



Bachelor of IT (Computer Science)
Assignment 2 - Client-Side React Application
CAB230 - Web Computing

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1 Introduction

Appendix A

1.1 Purpose and Description

The purpose of this react application is to collate and display information regarding movies, and cast members to the user in a responsive and accessible manner. The application should allow the user to search for movies by year or title and display the results in a list (Figure 1). When a movie is selected, the application should display all the details of the movie, including the year the movie was made, the plot of the movie and all the cast members involved with the movie (Figure 2). The application should also allow the user to visit individual pages of cast members where the user can view that cast members details, including their birth year, death year and all the movies they have been involved with.

It achieve this goal and to provide the user with the best experience I can, i have used a number of advanced react features, including the use of react router, IntesectionObserver and react-responsive-carousel. The use of these features has allowed me to create a professional looking application that is both easy to use and responsive for the user.

1.2 Completeness and Limitations

This implementation covers all the requirements of the assignment specification. Navigation is handled using react router, controlled forms are used for all user input, and every 10 minutes the refresh token is used to get a new access token. In addition to this, the application uses ag-grid to display the search results in an infinitely scrolling grid and react-responsive-carousel to display the highest scoring movies of all time on the home (landing) page. On the person page the movies the person is involved in are displayed in a grid with the IMDb Rating.

2 Use of End Points

Appendix B

The functionality for all the API endpoints is handled in API.js. This file contains all the functions that are used to make requests to the API. By containing all the API functionality in one file, it makes it easier to maintain and potentially update the application in the future.

2.1 /movies/search

This endpoint is implemented as the getMovies function and is utilised by two search forms at the top of the application. The first search form is for the user to search for movies by title, and the second is for the user to search for movies by year. Both of these

forms are controlled forms and can be accessed from any page in the application. Doing it this way removes an extra layer of complexity for the user and allows them to get into the function of the application right from the start of the application.
(Figure 3)

2.2 /movies/data/{imdbID}

This endpoint is implemented as the `getMovie` function and is utilised by the movie page to get the details of the movie the user has selected. The movie page is accessed by clicking on any of the movies in the search results. The movie page displays all the details of the movie, including the title, year, box office earnings, runtime, genre, country of origin, plot, cast and ratings. each cast member is a clickable link that will lead to that cast members respective page.
(Figure 4)

2.3 /people/{id}

This endpoint is implemented as the `getPerson` function and is utilised by the person page to get the details of the person the user has selected. The person page is accessed by clicking on any of the cast members on the movie page. The person page displays all the details of the person exposed by the API, including their name, birth year, death year, all the movies they have been involved with. In a grid the name of each movie, the name of the character the person played and the IMDb Rating is displayed for the users convenience.
(Figure 5)

2.4 /user/register

This endpoint is implemented as the `postRegister` function and is utilised by the profile page to register new users. The profile page is accessed by clicking on the profile button in the navigation bar at the top of the page. When first launched, if the user isnt logged in the profile page will be in the login state, if the user presses the register button the profile page will be transitioned into the register state. The register state contains fields for the user to enter their email, password and confirm password. If the user presses the register button the `/user/register` endpoint will be utilised to register the user and the tokens will be stored in local storage. If the user presses back to login the page will be transitioned back into the login state.
(Figure 6)

2.5 /user/login

This endpoint is implemented as the `postLogin` function and is utilised by the profile page to login existing users. If the user accesses the the profile page while logged out they will be greeted with a login prompt with an email and password field, button to login and a button to register. If the user presses the register button the page will be transitioned into the register state. If the user presses the login button the `/user/login` endpoint will be utilised to login the user and the tokens will be stored in local storage.
(Figure 7)

2.6 /user/refresh

This endpoint is implemented as the postRefresh function and is utilised in the back end in App.js to refresh the tokens when the app first starts and every 10 minutes after. This is done to ensure the user does not have to login every 10 minutes.

2.7 /user/logout

This endpoint is implemented as the postLogout function and is utilised by the profile page to logout the user. If the user accesses the the profile page while logged in they will be greeted with a message telling them they are logged in accompanied with a button to logout, if the user presses the logout button the /user/logout endpoint will be utilised to logout the user and the tokens will be deleted.

(Figure 8)

3 Modules Used

3.1 react-router-dom

This module was used to handle navigation within the application. It was used to create the navigation bar at the top of the page and to create the routes for the different pages in the application.

<https://www.npmjs.com/package/react-router-dom>

3.2 react-responsive-carousel

This module was used to create a carousel on the home page to display the movies with the highest IMDb Rating.

<https://www.npmjs.com/package/react-responsive-carousel>

3.3 ag-grid-react

This module was used in MoviesPage to create a grid to display the search results in an infinitely scrolling grid, and in PersonPage it is used to display the movies the person stars in.

<https://www.npmjs.com/package/ag-grid-react>

3.4 ag-grid-community

This module was used in both MoviesPage and PersonPage to utilise the CSS for the respective grids.

<https://www.npmjs.com/package/ag-grid-community>

4 Application Design

Appendix C

4.1 Navigation and Layout

The application has been designed to be as simple to use as possible. The ultimate goal of the design was to develop a user experience that the user can understand and use without having to think about it.

A few design choices were made to achieve this goal. The first major choice I made was to move the search bars to the navigation bar at the top of the page. This was done to make the search functionality more accessible to the user by allowing them to search from any page in the application. Moving the search bars to the navigation also freed up space on the MoviesPage allowing me to display more search results at once.

During development I also investigated the possibility of having the poster image for each movie displayed in the search results (Figure 10, Figure 11). I decided against this as it excessively queries the API and often resulted in a rate limit. It also increased the complexity of being able to sort the search results which was something I wanted to implement.

4.2 Usability and Quality of Design

As the application was designed with simplicity in mind, the usability of the application is very high. The application is very easy to use and the user can navigate the application with ease. The application is laid out in a way that is very clean, the only page that can at all be considered cluttered is the LandingPage because of the carousel but even then the carousel is very clean, easy to use and it doesn't seem to distract the user from the rest of the page.

The navigation of the app is very simple and easy for the user to understand. As previously mentioned, by having the search bars within the navigation bar at the top of the page the user can search from anywhere in the application. The only part of the navigation that may confuse the user is the home button using the logo of the application. It may not be clear to the user that this is a button that leads them home. But, this is quite a common design choice in web design and there isn't much use for the user to return to the home page as the user can search from any page in the application.

