Film Database App: Documentation

The Design

Jackson Structured Programming (JSP) [1] representation was used to represent the design of the app. The input is considered supplied by the user's choices, and the output is the resulting database and the information displayed to the user.

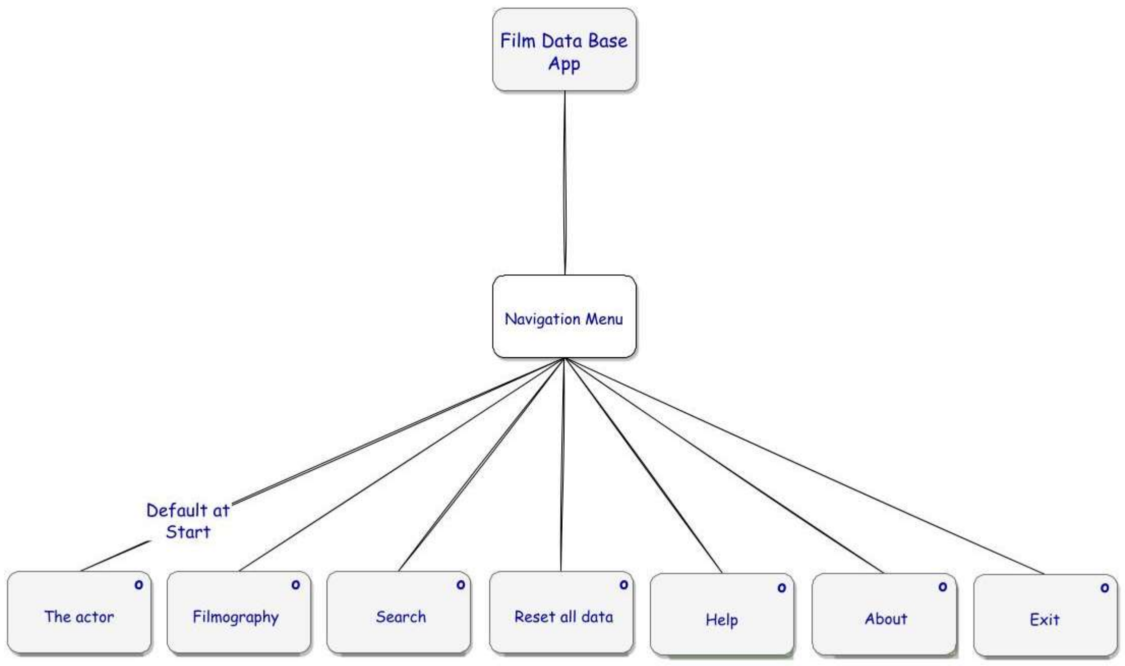


Diagram1 – The main menu

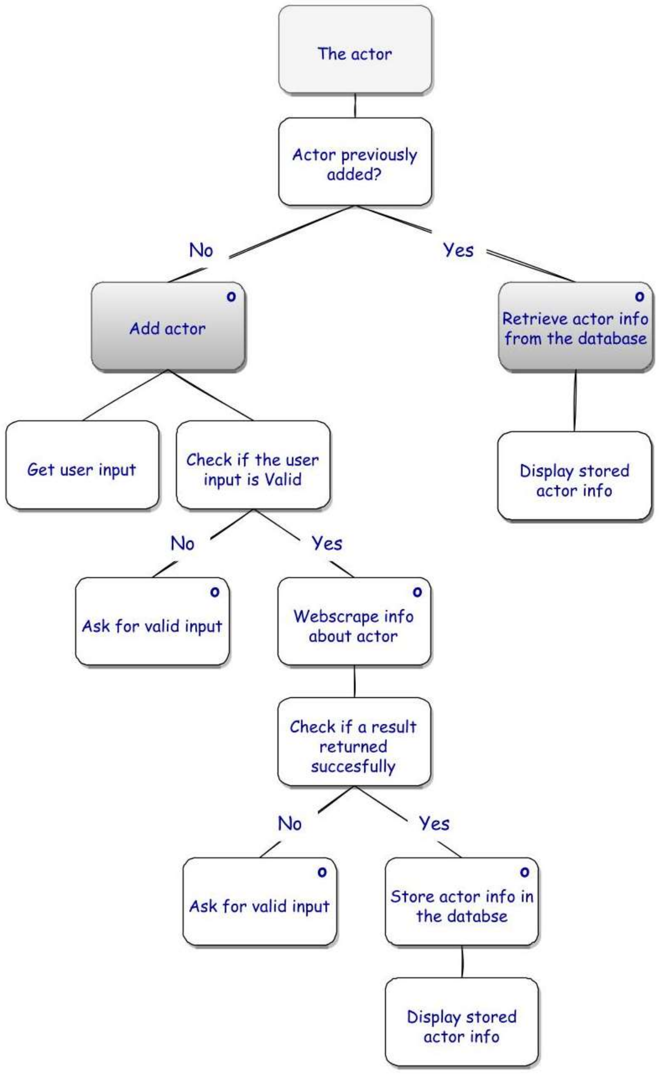

The actor
Actor previously added?
No
Yes
Add actor
Retrieve actor info from the database
Get user input
Check if the user input is Valid
Display stored actor info
No
Yes
Ask for valid input
Webscrape info about actor
Check if a result returned succesfully
No
Yes
Ask for valid input
Store actor info in the databse
Display stored actor info

