

Project Requirements and Analysis Artifacts

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a. Description

The application is an online booking system. An online booking system is an interface that simplifies the process of booking services handling multiple users and providers concurrently.

It is a platform where users can view movies available and book tickets online.

Constraints like primary key, foreign key, domain and conditions of attributes cannot be handled with set of files. A schema should give authorizations to particular users, which is a feature provided by database over set of files. Example - Only Admin should be given the feature of adding movies to the database, where as end user cannot. Multiple users can access and modify the data simultaneously. Complexity arises when a simple set of files has the data. Booking process has to be atomic to manage the inconsistency when system failure happens, from selecting the seats to successful payment.

Database used - Spatial Extension to Relational Database (postGIS)

Spatial Database is used to fetch information for theaters based on location

b. Use cases:

Set1

1.
 - a. Sign up for application
 - b. A user can register for the application, by setting up her/his profile and preferences of city, genre, language.
 - c. On clicking sign up in the home page
 - d. Consumer
 - e.
 - i. Inputs - username, password, phone number, city, languages, genres
 - ii. Constraints - city, languages and genres can be selected only from available values. genres and languages preferences can be empty. phone number should not have already been registered and should be a valid one. password length ≥ 8
 - f. user should not be logged in

- g. The system checks for validation of information entered and creates a profile for the consumer. The application switches to login page upon successful validation
 - h. Invalid entries lead to the exceptions and those will be pointed out to the user
 - i. The consumer information is added to the database
- 2.
- a. Select city
 - b. User can select the city where the he/she wants to see the theatres in the pop up
 - c. On opening the application
 - d. Consumer
 - e.
 - i. Inputs - city
 - ii. Constraints - city can be selected only from available values
 - f. user should not be logged in
 - g. The system checks for validation of information entered and clears the pop up showing the main page along with login, signup options
 - h. Invalid entry leads to the exceptions and it will be pointed out to the user
 - i. The city preference is set for the session until login/signup
- 3.
- a. View Profile
 - b. user can view his/her profile
 - c. On clicking view profile in main page
 - d. Consumer
 - e. No inputs
 - f. user should be logged in
 - g. user switches to the profile page
 - h. No exceptions
 - i. No change in state of the system
- 4.
- a. Edit Profile
 - b. User can change the city, genre preferences and language preferences
 - c. On clicking edit in profile page
 - d. Consumer
 - e.
 - i. Inputs - city, languages, genres (all of them need not be entered/changed)
 - ii. Constraints - city, languages and genres can be selected only from available values.
 - f. user should be logged in

- g. The system checks for validation of information entered and edits the profile for the consumer. The application switches to profile page upon successful validation
 - h. Invalid entries lead to the exceptions and those will be pointed out to the user
 - i. The consumer information is added to the database
- 5.
- a. View movies being aired
 - b. user can view the movies being aired in the theatres in that city
 - c. Upon logging in
 - d. Consumer
 - e. No inputs
 - f. No conditions
 - g. No output
 - h. No exceptions
 - i. No change in state of the system
- 6.
- a. Click a movie and view its info
 - b. users can select a movie from the movies available. He/she can then view info like cast, description in the movie page and have an option to book tickets
 - c. Upon clicking the one of the available movies in the main page
 - d. Consumer
 - e. No inputs
 - f. No conditions
 - g. Switches to the corresponding movie page
 - h. No exceptions
 - i. No change in the state of the system
- 7.
- a. View artist profile in the artist page
 - b. Users can select an artist from the cast section in a movie. He/she can then view info about the artist in the artist page
 - c. Upon clicking one of the artist in the cast section of movies page
 - d. Consumer
 - e. No inputs
 - f. No conditions
 - g. Switches to the corresponding artist page
 - h. No exceptions
 - i. No change in the state of the system
- 8.
- a. View all airing theatres and the available shows for a movie
 - b. users can see all the theatres airing the movie based on location preferences, show timings and dates available
 - c. On clicking book tickets for a movie from a movie page

- d. Consumer
 - e. No inputs
 - f. No conditions
 - g. No output
 - h. No exceptions
 - i. No change in the state of the system
- 9.
- a. View available seats for a show
 - b. users can see the seating layout which are marked whether available or not
 - c. On clicking a show from the all shows page
 - d. Consumer
 - e. No inputs
 - f. No conditions
 - g. No output
 - h. No exceptions
 - i. No change in the state of the system
- 10.
- a. Booking available seats for a show
 - b. user can select available seats from the seat layout, make the payment and get the tickets booked
 - c. On selecting seats and proceeding to payment
 - d. Consumer
 - e.
 - i. Inputs - Seats selected
 - ii. Constraints - No constraints
 - f. user must be logged in
 - g. The user gets the movie tickets to the registered mobile
 - h. When simultaneously two users are selecting the same seats and one person's transactions get completed and the other still on the selection page, the selected seats become invalid as the refreshing/loading is not done yet. this will be compensated further by failure of booking using transaction management
 - i. The relations booking and user history are updated in the database
- 11.
- a. Rate a movie
 - b. user can on movie page when the user watched the movie
 - c. On clicking rate movie in the movie page
 - d. Consumer
 - e.
 - i. Inputs - rating
 - ii. Constraints - rating must be in the valid range
 - f. user must be logged in and have booked and watched the movie
 - g. No output
 - h. No exceptions
 - i. The rating is added to the Movie_user relation

12.

