

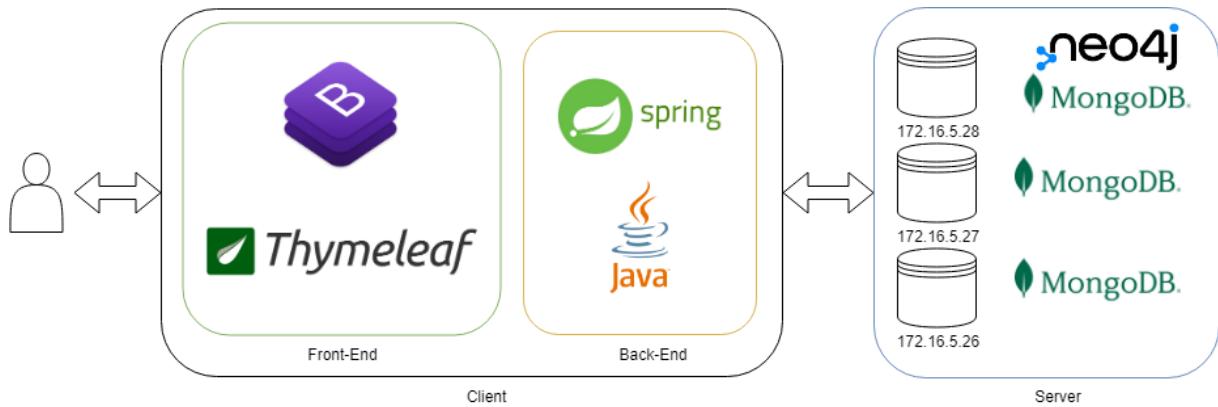
# Chapter 1

## Software Architecture

*Rotten Movies* is a web application developed in *Java* that implements the Model-View-Controller (MVC) paradigm through the use of the *Spring Framework*.

Specifically, the *view* layer is handled by the templating engine *Thymeleaf*, which enables the creation of custom web pages by interpolating data provided by the middle-ware with predefined html templates. Interface styling has been eased by the use of some predefined CSS classes defined in *Bootstrap 5.0*<sup>1</sup>

The back-end side of the application is supported by the document database *MongoDB* and the graph database *Neo4J*, which are accessed via the official mongo driver<sup>2</sup> and the neo4j driver<sup>3</sup> for Java, respectively



<sup>1</sup><https://getbootstrap.com/>

<sup>2</sup><https://www.mongodb.com/docs/drivers/java/sync/current/>

<sup>3</sup><https://neo4j.com/developer/java/>

# Chapter 2

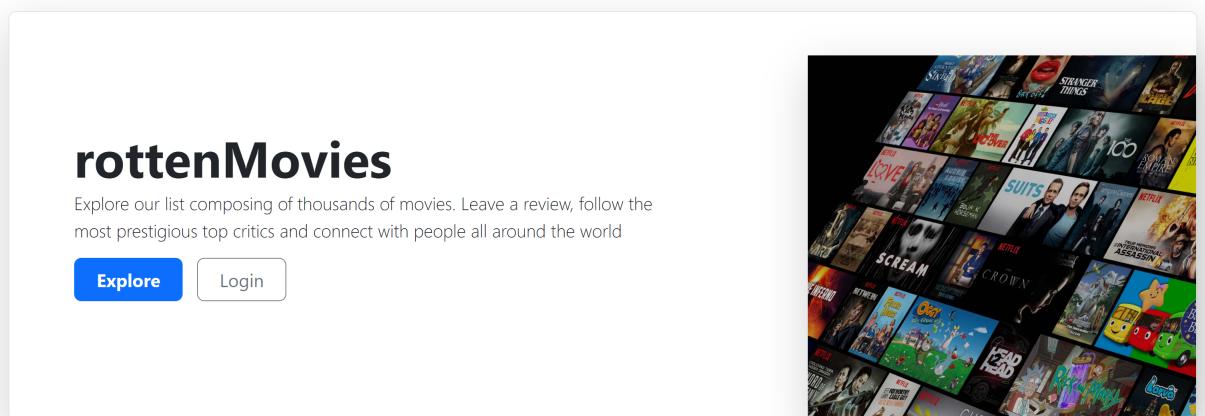
## Repository Structure

# Chapter 3

## Instruction Manual

The application is accessible through a web browser and doesn't require an authentication to perform some basic navigation and scrolling of movies and reviews. To leave a review under a movie, follow top critics and receive personalized information, a user must log-in or sign-up to the service. Some notable and certified users may be registered by an administrator as a *Top Critic* which can be followed by other users and whose reviews are highlighted under a movie

### 1 Greeting Page



The landing page presents the option to jump directly to the main page for exploring movies and incites the new user to login or sign-up to the application.