The design of the application is consistent throughout. The navigation bar is the same on every page, very little colours are used throughout the application and the colours that are used are consistent. Only the standard font is used throughout the application except in the ag-grids where a separate style is used.

4.3 Accessibility

The application has attempted to be as accessible as possible. The application achieve most of the checkpoints of the W3C Web Content Accessibility Guidelines 2.0. The application has achived the following checkpoints:

- 1.1.1 All non-text content such as images have alternative text.
- 1.2.1 Information conveyed in colour can also be conveyed in black and white.
- 1.6.1 Page can be read without CSS.
- 1.6.2 Text equivalents update when content changes.
- 1.7.1 The screen doesnt flicker.
- 1.14.1 The application uses the clearest language appropriate.

5 Technical Description

5.1 Architecture

- **Components:**
This folder contains the components and the API handler for the application.
- **Pages:**
This folder contains all the pages for the application.
- **Styles:**
This folder contains all the CSS files for the application.

The diagram on the next page show the file structure of the application. As you can see, the application is structured in a very simple way. As previously mentioned, all the code for handling API requests is contained within the API.js file. This has made it easier to write the code for the application as it is all in one place and can be reused easily.

The only component of the application that has been seperated out into its own file is the search inputs. The only reason this was done was because I couldnt get it working within App.js.

Each page of the application has its own JS and CSS file. This was done to make the code easier to read and understand, and to cut down on the amount of code in each file.

Project Root

- Docs
- Public
- SRC
- .gitignore
- package-lock.json
- package.json
- README.md

SRC

- Components
 - SearchInputs.js
 - API.js
- Pages
 - LandingPage.js
 - MoviePage.js
 - MoviesPage.js
 - PersonPage.js
 - ProfilePage.js
- Styles
 - App.css
 - LandingPage.css
 - MoviePage.css
 - MoviesPage.css
 - PersonPage.css
 - ProfilePage.css
 - SearchInputs.css
- App.js
- Logo.svg

5.2 Test Plan

Appendix D

| Task | Expected Outcome | Result | Screenshot |
|---|--------------------------------------|--------|---------------------|
| Search by title. | List of movies returned | PASS | Figure 13 |
| Search by year. | List of movies returned | PASS | Figure 14 |
| Search by title and year. | Movie, or List of movies returned | PASS | Figure 15 |
| Click on a movie. | Respective movie page is displayed. | PASS | Figure 16 |
| Click on a cast member. (Logged Out) | User is prompted to Login | PASS | Figure 17 |
| Click on a cast member. (Logged In) | Respective person page is displayed. | PASS | Figure 18 |
| Register a new user. | User is registered and logged in. | PASS | Figure 19 Figure 20 |
| Login as a user. | User is logged in. | PASS | Figure 21 Figure 22 |