- a. View upcoming movies
- b. To view all upcoming movies which are going to be aired in theatres later
- c. Human trigger - on clicking View upcoming button
- d. Consumer
- e. Inputs - None. Constraints - None
- f. None
- g. Shows all upcoming movies list
- h. No exceptions
- i. No change in state

13.

- a. Info of Upcoming movie
- b. View Info of Upcoming movie in upcoming movie page
- c. Human trigger - on clicking Movie
- d. Consumer
- e. Inputs - None. Constraints - None
- f. None
- g. Redirects to upcoming movie info page
- h. No exceptions
- i. No change in state

14.

- a. Set a notification preference for movie tickets release update
- b. Users can set preference for an upcoming movie to get notified on mobile once the movie tickets are released
- c. on clicking "notify me" in an upcoming movie page.
- d. Consumer
- e. No inputs
- f. User must be logged in
- g. No output
- h. No exceptions
- i. Sets the Notification relation in database

15.

- a. Showing recommendations
- b. recommending movies based on profile preferences like genre, language, rating
- c. None
- d. Consumer
- e. profile preferences by user
- f. User must be logged in
- g. Movie recommendations are displayed as banners
- h. None
- i. No change in state of system

- 16.
- a. View available theatres
 - b. User can browse theatres i.e. he/she can see all the theatres available based on location preferences
 - c. Human trigger - on selecting browse theatres from main page
 - d. Consumer
 - e. No input
 - f. None
 - g. switches to all theatre page
 - h. None
 - i. No change in state of system
- 17.
- a. View shows available in a theater
 - b. users can see all the movies available, screens and timings for a theatre in theatre page
 - c. on clicking a theatre in all theatres page
 - d. Consumer
 - e. No input
 - f. No conditions
 - g. No output
 - h. None
 - i. None
- 18.
- a. Rate a theatre on theatre page when the user watched at least one movie in the theatre
 - b. user can rate the theatre which they have been to.
 - c. Human trigger - On Clicking "rate theatre" button
 - d. consumer
 - e. Rating value to be submitted
 - f. user must be logged in and user must book a ticket in the theatre
 - g. User rating is submitted
 - h. No exceptions
 - i. Database is updated with the user's rating value.
- 19.
- a. Filter out movies based on genre, language
 - b. Filter the movies based on genre and language
 - c. Human trigger - On clicking apply filter button
 - d. consumer
 - e. Genre and language preferences
 - f. user must be logged in
 - g. Filtered movies are displayed to user
 - h. No exception
 - i. No change in state of system
20. View theatres available within a selected range of distance from a selected location

- a. View of near theatres
 - b. Show the list of theatres nearer to the user location
 - c. Human trigger - On clicking "get nearby theatres" button
 - d. consumer
 - e. Location of the user
 - f. user should provide location access
 - g. Nearby theatres is displayed to the user
 - h. Exception arises if location permission is not given, will handle it by requesting location permission from the user.
 - i. No change in state of system
- 21.
- a. View history of bookings
 - b. Show history of previous ticket bookings by the user
 - c. Human trigger - On clicking "view history" button in the user profile
 - d. consumer
 - e. No inputs
 - f. No conditions
 - g. Retrieves the past bookings by the user and display them
 - h. No exceptions
 - i. History is displayed to the user

Set 2

1.
 - a. Logging on to the system
 - b. Enables user to login to their account
 - c. Human trigger - on clicking submit button after entering credentials
 - d. Administrator, Theatre Admin, Consumer
 - e. Inputs - Login ID, password. Constraints - For Consumer, Login ID has to be of 10 digits, password has to be of minimum length 8
 - f. User in logged out state
 - g. System checks if the given credentials are valid. If valid, redirect to logged in home page of user
 - h. If invalid credentials, then asks for the correct credentials in login page itself
 - i. No change in state
2.
 - a. Reset password
 - b. Enables user to reset password
 - c. Human trigger - on clicking reset password button
 - d. Administrator, Theatre Admin, Consumer
 - e. Inputs - current password, new password, confirm new password. Constraints - all the inputs have to be of minimum length 8

- f. User in logged in state
- g. System checks if the current password is valid. Also, it checks if new password and confirm new password inputs are matching. If valid, redirect to home page of user with a notification mentioning the resetting was successful
- h. If invalid inputs, then shows a notification of failure with resetting on reset password page itself
- i. Password of user in database has to be updated

3.

- a. Logging out of the system
- b. Enables user to logout of their account
- c. Human trigger - on clicking Logout button
- d. Administrator, Theatre Admin, Consumer
- e. Inputs - none. Constraints - none
- f. User in logged in state
- g. User redirected to main page
- h. No exceptions
- i. No change in state

4.

- a. Register a theater
- b. Add a theatre and its owner information to database of theatres
- c. Human trigger - on clicking Add theatre button
- d. Administrator
- e. Inputs - theatre name, city, location, number of screens. Constraints - location has to be in latitude-longitude format
- f. User in logged in state
- g. System checks if the given theatre is already in the database. If not present, creates an ID and password for the theatre and shows notification that theatre is added successfully and redirects to home page
- h. If invalid, then shows failure notification in the page itself
- i. Adds theatre to the database

5.