 **rottent Movies**

Start Year Range  End Year Range

Personnel  
  
 Must include all names (separate by comma ',')  
 Genres  
  
 Must include all genres (separate by comma ',')

Sort By  
 top critic rating  
 Ascending order

[Previous](#) [0](#) [Next](#)

  
**Image Not Found**

[On Dangerous Ground](#)  
1917 (WARNER BROTHERS PICTURES)

[Drama](#) [War](#)

[William A. Brady](#) [Lucien N. Andriot](#) [Gail Kane](#)  
[William Bailey](#) [Carlyle Blackwell](#) [Frances Marion](#)

  
**Image Not Found**

[Way Down East](#)  
1920 (Kino Lorber)

[Drama](#) [Romance](#)

[William A. Brady](#) [D.W. Griffith](#) [Lillian Gish](#)  
[Lowell Sherman](#) [Anthony Paul Kelly](#) [Lottie Blair Parker](#)

[Romeo and Juliet](#)  
1916 (Paramount Home Video)

[Drama](#)

[William Shakespeare](#) [John Webb Dillon](#) [Glen White](#)  
[J. Gordon Edwards](#) [Phil Rosen](#) [William Fox](#)

The exploring page offers multiple options to filter between all movies inside the database

 **rottent Movies**

Start Year Range  End Year Range

Personnel  
  
 Must include all names (separate by comma ',')  
 Genres  
  
 Must include all genres (separate by comma ',')

Sort By  
 top critic rating  
 Ascending order

[Previous](#) [0](#) [Next](#)

[Avengers: Age of Ultron](#)  
2015 (Walt Disney Pictures)

[Action](#) [Adventure](#) [Sci-Fi](#)

[Robert Downey Jr.](#) [Joss Whedon](#) [Joe Simon](#)  
[Jack Kirby](#) [Stan Lee](#) [Mark Ruffalo](#) [Chris Evans](#)  
[Kevin Feige](#) [Chris Hemsworth](#) [Jim Starlin](#)

Upright (76%) Certified Fresh (75%)

[Login to Review](#) 141 mins

[Avengers: Infinity War](#)  
2018 (Walt Disney Pictures)

[Action](#) [Adventure](#) [Sci-Fi](#)

[Robert Downey Jr.](#) [Jack Kirby](#) [Stan Lee](#) [Mark Ruffalo](#)  
[Chris Evans](#) [Joe Russo](#) [Anthony Russo](#)  
[Christopher Markus](#) [Stephen McFeely](#) [Chris Hemsworth](#)

Upright (86%) Fresh (74%)

[Login to Review](#) 149 mins

It is possible to search by

- a string contained in the title
- a range of year in which the movie has been produced
- people that worked on the film. It is possible to build a list of names by employing a

comma (,) and stating if the movie must include all names or at least one of them

- genres. It is possible to build a list of genres by employing a comma (,) and stating if the movie must include all genres or at least one of them

The available sorting options are

- by top critic rating (the default)
- by user critic rating
- alphabetical order
- by date of production

and the user can opt for an ascending or descending sort.

At any point the user can click on the pills of genres or crew members to perform a search with that value.

If a user isn't logged-in, the button under a movie says 'Login to Review' and brings to the login page. Otherwise it becomes 'Review' and clicking on it allows the quick creation or editing of the review for that movie.

The screenshot shows the movie page for 'Avengers: Infinity War' on Rotten Tomatoes. At the top, there's a navigation bar with a magnifying glass icon and the text 'rotten Movies'. Below the title 'Avengers: Infinity War' (in large bold letters), it says '2018, 149 min, Walt Disney Pictures'. There are three genre buttons: Action, Adventure, and Sci-Fi. Under the movie title, there's a list of credits and cast information. To the right is a large movie poster for 'Avengers: Infinity War'. Below the poster, there's a 'login to review this movie' button. At the bottom, there's a section titled 'Reviews:' with reviews from users like Josh Larsen, Scott Menzel, and Alan Zilberman.