6 Appendix

6.1 Appendix A - Introduction

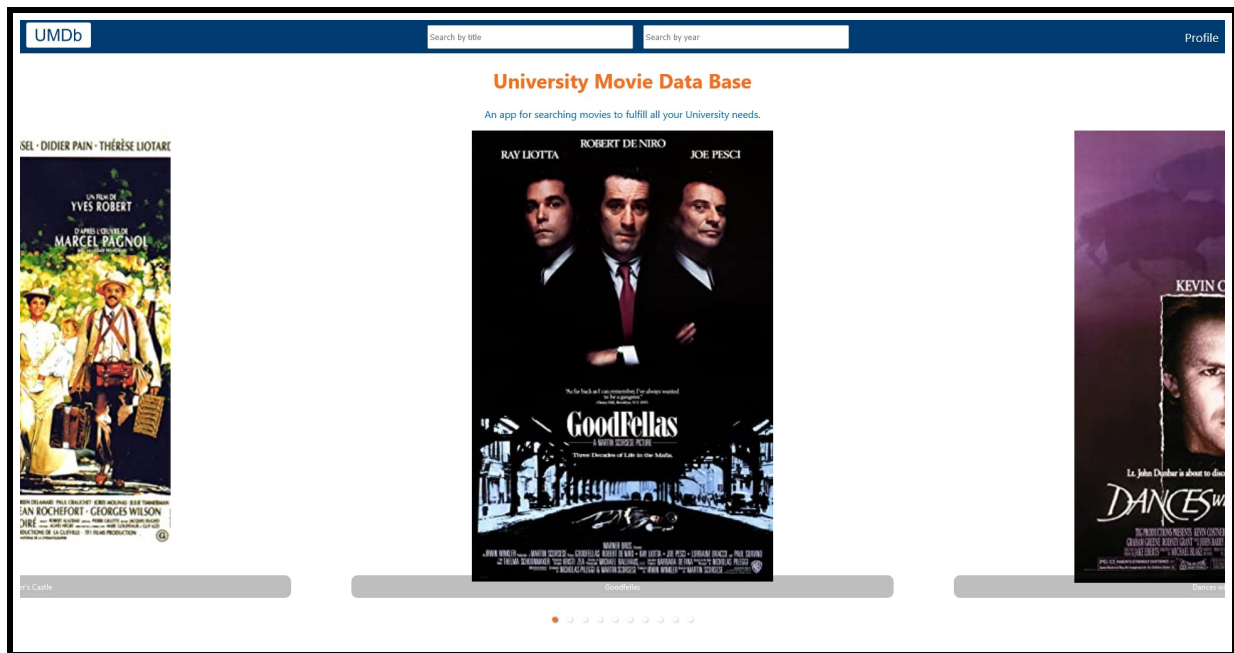


Figure 1: Landing Page of the Application

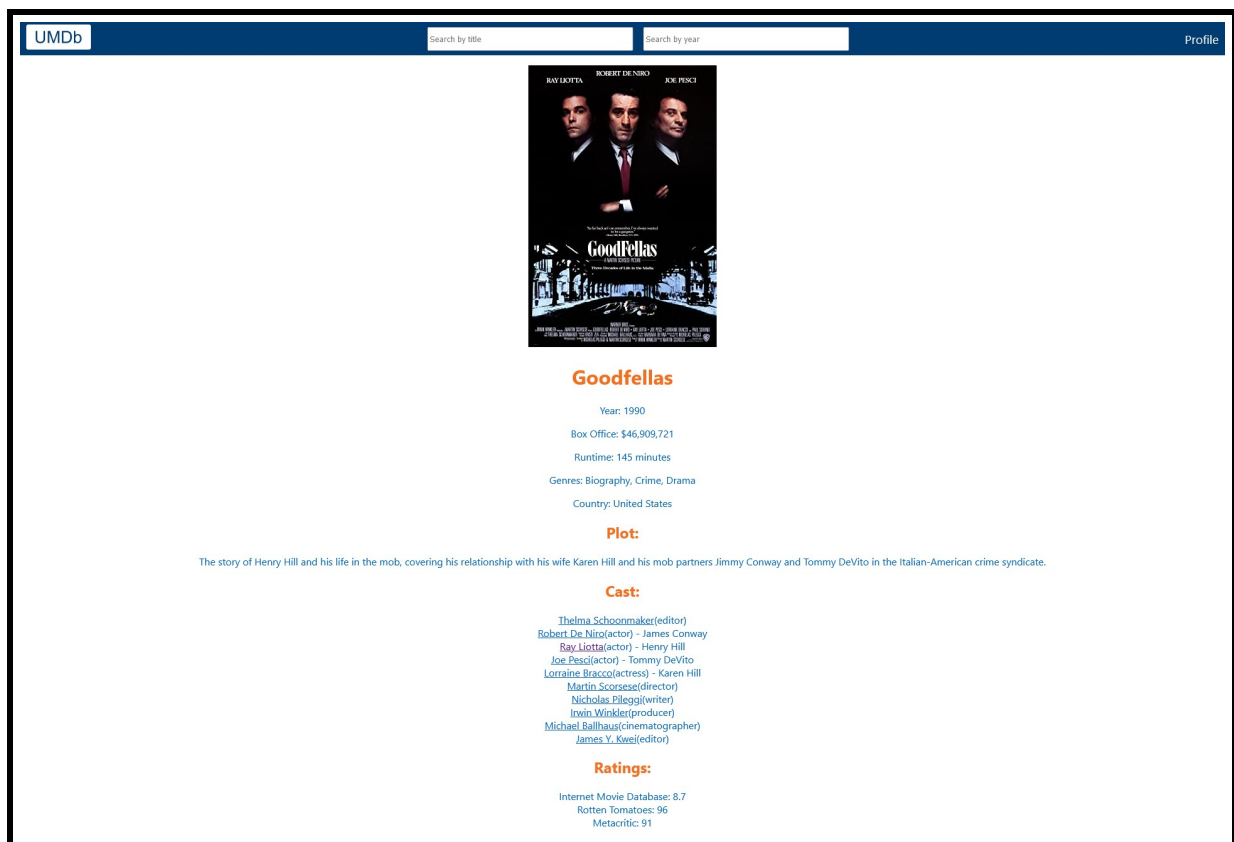


Figure 2: Movie Page of the Movie "Goodfellas"

| UMDb | | | Search by title | Search by year | Profile |
|-------------------------------|-------------------|-------------|-----------------|----------------|---------|
| Person Details | | | | | |
| Kevin Costner | | | | | |
| Date of Birth: 1955 | | | | | |
| Death: | | | | | |
| Roles: | | | | | |
| Movie Name | Character | IMDb Rating | | | |
| Dances with Wolves | Lieutenant Dunbar | 8 | | | |
| Revenge | Cochran | 6.2 | | | |
| JFK | Jim Garrison | 8 | | | |
| Robin Hood: Prince of Thieves | Robin of Locksley | 6.9 | | | |
| The Bodyguard | Frank Farmer | 6.3 | | | |
| A Perfect World | Butch Haynes | 7.5 | | | |
| Rapa Nui | | 6.4 | | | |
| The War | Stephen Simmons | 6.7 | | | |

Figure 3: Person Page of the Actor "Kevin Costner"

6.2 Appendix B - Use of End Points

| UMDb | | | | | | Search by title | Search by year | Profile |
|---|------|-------------|------------------------|-------------------|----------------|-----------------|----------------|---------|
| Title | Year | IMDb Rating | Rotten Tomatoes Rating | Metacritic Rating | Classification | | | |
| Goodfellas | 1990 | 8.7 | 96 | 91 | R | | | |
| A Few Good Men | 1992 | 7.7 | 84 | 62 | R | | | |
| The Good Son | 1993 | 6.4 | 25 | 45 | R | | | |
| The Long Kiss Goodnight | 1996 | 6.8 | 68 | 44 | R | | | |
| Good Burger | 1997 | 5.7 | 33 | 41 | PG | | | |
| Good Will Hunting | 1997 | 8.3 | 97 | 70 | R | | | |
| Midnight in the Garden of Good and Evil | 1997 | 6.6 | 50 | 57 | R | | | |
| As Good as It Gets | 1997 | 7.7 | 86 | 67 | PG-13 | | | |
| Good Advice | 2001 | 6.2 | 33 | | R | | | |
| The Good Girl | 2002 | 6.4 | | 71 | R | | | |
| The Good Thief | 2002 | 6.5 | 77 | 68 | R | | | |
| No Good Deed | 2002 | 5.4 | 25 | | R | | | |
| Good Bye Lenin! | 2003 | 7.7 | 90 | 68 | R | | | |
| The Good Shepherd | 2006 | 6.7 | 56 | 61 | R | | | |
| Goodbye, Dragon Inn | 2003 | 7.1 | 81 | 83 | N/A | | | |
| A Good Woman | 2004 | 6.5 | 37 | 53 | PG | | | |
| In Good Company | 2004 | 6.5 | 82 | 66 | PG-13 | | | |
| A Good Year | 2006 | 6.9 | 26 | 47 | PG-13 | | | |

Figure 4: Movies Page of the Application

UMDb

Fight C

Search by year

Profile



Fight Club

Year: 1999

Box Office: \$37,030,102

Runtime: 139 minutes

Genres: Drama

Country: Germany, United States

Plot:

An insomniac office worker and a devil-may-care soap maker form an underground fight club that evolves into much more.