- a. Add a movie
- b. Add a movie and its information to database of movies
- c. Human trigger - on clicking Add Movie button

- d. Administrator
- e. Inputs - movie name, release date, image, description. Constraints - description should be non empty
- f. User in logged in state
- g. System checks if the given inputs are valid with above constraints. If valid, creates an ID for the movie and shows notification that movie is added successfully and redircets to home page
- h. If invalid, then shows failure notification in the page itself
- i. Adds movie to the database

6.

- a. Add an artist
- b. Adds profile for artist and his/her information to database of artists
- c. Human trigger - on clicking "Add Artist" button
- d. Administrator
- e. Inputs - Artist name. Constraints - artist name should not be empty
- f. User in logged in state
- g. System checks if the given inputs are valid with above constraints. If valid, creates an ID for the artist and shows notification that artist is added successfully and redircets to home page
- h. If invalid, then shows failure notification in the page itself
- i. Adds artist to the database

7.

- a. Admin Analytics
- b. View the analytics of online vs live bookings for all the theaters
- c. Human trigger - on clicking "View Analytics" button
- d. Administrator
- e. Inputs - None. Constraints - None
- f. User in logged in state
- g. Preconditions - None. Shows the graph analysis
- h. Exceptions - None
- i. No state change

8.

- a. View movies being aired in a theater
- b. View all the movies being aired in the theater along with button to extend airing period
- c. Triggered automatically
- d. Theatre Admin
- e. Inputs - None. Constraints - None

- f. User in logged in state
- g. Preconditions - None. Shows the movies list
- h. Exceptions - None
- i. No state change

9.

- a. Theatre Analytics - Live vs Online Bookings
- b. View the analytics about number of live vs Online booking for the theatre
- c. Human trigger - On clicking corresponding button
- d. Theatre Admin
- e. Inputs - None. Constraints - None
- f. User in logged in state
- g. Preconditions - None. Shows the analysis
- h. Exceptions - None
- i. No state change

10.

- a. Theatre Analytics - Percentage of Audience
- b. Can view percentage of audience for a particular movie over various theatres
- c. Human trigger - On clicking corresponding button
- d. Theatre Admin
- e. Inputs - Movie name. Constraints - None
- f. User in logged in state
- g. Preconditions - None. Shows the analysis
- h. Exceptions - None
- i. No state change

11.

- a. Theatre Analytics - Choices of Audience
- b. Can view choices of audience watching movies in the theatre like language/Genre
- c. Human trigger - On clicking corresponding button
- d. Theatre Admin
- e. Inputs - None. Constraints - None
- f. User in logged in state

- g. Preconditions - None. Shows the analysis
- h. Exceptions - None
- i. No state change

12.

- a. Theatre Analytics - View Ratings
- b. Can view the ratings of movies aired and theatre
- c. Human trigger - On clicking corresponding button
- d. Theatre Admin
- e. Inputs - None. Constraints - None
- f. User in logged in state
- g. Preconditions - None. Shows the analysis
- h. Exceptions - None
- i. No state change

13.

- a. Change availability of seats
- b. Change availability of seats for a movie of a screen in a show timing (when booking is done physically)
- c. Human trigger - On selecting modify seats
- d. Theatre Admin
- e. Inputs - Selecting seats. Constraints - None
- f. User in logged in state
- g. Preconditions - None. If successful, shows success notification and redirects to home page
- h. Exceptions - None
- i. Changes availability of seats in database

14.

- a. Add movie shows
- b. Add a movie and its information to the theatre for 7 days from present day and choose show timings from the available show timings of 7 days for selected screen
- c. On selecting show timings and clicking add button
- d. Theatre Admin
- e. Inputs- Movie, Show timings, screen. Constraints- We enable only available show timings for those 7 days
- f. Theatre admin logged in
- g. Show a confirmation message
- h. Exceptions: None
- i. Show gets added to the database with corresponding 7 days, timings and screen.

15.

- a. Extend an already airing movie of a screen to 7 more days

- b. Add next 7 days and choose show timings to an airing movie(can add only next 7 days from present day)
- c. On selecting movie from airing movies list, screen and clicking extend button
- d. Theatre Admin
- e. Inputs- None. Constraints- None
- f. Theatre admin logged in and selected movie airing already in the theatre
- g. Show a confirmation message
- h. Exceptions: None
- i. Show dates get changed in the database for the corresponding screen

c. Main Entities:

Movie:

- Movie_id
- Name
- Release date
- Count of no.of theaters airing the movie
- Boolean to check if movie is upcoming
- Poster image
- IMDB Rating
- Description

Theater:

- Theater_id
- Name
- Location
- Login id
- Password

User:

- User_id
- Name
- Age
- Mobile number
- Email id
- Password

Screen: (weak entity set identified by theater entity)