**Reviews:**

**Josh Larsen (2018-04-25)**  
"...a business play forcing us to make yet another down payment on our collective Marvel mortgage."  
Review Score: "2/4"

**Scott Menzel (2018-04-25)**  
"Be prepared to sweat, cry, and clench your armrest because Avengers: Infinity War is one hell of a ride."  
Review Score: "9.5/10"

**Alan Zilberman (2018-04-25)**  
"If the Marvel Cinematic Universe aims to reshape popular entertainment, it needs to move beyond climax after climax with unremarkable, repetitive violence."

Selecting a movie allows to see a full description of it

**Reviews:**

Previous 2 Next

**Michael Sangiacomo (2018-04-25)**

"Avengers: Infinity War" is almost three hours of non-stop action on multiple battlefields leading to a conclusion that will forever change the Marvel cinematic universe."

Review  
Score: "A"

**Matthew Razak (2018-04-25)**

"This movie isn't actually about the Avengers. It's about Thanos."

Review  
Score: "8/10"

**Clay Cane (2018-04-25)**

"There is a fissure between critics and audiences, which I can admit. The movie is critic-proof. 'Avengers: Infinity War' is superhero porn, strictly for the fans, while 'Black Panther' was undeniably excellent, transcending the comic book fan base."

Review  
Score: "B-"

**Julian Roman (2018-04-25)**

"Infinity War is so gargantuan in scope, it almost becomes too much to digest. The smaller moments that have made the Marvel Cinematic Universe so enjoyable are lost in the spectacle."

Review  
Score: "3.5/5"

**Hannah Woodhead (2018-04-25)**

[View Profile](#)      Top Critic ★

"The high doesn't last, but it's dizzying all the same."

Review  
Score: "4/5"

**Diva Velez (2018-04-25)**

"AVENGERS: INFINITY WAR is nearly spread too thin by its massive amount of plot and characters. It redeems itself by being full of surprises and foreboding; focusing on the heroes' relationships and real peril in fierce, unrestrained action."

Review  
Score: "3.5/5"

**Fico Cangiano (2018-04-25)**

"Expectations surpassed. An ambitious, exhilarating and

Review

A selected movie allows also to read a paginated list of all its reviews

If a user isn't logged-in, the button under the movie says 'Login to Review this movie' and brings to the login page. Otherwise it becomes 'Review' and clicking on it allows the creation or editing of the review for that movie.



Please sign in

First Name	John
Last Name	Doe
Username	JDoe99
Password	*****
Birthday	20/07/1999

[Register](#)

[Already a User? Login](#)

User registration requires some basic information about the new user



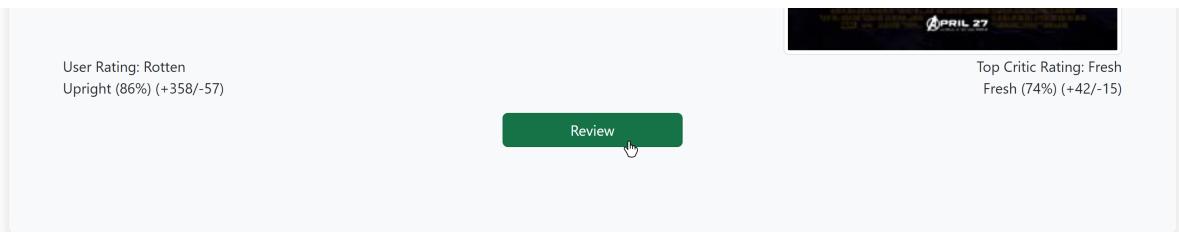
Please login

Username	JDoe99
Password	*****

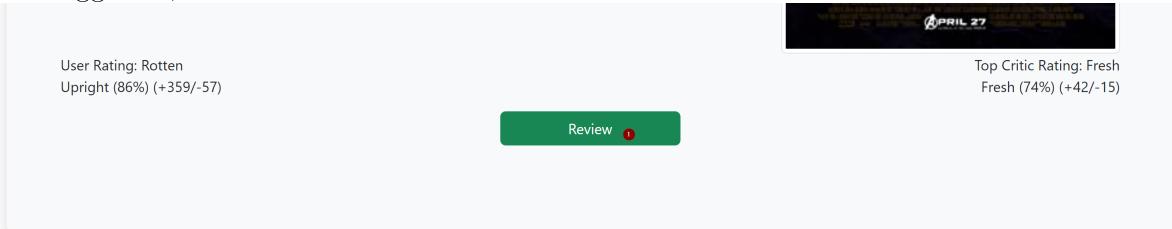
[Login](#)