Diagram 2 – The actor activity

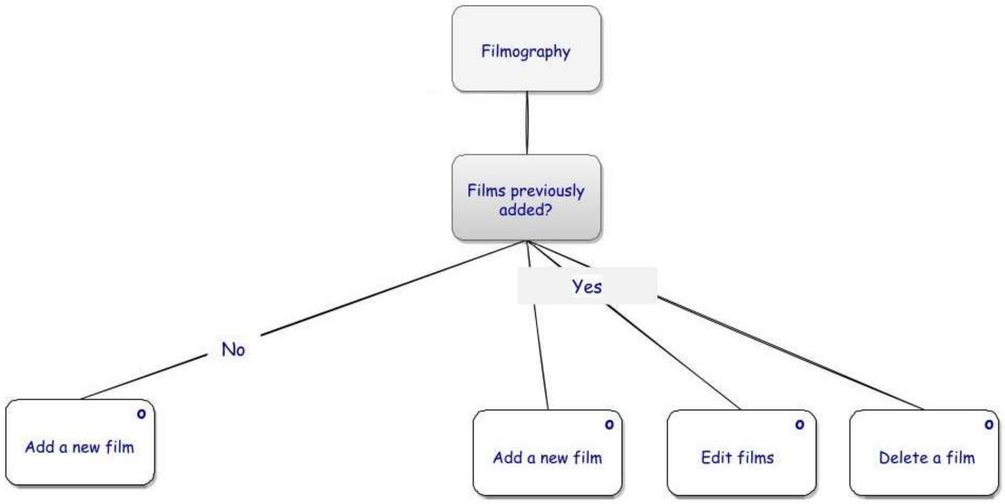


Diagram 3 – The filmography activity

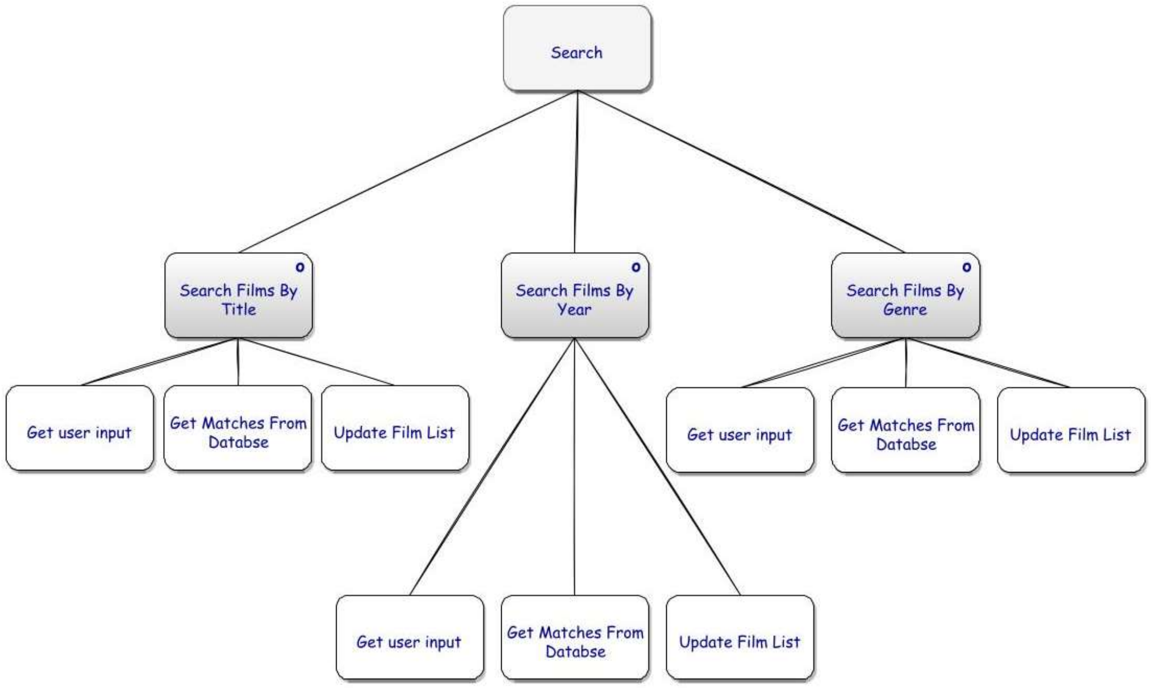


Diagram 4 – The search activity

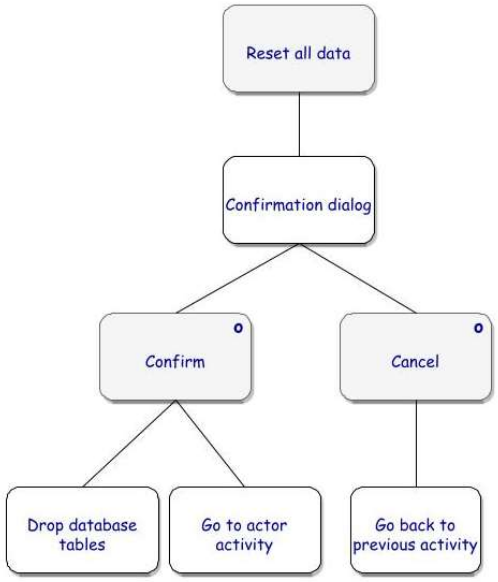


Diagram 5 – The reset activity

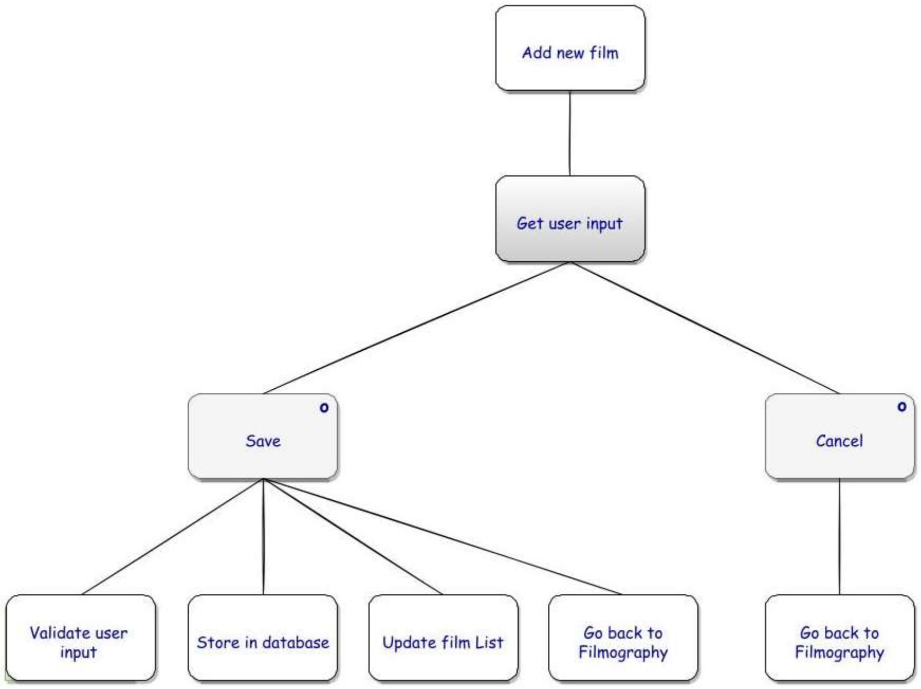


Diagram 6 – The add film activity

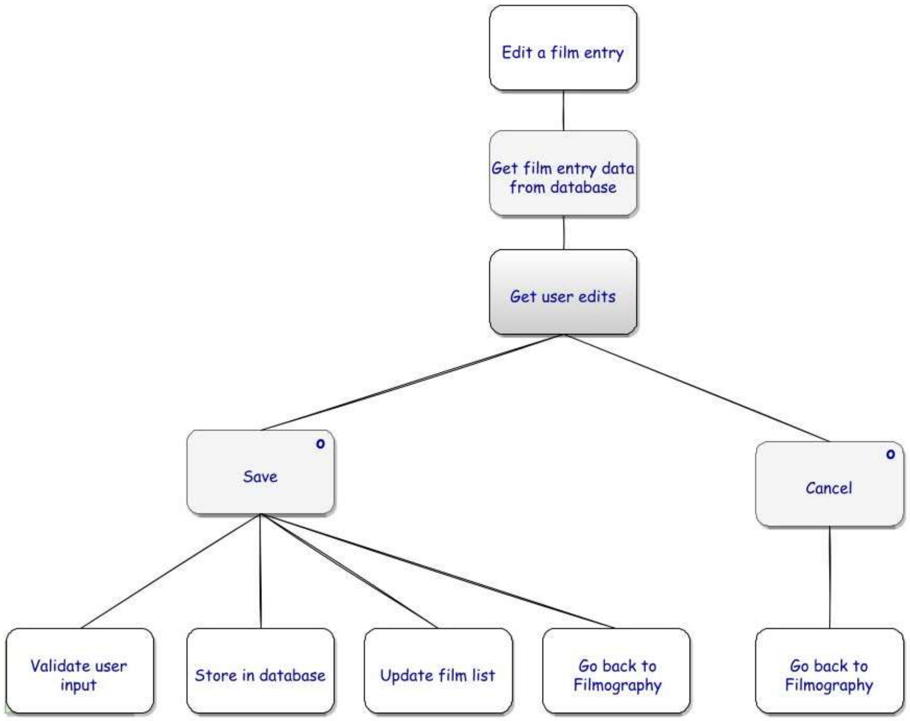


Diagram 7 – The edit film activity

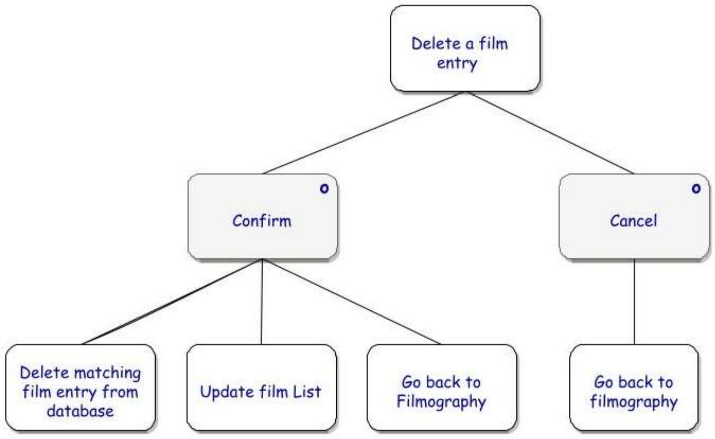


Diagram 8 – The delete film mechanism

Encountered Problems and Solutions

1. UI/UX Challenges

The initial challenge confronted was to build a navigation menu accessible from all activities to provide a better flow and user experience, instead of a menu available only from one activity. This was achieved by first defining an XML file with the menu and all the menu items [2]. Then a DrawerLayout [3], a NavigationView [4], and an ActionBarDrawerToggle [5] were implemented as explained in this post [6] in a base activity that other activities extend. In addition, the addContentView method [7] was used in the child activities to add their corresponding layouts.

Concerning the UI also, a problem emerged when the Actor and the Help layouts contained text in the text views extending vertically beyond the screen size. However, setting the setMovementMethod [8] to a new ScrollingMovementMethod [9] for the corresponding views fixed this.

Also, the Help and About activities are meant to include text paragraphs with presentable styling. Yet, when the texts were first added to the text views, they lacked proper formatting. This was fixed by adding HTML markup tags [10] to the strings XML resource file.

On the other hand, in the Add and Edit Film activities, the on-screen keyboard was obstructing the last text view. Therefore the windowSoftInputMode = "adjustPan" [11] attribute was introduced in the Manifest file to solve this.

2. Web Scraping

The first user input hurdle was handling possible misspells of the actor's name, which might throw a web-scraping error. To minimise this risk and help the user with the input, a string array was assigned to an autoCompleteTextView [12] with the correct names of the top 1000 actors [13].

Also, as the web-scarping URL depends on the user's input for the actor's name, the string passed to jsoup had to be dynamic. Thus, it was necessary to set a specific URL while appending the user input to it. The solution was to make a concatenated string [14] made of a fixed part corresponding to the general Wikipedia URL and a variable part for the name.

Another problem that occurred while web-scraping was when the actor's information was available but the photo could not be found on the URL with the specific CSS selector [15]. Therefore, two nested try/catch statements were implemented to avoid an error.

3. User Interaction

On the other hand, when displaying the dialog to get the actor’s name, the user might press the back button or click outside the dialog window. If this happens, web scraping would not start and the user would be left with an empty screen. To overcome this, the setCancelable [16] was set to false when the dialog was shown.

4. Database Handling and User Input

One of the main problems encountered was not being able to store the actor’s photo in its current format in the database. This is because the SQLite database can only store images as raw data (Blob) [17]. The solution was to use a ByteArrayOutputStream [18] to store a compressed format of the image [19], and then convert it to a byte array. A bitmap decoder was used to convert it back to a bitmap format [20] when it was pulled from the database.

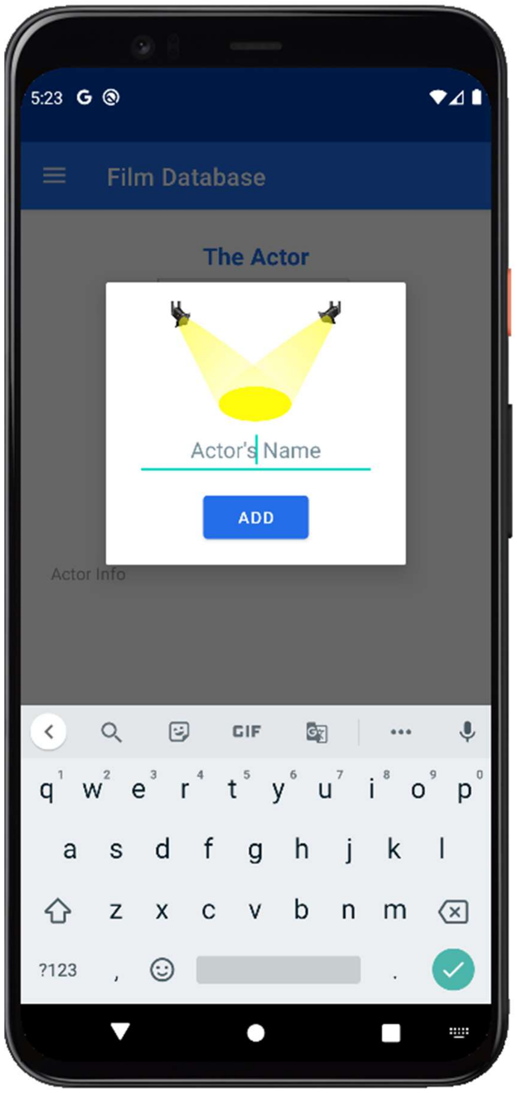
Also, while trying different user inputs in adding and editing film records, a problem occurred when the input contained single quotes. The reason is that the quotes interfere with the SQL query syntax passed in rawQuery and execSQL methods. Therefore, as a workaround, the single quotes inside the strings were replaced by backticks using the replaceAll string method [21] before passing them to the database handler. Further research might lead in the future to a better solution in this regard.

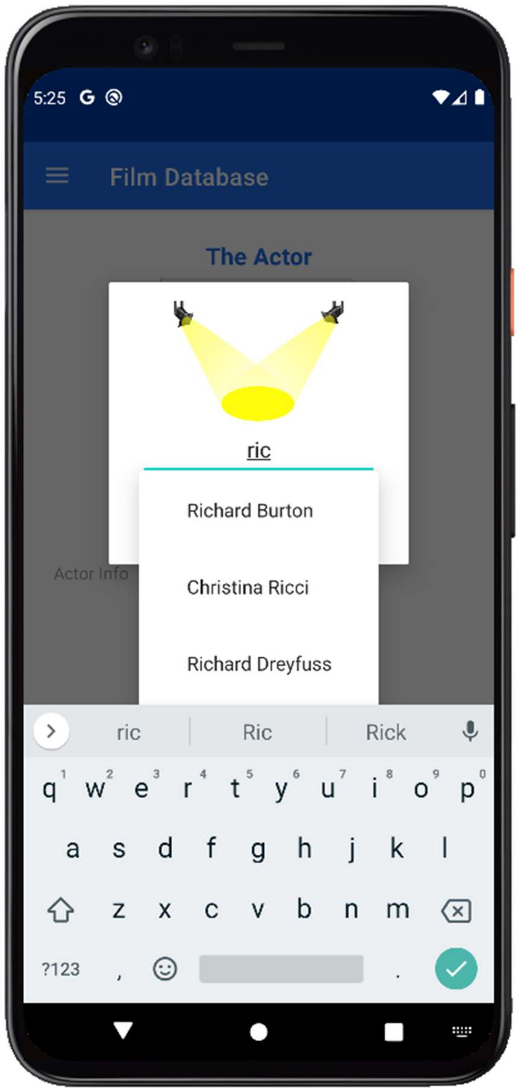
Additionally, there was a need to pass the variable that stores the film title from the Filmography activity to the Edit List activity. This was accomplished by using the putExtra Intent method [22] before starting the Edit Film activity.

App Mechanics Demonstration

The following series of screenshots show how different app features.