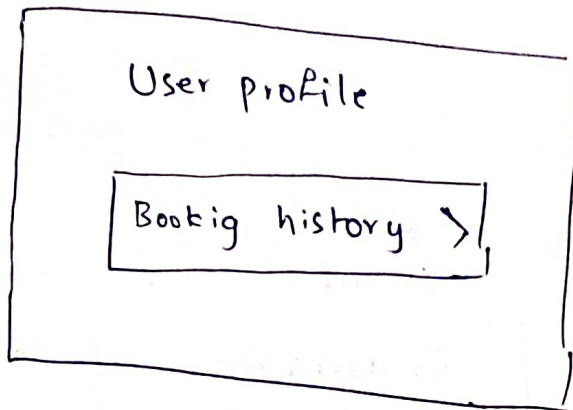
- Number

Show Timings:

- Show_id

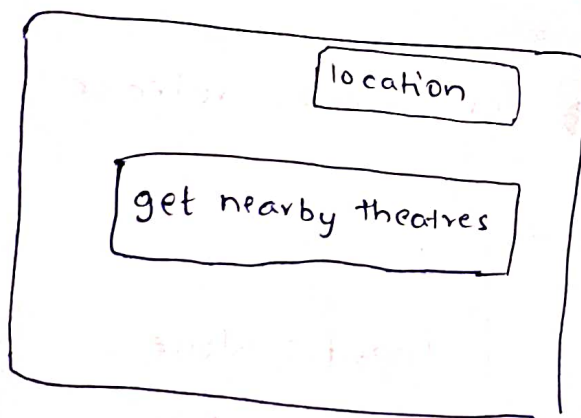
Name
Start_time
End_time
Genre:
Genre_id
Genre name
Language:
Language_id
Language name
City:
City_id
City name
Role:
Role_id
Role name
Artist:
Artist_id
Artist name
Seat:
Seat label
Seat number

20. View history of bookings



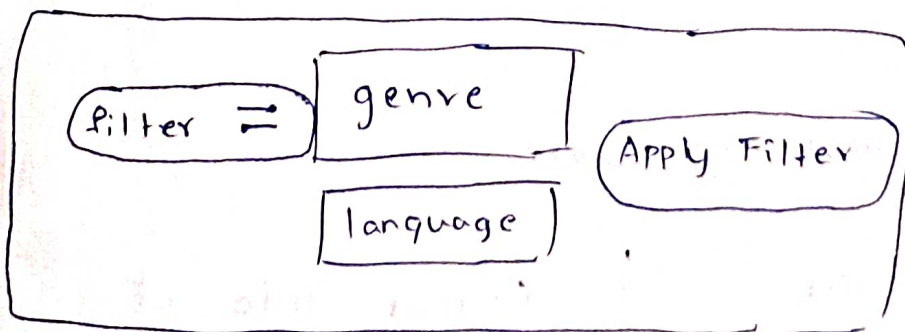
Output:
History of Purchases
by user.

19. Viewing Nearby theatres



Output:
Nearby theatres is displayed
to user
Input: location

8. Filter movies based on genre and language



Output:
Filtered movies are
displayed to user
Input:
Filter values.

17. Rating a theatre

A hand-drawn rectangular box representing a rating interface. At the top, it says "RATE THE ~~MOVIE~~ Theatre". Below this, there is a label "Rating:" followed by a rectangular input field. At the bottom of the box is a rectangular button labeled "Submit".

Input: Rating value

Output: Submission prompt

15. Showing recommendations
16.

A hand-drawn rectangular box representing a recommendation interface. Inside the box is a smaller rectangular box with the text "Movie Name" on the left and an "X" icon on the right, resembling a search bar or a list item.

Input: None

Output: Recommendation banners

14. Set Notification Preference for movie release

A hand-drawn rectangular box representing a notification preference interface. At the top, it says "Upcoming Movies". Below this, there is a rectangular input field labeled "Movie Name". Underneath the input field is the text "Movie description". At the bottom right of the box is a rectangular button labeled "Notify me".

Input: None

Output: No output

13. View Info of upcoming movie

A hand-drawn rectangular box representing a movie list interface. At the top, it says "Upcoming Movie list". Below this, there are three stacked rectangular boxes, each containing the text "Movie 1", "Movie 2", and "Movie 3" respectively.

Output: Info of upcoming movie

12. View upcoming movies

A hand-drawn rectangular box representing a user interface. At the top, there is a rectangular button labeled "UpComing Movies". Below this button, the text "Running movies" is written. Underneath the text, there are three square icons, each containing a large 'X'. Below each icon is a label: "M₁", "M₂", and "M₃".

Input: clicking upcoming movies

Output: Upcoming movie list

11. Rate a Movie

A hand-drawn rectangular box representing a user interface. At the top, the text "RATE A MOVIE" is written. Below this, the text "Rating:" is followed by a rectangular input field. At the bottom of the box, there is a rectangular button labeled "Submit".

Input: Rating Value

Output: Submission prompt.

5) Add a movie

onclick → Adds movie to db, Redirect to home page

6) Add an artist

Add artist

onclick → Adds artist to the database, Redirect to home page.

15. Extend an already airing movie to 7 more days.

Movie Name, Screen number.

Day 1
slot 1 (unavailable) slot 2 (available) slot 3 slot 4

Day 2
slot 1 slot 2 slot 3 slot 4

Day 7
slot 1 slot 2 slot 3 slot 4

Extend

on extend button.

Add dates to database, redirect to home page.