Cast:

Art Linson(producer)

Brad Pitt(actor) - Tyler Durden

Edward Norton(actor) - Narrator

Meat Loaf(actor) - Robert Paulsen

Zach Grenier(actor) - Richard Chesler (Regional Manager)

David Fincher(director)

Chuck Palahniuk(writer)

Jim Uhls(writer)

Ross Grayson Bell(producer)

Cedric Chaffin(producer)

Ratings:

Internet Movie Database: 8.8

Rotten Tomatoes: 79

Metacritic: 66

Figure 5: Movie Page of the Movie "Fight Club"

UMDb

Search by title

Search by year

Profile

Person Details

Robert De Niro

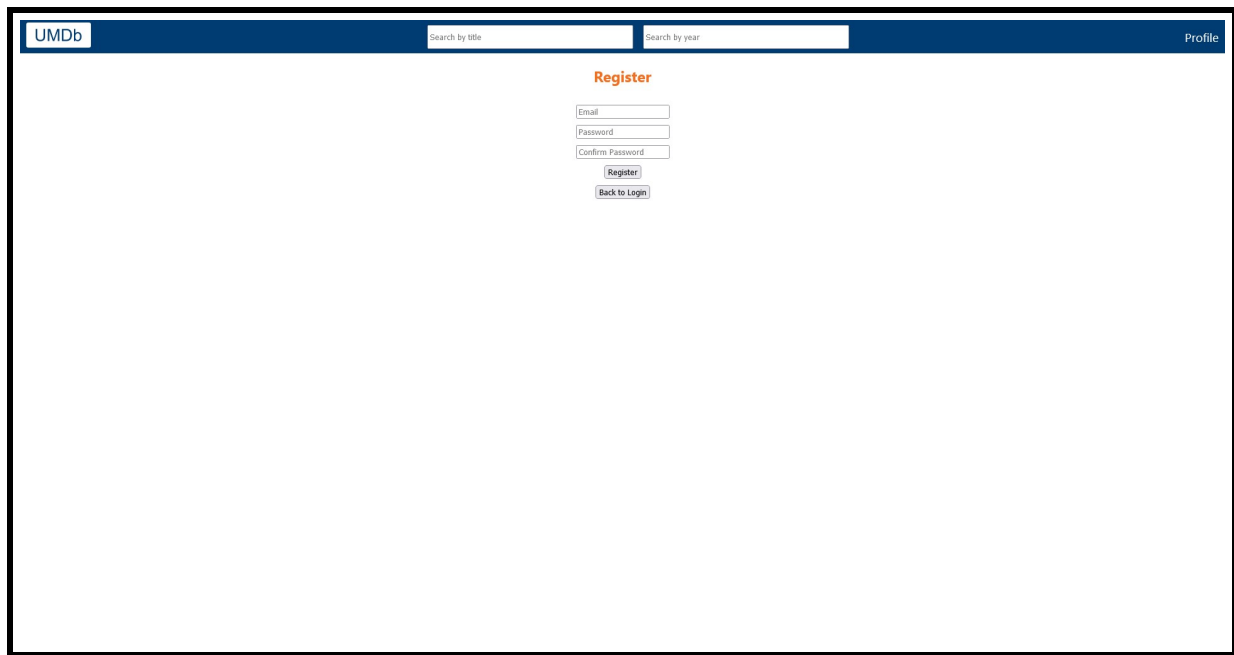
Date of Birth: 1943

Death:

Roles:

| Movie Name | Character | IMDb Rating |
|--------------------|----------------|-------------|
| Awakenings | Leonard Lowe | 7.8 |
| Goodfellas | James Conway | 8.7 |
| Stanley & Iris | Stanley Cox | 6.3 |
| Backdraft | Donald Rimgale | 6.7 |
| Cape Fear | Max Cady | 7.3 |
| Guilt by Suspicion | David Merrill | 6.5 |
| Thunderheart | | 6.8 |
| A Bronx Tale | Lorenzo | 7.8 |

Figure 6: Person Page of the Actor "Robert De Niro"