[Don't have an account? Register](#)

If a user has already registered to the application, he/she can login with its credentials



After loggin-in, a user can leave a review under a movie



JDoe99 (2023-01-10)

Review  
Score: ""

Top Critic Rating: Fresh  
Fresh (74%) (+42/-15)

Edit

If a user has never reviewed a movie, a new one is created and can be immediately modified

Reviews:

Previous 0 Next

JDoe99 (2023-01-10)

Overcomes its artificial contrivances to become a  
touching psychological drama about despair and

9/10

Fresh

Apply

Cancel

Delete

Writing a review, a user can write its content, leave a summarizing score and determine if it's a *Fresh* (positive) or *Rotten* (negative) review. Here the user can also choose to delete its review

have made the Marvel cinematic universe so enjoyable  
are lost in the spectacle."

Hannah Woodhead (2018-04-25) Top Critic ★  
"The high doesn't last, but it's dizzying all the same."  
Review Score: "4/5"

Top Critic reviews are highlighted by a little label with a star and a link that brings to its user page

## Michael Phillips

First Name: Michael  
Last Name: Phillips  
Registration Date: 2000-01-01  
Top Critic \*  
Number of followers: 28  
[Follow](#) [Unfollow](#)

Most recent Reviews:

[Rebuilding Paradise \(2020-07-31\)](#)

"It's frequently gripping and finally very moving."

Review Score: "3.5/4"

[Sputnik \(2020-08-12\)](#)

"The clever and nicely gory "Sputnik" comes from Russia with love, slime, and an impressive lesson in efficient, low-cost pulp filmmaking."

Review Score: "3/4"

[Bill & Ted Face the Music \(2020-08-28\)](#)

"Cheesy, yes, hit-and-miss, maybe, but the bits that work really do work."

Review Score: "3/4"

All reviews:

<a href="#">The Boss</a>	<a href="#">Chimes at Midnight</a>	<a href="#">The Tempest</a>
<a href="#">Were the World Mine</a>	<a href="#">Doubt</a>	<a href="#">Coriolanus</a>
<a href="#">Oz the Great and Powerful</a>	<a href="#">In Secret</a>	<a href="#">Alexandra</a>
<a href="#">Oliver Twist</a>	<a href="#">Possession</a>	<a href="#">Les Misérables</a>
<a href="#">Monte Carlo</a>	<a href="#">Paris</a>	<a href="#">Prometheus</a>
<a href="#">Atonement</a>	<a href="#">The American</a>	<a href="#">The Walk</a>

Viewing the user page of a Top Critic, a user can choose to follow or, if its already a follower, unfollow that critic

The screenshot shows the Rotten Tomatoes homepage. At the top right, there is a "Hall of Fame" dropdown menu. A mouse cursor is hovering over the "Genres" option, which is highlighted with a red dot. Other options in the dropdown are "Production Houses" and "Years". The main content area displays a movie card for "Avengers: Infinity War". The card includes the movie title, release year (2018), runtime (149 min), studio (Walt Disney Pictures), and genres (Action, Adventure, Sci-Fi). To the right of the card is a small thumbnail image of the movie.

The navbar for a user that hasn't logged-in has some basic features

The screenshot shows a table listing the top 10 genres based on top critic rating. The columns are "#", "Genre", "Top Critic Rating", and "Movie count". The genres listed are Documentary, News, Biography, History, Music, Film-Noir, Sport, War, Animation, and Drama. The "Top Critic Rating" column shows values like 75,09%, 72,50%, etc. The "Movie count" column shows values like 1430, 22, 968, etc.

#	Genre	Top Critic Rating	Movie count
1	Documentary	75,09%	1430
2	News	72,50%	22
3	Biography	63,02%	968
4	History	62,59%	532
5	Music	60,23%	551
6	Film-Noir	59,42%	121
7	Sport	55,80%	328
8	War	55,78%	364
9	Animation	54,20%	380
10	Drama	53,32%	7565

This page shows the best genres across all movies, sorted by top critic rating or user rating. It is also possible to specify the minimum number of movies that a genre must have to appear in the list

The screenshot shows a table listing the top 10 production houses based on top critic rating. The columns are "#", "Name", "Top Critic Rating", and "Movie count". The production houses listed are HBO Documentary Films, Rialto Pictures, The Cinema Guild, HBO, Cinema Guild, Disney/Pixar, Docurama, Gravitas, Janus Films, and Area 23a. The "Top Critic Rating" column shows values like 95,50%, 94,07%, etc. The "Movie count" column shows values like 10, 15, 9, etc.

#	Name	Top Critic Rating	Movie count
1	HBO Documentary Films	95,50%	10
2	Rialto Pictures	94,07%	15
3	The Cinema Guild	92,78%	9
4	HBO	92,40%	5
5	Cinema Guild	91,00%	20
6	Disney/Pixar	89,88%	8
7	Docurama	89,00%	6
8	Gravitas	88,83%	6
9	Janus Films	88,46%	13
10	Area 23a	87,67%	6

This page shows the best production houses based on the reviews left by users on the platform. They can be sorted by top critic rating or user rating and the user can specify the minimum number of produced movies to appear on the list

**rotten Movies**

Sort By  Minimum number of movies released

#	Year	Top Critic Rating	Movie count
1	1912	76,14%	7
2	1950	68,63%	38
3	1930	66,31%	26
4	1951	65,63%	46
5	1924	62,50%	22
6	1933	62,50%	34
7	1918	62,35%	26
8	1953	61,55%	42
9	1952	59,50%	40
10	1955	58,75%	59

This page shows the best years in terms of produced movies with positive reviews left by users on the platform. They can be sorted by top critic rating or user rating and the user can specify the minimum number of released movies in that year to appear on the list

**Explore**  
Join our community, post your thoughts and follow like-minded top critics

**Links**  
[Index](#)  
[Logout](#)

**Personal Area** 2

- Your profile 1
- Suggestions
- Your preferred genres
- Your personal feed

**rotten Movies**

## Avengers: Infinity War

2018, 149 min, Walt Disney Pictures

Action Adventure Sci-Fi



The navbar of an authenticated user shows some more personalized pages

**JDoe99**

First Name: John  
Last Name: Doe

Password  
password

first name  
John

last name  
Doe

Birthday  
19/07/1999

**Update**

Registration Date: 2023-01-10

Normal User

Most recent Reviews:

[Avengers: Infinity War \(2023-01-10\)](#)

"Overcomes its artificial contrivances to become a touching psychological drama about despair and loneliness."

Review Score: "9/10"

[Romeo and Juliet \(2023-01-10\)](#)

"Romeo and Juliet (1968) is Florentine director Franco Zeffirelli's beautiful modern interpretation of Shakespeare's enduring, classic yet tragic love story of"

Review Score: "2/5"

[The Three Musketeers \(2023-01-10\)](#)

"It might look good but it doesn't taste that good after a few bites."

Review Score: "C-"

All reviews:

[Avengers: Infinity War](#)

[Romeo and Juliet](#)

[The Three Musketeers](#)

In the personal page, a user can change its credentials, see its three most recent reviews and

the list of all its reviewed movies.

Leaving the password field blank won't change it.

#### rotten Movies

Here you can find your top critic suggestions, JDoe99

#	Username	Rate	
1	<a href="#">Edward Douglas</a>	80	<a href="#">Follow</a>
2	<a href="#">Robert Denerstein</a>	80	<a href="#">Follow</a>
3	<a href="#">Tim Appelo</a>	80	<a href="#">Follow</a>
4	<a href="#">Peter Rainer</a>	75	<a href="#">Follow</a>
5	<a href="#">Roxana Hadadi</a>	75	<a href="#">Follow</a>
6	<a href="#">Richard Roeper</a>	75	<a href="#">Follow</a>
7	<a href="#">Joe Morgenstern</a>	75	<a href="#">Follow</a>
8	<a href="#">Matt Zoller Seitz</a>	75	<a href="#">Follow</a>
9	<a href="#">Owen Gleiberman</a>	75	<a href="#">Follow</a>
10	<a href="#">Sean P. Means</a>	75	<a href="#">Follow</a>

The suggestion page shows a list of possible top critics that the user could follow. These top critics are chosen based on common reviewed movies (both positively or both negatively) between the two. The Rate index shows the estimated probability that the user might align with the suggested top critic views.