14. Add movie shows

Movie ~~name~~^{ID}:

Screen numbers^{*}:

Day 1: slot 1 (available) slot 2 (unavailable) slot 3 slot 4

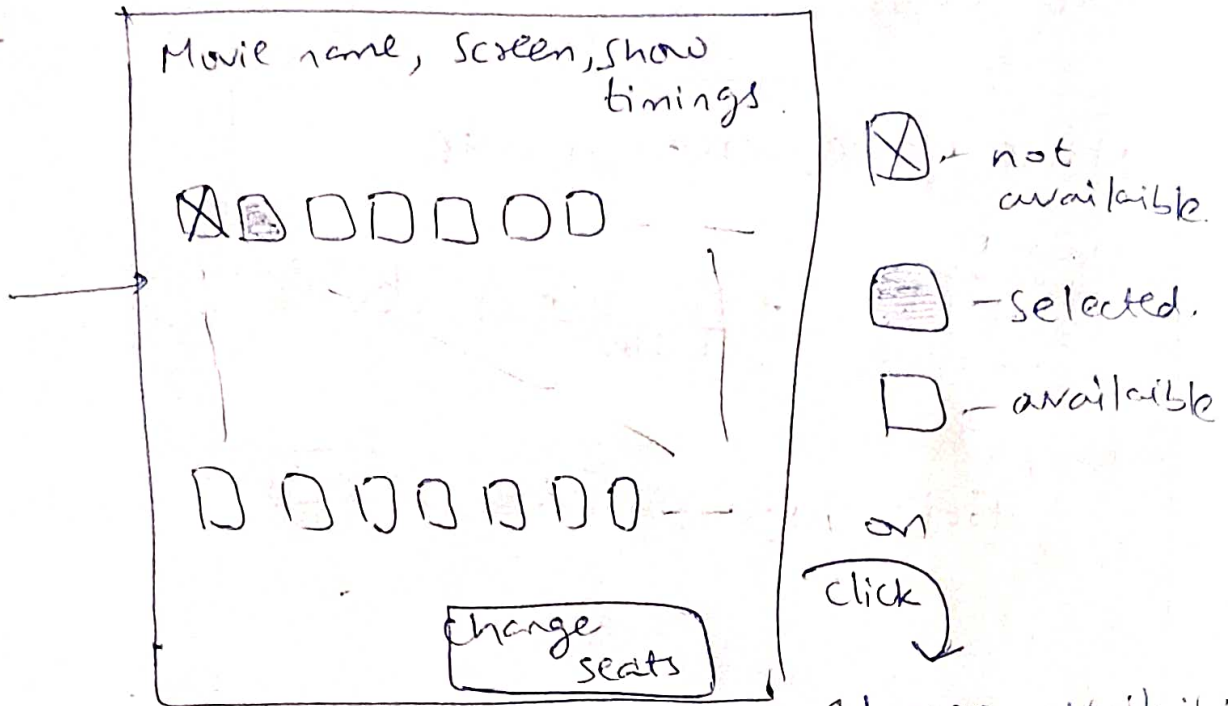
Day 2:

Day 7: slot 1 slot 2 slot 3 slot 4

Add movie

on click
Add movie to db.
Redirect to home page.