UMDb

Search by title

Search by year

Profile

Register

Email

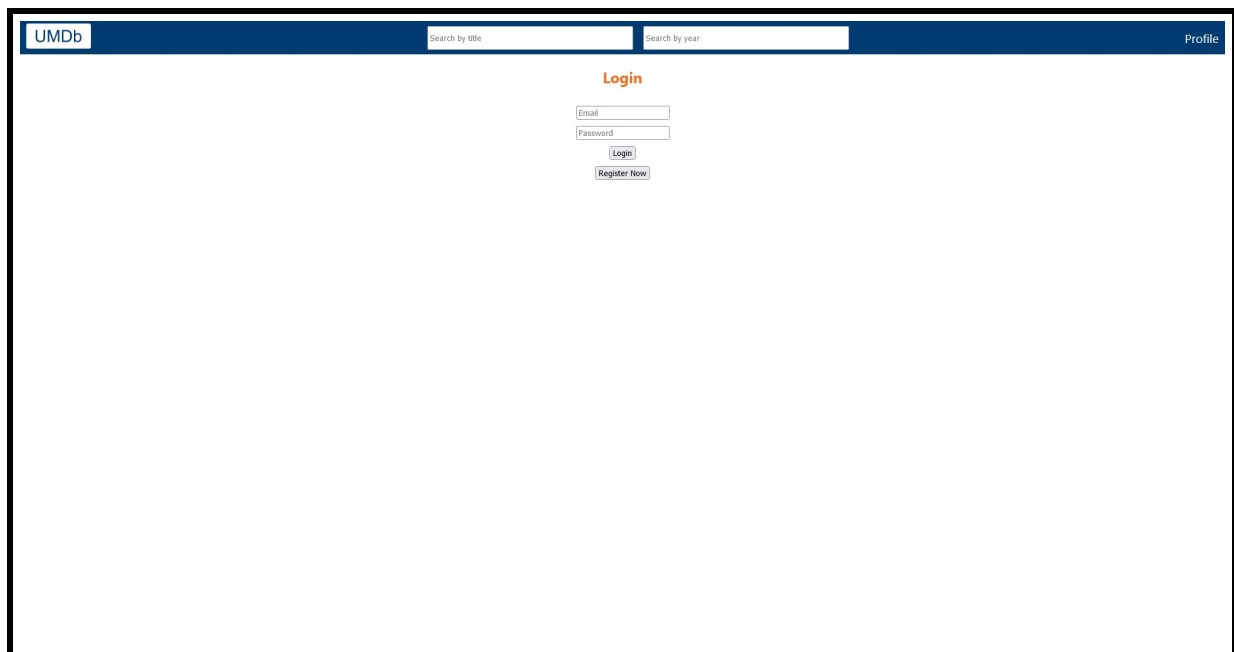
Password

Confirm Password

Register

Back to Login

Figure 7: Profile Page in the Register State



UMDb

Search by title

Search by year

Profile

Login

Email

Password

Login

Register Now

Figure 8: Profile Page in the Login State

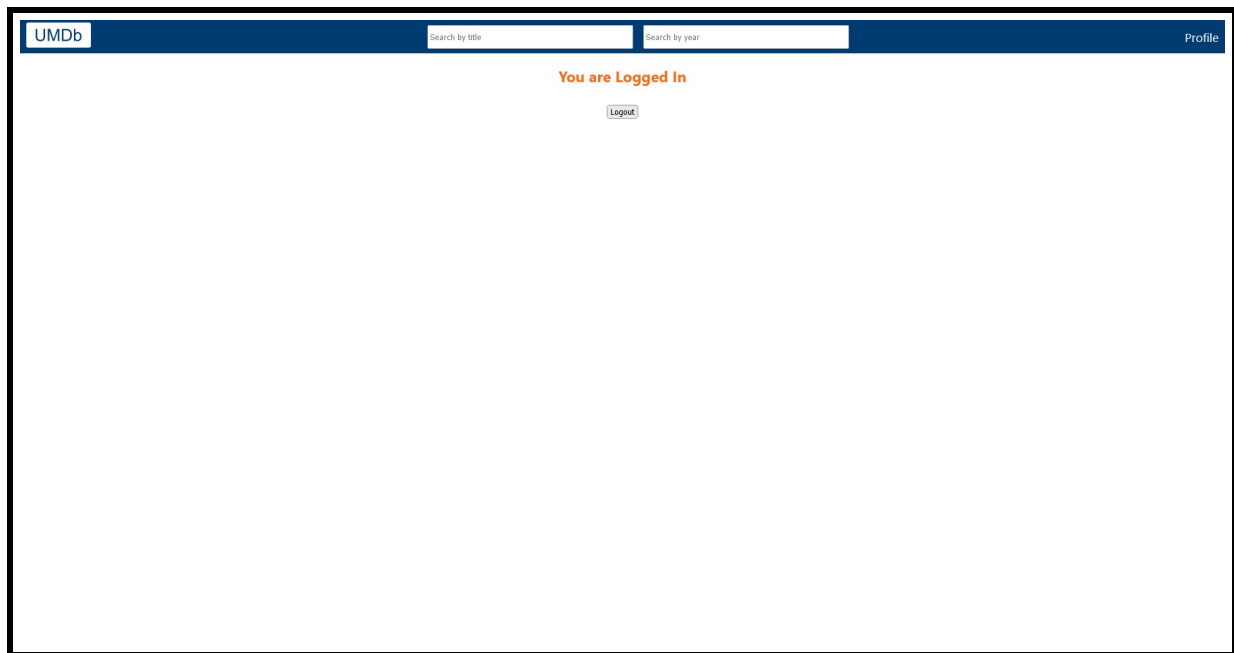


Figure 9: Profile Page Ready for the User to Logout

6.3 Appendix C - Application Design

The screenshot shows the UMDb website's movies page. The header is dark blue with 'UMDb' on the left, 'Movies' in the center, and 'Profile' on the right. Below the header, the word 'Movies' is displayed in orange. There are search filters for 'Search by Title' and 'Search by Year' (set to 1996), and a 'Search' button. The main content is a table with the following data:

| Title | Year | IMDb Rating | Rotten Tomatoes Rating | Metacritic Rating | Classification |
|---|------|-------------|------------------------|-------------------|----------------|
| The Pillow Book | 1996 | 6.5 | 67 | 64 | Not Rated |
| Poison Ivy II | 1996 | 4.4 | 14 | | R |
| Tromeo and Juliet | 1996 | 6 | | | R |
| 101 Dalmatians | 1996 | 5.7 | 41 | 49 | G |
| 2 Days in the Valley | 1996 | 6.5 | 62 | 56 | R |
| The Adventures of Pinocchio | 1996 | 5.2 | 35 | | G |
| Alaska | 1996 | 5.7 | 23 | | PG |
| Albino Alligator | 1996 | 6.1 | 50 | 48 | R |
| All Dogs Go to Heaven 2 | 1996 | 5.5 | 20 | | G |
| The Apartment | 1996 | 7.4 | | | R |
| The Arrival | 1996 | 6.2 | 66 | 56 | PG-13 |
| The Associate | 1996 | 6.1 | 28 | | PG-13 |
| Bad Moon | 1996 | 5.8 | 30 | | R |
| Barb Wire | 1996 | 3.5 | 28 | 40 | R |
| Basquiat | 1996 | 6.9 | | 65 | R |
| Beautiful Girls | 1996 | 7.1 | 78 | 64 | R |
| Beautiful Thing | 1996 | 7.6 | 91 | | R |
| Beavis and Butt-Head Do America | 1996 | 6.8 | 71 | 64 | PG-13 |
| Bed of Roses | 1996 | 6 | 19 | | PG |