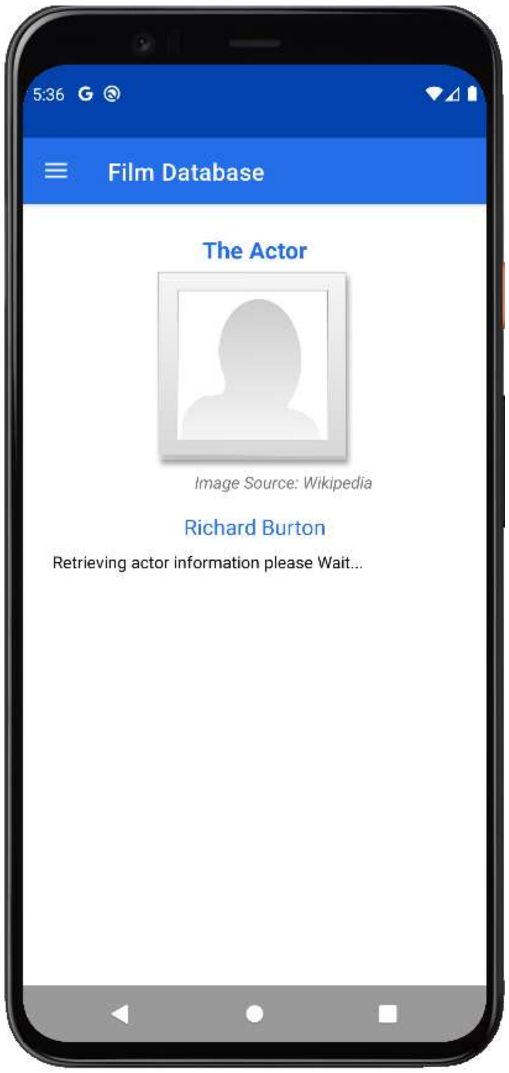
- The first run dialog



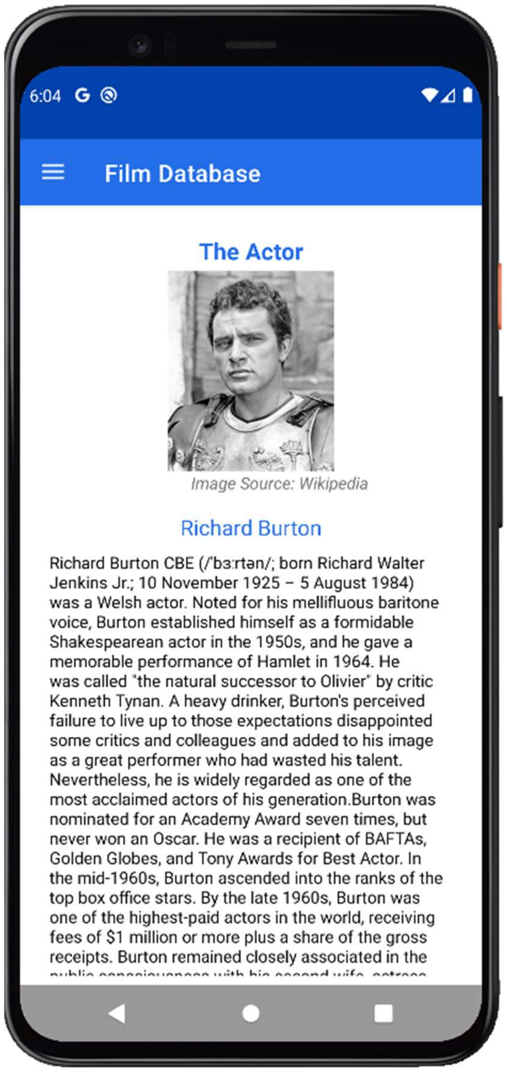


Description of the above screenshots: the one on the left is for the dialog in waiting for the user input, and the one on the right is showing the autocomplete list when the user is typing.

- The Actor information activity



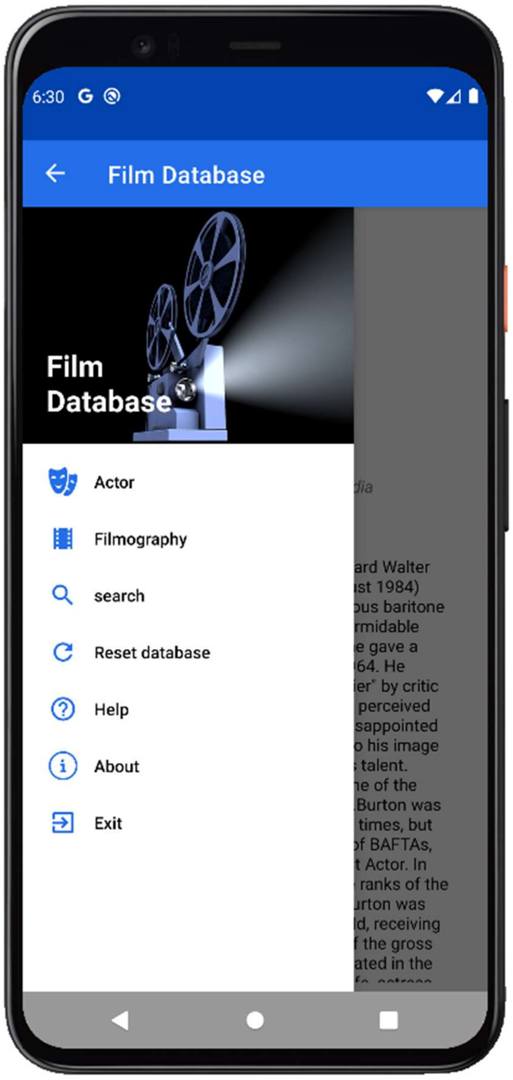
Retrieving actor information please Wait...



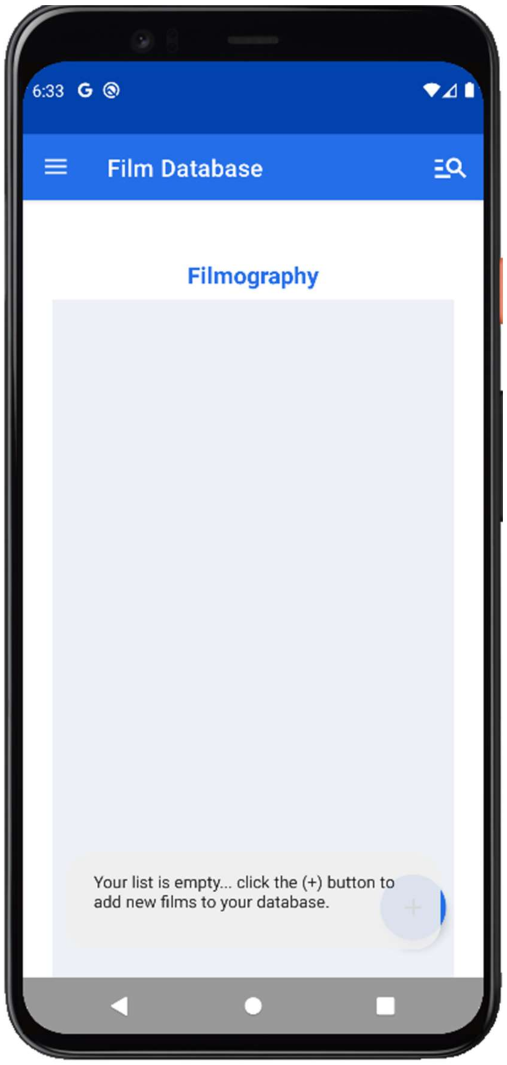
Richard Burton CBE (/ˈbɜːrtən/; born Richard Walter Jenkins Jr.; 10 November 1925 – 5 August 1984) was a Welsh actor. Noted for his mellifluous baritone voice, Burton established himself as a formidable Shakespearean actor in the 1950s, and he gave a memorable performance of Hamlet in 1964. He was called "the natural successor to Olivier" by critic Kenneth Tynan. A heavy drinker, Burton's perceived failure to live up to those expectations disappointed some critics and colleagues and added to his image as a great performer who had wasted his talent. Nevertheless, he is widely regarded as one of the most acclaimed actors of his generation.Burton was nominated for an Academy Award seven times, but never won an Oscar. He was a recipient of BAFTAs, Golden Globes, and Tony Awards for Best Actor. In the mid-1960s, Burton ascended into the ranks of the top box office stars. By the late 1960s, Burton was one of the highest-paid actors in the world, receiving fees of $1 million or more plus a share of the gross receipts. Burton remained closely associated in the

Description of the above screenshots: the one on the left is the actor activity while web-scraping is ongoing asking the user to wait, and the one on the right is showing the retrieved actor's biography and photo.

