional Dependencies:

AB → AB

Fc:

AB →

3NF:

AB

- Both attributes are reflexive so this table is in 3NF.

Table 3: Agent (Agent_Phone_Number, Agent_Name)

Functional Dependencies:

A → AB

Fc:

A → B

3NF:

AB

- AB is the simplest form of this table (nothing unneeded) therefore it is in 3NF.

Table 4: Managed_By(Actor_Name, Agent_Phone_Number)

Functional Dependencies:

AB → AB

Fc:

AB →

3NF:

AB

- Both attributes are reflexive so this table is in 3NF.

Table 5: Directed_By (Title, Director_Name)

Functional Dependencies:

AB → AB

Fc:

AB ->

3NF:

AB

- Both attributes are reflexive so this table is in 3NF.

Table 6: Director (Director_Name, Number_of_Oscar, Director_Rating, Director_Review)

Functional Dependencies:

A -> ABCD

B -> B

C -> C

D -> D

Fc:

A -> BCD

3NF:

ABCD

- ABCD is the simplest form of this table (nothing unneeded) therefore it is in 3NF.

Table 7: Movie(Title, Duration, Gross, Language, Movie_Review, Genre)

Functional Dependencies:

A -> ABCDE

B -> B

C -> C

D -> D

E -> E

Fc:

A -> BCDE

3NF:

ABCDE

- ABCDE is the simplest form of this table (nothing unneeded) therefore it is in 3NF.

Table 8: Produced_By (Production_ID, Title)

Functional Dependencies:

AB -> AB

Fc:

AB ->

3NF:

AB

- Both attributes are reflexive so this table is in 3NF.

Table 9: Production_Company (Production_ID, Production_Name)

Functional Dependencies:

A -> AB

B -> B

Fc:

A -> B

3NF:

AB

- AB is the simplest form of this table (nothing unneeded) therefore it is in 3NF.

Table 10: Movie_Sponsor(Title, Sponsor)

Functional Dependencies:

AB -> AB

Fc:

AB ->

3NF:

AB

- Both attributes are reflexive so this table is in 3NF.

Evaluation of Product

Testing Procedures

We tested our database and application simultaneously. To check if logged in as the critic works, we inputted the movie critic's email and password. After doing this, we were redirected to the homepage as the movie critic.



Login Below

A light grey rectangular box with a thin border. Inside, there are two labels: 'Username:' and 'Password:'. Next to 'Username:' is a white text input field containing the text 'testuser'. Next to 'Password:' is a white password input field containing the text 'password'. Below these fields is a small grey button with the text 'Submit' in white.

We tested the “All reviews” page by comparing the results from that page to our phpAdmin database. We found that the results were the same, or in other words, the data was the same on the frontend and backend..



Display All Movies in Database

A light grey rectangular box with a thin border. Inside, there is a line of text: 'Find a review below!'. Below this text is a small grey button with the text 'Submit' in white.

We tested the “Add movie” page by adding in a movie. Then, we got all the moves from the “All reviews” page and saw the newly entered movie show up; we also saw the new movie in the database.

Add New Movie and Insert to Database

Add movie below!

Title:

The Incredibles

Duration:

30

Genre:

Action

Gross Amount Made:

1000000

Language:

English

Your Review:

Loved it

Submit

We tested the “Update review” page by updating the review. We then saw the newly updated review on the “All reviews” page.

Update or Add a New Review and Insert to Database

Add review below!

Title:

Forrest Gump

Review:

Run forrest run!

Submit

Sample Data and Sample Queries

Below are sample queries used on our website:

- Export/View Data:
 - **SELECT * FROM Movie ORDER BY Title**
 - Explanation: This takes all the data entries from the Movie table and orders them alphabetically by their title. We use this on the website to display to the users all the movies inputted and their corresponding reviews.
- Update Review:
 - **UPDATE Movie SET Movie_Review='\$_POST[review]' WHERE Title='\$_POST[title]'**
 - Explanation: This query is used on the website as an update to change reviews. If a user, specifically the movie critic, would like to change their review, then this query takes in a title and changes the current review post in the Movie table to the new review that is being inputted.
- Insert Movie:
 - **CALL Insert_Movie('\$_POST[title]', '\$_POST[duration]', '\$_POST[gross]', '\$_POST[language]', '\$_POST[review]', '\$_POST[genre]')**
 - Explanation: This query is meant to insert movies into the database table based on all the fields given. This data is important in later use for future queries and retrieving information, such as the ones described above.

Below is sample data in the form of excel spreadsheets that was used to populate our tables:

Movie Data:

Title	Duration	Gross	Language	Movie_Review	Genre
			test2	test review!	
Aladdin	95	8934539	English	Will Smith was a good genie.	Action
Black Panther	100	1344000000	English	A jolt of a movie, Black Panther creates wonder wi...	Action
BlackKkKlansman	123	87632	English	An idealistic black cop goes undercover in the Ku ...	Drama
Cinderella	111	76432	French		Fantasy
Citizen Kane	130	1234567	English		Action
Fantasia	86	439343	None	Disney's most experimental movie may bore kids use...	Fantasy
Fox and the Hound	125	345903	French		Comedy
Get Out	106	132657	English		Horror
Lady Bird	105	1234	English	Saoirse Ronan and Laurie Metcalf are electric as w...	Romance
Lord of the Rings	256	824575	Spanish		Drama
Max Max: Fury Road	209	45653465	English	t's all great fun, and quite rousing as well — a l...	Action
Modern Times	134	32454523	English		Action
Sleeping Beauty	154	23453209	English		Comedy
test	1	1	test	test review!	test1
test1	1	1	test	test	test1
test3	1	1	test3	1	test3
Test4	10	10	Test4	Bad	Fantasy
The Godfather	96	1234321	English		Drama
The Third Man	211	23457574	English	Blustering, conceited, charming – Orson Welles is ...	Drama
The Wizard of Oz	205	76453	English		Adventure

Actor Data:

Actor_Name	Booking_Number	Actor_Hometown	Actor_Review
Alex Forman	(732) 990-9551	Miami, FL	Forman made a very moving performance in his first...
Alfred Prokop	(835) 389-5073	Houston, TX	
Chris Zeller	(700) 519-5913	Seattle, WA	Zeller continues to enthrall in an emotional and p...
Cinderella	(382) 267-1585	Boston, MA	Cinderella really had an off movie in her latest f...
Don Knight	(783) 269-9997	Los Angeles, CA	
Donald Glover	(735) 222-3600	Chicago, IL	Donald Glover is a much better singer than an acto...
Elenor Smith	(253) 983-0770	New York, NY	
Jack Cozby	(220) 569-0091	Albany, NY	
Jackie Berkhart	(504) 978-8665	Cincinnati, OH	
Jackson Brown	(251) 429-8988	San Francisco, CA	
James Slate	(825) 491-5438	New Orleans, LA	
Joe Green	(406) 377-5210	Dallas, TX	Joe Green keeps the audience on his toes with his ...
Micky Mouse	(820) 220-4624	Las Vegas, NV	Micky Mouse is a phenomenal actor who very few Dis...
Snow White	(584) 546-0409	Newark, NJ	Snow White is perhaps the most stunning of all Dis...
The Fox	(742) 291-0547	Oklahoma City, OK	

Director Data:

Director_Name	Director_Review	Number_of_Oscar	Director_Rating
Carol Reed		5	5
Charlie Chaplin		4	6
Clyde Geronimi	Clyde has recently moved from his hard hitting dra...	7	6
Francis Ford Coppola	Francis Ford Coppola does it again	6	7
George Miller		3	8
Greta Gerwig		4	7
Jordan Peele		2	7
Kenneth Branagh		1	7
Orson Welles		2	9
Peter Jackson		3	8
Richard Rich		5	7
Ryan Coogler	Ryan Coogler is new to the scence, but he is alrea...	1	8
Spike Lee	Spike Lee lit it up with BlackKkKlansman. It was u...	5	6
Victor Fleming	Victor makes astounding black and white films with...	3	8
Wilfred Jackson	Wilfred is stuck in a rut of explosions and sex. H...	2	9

Agent Data:

Agent_Phone_Number	Agent_Name
(201) 795-4497	Joyce Cooper
(217) 253-4695	Tommy Howell
(352) 588-0868	Tara Welch
(360) 805-1353	Sherry Poole
(401) 619-1235	Monica Wagner
(518) 647-8402	Walter Carter
(641) 682-1602	Tina Mann
(662) 653-3054	Mario Maxwell
(740) 453-0143	Noah Wilkins
(760) 944-7296	Dolores Taylor
(812) 936-7334	Hubert Burns
(843) 423-2347	William Schatner
(863) 709-0683	Kendra Schultz
(903) 665-8927	Ada Fernandez
(978) 887-8079	Ira Foster

Sponsor Data:

Title	Sponsor
Black Panther	Monster
BlacKkKlansman	Doritos
Cinderella	Dell
Citizen Kane	Browning
Fantasia	Twizzlers
Fox and the Hound	Coca Cola
Get Out	Mountain Dew
Lady Bird	Red Bull
Lord of the Rings	Starbucks
Max Max: Fury Road	Pappa Johns
Modern Times	Ford
Sleeping Beauty	Apple
The Godfather	Chevrolet
The Third Man	Dodge
The Wizard of Oz	Beats

Citations

- <https://stackpath.bootstrapcdn.com/bootstrap/4.1.0/css/bootstrap.min.css>
- https://www.w3schools.com/howto/howto_css_column_cards.asp
- <https://stackpath.bootstrapcdn.com/bootstrap/4.3.1/js/bootstrap.min.js>
- <https://code.jquery.com/jquery-3.3.1.slim.min.js>
- <https://cdnjs.cloudflare.com/ajax/libs/popper.js/1.14.7/umd/popper.min.js>
- <https://maxcdn.bootstrapcdn.com/bootstrap/4.0.0/css/bootstrap.min.css>
- <https://www.webslesson.info/2016/02/export-mysql-data-to-excel-in-php-php-tutorial.html>
- https://www.w3schools.com/howto/howto_js_redirect_webpage.asp
- <https://www.tutorialrepublic.com/php-tutorial/php-mysql-login-system.php>
-