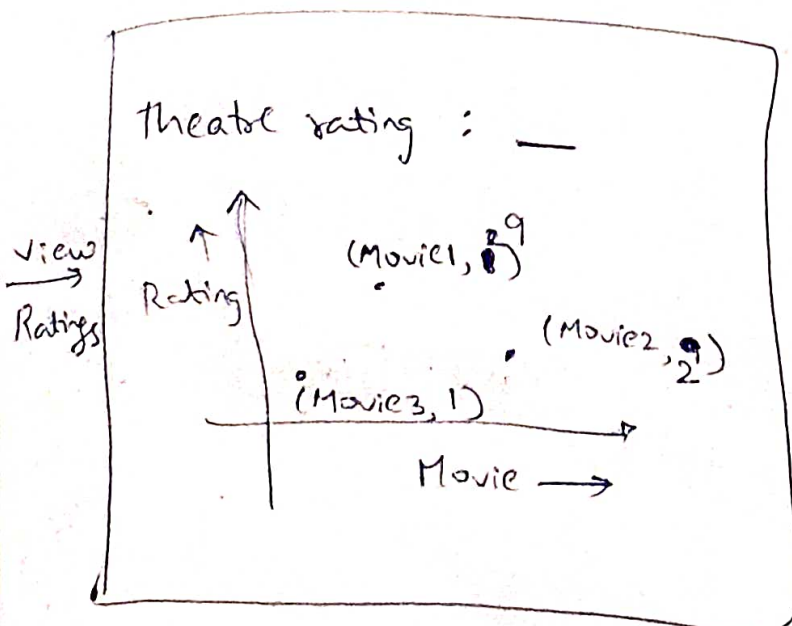
13.) Change availability of seats



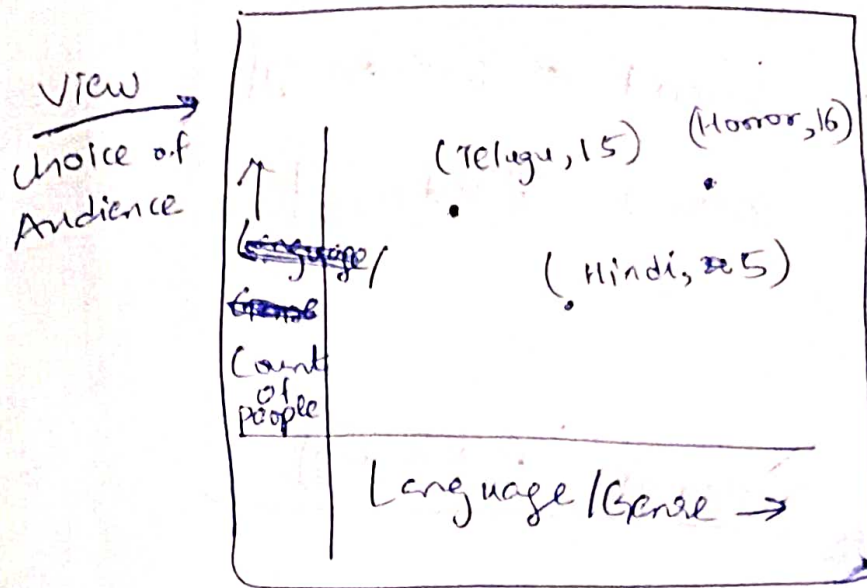
Change availability of seats in db.
Redirect to home page.

~~11)~~

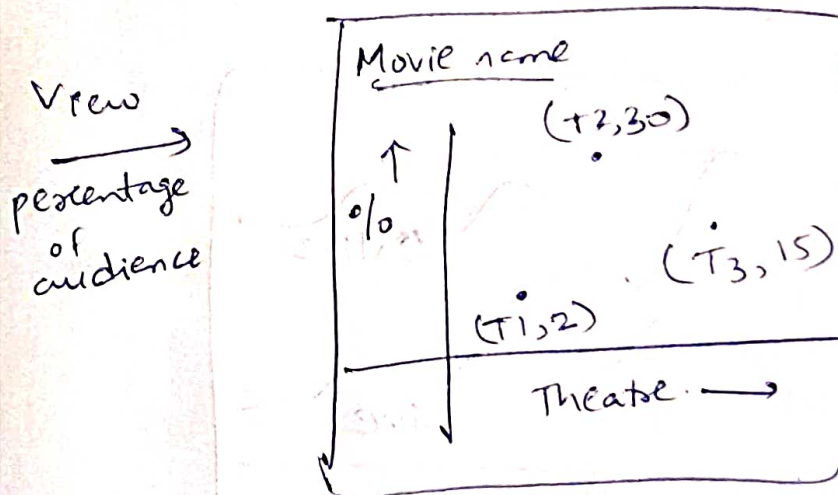
12.) Theatre Analytics - View Ratings



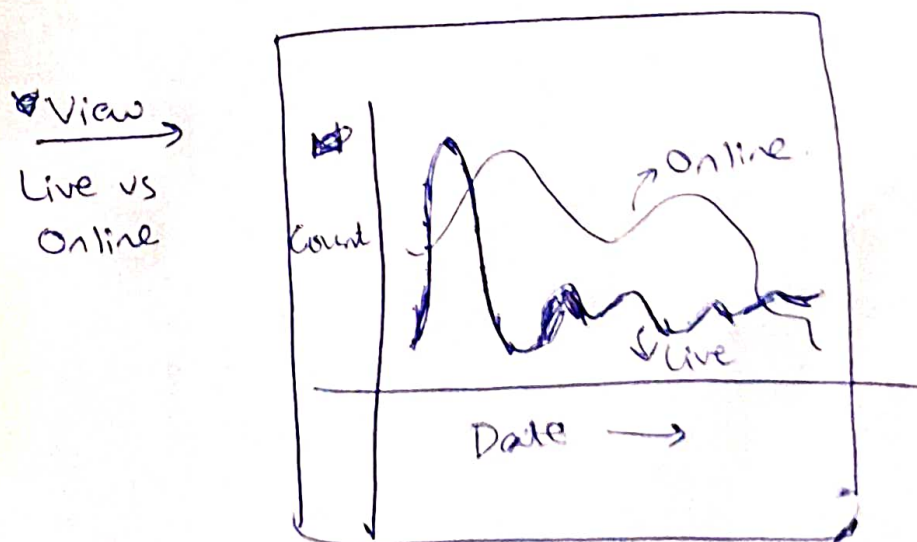
11) Theatre Analytics - Choice of Audience.



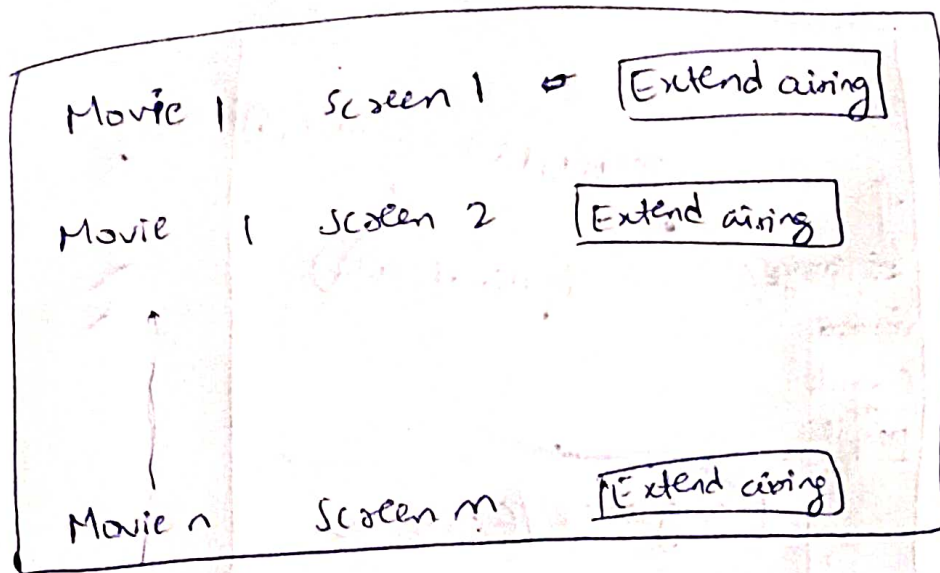
10). Theatre Analytics - Percentage of Audience.