#### rotten Movies



#	Genre	Review count
1	Sci-Fi	2
2	Adventure	2
3	Action	1
4	Drama	1

The preferred genres page shows an aggregated overview of genres reviewed by the user. This highlights possible preferences towards certain genres more than others.

#### Here is your review feed, JDoe99

<a href="#">Bill &amp; Ted Face the Music</a>	<a href="#">Michael Phillips</a>	Date: "2020-08-28"
"Cheesy, yes, hi..."	<a href="#">Read full review</a>	
<a href="#">Sputnik</a>	<a href="#">Michael Phillips</a>	Date: "2020-08-12"
"The clever and ..."	<a href="#">Read full review</a>	
<a href="#">Rebuilding Paradise</a>	<a href="#">Michael Phillips</a>	Date: "2020-07-31"
"It's frequently..."	<a href="#">Read full review</a>	
<a href="#">I Used to Go Here</a>	<a href="#">Michael Phillips</a>	Date: "2020-07-28"
"The lightly car..."	<a href="#">Read full review</a>	
<a href="#">The Rental</a>	<a href="#">Michael Phillips</a>	Date: "2020-07-23"
"It starts out g..."	<a href="#">Read full review</a>	
<a href="#">Yes, God, Yes</a>	<a href="#">Michael Phillips</a>	Date: "2020-07-22"
"One of this sum..."	<a href="#">Read full review</a>	
<a href="#">Married to the Mob</a>	<a href="#">Roger Ebert</a>	Date: "2020-07-18"
"The results are..."	<a href="#">Read full review</a>	
<a href="#">Bloody Nose, Empty Pockets</a>	<a href="#">Michael Phillips</a>	Date: "2020-07-10"
"This movie crea..."	<a href="#">Read full review</a>	

The feed shows a list of recent reviews written by followed top critics. The review contains an excerpt of the full content, which can be seen by clicking on the button *Read full review*.



Please login

Username	admin
Password	*****

**Login**

[Don't have an account? Register](#)

A special kind of user can log-in to perform administration task on the application

**Explore**  
Join our community, post your thoughts and follow like-minded top critics

**Links**  
[Index](#)  
[Admin panel](#) ?  
[Logout](#) 1

[Hall of Fame](#) ▼

**rotten Movies** ≡

The admin navbar allows to reach the administrator panel

Username	Registration Date	Type	Birthday
Bob Bloom	2014-06-07	Normal User	1998-08-10
Bob Thomas	2001-01-13	Top Critic ★	----
Bob Mondello	1990-06-11	Top Critic ★	----
Bob Strauss	1997-04-22	Top Critic ★	----
Bob Grimm	2014-08-23	Normal User	1989-07-06

In the administrator panel the admin can search for a specific user. The side panel links to different analytic pages about the status of the application

**Bob Bloom**

First Name: Bob  
Last Name: Bloom  
Registration Date: 2014-06-07  
Normal User

**BAN** **UNBAN**

Most recent Reviews:

**Love & Debt (2020-08-19)**  
"Love & Debt" ends on a note of hopeful uncertainty. It is a movie that offers lessons that hundreds of families who are struggling today can learn from and embrace.