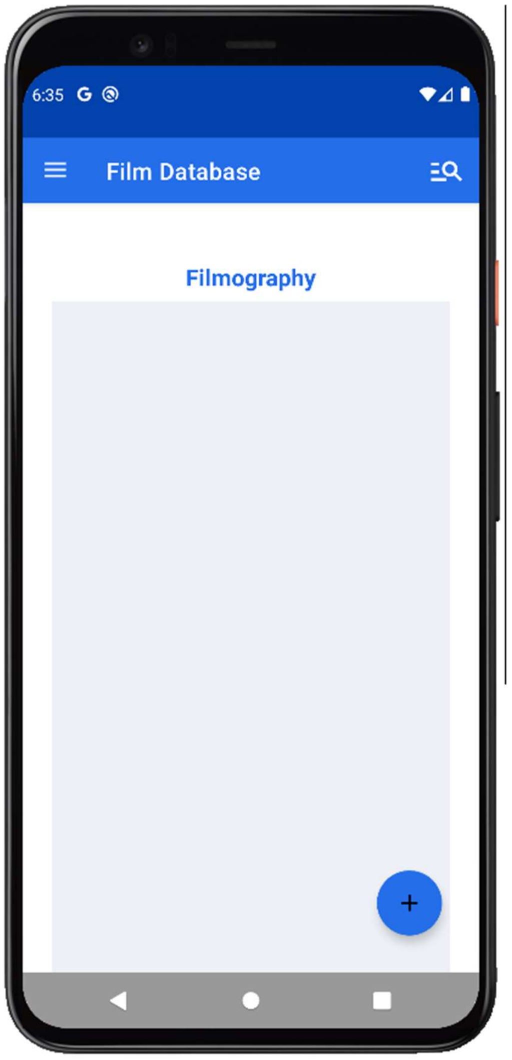
- The navigation menu



- The Filmography activity

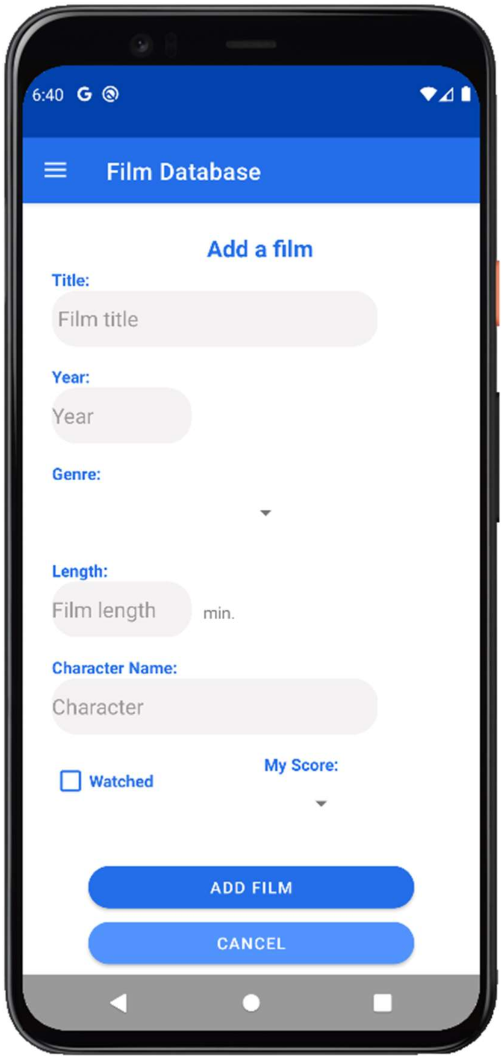


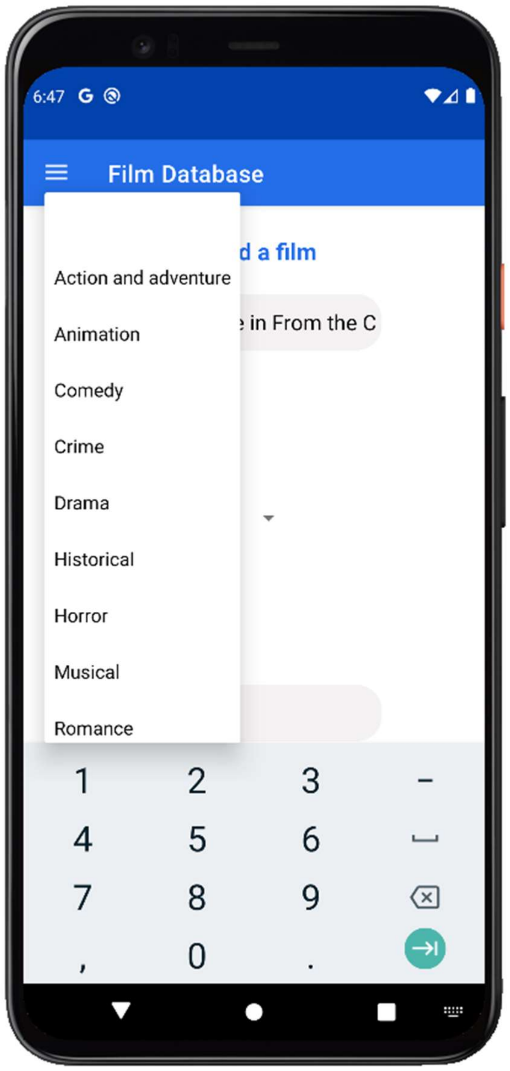
Your list is empty... click the (+) button to add new films to your database.



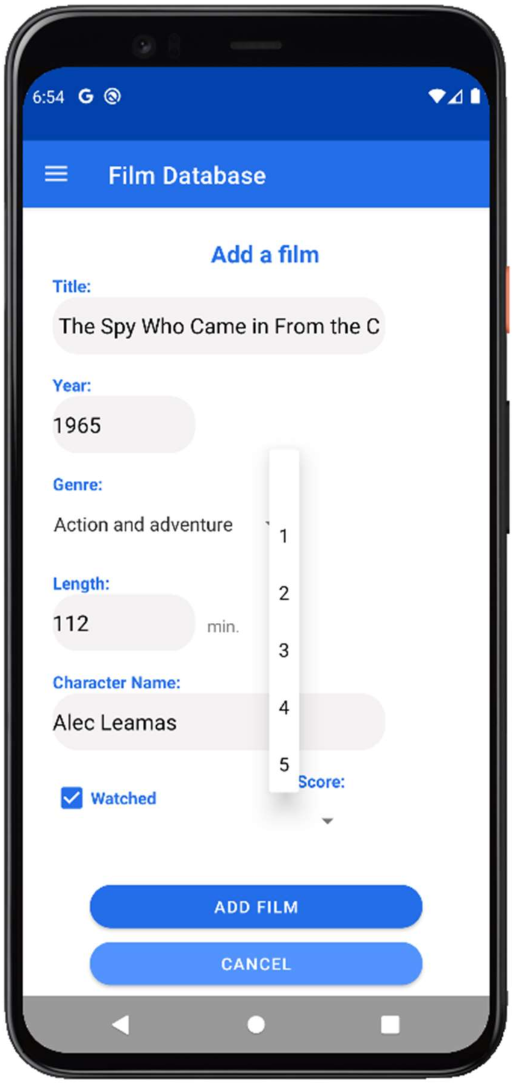
Description of the above screenshots: the filmography activity before any film records are inserted. The screenshot on the left shows a Toast message guiding the user to the floating add button

- The Add film activity





The above screenshot on the left shows the Add a Film activity asking the user to input the film title, the year, the length, and the character name. Additionally, a spinner for the genre is available for the user as shown on the right.



6:54

Film Database

Add a film

Title: The Spy Who Came in From the C

Year: 1965

Genre: Action and adventure

Length: 112 min.

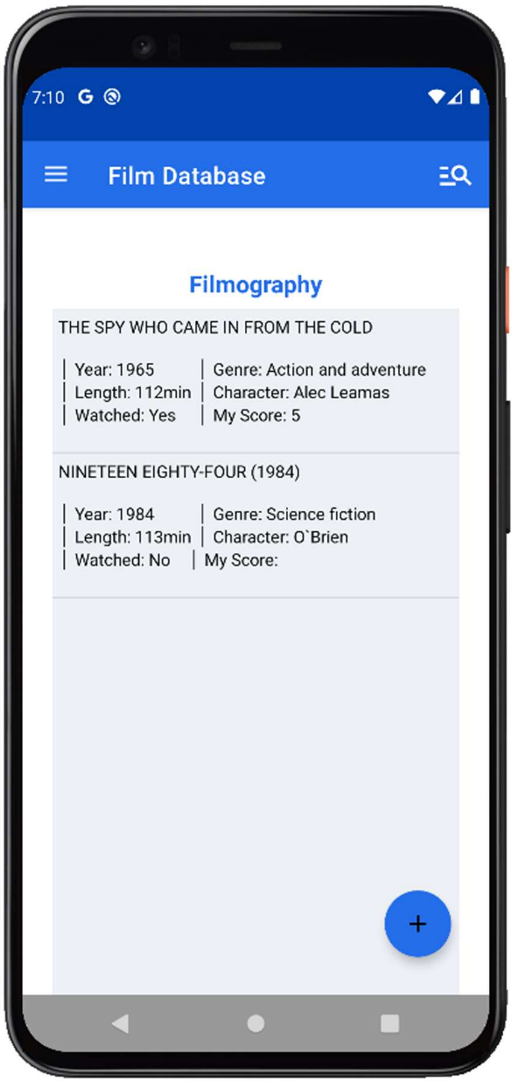
Character Name: Alec Leamas

✓ Watched

Score:

The above screenshot shows another spinner for the user’s score out of 5 as well as a check box to save if the user has watched the film or not.

- The Filmography activity after adding film records



Filmography

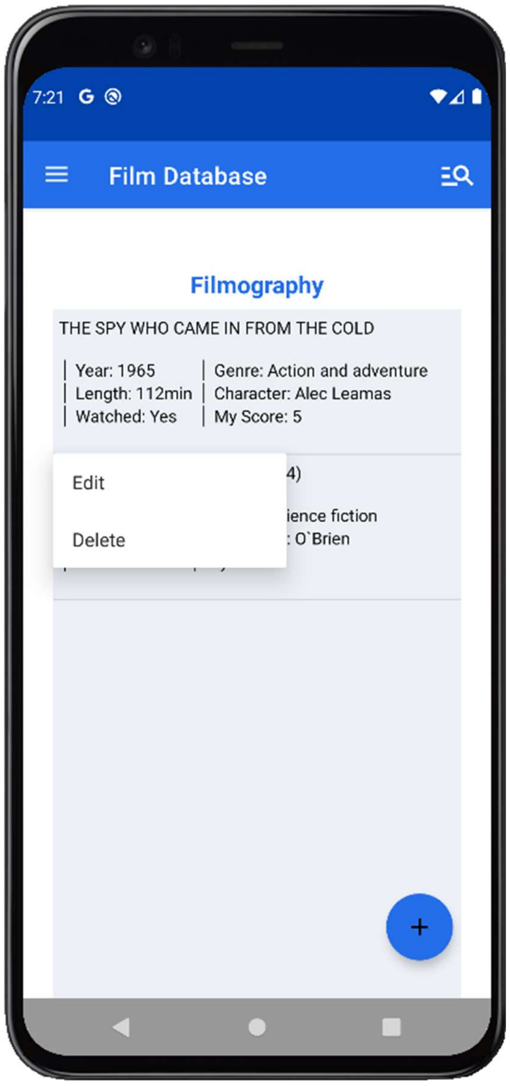
THE SPY WHO CAME IN FROM THE COLD

| Year: 1965 | Genre: Action and adventure
| Length: 112min | Character: Alec Leamas
| Watched: Yes | My Score: 5

NINETEEN EIGHTY-FOUR (1984)

| Year: 1984 | Genre: Science fiction
| Length: 113min | Character: O`Brien
| Watched: No | My Score:

- The popup menu for editing and deleting a film record



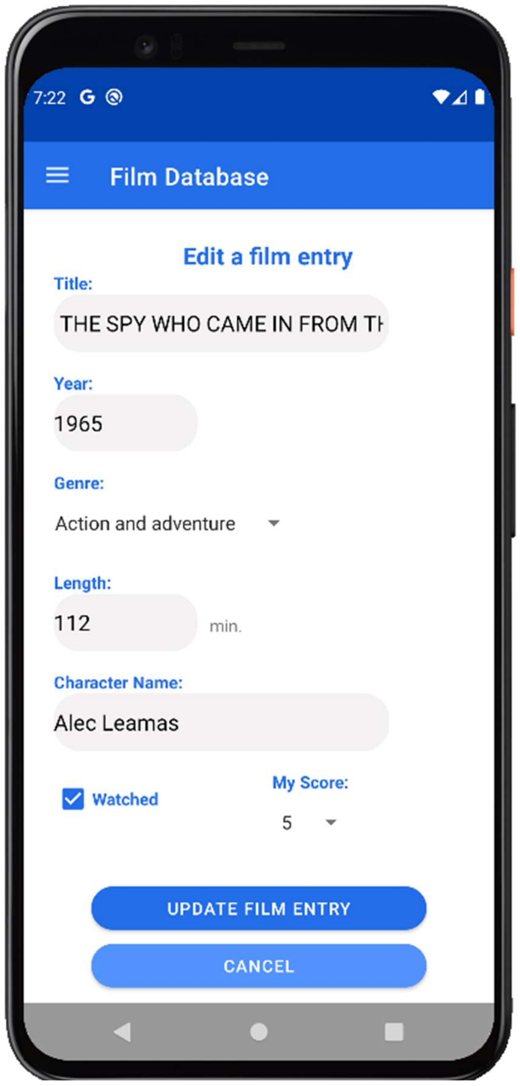
THE SPY WHO CAME IN FROM THE COLD

| Year: 1965 | Genre: Action and adventure
| Length: 112min | Character: Alec Leamas
| Watched: Yes | My Score: 5

4)

ience fiction
: O`Brien

- The Edit film activity



7:22

Film Database

Edit a film entry

Title: THE SPY WHO CAME IN FROM TH

Year: 1965

Genre: Action and adventure

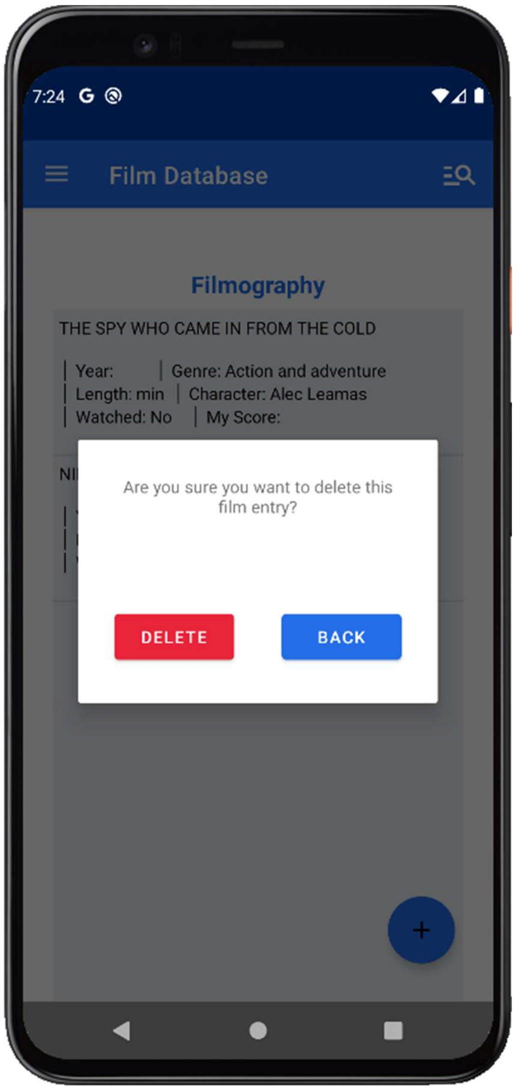
Length: 112 min.