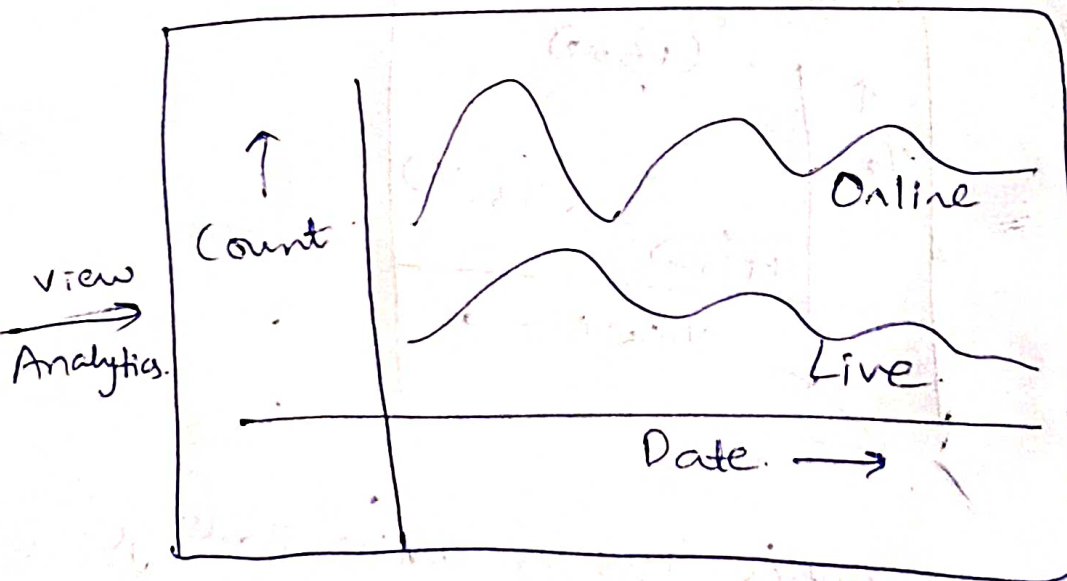
9) Theatre Analytics - Live vs Online Bookings.



8) View movies being aired in theaters.



7) Admin Analytics



1.

Sign up for application

Input

A hand-drawn sign-up form with the following fields:

- Username *
- Password *
- Confirm password *
- Phone number *
- City *
- Language
- Genre

Output:

Redirect to
Sign in page.

2.

Input

Select city

A hand-drawn selection interface showing a row of buttons labeled "city 1", "city 2", and "city n".

Output:

Main page.
(Removes
popup).

3.

View Profile

A hand-drawn button labeled "User Profile".

Output:

User profile

4.

A hand-drawn user profile card with the following fields:

- city
- language
- Genre

There is an "Edit button" (represented by a pencil icon) next to the "city" field.

Edit button

Edit Profile

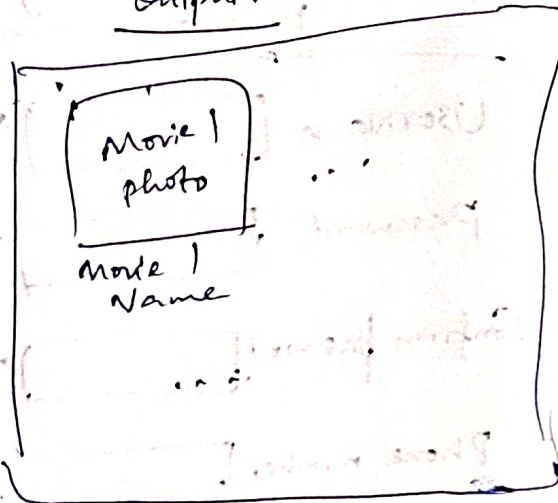
Output:

User profile
with edit option
back to non-
editing
status.

5.

View Movies being aired
 No input
 (After logging in)

Output:



6.

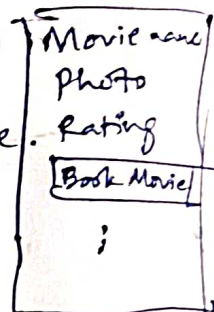
View Movie Info

Input:

No input
 Click Movie photo

Output:

Movie Page



7.

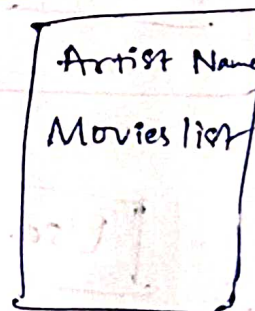
View Artist Profile

Input:

No input
 Click artist in movie page.

Output:

Artist Page

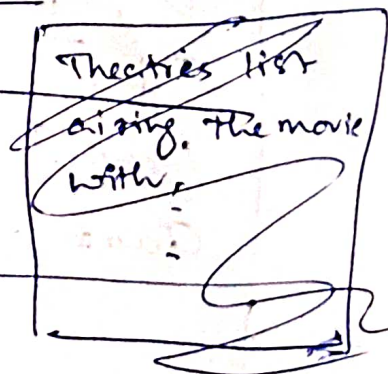


8.

Input:

No input
 Click Book Tickets
 in Movie page.

Output:



8.

View Theatres List & Show timings for a movie

Input:

None.

Click Book tickets
in Movie Page.

Output:

Theatre1 Name

Show 1
Show 2

Theatre2 Name

Show 1

⋮

9.

View available seats for a show

Input:

None.

Click Show x in
Theatres list of
a movie page.

Output:

	1	2	3	...	10	
	□	□	A		□	A
	□	A	A	A	□	B
						⋮
						M

to.

Book available seats for a show

Input:

Seats selected
from Seat
layout
& Click Pay

Output:~~Message~~

Confirmation Message.

1.

Log in Page

Input:

Output:

Login ID

Password

Login

Home page.

2.

Reset Password

Input:

Output:

Current Password

New Password

Confirm New Password

Reset

If valid, Home Page.

Else, Error Message.

3.

Logging Out

Input:

Output:

None.

Click

log out

Main Page.

4.

Register Theater

Input:

Output:

Name :

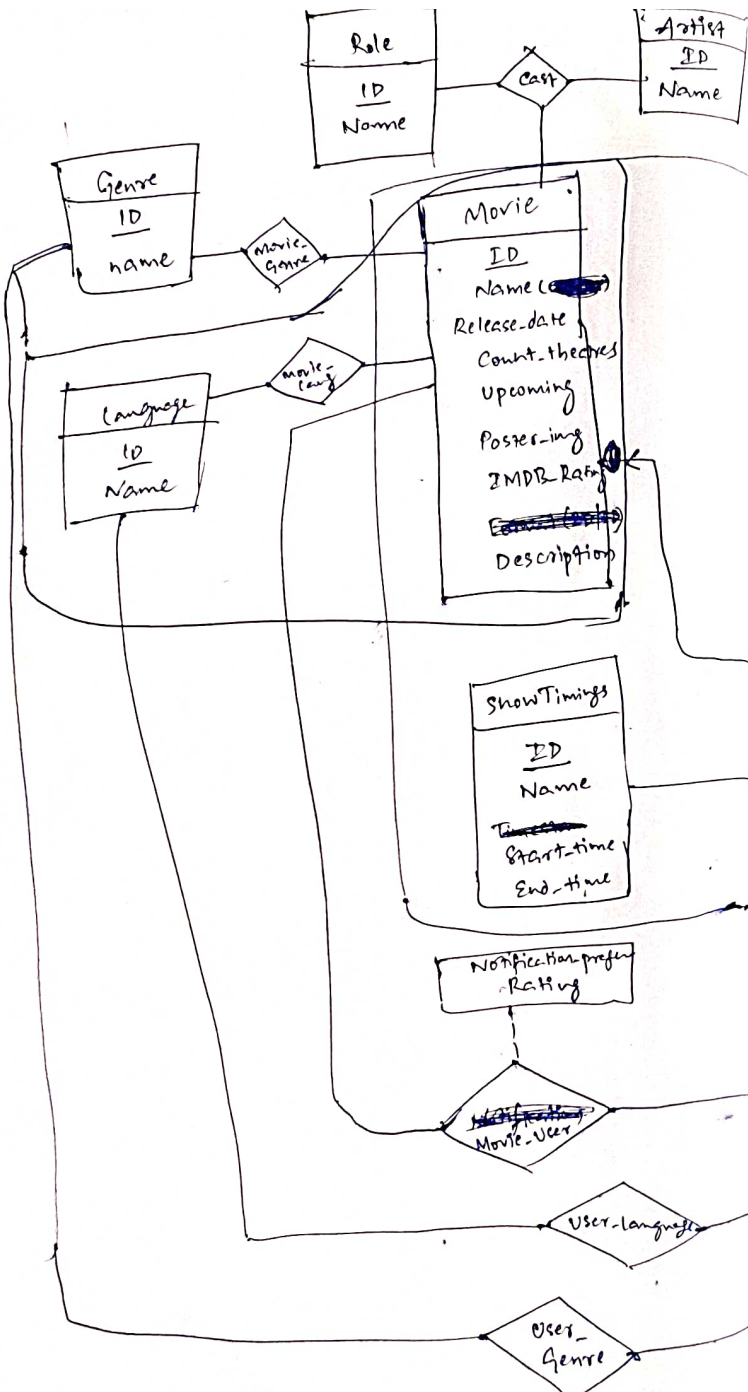
City :

Location :

Number of screens:

Home page.

Register



E-R MODEL