Figure 10: An earlier version of the MoviePage

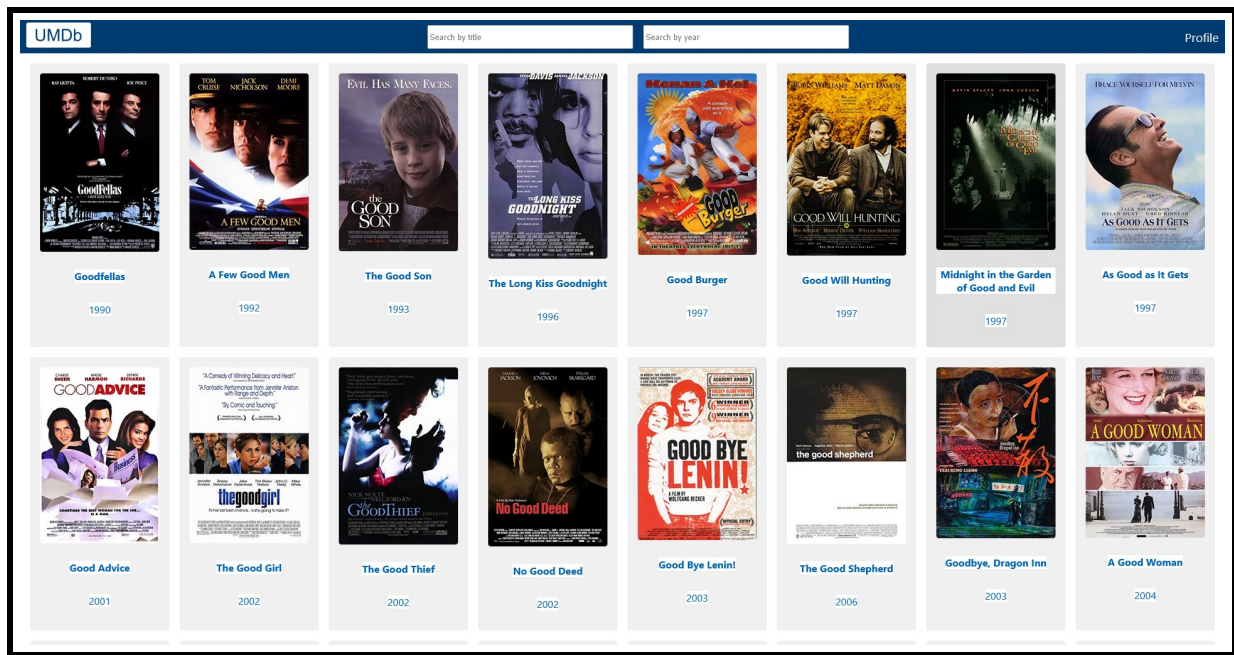


Figure 11: An experimental version of the MoviesPage

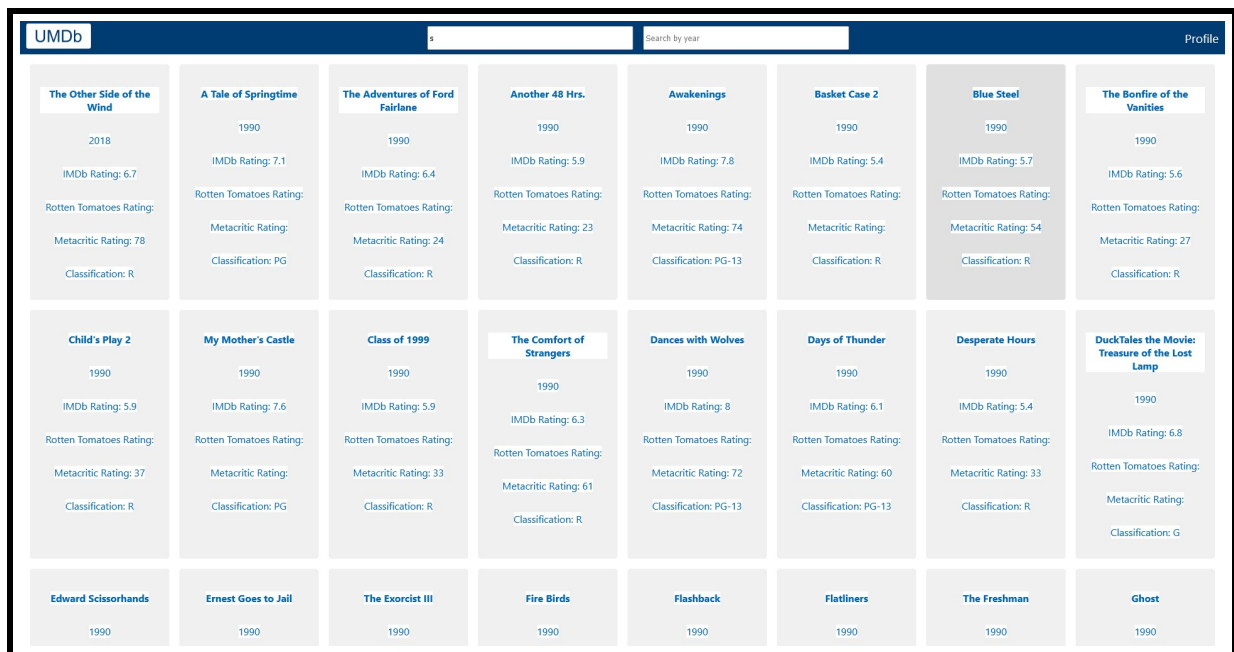


Figure 12: Another experimental version of the MoviesPage

6.4 Appendix D - Test Plan

| UMDb | | Blade | Search by year | Profile | |
|----------------------------|------|-------------|------------------------|-------------------|----------------|
| Title | Year | IMDb Rating | Rotten Tomatoes Rating | Metacritic Rating | Classification |
| Sing Blade | 1996 | 8 | 97 | 84 | R |
| Blade | 1998 | 7.1 | 57 | 47 | R |
| Blade II | 2002 | 6.7 | 57 | 52 | R |
| Blade: Trinity | 2004 | 5.8 | 24 | 38 | R |
| The Hidden Blade | 2004 | 7.7 | 84 | 76 | R |
| Blades of Glory | 2006 | 6.3 | 70 | 64 | PG-13 |
| Shinobi: Heart Under Blade | 2005 | 6.8 | | | R |
| 14 Blades | 2010 | 6.3 | 69 | 50 | R |
| Blade Runner: 2049 | 2017 | 8 | 88 | 81 | R |
| Dragon Blade | 2015 | 5.9 | 35 | 41 | R |
| Blade of the Immortal | 2017 | 6.7 | 86 | 72 | R |
| | | | | | |

Figure 13: Test 1 - Search by Title


| UMDb | | Search by title | 2008 | Profile | |
|--|------|-----------------|------------------------|-------------------|----------------|
| Title | Year | IMDb Rating | Rotten Tomatoes Rating | Metacritic Rating | Classification |
| The Bank Job | 2008 | 7.2 | 80 | 69 | R |
| Berlin Calling | 2008 | 7.2 | | | N/A |
| Lymelife | 2008 | 6.8 | 63 | 64 | R |
| Babylon A.D. | 2008 | 5.5 | 7 | 26 | PG-13 |
| The Red Baron | 2008 | 6.3 | 17 | | PG-13 |
| Indiana Jones and the Kingdom of the Crystal Skull | 2008 | 6.2 | 78 | 65 | PG-13 |
| Four Christmases | 2008 | 5.7 | 25 | 41 | PG-13 |
| Iron Man | 2008 | 7.9 | 94 | 79 | PG-13 |
| Journey to the Center of the Earth | 2008 | 5.8 | 61 | 57 | PG |
| Cher: Part Two | 2008 | 6.8 | 79 | 64 | Not Rated |
| Leatherheads | 2008 | 6 | 52 | 56 | PG-13 |
| Synecdoche, New York | 2008 | 7.5 | 69 | 67 | R |
| The Onion Movie | 2008 | 6.2 | | | Not Rated |
| The Secret of Moonacre | 2008 | 6 | 23 | | PG |
| Bolt | 2008 | 6.8 | 90 | 67 | PG |
| Far Cry | 2008 | 3.2 | | | R |
| My Sassy Girl | 2008 | 6.2 | | | PG-13 |
| Rudo y Cursi | 2008 | 6.7 | 73 | 67 | R |