Character Name: Alec Leamas

[✓] Watched

My Score: 5

- The Delete film confirmation dialog


7:24

Film Database

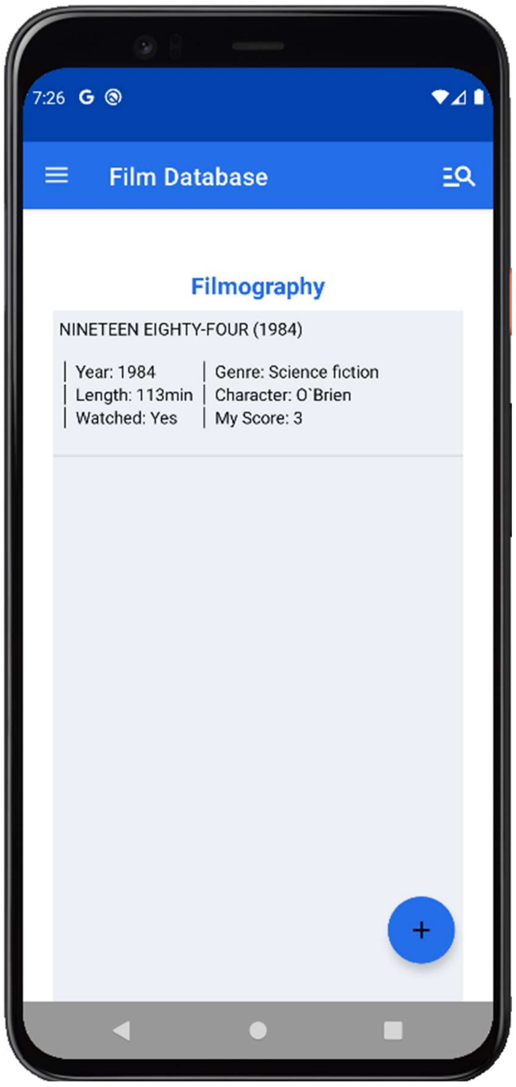
Filmography

THE SPY WHO CAME IN FROM THE COLD

| Year: | Genre: Action and adventure
| Length: min | Character: Alec Leamas
| Watched: No | My Score:

Are you sure you want to delete this film entry?

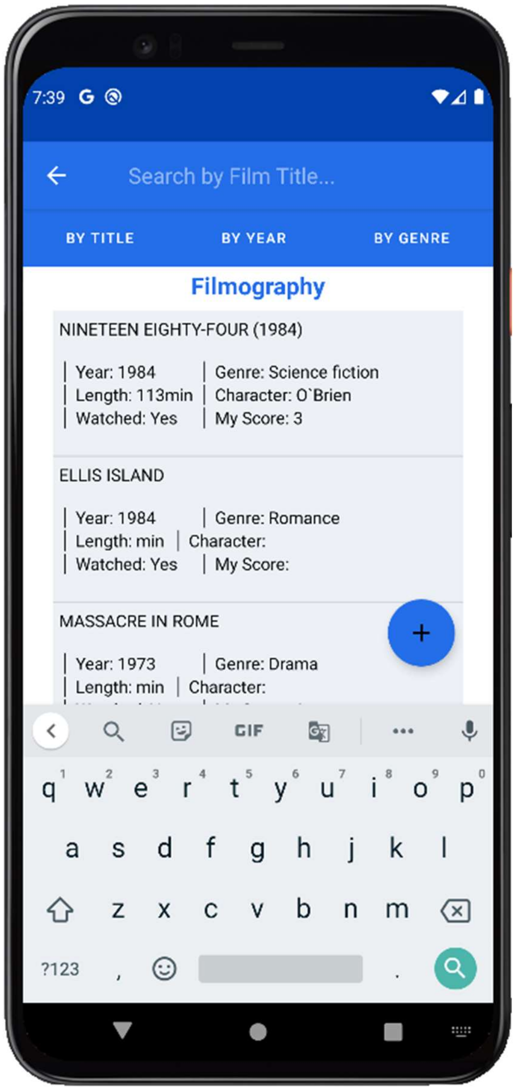
- The updated list in the Filmography activity after a film is deleted or edited



NINETEEN EIGHTY-FOUR (1984)

| Year: 1984 | Genre: Science fiction
| Length: 113min | Character: O`Brien
| Watched: Yes | My Score: 3

- The Search film activity
    i. Searching by title



Filmography

NINETEEN EIGHTY-FOUR (1984)

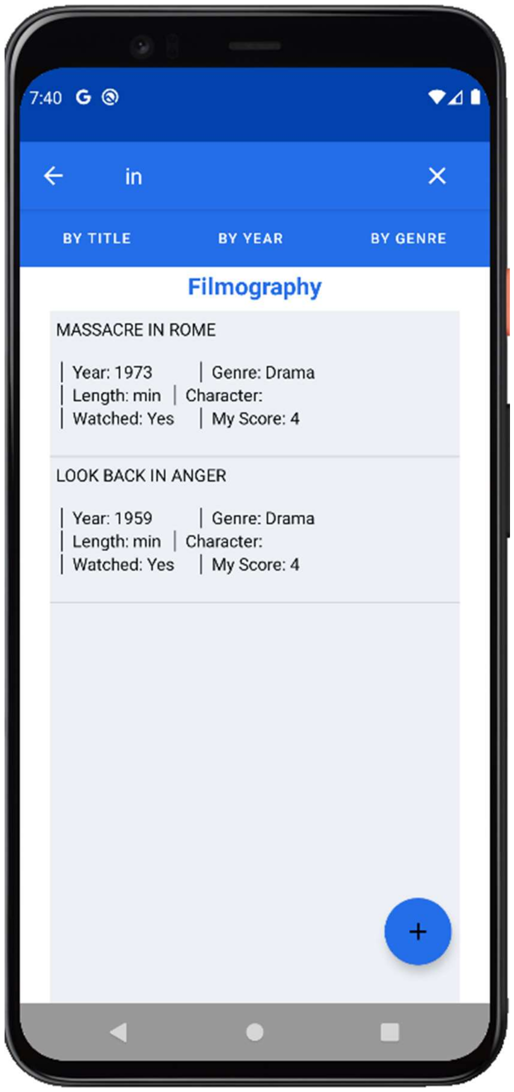
| Year: 1984 | Genre: Science fiction
| Length: 113min | Character: O`Brien
| Watched: Yes | My Score: 3

ELLIS ISLAND

| Year: 1984 | Genre: Romance
| Length: min | Character:
| Watched: Yes | My Score:

MASSACRE IN ROME

| Year: 1973 | Genre: Drama
| Length: min | Character:



Filmography

MASSACRE IN ROME

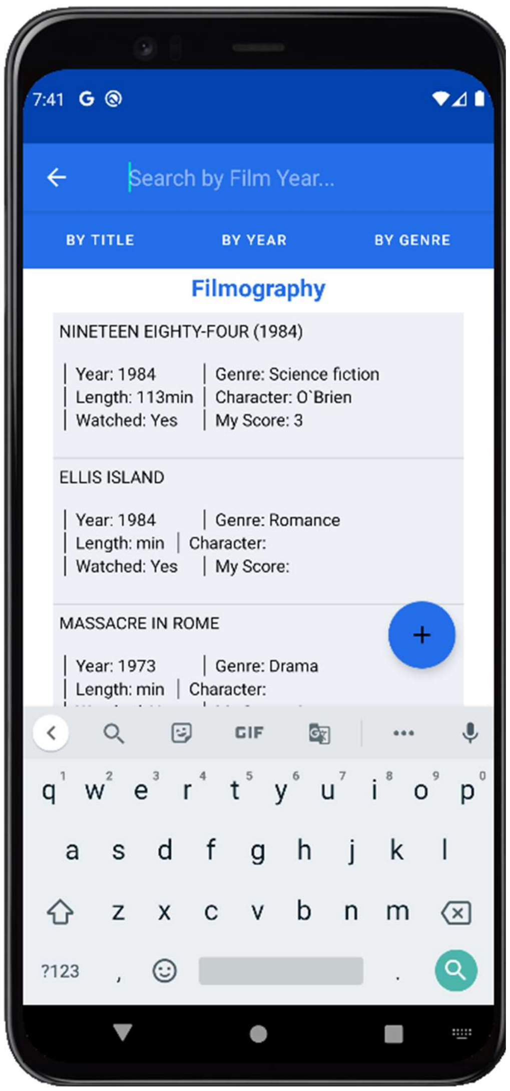
| Year: 1973 | Genre: Drama
| Length: min | Character:
| Watched: Yes | My Score: 4

LOOK BACK IN ANGER

| Year: 1959 | Genre: Drama
| Length: min | Character:
| Watched: Yes | My Score: 4

The search returns records with titles that partially match the query.

    ii. Searching by year



7:41

Search by Film Year...

BY TITLE BY YEAR BY GENRE

Filmography

NINETEEN EIGHTY-FOUR (1984)

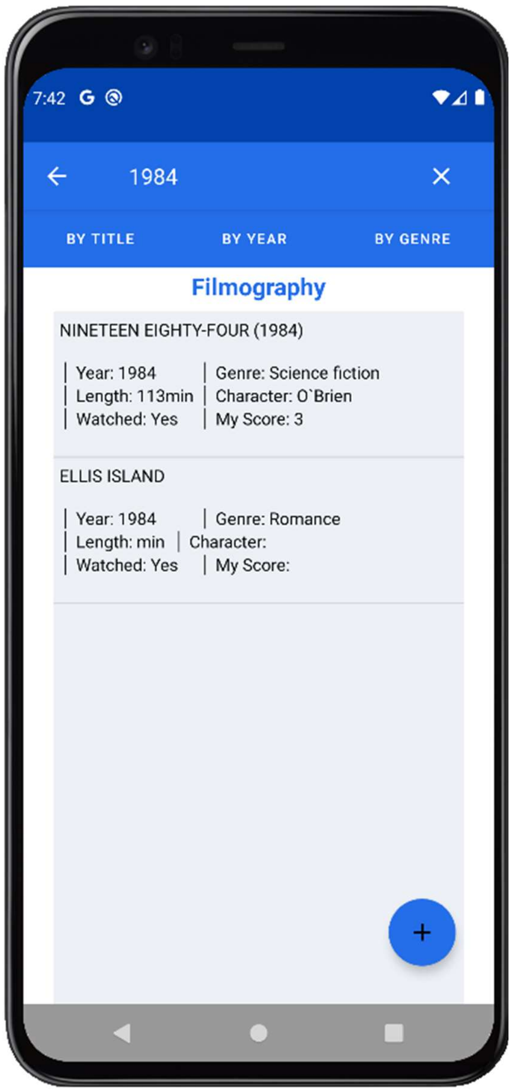
| Year: 1984 | Genre: Science fiction
| Length: 113min | Character: O`Brien
| Watched: Yes | My Score: 3