Review Score: "3/4"

**Tesla (2020-08-19)**  
"The crucial flaw with "Tesla" is that it, ironically, lacks spark. Almerryda's depiction of Tesla may be accurate, but cinematically it filters the spotlight that this nearly

Review Score: "2/4"

After selecting a user, the admin can ban or unban it

**rotten Movies**

Insert start year, the offset and the index

Year	Count
1970-1975	815
1975-1980	803
1980-1985	834
1985-1990	817
1990-1995	808
1995-2000	806
2000-2005	757
2005-2010	327

**Search**

This analytic shows the number of registered users for each year range, passed as input

**rotten Movies**

#	Username	Type	Number of Reviews
1	<a href="#">Emanuel Levy</a>	TopCritic	5850
2	<a href="#">Roger Ebert</a>	TopCritic	4850
3	<a href="#">Dennis Schwartz</a>	User	4813
4	<a href="#">Brian Omdorf</a>	User	4546
5	<a href="#">Frank Swietek</a>	User	4528
6	<a href="#">Jeffrey M. Anderson</a>	User	4153
7	<a href="#">Roger Moore</a>	TopCritic	4143
8	<a href="#">James Berardinelli</a>	TopCritic	3995
9	<a href="#">David Nusair</a>	User	3908
10	<a href="#">Frederic and Mary Ann Brussat</a>	User	3677

This page shows a ranking of users based on their number of reviews. This can be useful to verify a possible automated user, or promote a certified active user as a top critic

**rotten Movies**

#	Username	Type	Number of Reviews
1	<a href="#">Elissa Suh</a>		44
2	<a href="#">Gene Stout</a>		41
3	<a href="#">Harry Carr</a>		41
4	<a href="#">Lynne Heffley</a>		41
5	<a href="#">Gemma Files</a>		41
6	<a href="#">Chris Harvey</a>		40
7	<a href="#">Suzanne S. Brown</a>		40
8	<a href="#">Julia Irion Martins</a>		40
9	<a href="#">Manohla Dargis</a>		40
10	<a href="#">Drew Toal</a>		40

With this page, the administrator can see a ranking of most active top critics, based on the number of reviews



Please sign in

First Name	Alice
Last Name	Johnson
Username	AJohnson87
Password	*****
Birthday	12/03/1987

Register



The top critic creation page isn't accessible to the public, only to the registered administrator. It is very similar to the user registration page, but it doesn't redirect to the explore movie page after a successful sign-up

The screenshot shows the Rotten Tomatoes search interface. At the top, there's a search bar with the placeholder "Avatar". Below it are two input fields for "Start Year Range" (1980) and "End Year Range" (2020). There are also dropdown menus for "Personnel" (listing Leonardo DiCaprio and Johnny Depp) and "Genres" (Adventure, Sci-Fi). To the right of these, there's a "Sort By" dropdown set to "top critic rating" and a "Descending order" checkbox. At the bottom of the search bar area, there are "Previous" and "Next" buttons. To the right of the search bar, there's a green "Add Movie" button with a hand cursor icon over it. Below the search bar, there are three movie cards. The first two cards are partially visible, each with an orange "View Details" button. The third card is fully visible and shows a poster for the movie "ROMEO + JULIET" featuring Leonardo DiCaprio and Claire Danes.

Adding a new movie is done through the explore movie page. A new button labeled *Add Movie* appears near the *Search* one and will create a new movie, temporarily named as the string currently present in the search bar

title  
Avatar 2

year  
2022

runtimeMinutes  
192

productionCompany  
AMC

genres (use a comma ',' separated list of genres)  
Action, Adventure

posterUrl  
posterUrl

Personnel

primaryName	James Cameron
category	Director
job or interpreted characters	job_characters
primaryName	Sam Worthington
category	Actor
job or interpreted characters	Jake Sully

After adding a movie, or when selecting an existing one, the administrator can change its descriptive information

primaryName	Balwant Bhatt
category	director
job or interpreted characters	job_characters
primaryName	Master Bhagwan
category	actor
job or interpreted characters	job_characters

[Update](#) [Delete](#) [Check Review Bombing](#)

When viewing a movie, the administrator can check for possible review bombing for this movie, by clicking on the specific button

rotten Movies

Insert the number of month  
36

Movie	Storic Count	Storic Rate	Target Count	Target Rate
Joker	528	12.0	44	6.0

**Admin manual**

**Movie:** title of the selected movie

**Storic Count:** count of total number of review before the date: today - number of month passed in the input

**Storic Rate:** rate of the positive review before the date: today - number of month passed in the input

**Target Count:** count of the total number of review between today and the date: today - number of month passed in the input

**Target Rate:** rate of the positive review between today and the date: today - number of month passed in the input

The review bombing page shows some statistics about recent reviews made on a specific movie. An info box explains the meaning of each value