Figure 14: Test 2 - Search by Year

| UMDb | | The D | 2008 | Profile | | |
|---------------------------------------|------|-------------|------------------------|-------------------|----------------|--|
| Title | Year | IMDb Rating | Rotten Tomatoes Rating | Metacritic Rating | Classification | |
| The Dark Knight | 2008 | 9 | 94 | 84 | PG-13 | |
| The Mummy: Tomb of the Dragon Emperor | 2008 | 5.2 | 13 | 31 | PG-13 | |
| The Duchess | 2008 | 6.9 | 62 | 62 | PG-13 | |
| I Sell the Dead | 2008 | 6 | 73 | 62 | Not Rated | |
| Dance of the Dead | 2008 | 5.8 | 80 | | R | |
| The Day the Earth Stood Still | 2008 | 5.5 | 20 | 40 | PG-13 | |

Figure 15: Test 3 - Search by Title and Year

UMDb
Blade
Search by year:
Profile



Blade Runner 2049

Year: 2017

Box Office: \$92,071,675

Runtime: 164 minutes

Genres: Action, Drama, Mystery

Country: United States, United Kingdom, Canada, Spain

Plot:

Young Blade Runner K's discovery of a long-buried secret leads him to track down former Blade Runner Rick Deckard, who's been missing for thirty years.

Cast:

[Andrew A. Kosove](#)(producer)
[Harrison Ford](#)(actor) - Rick Deckard
[Ryan Gosling](#)(actor) - K
[Ana de Armas](#)(actress) - Joi
[Dave Bautista](#)(actor) - Sapper Morton
[Denis Villeneuve](#)(director)
[Hampton Fancher](#)(writer)
[Michael Green](#)(writer)
[Philip K. Dick](#)(writer)
[Broderick Johnson](#)(producer)

Ratings:

Internet Movie Database: 8
Rotten Tomatoes: 88
Metacritic: 81

Figure 16: Test 4 - Click on a Movie

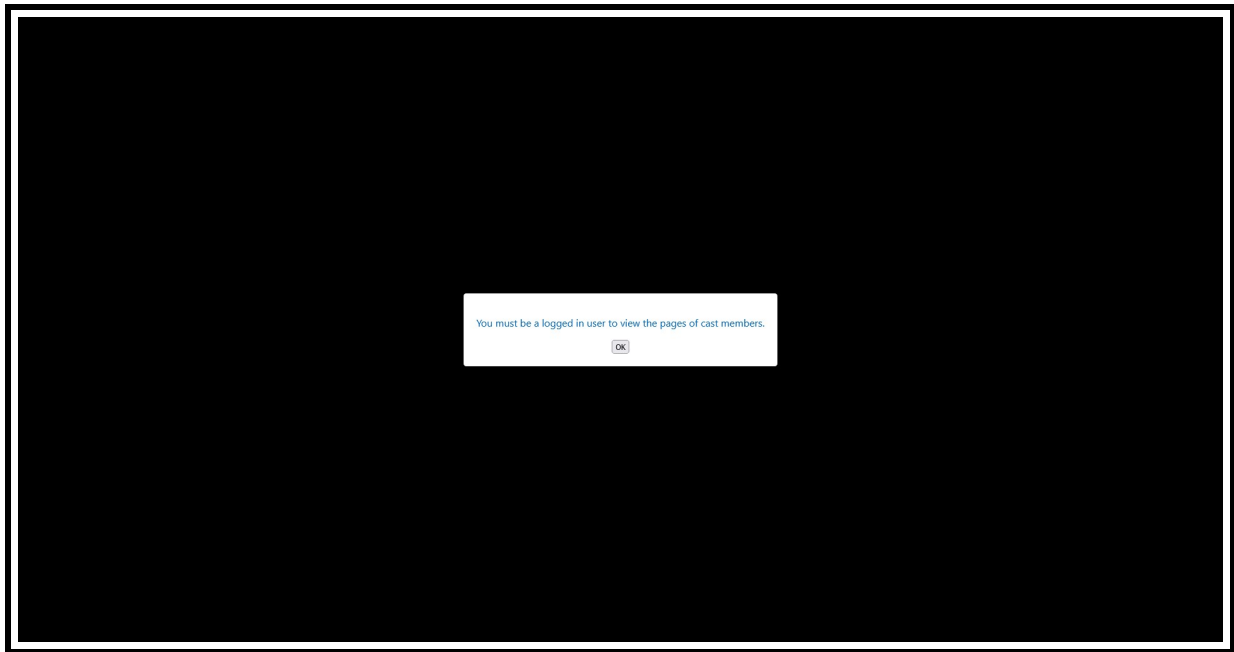
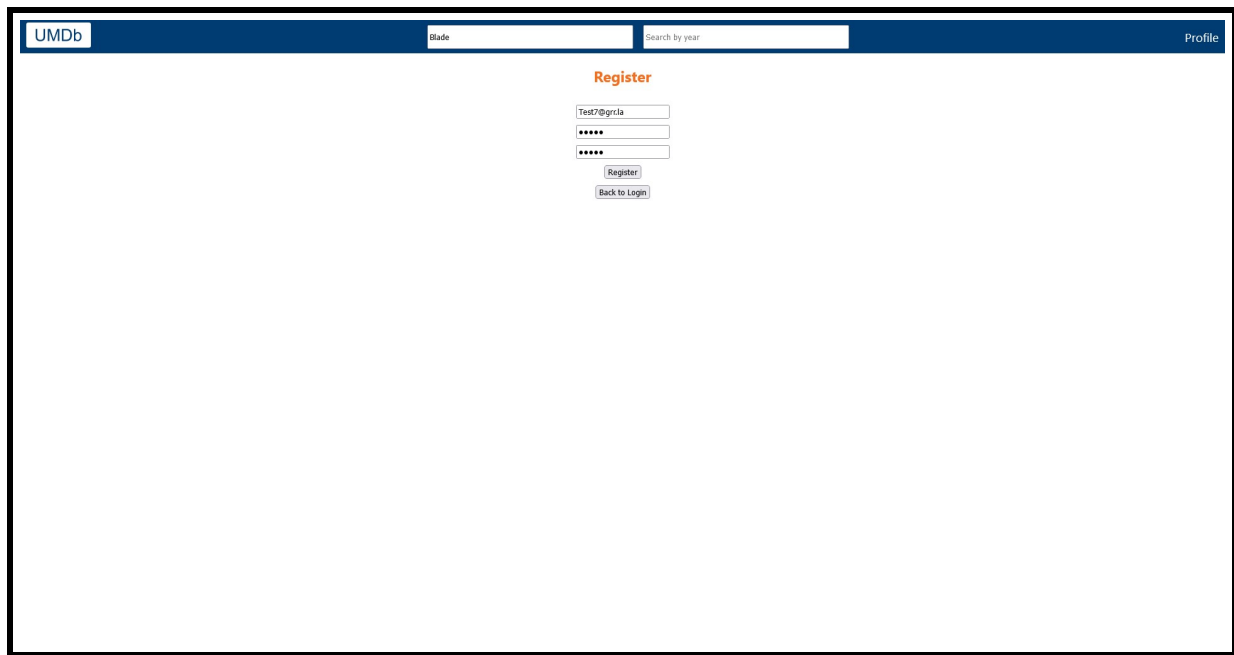


Figure 17: Test 5 - Click on a Cast Member (Logged Out)

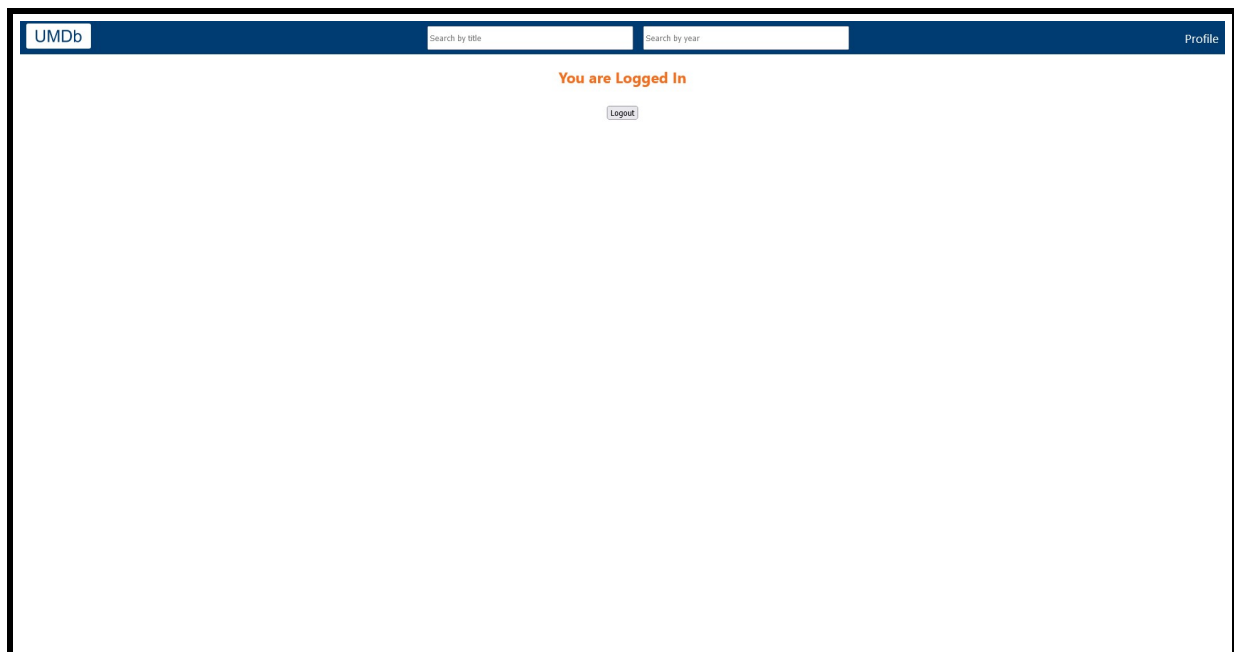
| UMDb | Blade | Search by year: | Profile |
|----------------------|--------------------|-----------------|---------|
| Person Details | | | |
| Ray Liotta | | | |
| Date of Birth: 1954 | | | |
| Death: 2022 | | | |
| Roles: | | | |
| Movie Name | Character | IMDb Rating | |
| Goodfellas | Henry Hill | 8.7 | |
| Unlawful Entry | Officer Pete Davis | 6.4 | |
| Corrina, Corrina | Manny Singer | 6.6 | |
| No Escape | Capt. J.T. Robbins | 6.1 | |
| Operation Dumbo Drop | Capt. T.C. Doyle | 5.2 | |
| Unforgettable | David Krane | 6 | |
| Cop Land | Gary Figgis | 7 | |
| Turbulence | Ryan Weaver | 4.9 | |

Figure 18: Test 6 - Click on a Cast Member (Logged In)



The screenshot shows the UMDb website's registration page. The header is dark blue with the UMDb logo on the left, a search bar in the center, and a 'Profile' link on the right. The main content area is white and features a red 'Register' heading. Below the heading are three input fields: the first contains 'Test7@gr1a', the second contains five asterisks, and the third contains five asterisks. At the bottom of the form are two buttons: 'Register' and 'Back to Login'.

Figure 19: Test 7 - Register a New User



The screenshot shows the UMDb website's logged-in page. The header is dark blue with the UMDb logo on the left, search bars for 'Search by title' and 'Search by year' in the center, and a 'Profile' link on the right. The main content area is white and features a red 'You are Logged In' heading. Below the heading is a single button labeled 'Logout'.

Figure 20: Test 7 - Logged in as a User

The screenshot shows the UMDb website's login interface. At the top, a dark blue header contains the 'UMDb' logo on the left, a search bar with the placeholder 'Blade' in the center, and a 'Search by year' dropdown on the right. A 'Profile' link is visible in the top right corner. The main content area is white and features the word 'Login' in orange text. Below this, there are two input fields: the first contains the email 'Test7@gr1a' and the second contains masked characters '*****'. Underneath the password field are two buttons: 'Login' and 'Register Now'.

Figure 21: Test 8 - Login in as User

The screenshot shows the UMDb website after a successful login. The header is identical to the previous figure, with 'UMDb', the search bar (now empty), and the 'Search by year' dropdown. The 'Profile' link remains in the top right. The main content area is white and displays the message 'You are Logged In' in orange text. Below this message is a single button labeled 'Logout'.

Figure 22: Test 8 - Logged in as a User