ELLIS ISLAND

| Year: 1984 | Genre: Romance
| Length: min | Character:
| Watched: Yes | My Score:

MASSACRE IN ROME

| Year: 1973 | Genre: Drama
| Length: min | Character:



7:42

1984

BY TITLE BY YEAR BY GENRE

Filmography

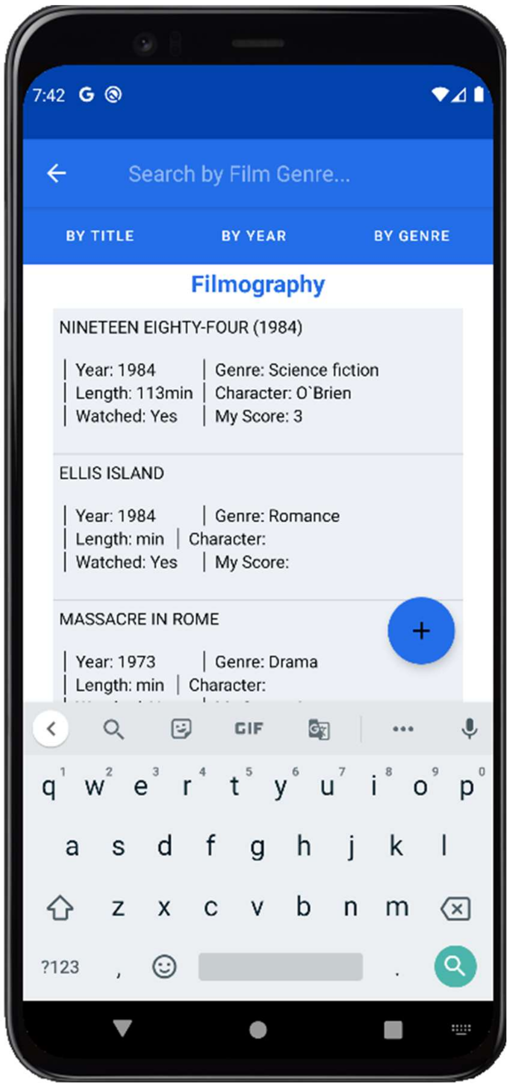
NINETEEN EIGHTY-FOUR (1984)

| Year: 1984 | Genre: Science fiction
| Length: 113min | Character: O`Brien
| Watched: Yes | My Score: 3

ELLIS ISLAND

| Year: 1984 | Genre: Romance
| Length: min | Character:
| Watched: Yes | My Score:

iii. Searching by genre



Filmography

NINETEEN EIGHTY-FOUR (1984)

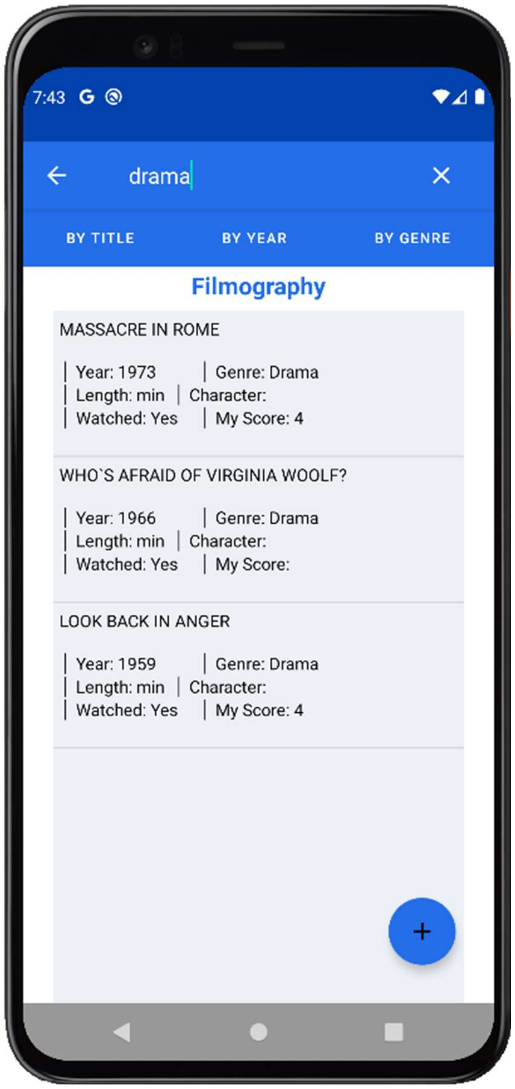
| Year: 1984 | Genre: Science fiction
| Length: 113min | Character: O`Brien
| Watched: Yes | My Score: 3

ELLIS ISLAND

| Year: 1984 | Genre: Romance
| Length: min | Character:
| Watched: Yes | My Score:

MASSACRE IN ROME

| Year: 1973 | Genre: Drama
| Length: min | Character:



Filmography

MASSACRE IN ROME

| Year: 1973 | Genre: Drama
| Length: min | Character:
| Watched: Yes | My Score: 4

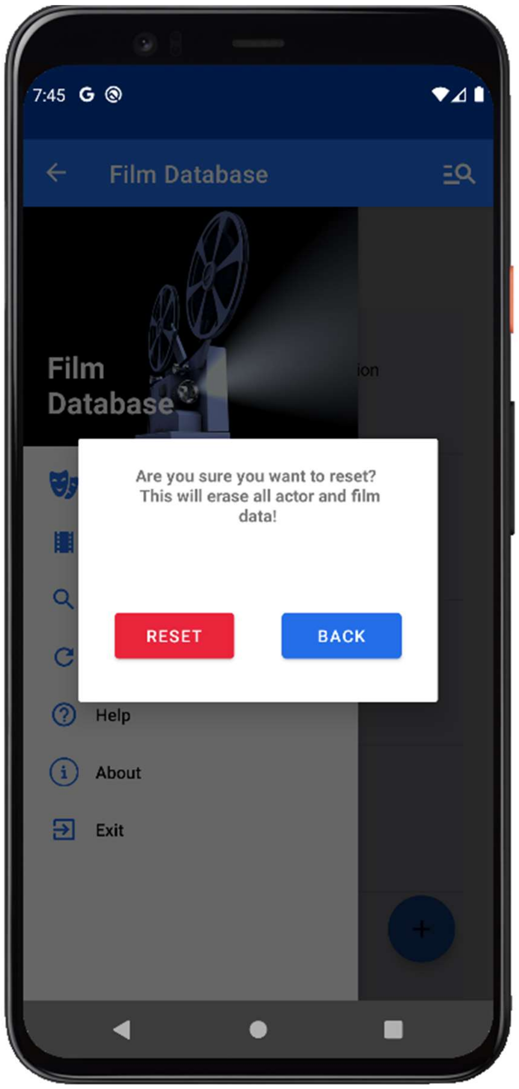
WHO`S AFRAID OF VIRGINIA WOOLF?

| Year: 1966 | Genre: Drama
| Length: min | Character:
| Watched: Yes | My Score:

LOOK BACK IN ANGER

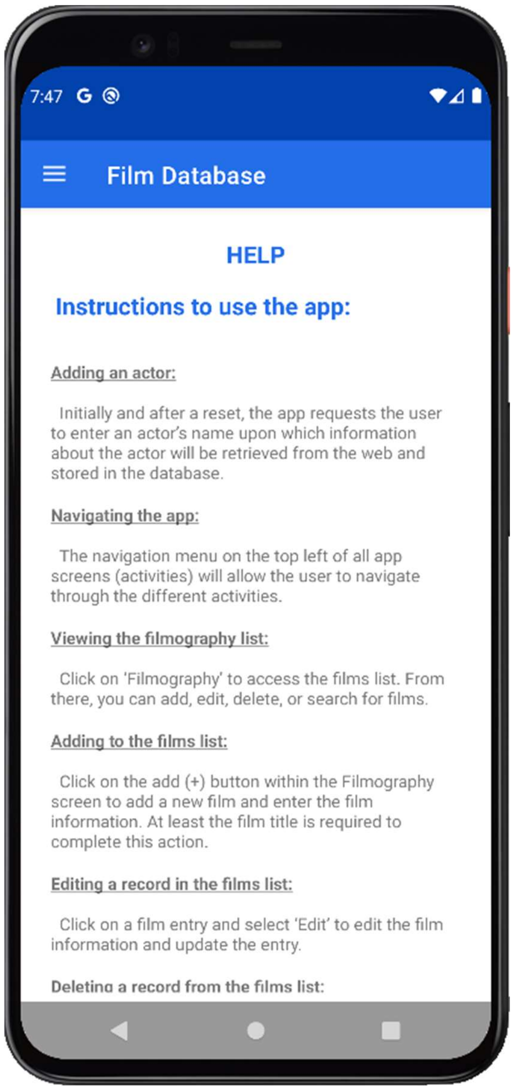
| Year: 1959 | Genre: Drama
| Length: min | Character:
| Watched: Yes | My Score: 4

- The Reset confirmation dialog



Are you sure you want to reset? This will erase all actor and film data!

- The Help activity



HELP

Instructions to use the app:

Adding an actor:

Initially and after a reset, the app requests the user to enter an actor's name upon which information about the actor will be retrieved from the web and stored in the database.

Navigating the app:

The navigation menu on the top left of all app screens (activities) will allow the user to navigate through the different activities.

Viewing the filmography list:

Click on 'Filmography' to access the films list. From there, you can add, edit, delete, or search for films.

Adding to the films list:

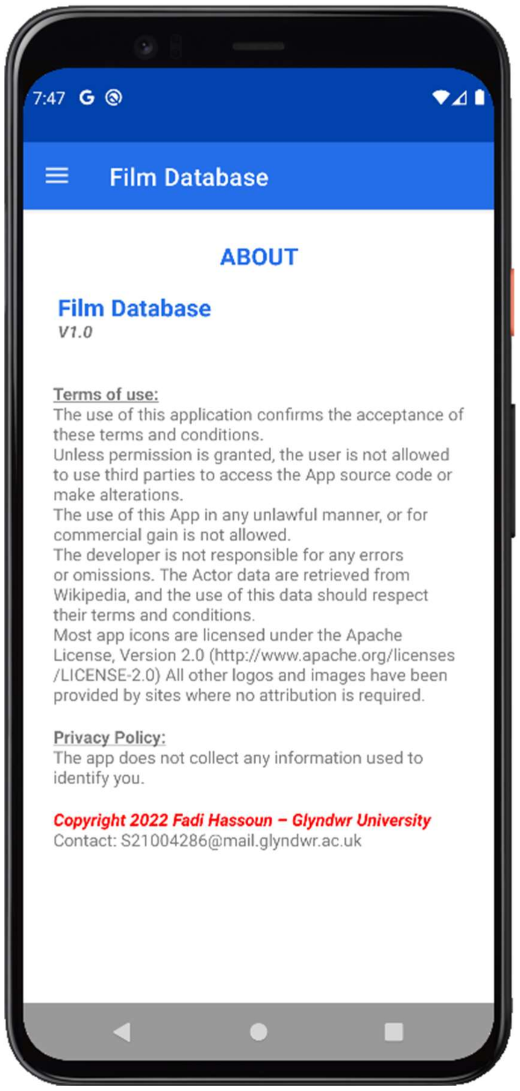
Click on the add (+) button within the Filmography screen to add a new film and enter the film information. At least the film title is required to complete this action.

Editing a record in the films list:

Click on a film entry and select 'Edit' to edit the film information and update the entry.

Deleting a record from the films list:

- The About activity



ABOUT

Film Database
V1.0

Terms of use:
The use of this application confirms the acceptance of these terms and conditions.
Unless permission is granted, the user is not allowed to use third parties to access the App source code or make alterations.
The use of this App in any unlawful manner, or for commercial gain is not allowed.
The developer is not responsible for any errors or omissions. The Actor data are retrieved from Wikipedia, and the use of this data should respect their terms and conditions.
Most app icons are licensed under the Apache License, Version 2.0 (http://www.apache.org/licenses/LICENSE-2.0) All other logos and images have been provided by sites where no attribution is required.

Privacy Policy:
The app does not collect any information used to identify you.

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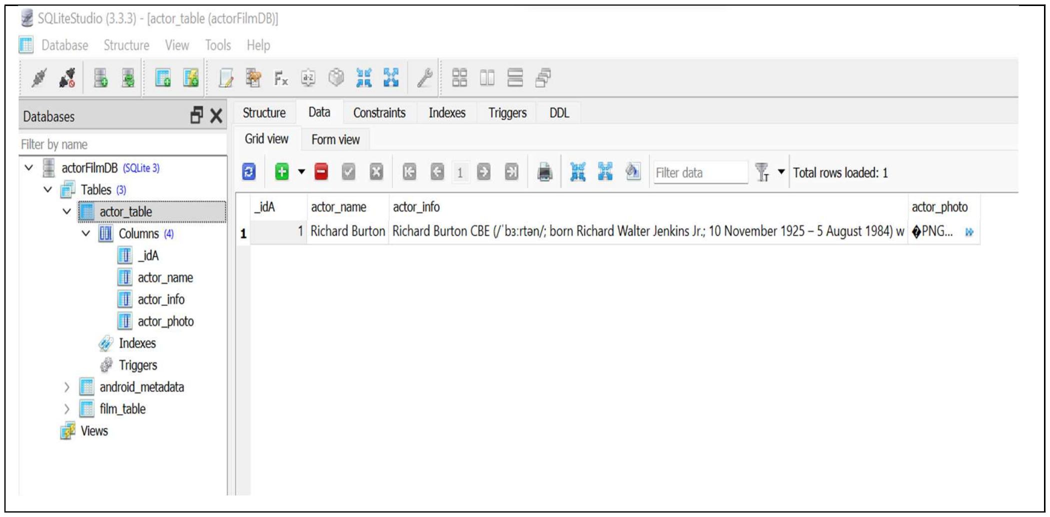
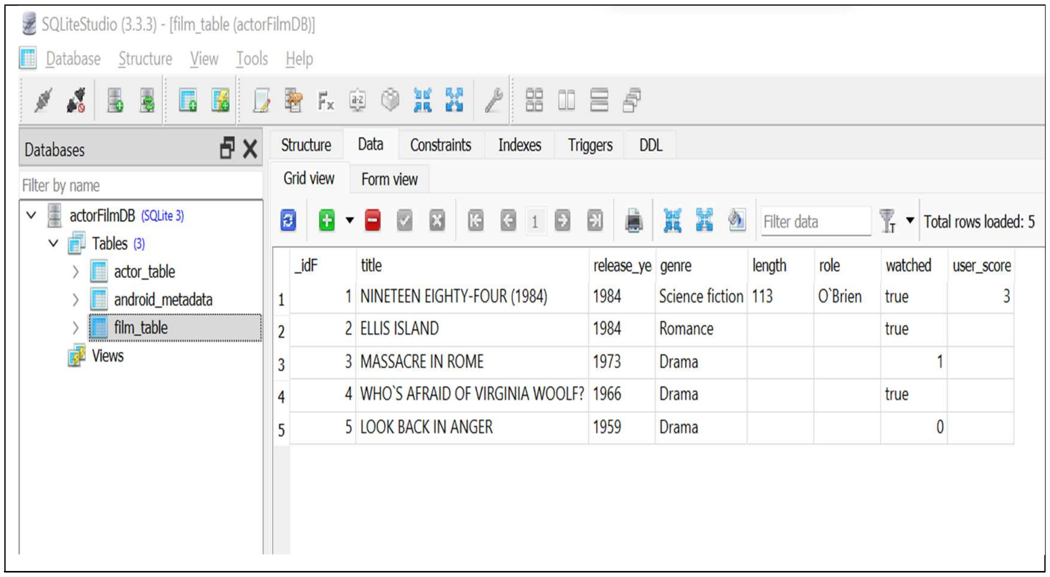
Contact: S21004286@mail.glyndwr.ac.uk

- The database



	_idA	actor_name	actor_info	actor_photo
1	1	Richard Burton	Richard Burton CBE (/ˈbɜːrtən/; born Richard Walter Jenkins Jr.; 10 November 1925 – 5 August 1984) w	�PNG...

The above screenshot shows the actor's table data after web scraping in SQLite Studio.

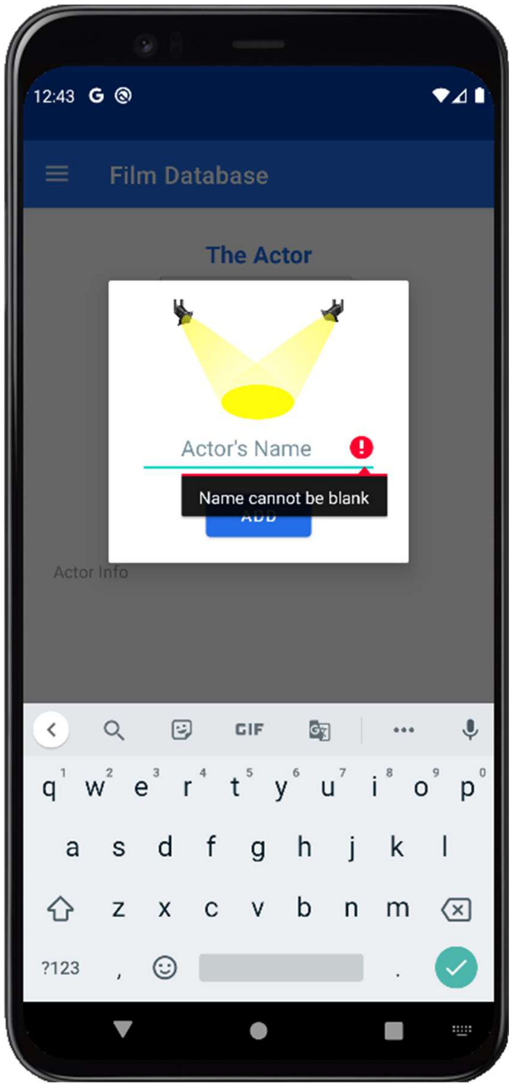


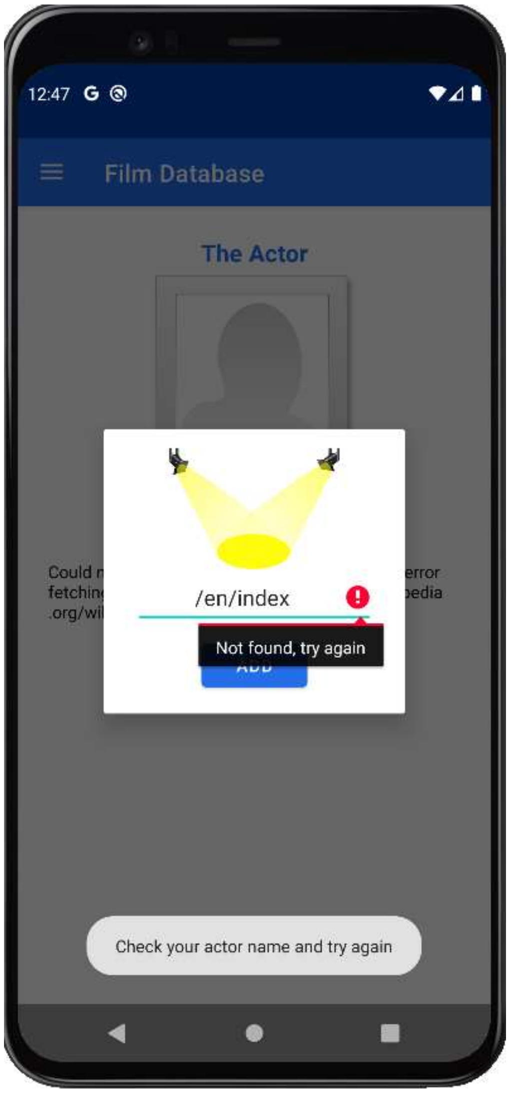
	_idF	title	release_ye	genre	length	role	watched	user_score
1	1	NINETEEN EIGHTY-FOUR (1984)	1984	Science fiction	113	O`Brien	true	3
2	2	ELLIS ISLAND	1984	Romance			true	
3	3	MASSACRE IN ROME	1973	Drama			1	
4	4	WHO`S AFRAID OF VIRGINIA WOOLF?	1966	Drama			true	
5	5	LOOK BACK IN ANGER	1959	Drama			0	

The above screenshot shows the filmography table data entered by the user in SQLite Studio.

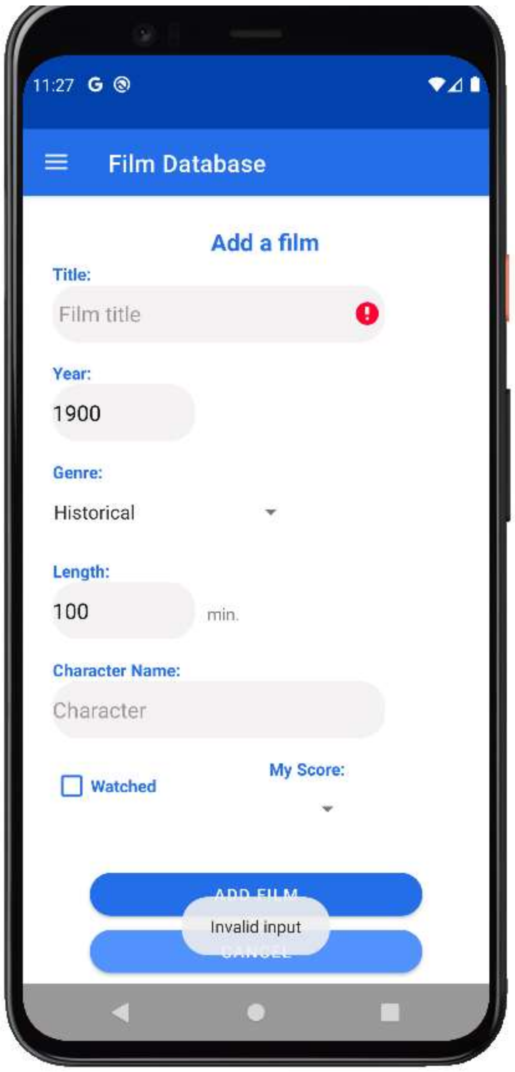
App testing for possible invalid user input

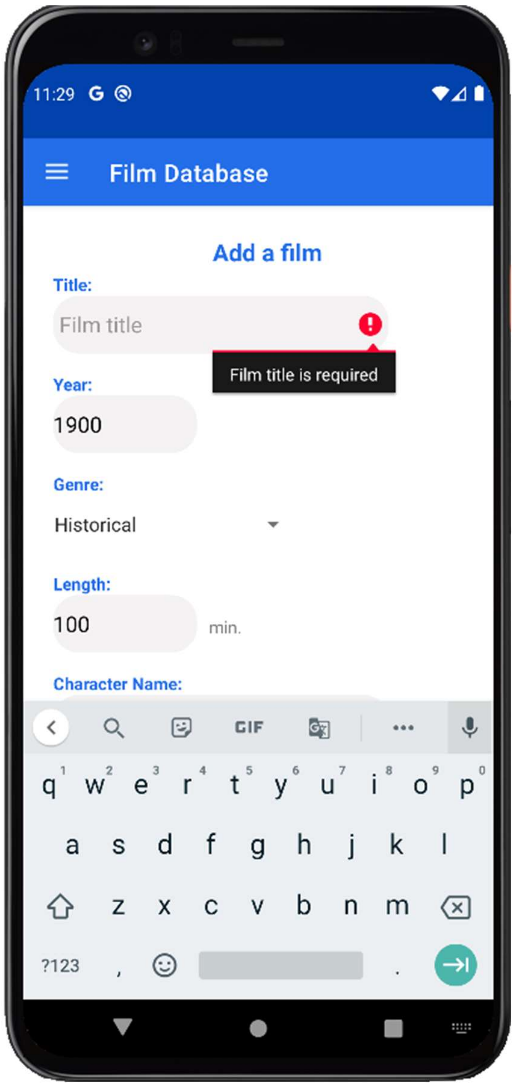
- The actor’s name input validation



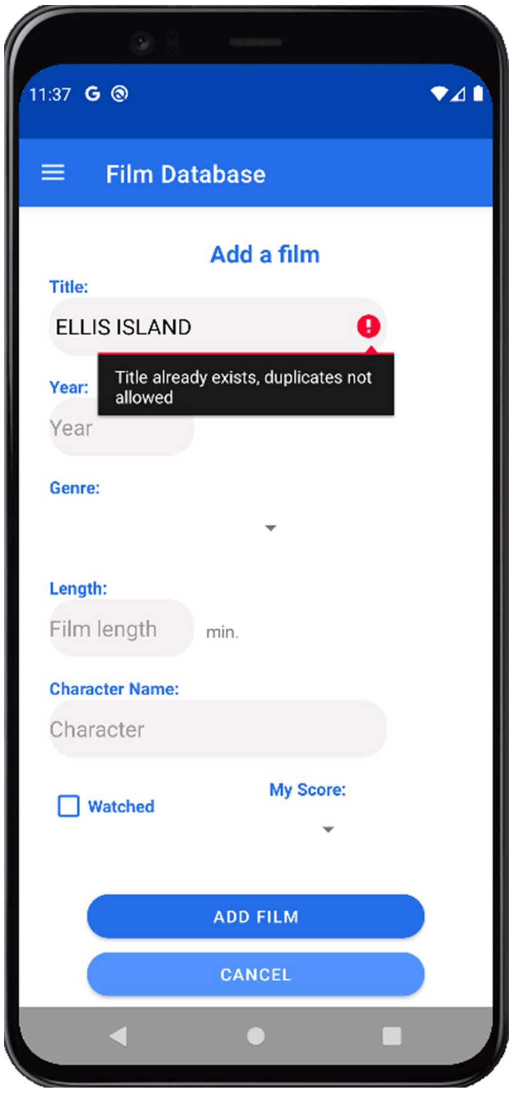


- The Add film input validation (and edit film input)
  - When the title missing:





- When the same title already exists in the database



11:37

Film Database

Add a film

Title: ELLIS ISLAND

Title already exists, duplicates not allowed

Year: Year

Genre:

Length: Film length min.

Character Name: Character

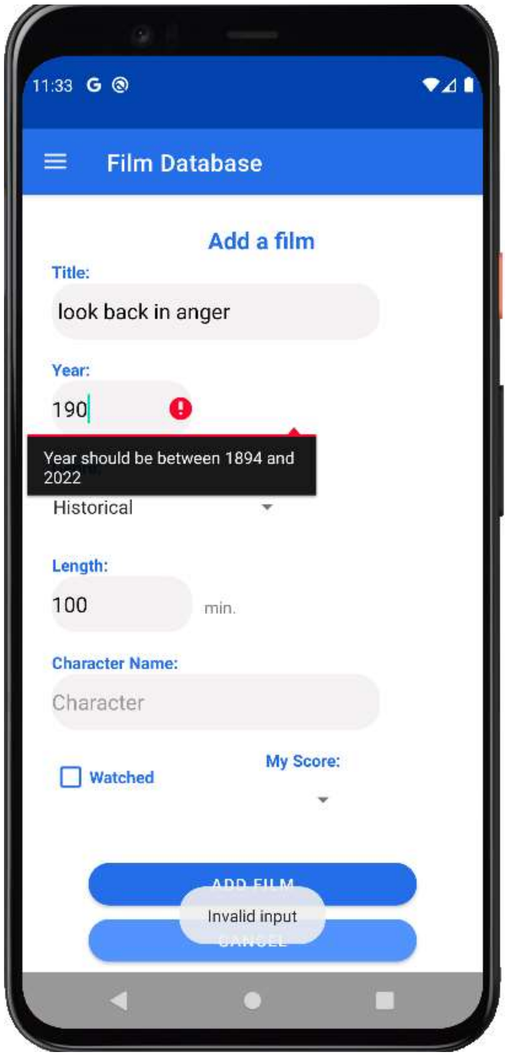
Watched

My Score:

ADD FILM

CANCEL

- When the year is not within an acceptable range


11:33

Film Database

Add a film

Title: look back in anger

Year: 190

Year should be between 1894 and 2022

Historical

Length: 100 min.

Character Name: Character

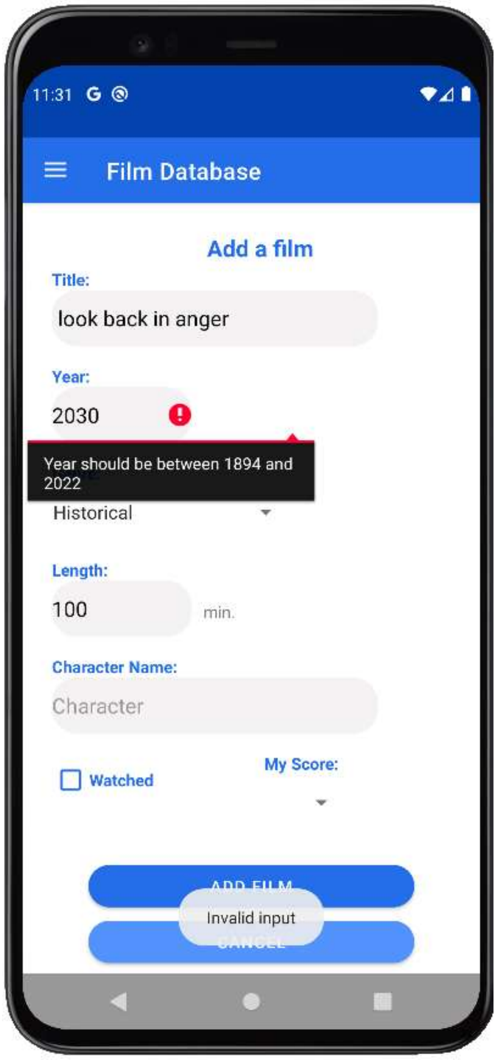
Watched

My Score:

ADD FILM

Invalid input

CANCEL


11:31

Film Database

Add a film

Title: look back in anger

Year: 2030

Year should be between 1894 and 2022

Historical

Length: 100 min.

Character Name: Character

Watched

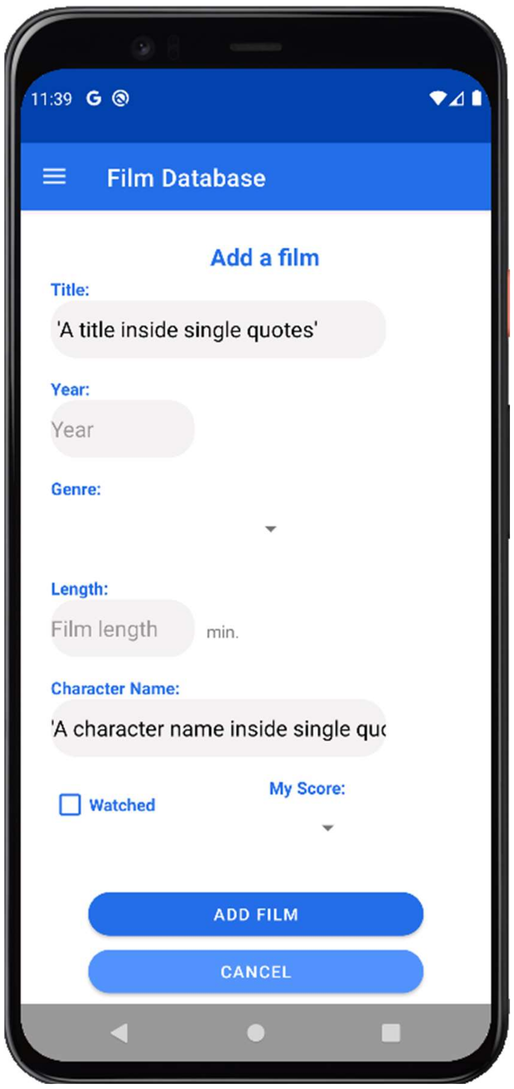
My Score:

ADD FILM

Invalid input

CANCEL

- When the user input includes single quotes



11:39

Film Database

Add a film

Title:
'A title inside single quotes'

Year:
Year

Genre:

Length:
Film length min.

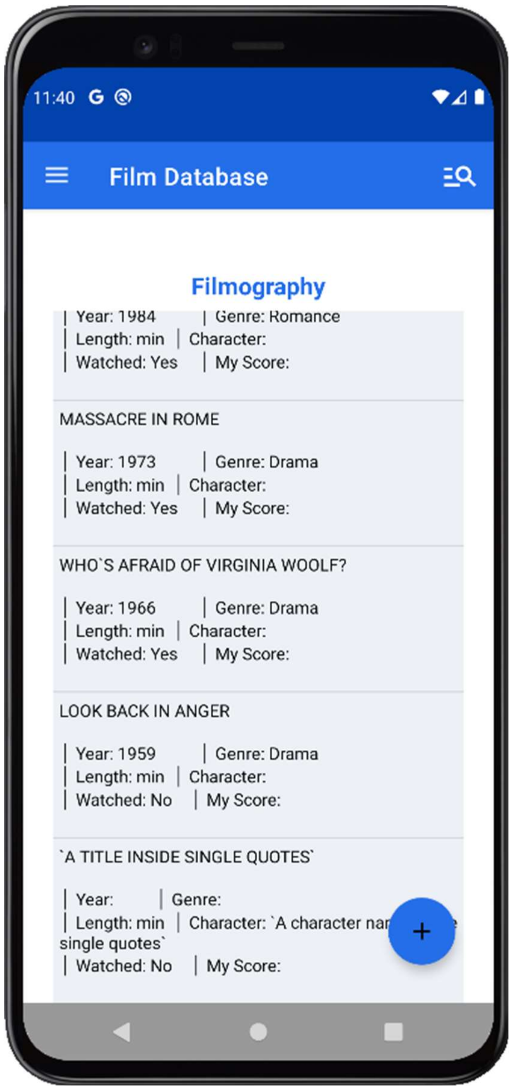
Character Name:
'A character name inside single quc

Watched

My Score:

ADD FILM

CANCEL



11:40

Film Database

Filmography

| Year: 1984 | Genre: Romance
| Length: min | Character:
| Watched: Yes | My Score:

MASSACRE IN ROME

| Year: 1973 | Genre: Drama
| Length: min | Character:
| Watched: Yes | My Score:

WHO`S AFRAID OF VIRGINIA WOOLF?

| Year: 1966 | Genre: Drama
| Length: min | Character:
| Watched: Yes | My Score:

LOOK BACK IN ANGER

| Year: 1959 | Genre: Drama
| Length: min | Character:
| Watched: No | My Score:

`A TITLE INSIDE SINGLE QUOTES`

| Year: | Genre:
| Length: min | Character: `A character nar
single quotes`
| Watched: No | My Score: