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Chapter 5

Namespace Documentation

5.1 Package recommendation_system

Packages

- package filters
- package movierunner
- package movies
- package raters
- package ratings
- package recommenders

Classes

- class **RecommendationRunnerTest**

5.2 Package recommendation_system.edu.duke

Classes

- class DirectoryResource
- class FileResource
- class **FileSelector**
- class **ImageFrame**
- class ImageResource
- class Pixel
- class Point
- class RangeResource
- class ResourceException
- class Shape
- class StorageResource
- class **TextIterable**
- class URLResource

5.3 Package recommendation_system.filters

Classes

- class AllFilters
- class DirectorsFilter
- interface Filter
- class GenreFilter
- class MinutesFilter
- class TrueFilter
- class YearAfterFilter

5.4 Package recommendation_system.movierunner

Classes

- class MovieRunnerAverage
- class MovieRunnerSimilarRatingsOptimized
- class MovieRunnerWithFilters

5.5 Package recommendation_system.movies

Classes

- class Movie
- class MovieDatabase

5.6 Package recommendation_system.raters

Classes

- class EfficientRater
- class PlainRater
- interface Rater
- class RaterDatabase

5.7 Package recommendation_system.ratings

Classes

- class FirstRatings
- class FourthRatingsOptimized
- class Rating
- class SecondRatings
- class ThirdRatings

5.8 Package recommendation_system.recommenders

Classes

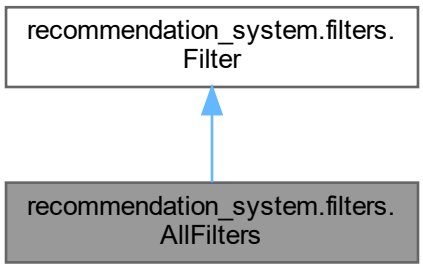
- class RecommendationRunner
- interface Recommender

Chapter 6

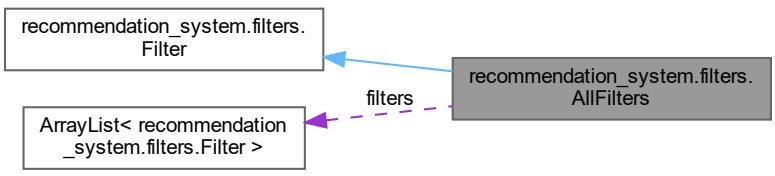
Class Documentation

6.1 recommendation_system.filters.AllFilters Class Reference

Inheritance diagram for recommendation_system.filters.AllFilters:



Collaboration diagram for recommendation_system.filters.AllFilters:



Public Member Functions

- AllFilters ()
- void addFilter (Filter f)
- boolean satisfies (String id)

6.1.1 Detailed Description

This class allows to combine all filters to pass them consecutively on an element that the user wants to filter.

The class contains the necessary methods for:

- Add different types of filters

Since

13/12/22

Version

1.0

6.1.2 Constructor & Destructor Documentation

6.1.2.1 AllFilters()

```
recommendation_system.filters.AllFilters.AllFilters ( )
```

Default builder

6.1.3 Member Function Documentation

6.1.3.1 addFilter()

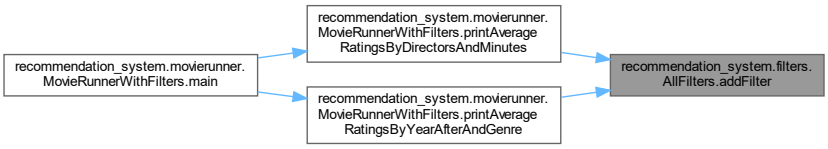
```
void recommendation_system.filters.AllFilters.addFilter (
            Filter f )
```

This method add a filter to our filter collection

Parameters

f	Filter to be added

Here is the caller graph for this function:



6.1.3.2 satisfies()

```
boolean recommendation_system.filters.AllFilters.satisfies (
            String id )
```

This method proves if the movie satisfies the criteria

Parameters

id	A string variable representing the ID of the movie

Returns

Boolean - True if the movie satisfies the criteria in the method - False otherwise

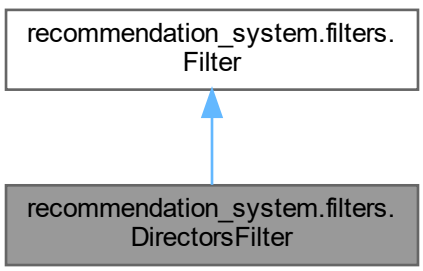
Implements recommendation_system.filters.Filter.

The documentation for this class was generated from the following file:

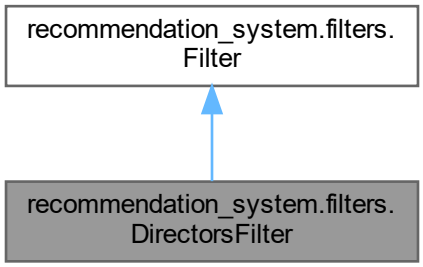
- src/main/java/recommendation_system/filters/AllFilters.java

6.2 recommendation_system.filters.DirectorsFilter Class Reference

Inheritance diagram for recommendation_system.filters.DirectorsFilter:



Collaboration diagram for recommendation_system.filters.DirectorsFilter:



Public Member Functions

- DirectorsFilter (String directors)
- boolean satisfies (String id)

6.2.1 Detailed Description

This class filters the movies directed by the specific directors that the user wants to watch. Note that each movie may have several directors.

The class contains the necessary methods for:

- Filtering movies based on the directors who directed them

Since

13/12/22

Version

1.0

6.2.2 Constructor & Destructor Documentation

6.2.2.1 DirectorsFilter()

```
recommendation_system.filters.DirectorsFilter.DirectorsFilter (
            String directors )
```

Builder overload

Parameters

directors	A string variable representing the directors of the movie

6.2.3 Member Function Documentation

6.2.3.1 satisfies()

```
boolean recommendation_system.filters.DirectorsFilter.satisfies (
            String id )
```

This method proves if the movie has any of the directors that the user want

Parameters

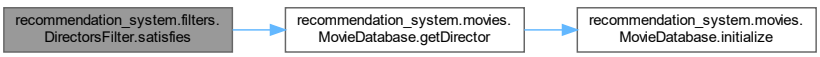
id	A string variable representing the ID of the movie

Returns

Boolean - True if movie has one of the directors the user wants to filter - False otherwise

Implements recommendation_system.filters.Filter.

Here is the call graph for this function:



The documentation for this class was generated from the following file:

- src/main/java/recommendation_system/filters/DirectorsFilter.java

6.3 recommendation_system.edu.duke.DirectoryResource Class Reference

Public Member Functions

- Iterable< File > selectedFiles ()

6.3.1 Member Function Documentation

6.3.1.1 selectedFiles()

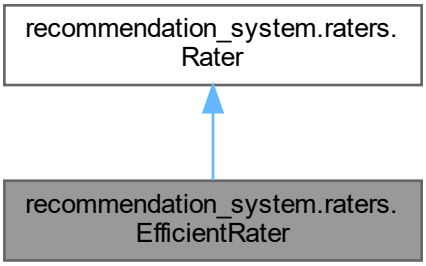
```
Iterable< File > recommendation_system.edu.duke.DirectoryResource.selectedFiles ( )
```

The documentation for this class was generated from the following file:

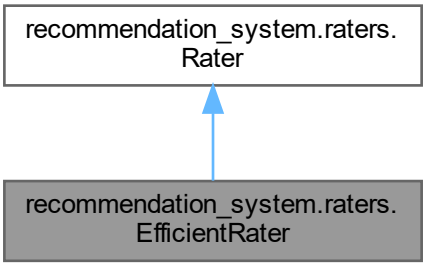
- src/main/java/recommendation_system/edu/duke/DirectoryResource.java

6.4 recommendation_system.raters.EfficientRater Class Reference

Inheritance diagram for recommendation_system.raters.EfficientRater:



Collaboration diagram for recommendation_system.raters.EfficientRater:



Public Member Functions

- EfficientRater (String id)
- void addRating (String item, double rating)
- boolean hasRating (String item)
- String getID ()
- double getRating (String item)
- int numRatings ()
- ArrayList< String > getItemsRated ()

6.4.1 Detailed Description

This class uses a HashMap to store all the information about the ratings associated with a rater

The class contains the necessary methods for:

- Add ratings
- Get ID of the movies
- Get ratings of the movies
- Prove if the movie has a rating
- Get the number of the rated movies
- Get rated movies

Since

30/12/22

Version

1.0

6.4.2 Constructor & Destructor Documentation

6.4.2.1 EfficientRater()

```
recommendation_system.raters.EfficientRater.EfficientRater (
            String id )
```

Builder overload

Parameters

id	- A String variable representing the IMDB ID of the movie

6.4.3 Member Function Documentation

6.4.3.1 addRating()

```
void recommendation_system.raters.EfficientRater.addRating (
            String item,
            double rating )
```

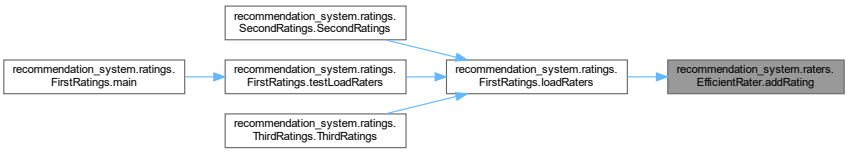
This method adds ratings to the HashMap

Parameters

item	- A String variable representing IMDB ID of the movie
rating	- A variable representing the rating

Implements recommendation_system.raters.Rater.

Here is the caller graph for this function:



6.4.3.2 getID()

```
String recommendation_system.raters.EfficientRater.getID ( )
```

This method gets the ID of the movie

Returns

Integer - ID of the movie

Implements recommendation_system.raters.Rater.

6.4.3.3 getItemsRated()

```
ArrayList< String > recommendation_system.raters.EfficientRater.getItemsRated ( )
```

This method gets the list of the rated movies

Returns

Arraylist<String> of ratings

Implements recommendation_system.raters.Rater.

6.4.3.4 getRating()

```
double recommendation_system.raters.EfficientRater.getRating (
            String item )
```

This method gets the rating of the movie

Parameters

item	- A String variable representing ID

Returns

Double - Rating of the movie

Implements recommendation_system.raters.Rater.

6.4.3.5 hasRating()

```
boolean recommendation_system.raters.EfficientRater.hasRating (
            String item )
```

This method proves if the HashMap contains the ID of the movie

Parameters

item	- A String variable representing IMDB ID of the movie

Returns

Boolean - True if the list contains the ID of the movie - False otherwise

Implements recommendation_system.raters.Rater.

6.4.3.6 numRatings()

```
int recommendation_system.raters.EfficientRater.numRatings ( )
```

This method gets the number of ratings on the HashMap

Returns

Integer - Number of ratings on the list

Implements recommendation_system.raters.Rater.

The documentation for this class was generated from the following file:

- src/main/java/recommendation_system/raters/EfficientRater.java

6.5 recommendation_system.edu.duke.FileResource Class Reference

Public Member Functions

- FileResource ()
- FileResource (File file)
- FileResource (String filename)
- FileResource (boolean writable)
- FileResource (File file, boolean writable)
- FileResource (String filename, boolean writable)
- Iterable< String > lines ()
- Iterable< String > words ()
- String asString ()
- CSVParser getCSVParser ()
- CSVParser getCSVParser (boolean withHeader)
- CSVParser getCSVParser (boolean withHeader, String delimiter)
- Iterable< String > getCSVHeaders (CSVParser parser)
- void write (String s)
- void write (StorageResource list)
- void write (String[] list)
- void write (ArrayList< String > list)

6.5.1 Constructor & Destructor Documentation

6.5.1.1 FileResource() [1/6]

```
recommendation_system.edu.duke.FileResource.FileResource ( )
```

6.5.1.2 FileResource() [2/6]

```
recommendation_system.edu.duke.FileResource.FileResource (
            File file )
```

6.5.1.3 FileResource() [3/6]

```
recommendation_system.edu.duke.FileResource.FileResource (
            String filename )
```

6.5.1.4 FileResource() [4/6]

```
recommendation_system.edu.duke.FileResource.FileResource (
            boolean writable )
```

6.5.1.5 FileResource() [5/6]

```
recommendation_system.edu.duke.FileResource.FileResource (
            File file,
            boolean writable )
```

6.5.1.6 FileResource() [6/6]

```
recommendation_system.edu.duke.FileResource.FileResource (
            String filename,
            boolean writable )
```

6.5.2 Member Function Documentation

6.5.2.1 asString()

```
String recommendation_system.edu.duke.FileResource.asString ( )
```

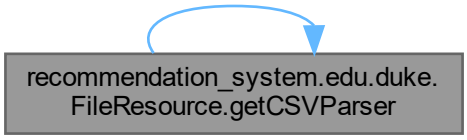
6.5.2.2 getCSVHeaders()

```
Iterable< String > recommendation_system.edu.duke.FileResource.getCSVHeaders (
            CSVParser parser )
```

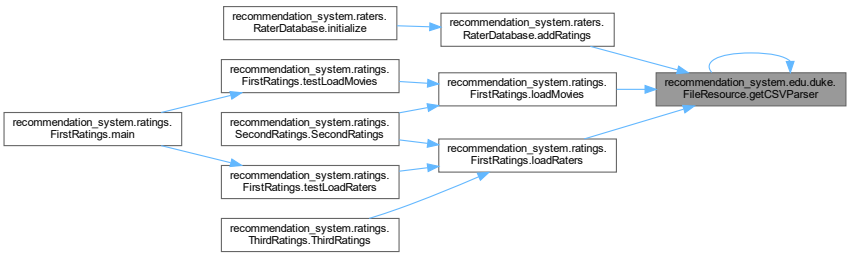
6.5.2.3 getCSVParser() [1/3]

```
CSVParser recommendation_system.edu.duke.FileResource.getCSVParser ( )
```

Here is the call graph for this function:



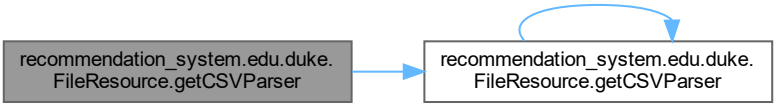
Here is the caller graph for this function:



6.5.2.4 getCSVParser() [2/3]

```
CSVParser recommendation_system.edu.duke.FileResource.getCSVParser (
            boolean withHeader )
```

Here is the call graph for this function:



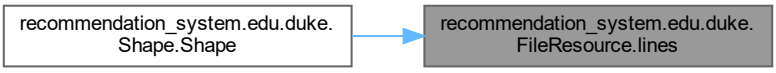
6.5.2.5 getCSVParser() [3/3]

```
CSVParser recommendation_system.edu.duke.FileResource.getCSVParser (
            boolean withHeader,
            String delimiter )
```

6.5.2.6 lines()

```
Iterable< String > recommendation_system.edu.duke.FileResource.lines ( )
```

Here is the caller graph for this function:



6.5.2.7 words()

```
Iterable< String > recommendation_system.edu.duke.FileResource.words ( )
```

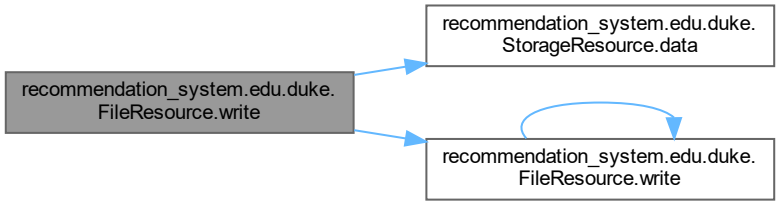
6.5.2.8 write() [1/4]

```
void recommendation_system.edu.duke.FileResource.write (
            ArrayList< String > list )
```

6.5.2.9 write() [2/4]

```
void recommendation_system.edu.duke.FileResource.write (
            StorageResource list )
```

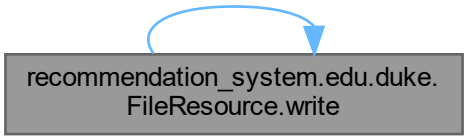
Here is the call graph for this function:



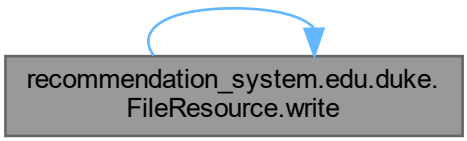
6.5.2.10 write() [3/4]

```
void recommendation_system.edu.duke.FileResource.write (
            String s )
```

Here is the call graph for this function:



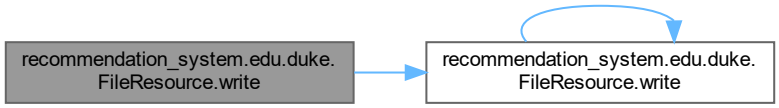
Here is the caller graph for this function:



6.5.2.11 write() [4/4]

```
void recommendation_system.edu.duke.FileResource.write (
            String[] list )
```

Here is the call graph for this function:

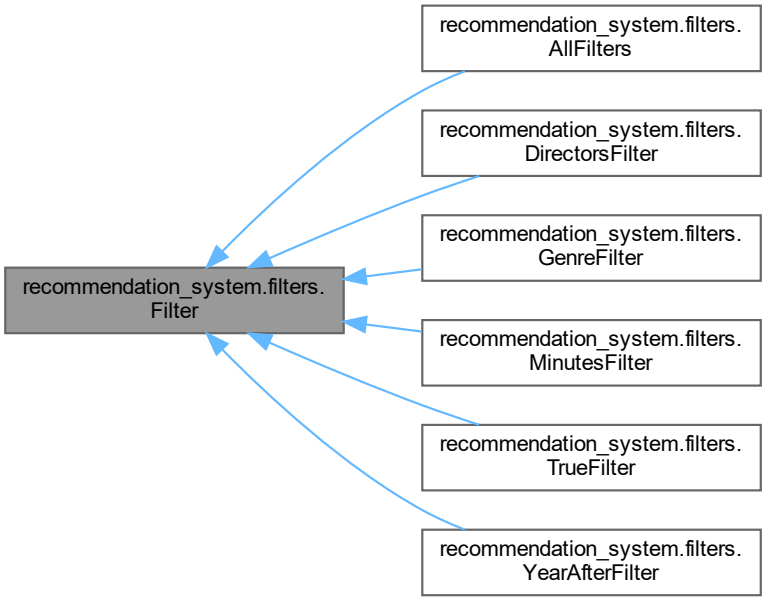


The documentation for this class was generated from the following file:

- src/main/java/recommendation_system/edu/duke/FileResource.java

6.6 recommendation_system.filters.Filter Interface Reference

Inheritance diagram for recommendation_system.filters.Filter:



Public Member Functions

- boolean satisfies (String id)

6.6.1 Detailed Description

This interface has only one signature for the method satisfies. Any filters that implements this interface must also have this method.

The Interface contains:

- The method satisfies with one String parameter representing a movie ID

Since

13/12/22

Version

1.0

6.6.2 Member Function Documentation

6.6.2.1 satisfies()

```
boolean recommendation_system.filters.Filter.satisfies (
            String id )
```

This method prove if the movie satisfies certain criteria

Parameters

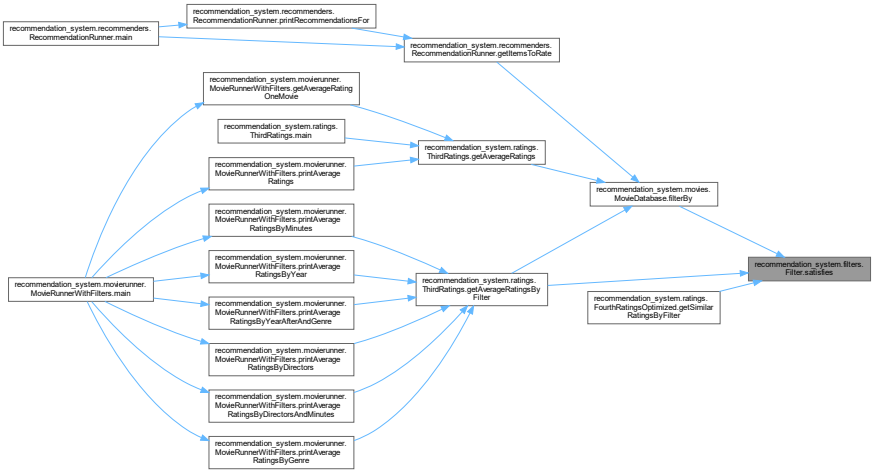
id	A string variable representing the ID of the movie

Returns

Boolean - True if the movie satisfies the criteria in the method - False otherwise

Implemented in recommendation_system.filters.AllFilters, recommendation_system.filters.DirectorsFilter, recommendation_system.filters.MinutesFilter, recommendation_system.filters.TrueFilter, and recommendation_system.filters.YearAfte

Here is the caller graph for this function:



The documentation for this interface was generated from the following file:

- src/main/java/recommendation_system/filters/Filter.java

6.7 recommendation_system.ratings.FirstRatings Class Reference

Public Member Functions

- ArrayList< Movie > loadMovies (String fileName)
- void testLoadMovies ()
- ArrayList< Rater > loadRaters (String fileName)
- void testLoadRaters (String filename)

Static Public Member Functions

- static void main (String[ ] args)

6.7.1 Detailed Description

Class to answer simple questions about movies and ratings. - Phase 1

The class contains the necessary methods for:

- Process every record from the CSV file and return an ArrayList of type Movie.
- Determine the maximum number of movies by any director.
- Load Raters.
- Get the number of ratings for a particular rater.
- Find the maximum number of ratings by any rater.
- Find the number of ratings a particular movie has.
- Determine how many movies have been rated.

Since

26/12/22

Version

1.0

6.7.2 Member Function Documentation

6.7.2.1 loadMovies()

```
ArrayList< Movie > recommendation_system.ratings.FirstRatings.loadMovies (
            String fileName )
```

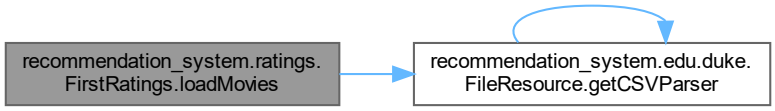
Parameters

fileName	A file of movie information

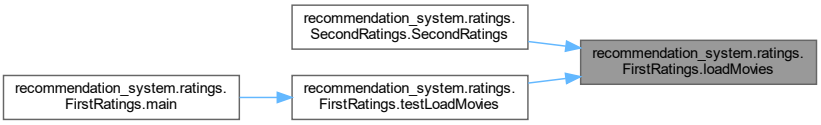
Returns

ArrayList<Movie> with all of the movie data from the file

Here is the call graph for this function:



Here is the caller graph for this function:



6.7.2.2 loadRaters()

```
ArrayList< Rater > recommendation_system.ratings.FirstRatings.loadRaters (
            String fileName )
```

Load Raters - Raters is class for storing the data about one rating of an item.

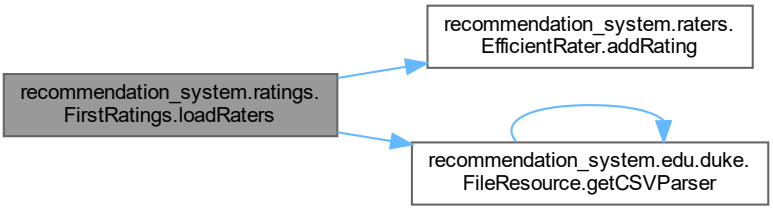
Parameters

fileName	Ratings file

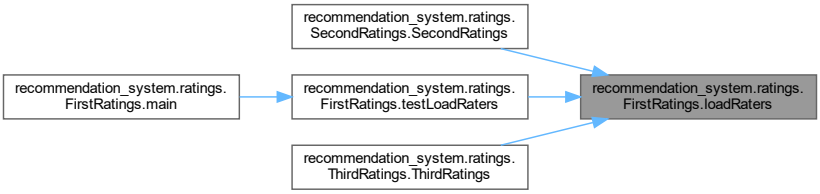
Returns

ArrayList<Rater> of Raters

Here is the call graph for this function:



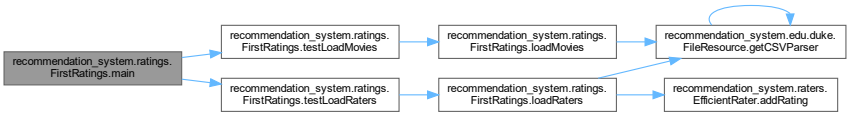
Here is the caller graph for this function:



6.7.2.3 main()

```
static void recommendation_system.ratings.FirstRatings.main (
            String[] args )  [static]
```

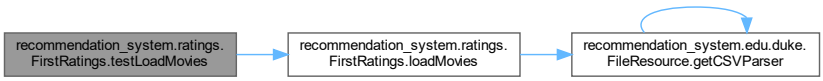
Here is the call graph for this function:



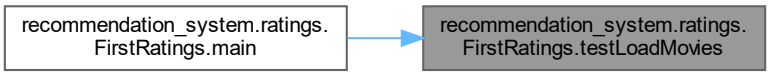
6.7.2.4 testLoadMovies()

```
void recommendation_system.ratings.FirstRatings.testLoadMovies ( )
```

This method determine the maximum number of movies by any director, and who the directors are that directed that many movies. Remember that some movies may have more than one director. Here is the call graph for this function:



Here is the caller graph for this function:



6.7.2.5 testLoadRaters()

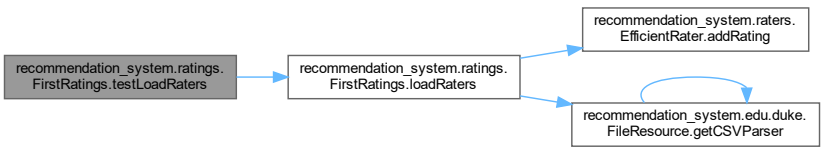
```
void recommendation_system.ratings.FirstRatings.testLoadRaters (
            String filename )
```

This method find the number of ratings by rater, the number of ratings by movie and determine how many movies have been rated

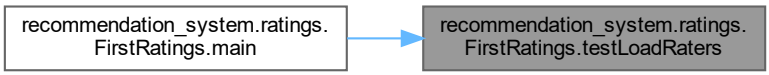
Parameters

filename	- A String variable representing the filename

Here is the call graph for this function:



Here is the caller graph for this function:



The documentation for this class was generated from the following file:

- src/main/java/recommendation_system/ratings/FirstRatings.java

6.8 recommendation_system.ratings.FourthRatingsOptimized Class Reference

Public Member Functions

- ArrayList< Rating > getSimilarRatings (String raterID, int numSimilarRaters, int minimalRaters)
- ArrayList< Rating > getSimilarRatingsByFilter (String raterID, int numSimilarRaters, int minimalRaters, Filter f)

Static Public Member Functions

- static void main (String[ ] args)

6.8.1 Detailed Description

Class to get similar ratings - Phase 4 (Optimized) Instead of iterate all movie in the MovieDataBase, we use the movie list that only the topSimilarRater's movie. Greatly reduce the time.

DUKE: "sum of (similar rating(i) ∗rating of the movie(i))/count of the raters"

WEIXU: "sum of (similar rating(i) ∗rating of the movie(i))/ sum of the similar rating(i)"

The class contains the necessary methods for:

- Get a similarity rating for each rater
- Get a similar ratings
- Get a similar ratings by filter

Since

1/1/23

Version

1.0

6.8.2 Member Function Documentation

6.8.2.1 getSimilarRatings()

```
ArrayList< Rating > recommendation_system.ratings.FourthRatingsOptimized.getSimilarRatings (
            String raterID,
            int numSimilarRaters,
            int minimalRaters )
```

This method obtains the movies and their weighted average ratings using only the top numSimilarRaters with positive ratings and including only those movies that have at least minimalRaters ratings from those most similar raters (not just minimalRaters ratings overall).

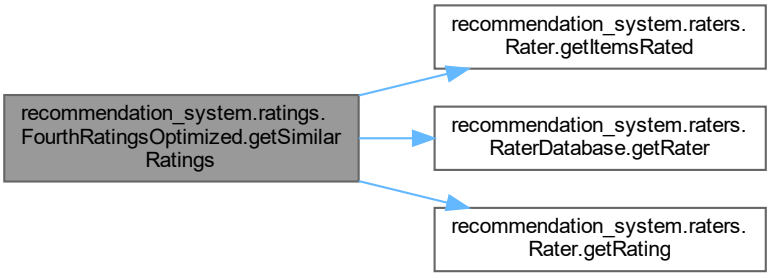
Parameters

raterID	Rater to analyze (not included into the analysis)
numSimilarRaters	Raters to be analyzed within the set recommended to the user
minimalRaters	Minimum number of Raters to have recommended a movie

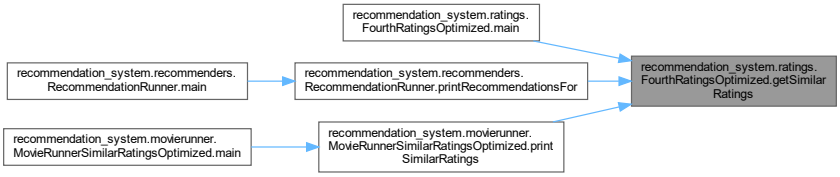
Returns

ArrayList - Movies and their weighted average ratings

Here is the call graph for this function:



Here is the caller graph for this function:



6.8.2.2 getSimilarRatingsByFilter()

```
ArrayList< Rating > recommendation_system.ratings.FourthRatingsOptimized.getSimilarRatingsBy↩
Filter (
            String raterID,
            int numSimilarRaters,
            int minimalRaters,
            Filter f )
```

This method gets similar ratings following a certain criteria

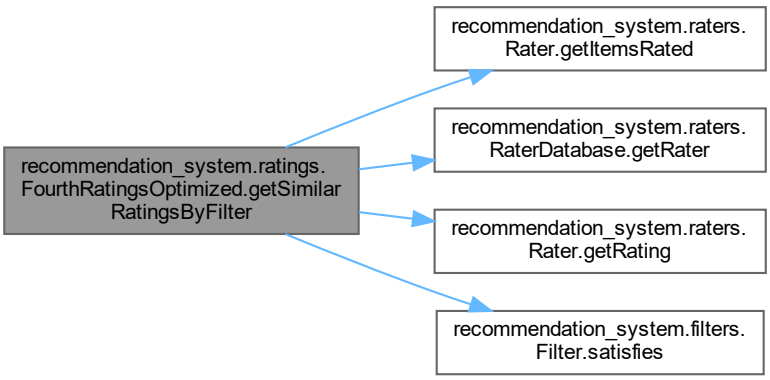
Parameters

raterID	Rater to analyze (not included into the analysis)
numSimilarRaters	Raters to be analyzed within the set recommended to the user
minimalRaters	Minimum number of Raters to have recommended a movie
f	- Represents the filters

Returns

ArrayList - Movies and their weighted average ratings

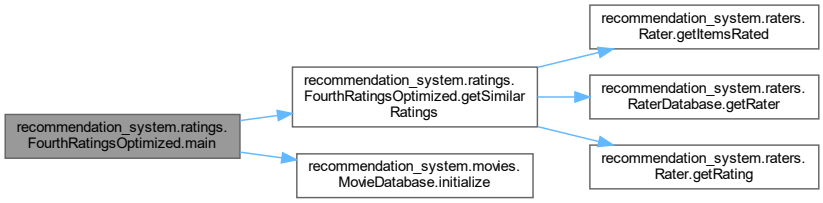
Here is the call graph for this function:



6.8.2.3 main()

```
static void recommendation_system.ratings.FourthRatingsOptimized.main (
            String[] args )  [static]
```

Here is the call graph for this function:

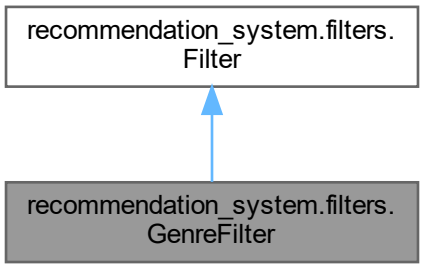


The documentation for this class was generated from the following file:

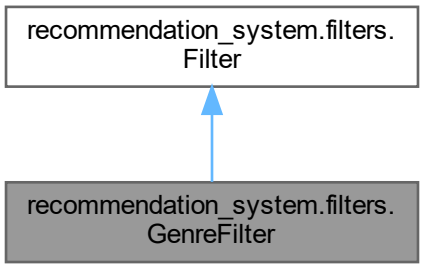
- src/main/java/recommendation_system/ratings/FourthRatingsOptimized.java

6.9 recommendation_system.filters.GenreFilter Class Reference

Inheritance diagram for recommendation_system.filters.GenreFilter:



Collaboration diagram for recommendation_system.filters.GenreFilter:



Public Member Functions

- GenreFilter (String genre)
- boolean satisfies (String id)

6.9.1 Detailed Description

This class filters the movies based on the specific genres that the user wants to watch. Note that movies may have several genres.

The class contains the necessary methods for:

- Filtering movies based on their genres

Since

13/12/22

Version

1.0

6.9.2 Constructor & Destructor Documentation

6.9.2.1 GenreFilter()

```
recommendation_system.filters.GenreFilter.GenreFilter (
            String genre )
```

Builder overload

Parameters

genre	A string variable that represents the genre of the movies

6.9.3 Member Function Documentation

6.9.3.1 satisfies()

```
boolean recommendation_system.filters.GenreFilter.satisfies (
            String id )
```

This method proves if the movie has the genres that the user want

Parameters

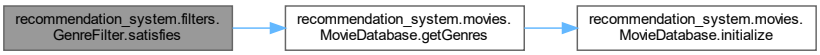
id	A string variable representing the ID of the movie

Returns

Boolean - True if movie has one of the genres that the user wants to filter - False otherwise

Implements recommendation_system.filters.Filter.

Here is the call graph for this function:



The documentation for this class was generated from the following file:

- src/main/java/recommendation_system/filters/GenreFilter.java

6.10 recommendation_system.edu.duke.ImageResource Class Reference

Public Member Functions

- ImageResource ()
- ImageResource (int width, int height)
- ImageResource (String fileName)
- ImageResource (File file)
- ImageResource (ImageResource other)
- int getWidth ()
- int getHeight ()
- Iterable< Pixel > pixels ()
- void draw ()
- String getFileName ()
- void setFileName (String name)
- Pixel getPixel (int x, int y)
- void setPixel (int x, int y, Pixel p)
- String toString ()
- void save ()
- void saveAs ()

6.10.1 Constructor & Destructor Documentation

6.10.1.1 ImageResource() [1/5]

```
recommendation_system.edu.duke.ImageResource.ImageResource ( )
```

6.10.1.2 ImageResource() [2/5]

```
recommendation_system.edu.duke.ImageResource.ImageResource (
            int width,
            int height )
```

6.10.1.3 ImageResource() [3/5]

```
recommendation_system.edu.duke.ImageResource.ImageResource (
            String fileName )
```

6.10.1.4 ImageResource() [4/5]

```
recommendation_system.edu.duke.ImageResource.ImageResource (
            File file )
```

6.10.1.5 ImageResource() [5/5]

```
recommendation_system.edu.duke.ImageResource.ImageResource (
            ImageResource other )
```

6.10.2 Member Function Documentation

6.10.2.1 draw()

```
void recommendation_system.edu.duke.ImageResource.draw ( )
```

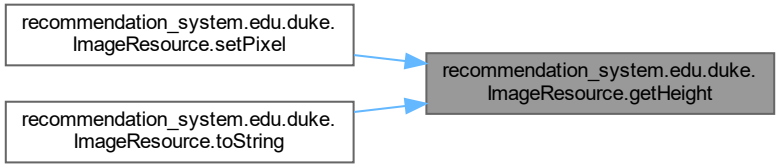
6.10.2.2 getFileName()

```
String recommendation_system.edu.duke.ImageResource.getFileName ( )
```

6.10.2.3 getHeight()

```
int recommendation_system.edu.duke.ImageResource.getHeight ( )
```

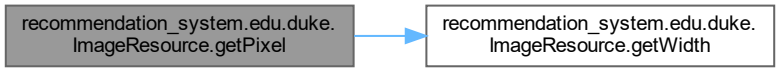
Here is the caller graph for this function:



6.10.2.4 getPixel()

```
Pixel recommendation_system.edu.duke.ImageResource.getPixel (
            int x,
            int y )
```

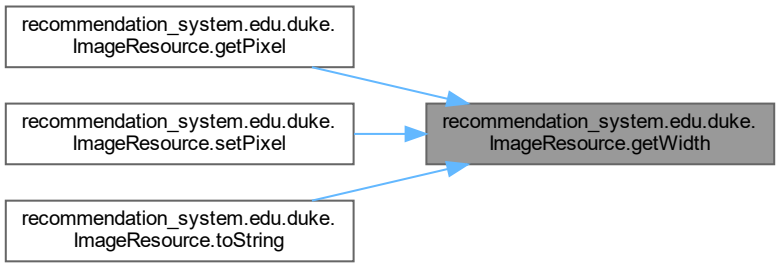
Here is the call graph for this function:



6.10.2.5 getWidth()

```
int recommendation_system.edu.duke.ImageResource.getWidth ( )
```

Here is the caller graph for this function:



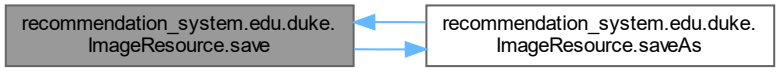
6.10.2.6 pixels()

```
Iterable< Pixel > recommendation_system.edu.duke.ImageResource.pixels ( )
```

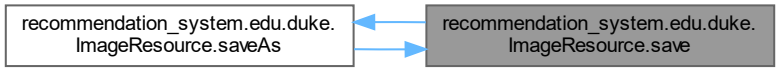
6.10.2.7 save()

```
void recommendation_system.edu.duke.ImageResource.save ( )
```

Here is the call graph for this function:



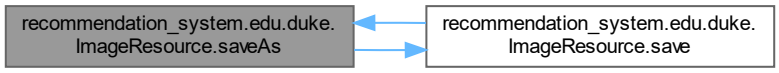
Here is the caller graph for this function:



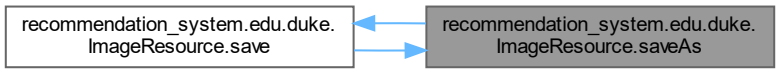
6.10.2.8 saveAs()

```
void recommendation_system.edu.duke.ImageResource.saveAs ( )
```

Here is the call graph for this function:



Here is the caller graph for this function:



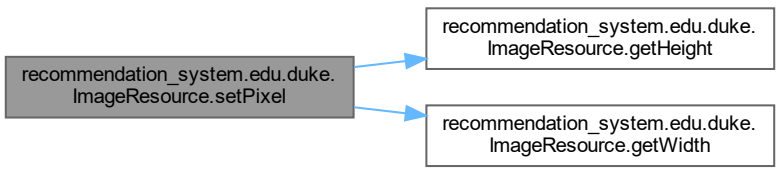
6.10.2.9 setFileName()

```
void recommendation_system.edu.duke.ImageResource.setFileName (
            String name )
```

6.10.2.10 setPixel()

```
void recommendation_system.edu.duke.ImageResource.setPixel (
            int x,
            int y,
            Pixel p )
```

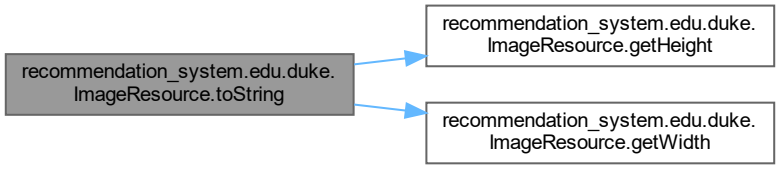
Here is the call graph for this function:



6.10.2.11 toString()

```
String recommendation_system.edu.duke.ImageResource.toString ( )
```

Here is the call graph for this function:

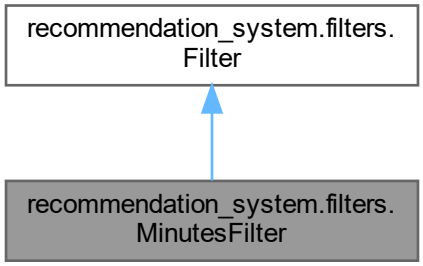


The documentation for this class was generated from the following file:

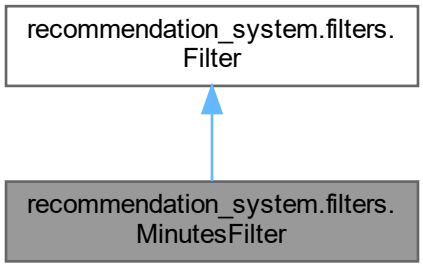
- src/main/java/recommendation_system/edu/duke/ImageResource.java

6.11 recommendation_system.filters.MinutesFilter Class Reference

Inheritance diagram for recommendation_system.filters.MinutesFilter:



Collaboration diagram for recommendation_system.filters.MinutesFilter:



Public Member Functions

- MinutesFilter (int min, int max)
- boolean satisfies (String id)

6.11.1 Detailed Description

This class filters the movies based on the specific duration that the user wants.

The class contains the necessary methods for:

- Filtering movies based on their duration

Since

13/12/22

Version

1.0

6.11.2 Constructor & Destructor Documentation

6.11.2.1 MinutesFilter()

```
recommendation_system.filters.MinutesFilter.MinutesFilter (
            int min,
            int max )
```

Builder overload

Parameters

min	An integer variable representing the Minimum of minutes that the movie should have
max	An integer variable representing the Maximum of minutes that the movie should have

6.11.3 Member Function Documentation

6.11.3.1 satisfies()

```
boolean recommendation_system.filters.MinutesFilter.satisfies (
            String id )
```

This method proves if the movie is within the minutes that the user wants

Parameters

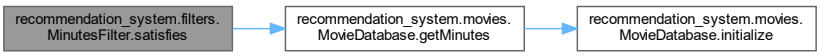
id	A string variable representing the ID of the movie

Returns

Boolean - True if movie is within the minutes that the user wants to filter - False otherwise

Implements recommendation_system.filters.Filter.

Here is the call graph for this function:



The documentation for this class was generated from the following file:

- src/main/java/recommendation_system/filters/MinutesFilter.java

6.12 recommendation_system.movies.Movie Class Reference

Public Member Functions

- Movie (String anID, String aTitle, String aYear, String theGenres)
- Movie (String anID, String aTitle, String aYear, String theGenres, String aDirector, String aCountry, String aPoster, int theMinutes)

- String getID ()
- String getTitle ()
- int getYear ()
- String getGenres ()
- String getCountry ()
- String getDirector ()
- String getPoster ()
- int getMinutes ()
- String toString ()

6.12.1 Detailed Description

Plain Old Java Object (POJO) class for storing the data about one movie An immutable passive data object (PDO) to represent item data

The class contains the necessary methods for:

- A constructor with eight parameters to initialize the private variables
- Eight getter methods to return the private information
- A toString method for representing movie information as a String

Since

13/12/22

Version

1.0

6.12.2 Constructor & Destructor Documentation

6.12.2.1 Movie() [1/2]

```
recommendation_system.movies.Movie.Movie (
            String anID,
            String aTitle,
            String aYear,
            String theGenres )
```

Builder overload

Parameters

anID	A String variable representing the IMDB ID of the movie
aTitle	A String variable for the movie's title
aYear	An integer representing the year
theGenres	String of one or more genres separated by commas

6.12.2.2 Movie() [2/2]

```
recommendation_system.movies.Movie.Movie (
            String anID,
            String aTitle,
            String aYear,
            String theGenres,
            String aDirector,
            String aCountry,
            String aPoster,
            int theMinutes )
```

Builder overload

Parameters

anID	A String variable representing the IMDB ID of the movie
aTitle	A String variable for the movie's title
aYear	An integer representing the year
theGenres	String of one or more genres separated by commas
aDirector	String of one or more directors of the movie separated by commas
aCountry	String of one or more countries the film was made in, separated by commas
aPoster	String that is a link to an image of the movie poster if one exists, or "N/A"
theMinutes	An integer for the length of the movie

6.12.3 Member Function Documentation

6.12.3.1 getCountry()

```
String recommendation_system.movies.Movie.getCountry ( )
```

This method gets the country of the movie

Returns

String - Countries the film was made in, separated by commas

6.12.3.2 getDirector()

```
String recommendation_system.movies.Movie.getDirector ( )
```

This methods gets the directors of the movie

Returns

String - Directors of the movie separated by commas

6.12.3.3 getGenres()

```
String recommendation_system.movies.Movie.getGenres ( )
```

This method gets the genres of the movie

Returns

String - Genres associated with this item

6.12.3.4 getID()

```
String recommendation_system.movies.Movie.getID ( )
```

This method gets the ID of the movie

Returns

String - ID associated with this item

6.12.3.5 getMinutes()

```
int recommendation_system.movies.Movie.getMinutes ( )
```

This method get the minutes of the movie

Returns

int - An integer for the length of the movie

6.12.3.6 getPoster()

```
String recommendation_system.movies.Movie.getPoster ( )
```

This method get the poster of the movie

Returns

String - A link to an image of the movie poster if one exists, or “N/A”

6.12.3.7 getTitle()

```
String recommendation_system.movies.Movie.getTitle ( )
```

This method gets the title of the movie

Returns

String - Title of this item

6.12.3.8 getYear()

```
int recommendation_system.movies.Movie.getYear ( )
```

This method gets the year of the movie

Returns

int - Year in which this item was published

6.12.3.9 toString()

```
String recommendation_system.movies.Movie.toString ( )
```

This method gets the movie´s information

Returns

String - Item's information

The documentation for this class was generated from the following file:

- src/main/java/recommendation_system/movies/Movie.java

6.13 recommendation_system.movies.MovieDatabase Class Reference

Static Public Member Functions

- static void initialize (String moviefile)
- static boolean containsID (String id)
- static int getYear (String id)
- static String getGenres (String id)
- static String getTitle (String id)
- static Movie getMovie (String id)
- static String getPoster (String id)
- static int getMinutes (String id)
- static String getCountry (String id)
- static String getDirector (String id)
- static int size ()
- static ArrayList< String > filterBy (Filter f)

6.13.1 Detailed Description

This class is an efficient way to get information about movies. It stores movie information in a HashMap for fast lookup of movie information given a movie ID.

The class contains the necessary methods for:

- Filtering movies based on queries

Since

13/12/22

Version

1.0

6.13.2 Member Function Documentation

6.13.2.1 containsID()

```
static boolean recommendation_system.movies.MovieDatabase.containsID (
            String id )  [static]
```

This method prove if the HashMap contains the ID of the movie

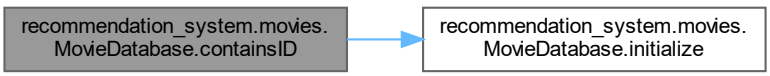
Parameters

id	- A String variable representing the ID of the movie

Returns

Boolean - True if the HashMap contains the ID - False otherwise

Here is the call graph for this function:



6.13.2.2 filterBy()

```
static ArrayList< String > recommendation_system.movies.MovieDatabase.filterBy (
            Filter f )  [static]
```

This method adds to the list the movies that follow certain criteria

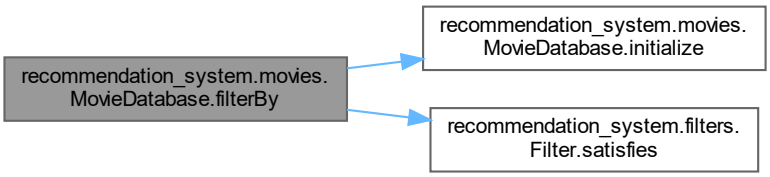
Parameters

f	Represents the filter

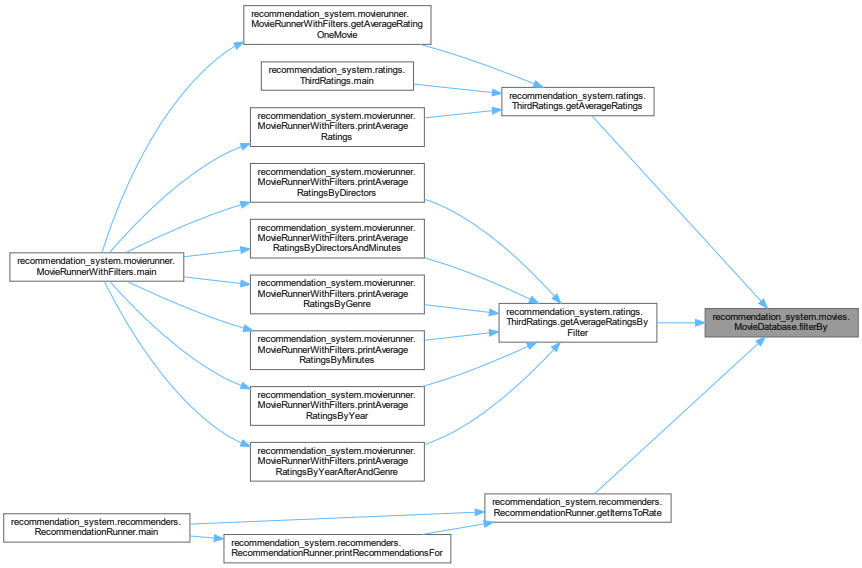
Returns

Arraylist<String> of movie IDs

Here is the call graph for this function:



Here is the caller graph for this function:



6.13.2.3 getCountry()

```
static String recommendation_system.movies.MovieDatabase.getCountry (
            String id )  [static]
```

This method gets the country of the movie

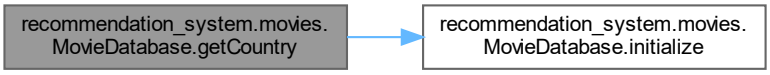
Parameters

id	- A String variable representing the ID of the movie

Returns

String - Country of the movie

Here is the call graph for this function:



Here is the caller graph for this function:

6.13.2.4 getDirector()

```
static String recommendation_system.movies.MovieDatabase.getDirector (
            String id )  [static]
```

This method gets the director of the movie

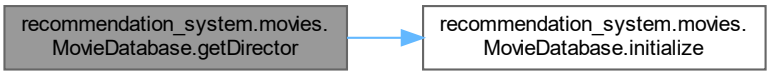
Parameters

id	- A String variable representing the ID of the movie

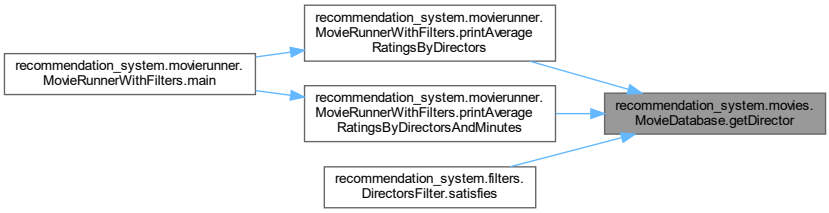
Returns

String - Directors of the movie

Here is the call graph for this function:



Here is the caller graph for this function:



6.13.2.5 getGenres()

```
static String recommendation_system.movies.MovieDatabase.getGenres (
            String id )  [static]
```

This method gets the genres of the movie

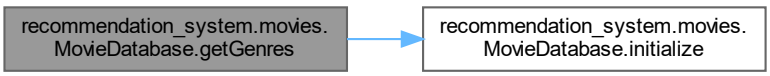
Parameters

id	- A String variable representing the ID of the movie

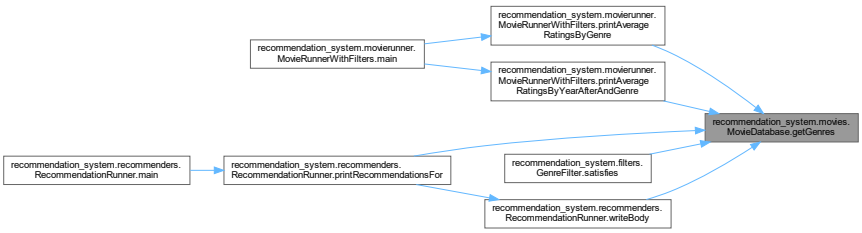
Returns

String - Genres of the movie

Here is the call graph for this function:



Here is the caller graph for this function:



6.13.2.6 getMinutes()

```
static int recommendation_system.movies.MovieDatabase.getMinutes (
            String id )  [static]
```

This method gets the minutes of the movie

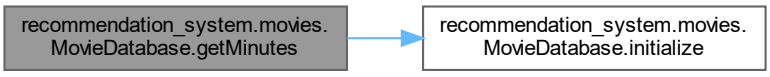
Parameters

id	- A String variable representing the ID of the movie

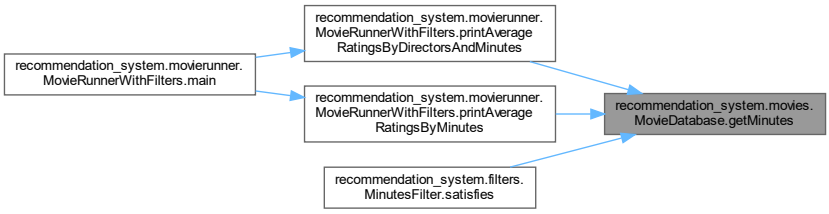
Returns

Int - Minutes of the movie

Here is the call graph for this function:



Here is the caller graph for this function:



6.13.2.7 getMovie()

```
static Movie recommendation_system.movies.MovieDatabase.getMovie (
            String id )  [static]
```

Parameters

id	- A String variable representing the ID of the movie

Returns

Movie - Film object to be analyzed

Here is the call graph for this function:

6.13.2.8 getPoster()

```
static String recommendation_system.movies.MovieDatabase.getPoster (
            String id )  [static]
```

This method gets the poster of the movie

Parameters

id	- A String variable representing the ID of the movie

Returns

String - Poster of the movie

Here is the call graph for this function:

Here is the caller graph for this function:

6.13.2.9 getTitle()

```
static String recommendation_system.movies.MovieDatabase.getTitle (
            String id )  [static]
```

This method gets the title of the movie

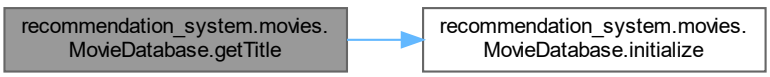
Parameters

id	- A String variable representing the ID of the movie

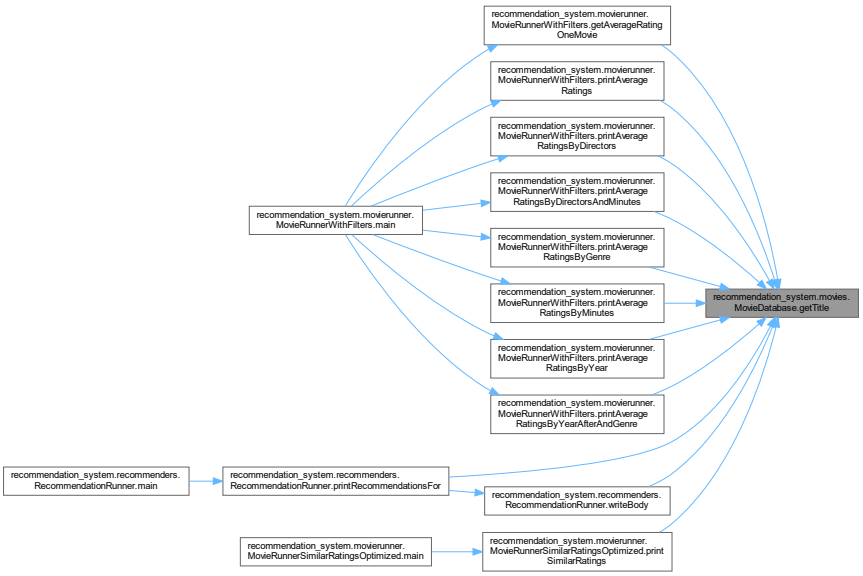
Returns

String - Title of the movie

Here is the call graph for this function:



Here is the caller graph for this function:



6.13.2.10 getYear()

```
static int recommendation_system.movies.MovieDatabase.getYear (
            String id )  [static]
```

This method gets the year of the movie

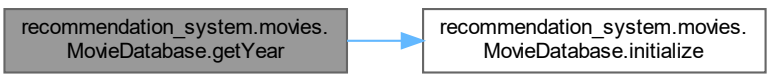
Parameters

id	- A String variable representing the ID of the movie

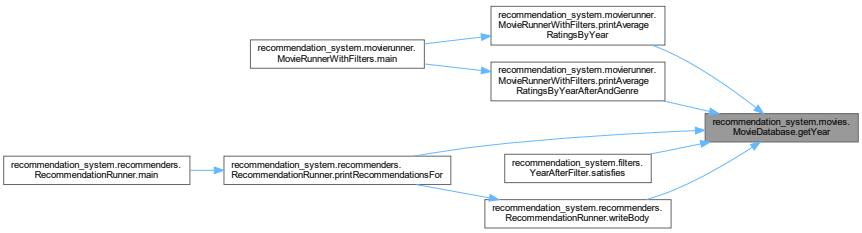
Returns

Int - Year of the movie

Here is the call graph for this function:



Here is the caller graph for this function:



6.13.2.11 initialize()

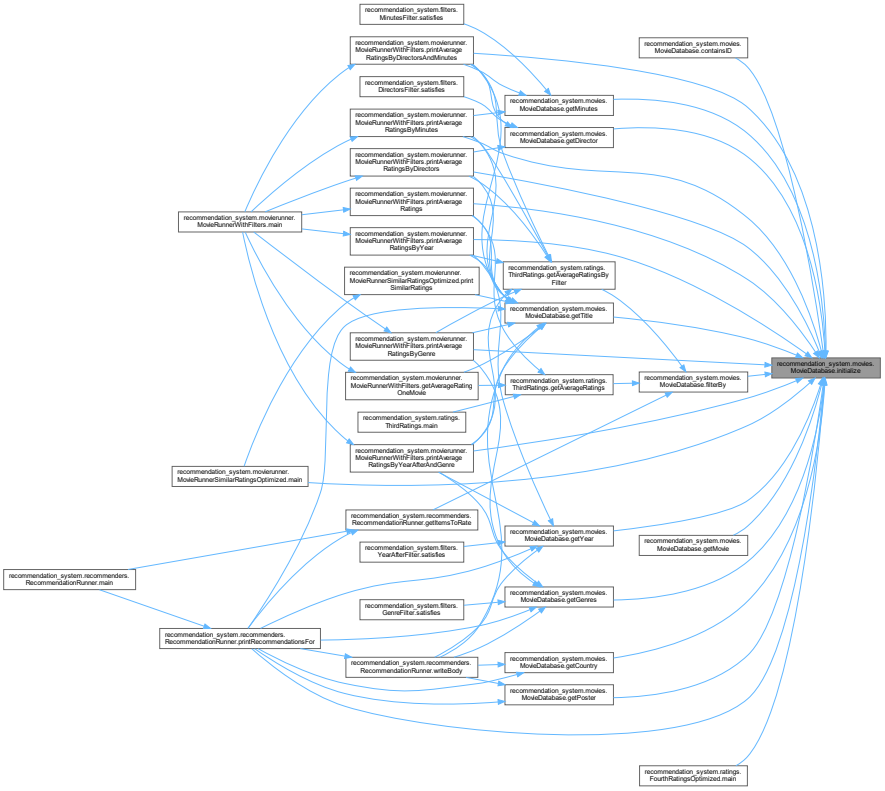
```
static void recommendation_system.movies.MovieDatabase.initialize (
            String moviefile )  [static]
```

Static builder overload

Parameters

moviefile	File of movies to load

Here is the caller graph for this function:



6.13.2.12 size()

```
static int recommendation_system.movies.MovieDatabase.size ( )  [static]
```

This method gets the number of movies stored on the list

Returns

Int - Number of movies stored on the HashMap

Here is the caller graph for this function:

The documentation for this class was generated from the following file:

- src/main/java/recommendation_system/movies/MovieDatabase.java

6.14 recommendation_system.movierunner.MovieRunnerAverage Class Reference

Public Member Functions

- void printAverageRatings (String ratedMovies, String ratings)
- void getAverageRatingOneMovie (String movieTitle, String ratedMovies, String ratings)

Static Public Member Functions

- static void main (String[ ] args)

6.14.1 Detailed Description

Class to test the methods created in SecondRatings. - Phase 2

The class contains the necessary methods for:

- Print average ratings.
- Get average rating of one movie.

Since

26/12/22

Version

1.0

6.14.2 Member Function Documentation

6.14.2.1 getAverageRatingOneMovie()

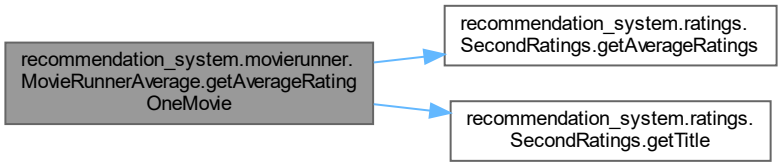
```
void recommendation_system.movierunner.MovieRunnerAverage.getAverageRatingOneMovie (
            String movieTitle,
            String ratedMovies,
            String ratings )
```

This method gets the average rating of one movie

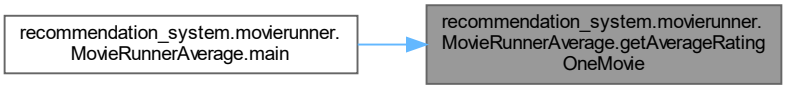
Parameters

movieTitle	- A String variable representing the title of the movies
ratedMovies	- A String variable representing the rated movies
ratings	- A String variable representing the ratings of the movies

Here is the call graph for this function:



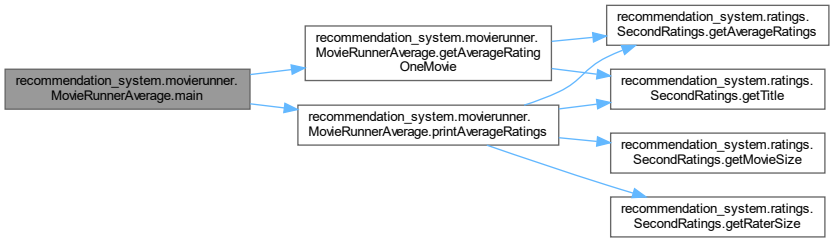
Here is the caller graph for this function:



6.14.2.2 main()

```
static void recommendation_system.movierunner.MovieRunnerAverage.main (
            String[] args )  [static]
```

Here is the call graph for this function:



6.14.2.3 printAverageRatings()

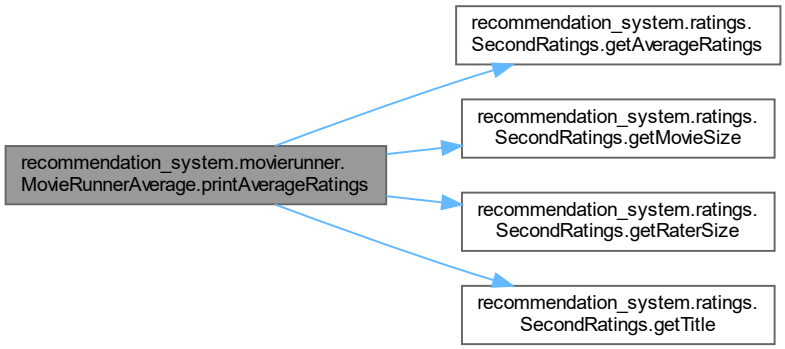
```
void recommendation_system.movierunner.MovieRunnerAverage.printAverageRatings (
            String ratedMovies,
            String ratings )
```

This method prints the average ratings

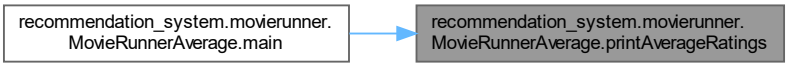
Parameters

ratedMovies	- A String variable representing the rated movies
ratings	- A String variable representing the ratings of the movies

Here is the call graph for this function:



Here is the caller graph for this function:



The documentation for this class was generated from the following file:

- src/main/java/recommendation_system/movierunner/MovieRunnerAverage.java

6.15 recommendation_system.movierunner.MovieRunnerSimilar↩ RatingsOptimized Class Reference

Public Member Functions

- void printSimilarRatings ()

Static Public Member Functions

- static void main (String[ ] args)

6.15.1 Detailed Description

Class to test the methods on FourthRatings

The class contains the necessary methods for:

- Print similar ratings
- Print similar ratings by genre
- Print similar ratings by directors
- Print similar ratings by genre and minutes
- Print similar ratings by year and minutes

Since

30/12/22

Version

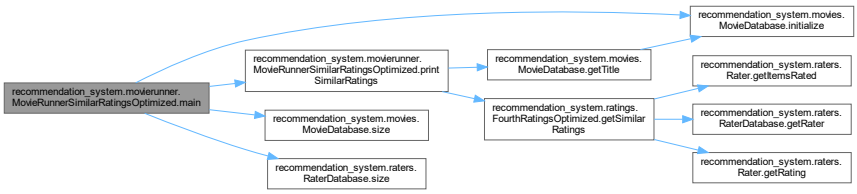
1.0

6.15.2 Member Function Documentation

6.15.2.1 main()

```
static void recommendation_system.movierunner.MovieRunnerSimilarRatingsOptimized.main (
            String[] args )  [static]
```

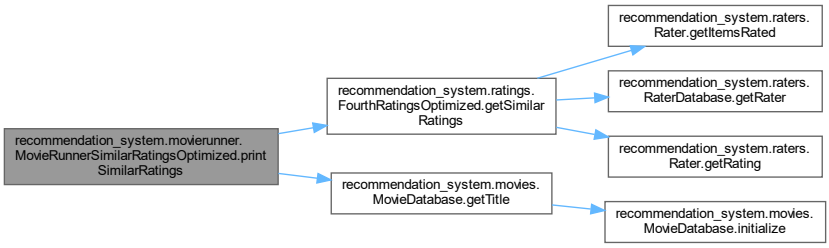
Here is the call graph for this function:



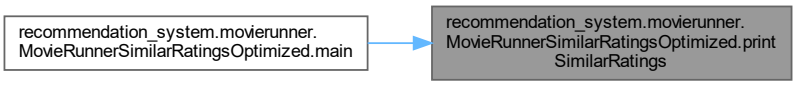
6.15.2.2 printSimilarRatings()

```
void recommendation_system.movierunner.MovieRunnerSimilarRatingsOptimized.printSimilarRatings
( )
```

This method finds and prints similar ratings Here is the call graph for this function:



Here is the caller graph for this function:



The documentation for this class was generated from the following file:

- src/main/java/recommendation_system/movierunner/MovieRunnerSimilarRatingsOptimized.java

6.16 recommendation_system.movierunner.MovieRunnerWithFilters Class Reference

Public Member Functions

- void printAverageRatings ()
- void getAverageRatingOneMovie ()
- void printAverageRatingsByYear ()
- void printAverageRatingsByGenre ()
- void printAverageRatingsByMinutes ()
- void printAverageRatingsByDirectors ()
- void printAverageRatingsByYearAfterAndGenre ()
- void printAverageRatingsByDirectorsAndMinutes ()

Static Public Member Functions

- static void main (String[ ] args)

6.16.1 Detailed Description

Class to test the methods on ThirdRatings

The class contains the necessary methods for:

- Print average ratings
- Get average ratings of the movies
- Print average ratings by year
- Print average ratings by genre
- Print average ratings by minutes
- Print average ratings by directors
- Print average ratings by year and genre
- Print average ratings by directors and minutes

Since

30/12/22

Version

1.0

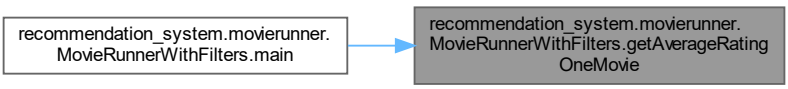
6.16.2 Member Function Documentation

6.16.2.1 getAverageRatingOneMovie()

```
void recommendation_system.movierunner.MovieRunnerWithFilters.getAverageRatingOneMovie ( )
```

This method gets the average rating of one movie Here is the call graph for this function:

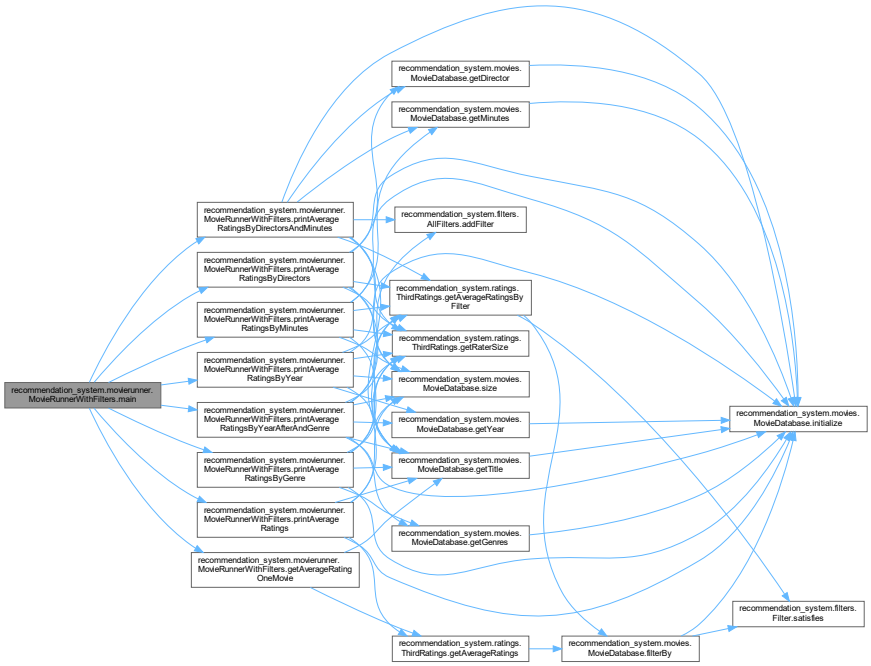
Here is the caller graph for this function:



6.16.2.2 main()

```
static void recommendation_system.movierunner.MovieRunnerWithFilters.main (
            String[] args ) [static]
```

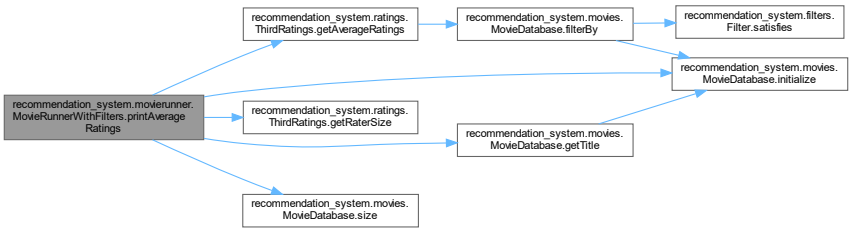
Here is the call graph for this function:



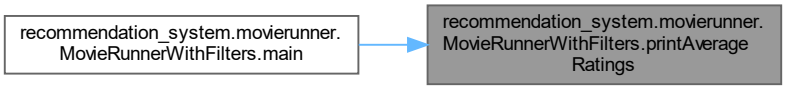
6.16.2.3 printAverageRatings()

```
void recommendation_system.movierunner.MovieRunnerWithFilters.printAverageRatings ( )
```

This method prints average ratings Here is the call graph for this function:



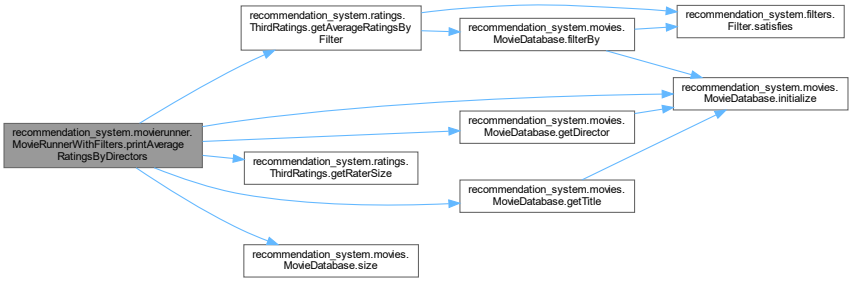
Here is the caller graph for this function:



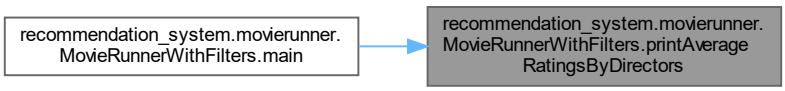
6.16.2.4 printAverageRatingsByDirectors()

```
void recommendation_system.movierunner.MovieRunnerWithFilters.printAverageRatingsByDirectors (
)
```

This method prints average ratings by directors Here is the call graph for this function:



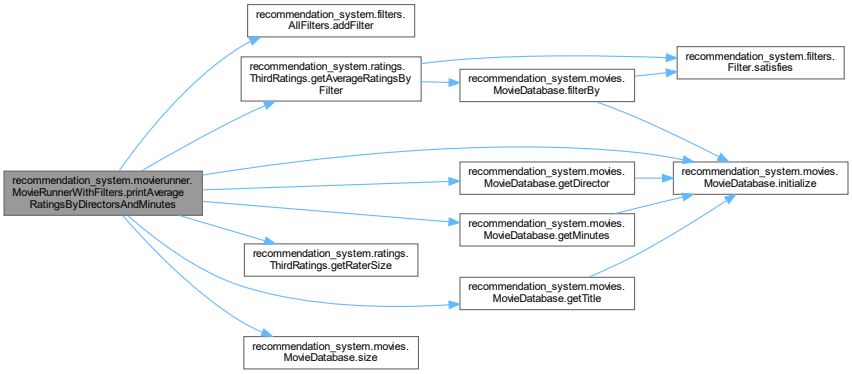
Here is the caller graph for this function:



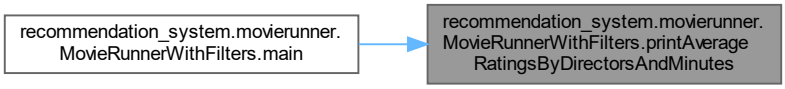
6.16.2.5 printAverageRatingsByDirectorsAndMinutes()

```
void recommendation_system.movierunner.MovieRunnerWithFilters.printAverageRatingsByDirectors↩
AndMinutes ( )
```

This method prints average ratings by directors and minutes Here is the call graph for this function:



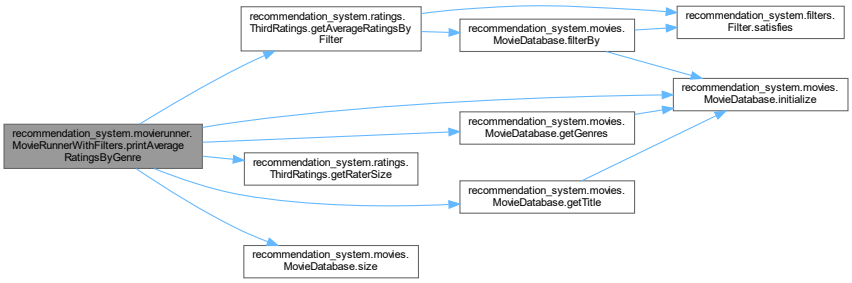
Here is the caller graph for this function:



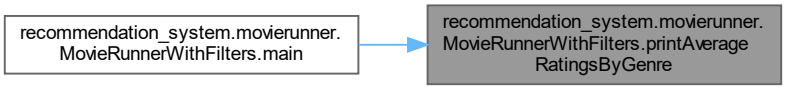
6.16.2.6 printAverageRatingsByGenre()

```
void recommendation_system.movierunner.MovieRunnerWithFilters.printAverageRatingsByGenre ( )
```

This method prints average ratings by genre Here is the call graph for this function:



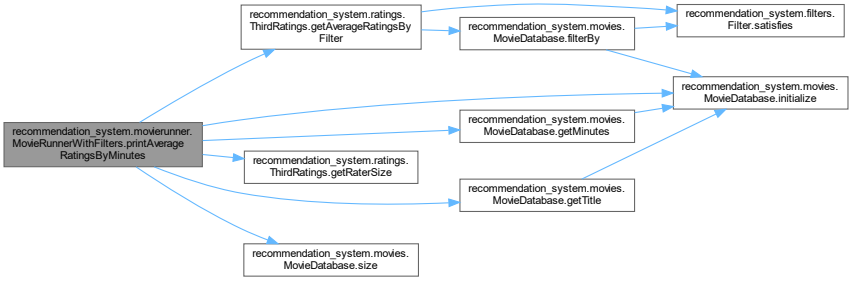
Here is the caller graph for this function:



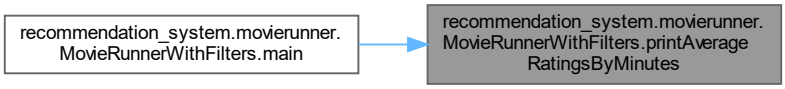
6.16.2.7 printAverageRatingsByMinutes()

```
void recommendation_system.movierunner.MovieRunnerWithFilters.printAverageRatingsByMinutes ( )
```

This method prints average ratings by minutes Here is the call graph for this function:



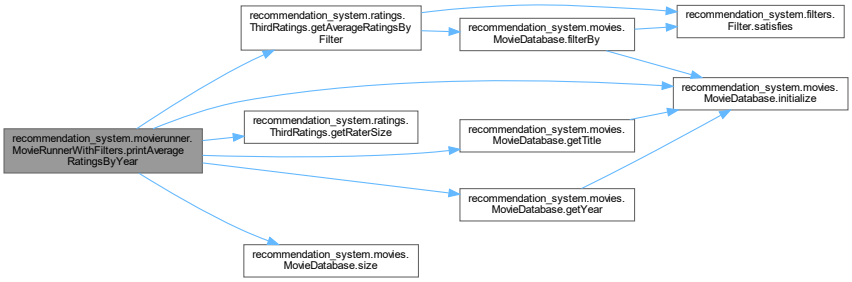
Here is the caller graph for this function:



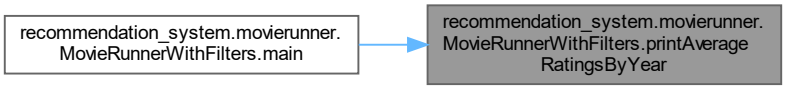
6.16.2.8 printAverageRatingsByYear()

```
void recommendation_system.movierunner.MovieRunnerWithFilters.printAverageRatingsByYear ( )
```

This method prints average ratings by year Here is the call graph for this function:



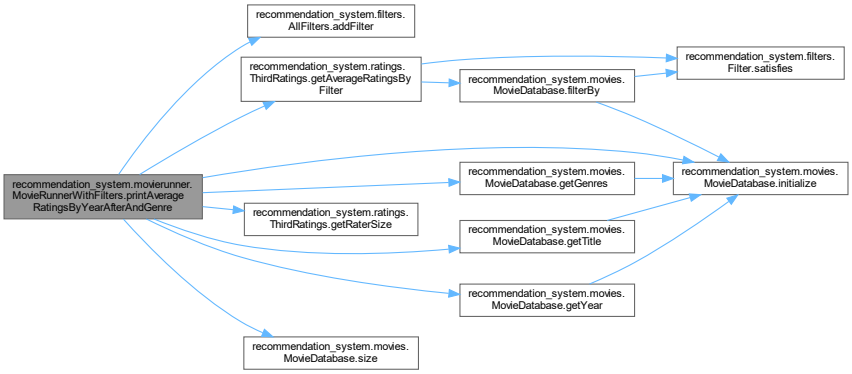
Here is the caller graph for this function:



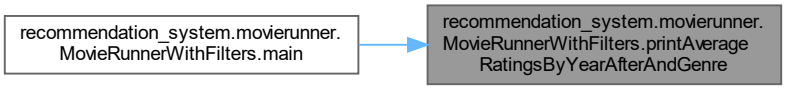
6.16.2.9 printAverageRatingsByYearAfterAndGenre()

```
void recommendation_system.movierunner.MovieRunnerWithFilters.printAverageRatingsByYearAfter↩
AndGenre ( )
```

This method prints average ratings by year and genre Here is the call graph for this function:



Here is the caller graph for this function:



The documentation for this class was generated from the following file:

- src/main/java/recommendation_system/movierunner/MovieRunnerWithFilters.java

6.17 recommendation_system.edu.duke.Pixel Class Reference

Public Member Functions

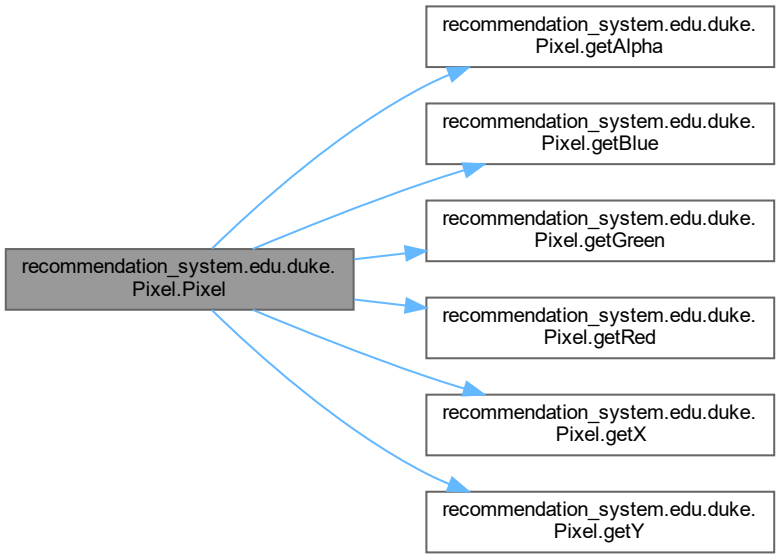
- Pixel (Pixel other)
- int getX ()
- int getY ()
- int getRed ()
- int getGreen ()
- int getBlue ()
- int getAlpha ()
- void setRed (int r)
- void setGreen (int g)
- void setBlue (int b)
- void setAlpha (int a)
- String toString ()

6.17.1 Constructor & Destructor Documentation

6.17.1.1 Pixel()

```
recommendation_system.edu.duke.Pixel.Pixel (
            Pixel other )
```

Here is the call graph for this function:

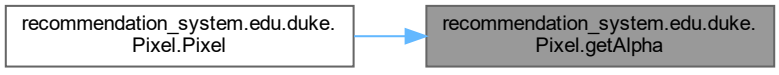


6.17.2 Member Function Documentation

6.17.2.1 getAlpha()

```
int recommendation_system.edu.duke.Pixel.getAlpha ( )
```

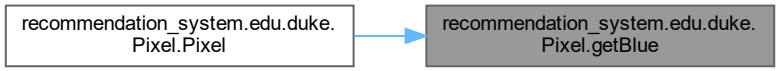
Here is the caller graph for this function:



6.17.2.2 getBlue()

```
int recommendation_system.edu.duke.Pixel.getBlue ( )
```

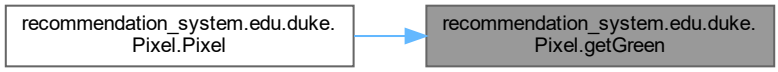
Here is the caller graph for this function:



6.17.2.3 getGreen()

```
int recommendation_system.edu.duke.Pixel.getGreen ( )
```

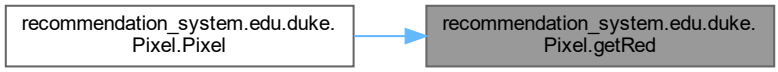
Here is the caller graph for this function:



6.17.2.4 getRed()

```
int recommendation_system.edu.duke.Pixel.getRed ( )
```

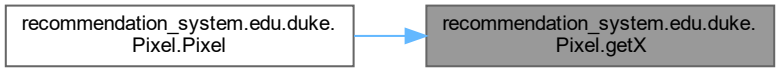
Here is the caller graph for this function:



6.17.2.5 getX()

```
int recommendation_system.edu.duke.Pixel.getX ( )
```

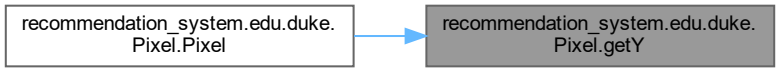
Here is the caller graph for this function:



6.17.2.6 getY()

```
int recommendation_system.edu.duke.Pixel.getY ( )
```

Here is the caller graph for this function:



6.17.2.7 setAlpha()

```
void recommendation_system.edu.duke.Pixel.setAlpha (
            int a )
```

6.17.2.8 setBlue()

```
void recommendation_system.edu.duke.Pixel.setBlue (
            int b )
```

6.17.2.9 setGreen()

```
void recommendation_system.edu.duke.Pixel.setGreen (
             int g )
```

6.17.2.10 setRed()

```
void recommendation_system.edu.duke.Pixel.setRed (
             int r )
```

6.17.2.11 toString()

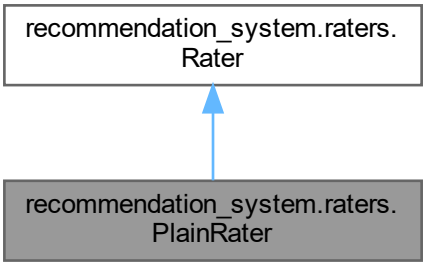
```
String recommendation_system.edu.duke.Pixel.toString ( )
```

The documentation for this class was generated from the following file:

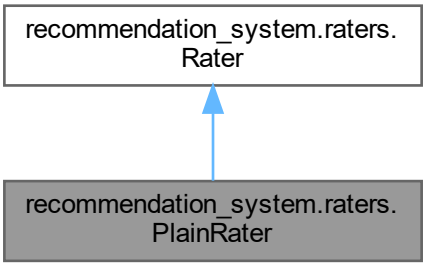
- src/main/java/recommendation_system/edu/duke/Pixel.java

6.18 recommendation_system.raters.PlainRater Class Reference

Inheritance diagram for recommendation_system.raters.PlainRater:



Collaboration diagram for recommendation_system.raters.PlainRater:



Public Member Functions

- PlainRater (String id)
- void addRating (String item, double rating)
- boolean hasRating (String item)
- String getID ()
- double getRating (String item)
- int numRatings ()
- ArrayList< String > getItemsRated ()

6.18.1 Detailed Description

Keeps track of one rater and all their ratings

The class contains the necessary methods for:

- A constructor with one parameter of the ID for the rater.
- A method addRating that has two parameters, a String named item and a double named rating
- A method getID with no parameters to get the ID of the rater.
- A method getRating that has one parameter item.
- A method numRatings that returns the number of ratings this rater has.
- A method getItemsRated that has no parameters.

Since

26/12/22

Version

1.0

6.18.2 Constructor & Destructor Documentation

6.18.2.1 PlainRater()

```
recommendation_system.raters.PlainRater.PlainRater (
            String id )
```

Builder overload

Parameters

id	ID for the rater

6.18.3 Member Function Documentation

6.18.3.1 addRating()

```
void recommendation_system.raters.PlainRater.addRating (
            String item,
            double rating )
```

This method adds a rating to the ArrayList of ratings associated with a user

Parameters

item	A String variable representing the ID of the movie
rating	A double variable representing the rating of the movie

Implements recommendation_system.raters.Rater.

6.18.3.2 getID()

```
String recommendation_system.raters.PlainRater.getID ( )
```

This method gets the ID of the raters

Returns

String - ID of the rater

Implements recommendation_system.raters.Rater.

6.18.3.3 getItemsRated()

```
ArrayList< String > recommendation_system.raters.PlainRater.getItemsRated ( )
```

This method gets list of the movies rated

Returns

ArrayList<String> - ID of all movies rated by a user

Implements recommendation_system.raters.Rater.

6.18.3.4 getRating()

```
double recommendation_system.raters.PlainRater.getRating (
            String item )
```

This method gets the rating of the movie

Parameters

item	A String variable representing the ID of the movie

Returns

double - Value associated with a specific movie rating - If there is no rating -1

Implements recommendation_system.raters.Rater.

6.18.3.5 hasRating()

```
boolean recommendation_system.raters.PlainRater.hasRating (
            String item )
```

This method verify if a user has rated a particular movie

Parameters

item	A String variable representing the ID of the movie

Returns

Boolean - True if the user has rated the movie - False otherwise

Implements recommendation_system.raters.Rater.

6.18.3.6 numRatings()

```
int recommendation_system.raters.PlainRater.numRatings ( )
```

This method gets the number of the ratings in the list

Returns

int - Size of the ratings ArrayList

Implements recommendation_system.raters.Rater.

The documentation for this class was generated from the following file:

- src/main/java/recommendation_system/raters/PlainRater.java

6.19 recommendation_system.edu.duke.Point Class Reference

Public Member Functions

- Point (int startx, int starty)
- int getX ()
- int getY ()
- double distance (Point otherPt)
- String toString ()

Static Public Member Functions

- static void main (String[ ] args)

6.19.1 Constructor & Destructor Documentation

6.19.1.1 Point()

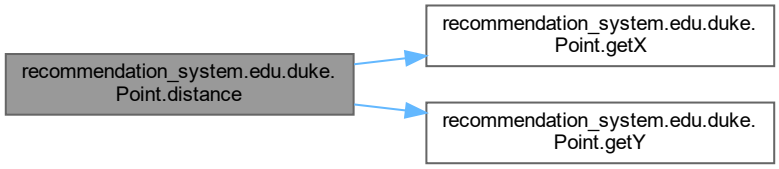
```
recommendation_system.edu.duke.Point.Point (
            int startx,
            int starty )
```

6.19.2 Member Function Documentation

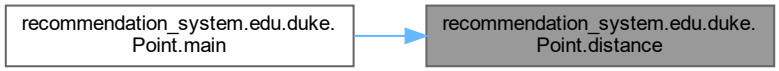
6.19.2.1 distance()

```
double recommendation_system.edu.duke.Point.distance (
            Point otherPt )
```

Here is the call graph for this function:



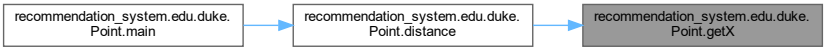
Here is the caller graph for this function:



6.19.2.2 getX()

```
int recommendation_system.edu.duke.Point.getX ( )
```

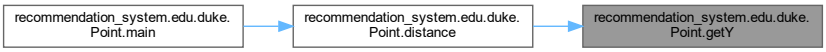
Here is the caller graph for this function:



6.19.2.3 getY()

```
int recommendation_system.edu.duke.Point.getY ( )
```

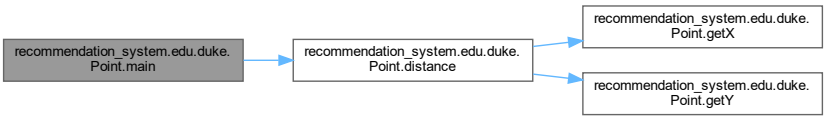
Here is the caller graph for this function:



6.19.2.4 main()

```
static void recommendation_system.edu.duke.Point.main (
            String[] args )  [static]
```

Here is the call graph for this function:



6.19.2.5 toString()

```
String recommendation_system.edu.duke.Point.toString ( )
```

The documentation for this class was generated from the following file:

- src/main/java/recommendation_system/edu/duke/Point.java

6.20 recommendation_system.edu.duke.RangeResource Class Reference

Public Member Functions

- RangeResource (int end)
- RangeResource (int start, int end)
- RangeResource (int start, int end, int increment)
- RangeResource (RangeResource other)
- String toString ()
- Iterable< Integer > sequence ()

6.20.1 Constructor & Destructor Documentation

6.20.1.1 RangeResource() [1/4]

```
recommendation_system.edu.duke.RangeResource.RangeResource (
            int end )
```

6.20.1.2 RangeResource() [2/4]

```
recommendation_system.edu.duke.RangeResource.RangeResource (
            int start,
            int end )
```

6.20.1.3 RangeResource() [3/4]

```
recommendation_system.edu.duke.RangeResource.RangeResource (
            int start,
            int end,
            int increment )
```

6.20.1.4 RangeResource() [4/4]

```
recommendation_system.edu.duke.RangeResource.RangeResource (
            RangeResource other )
```

6.20.2 Member Function Documentation

6.20.2.1 sequence()

```
Iterable< Integer > recommendation_system.edu.duke.RangeResource.sequence ( )
```

6.20.2.2 toString()

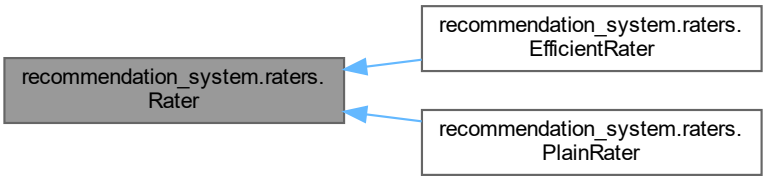
```
String recommendation_system.edu.duke.RangeResource.toString ( )
```

The documentation for this class was generated from the following file:

- src/main/java/recommendation_system/edu/duke/RangeResource.java

6.21 recommendation_system.raters.Rater Interface Reference

Inheritance diagram for recommendation_system.raters.Rater:



Public Member Functions

- void addRating (String item, double rating)
- boolean hasRating (String item)
- String getID ()
- double getRating (String item)
- int numRatings ()
- ArrayList< String > getItemsRated ()

6.21.1 Detailed Description

This interface allows to implement different versions of raters.

The Interface contains:

- The method addRating with one String parameter representing an ID and a Double parameter representing the rating
- The method hasRating with one String parameter representing an ID
- The method getID
- The method getRating with one String parameter representing an ID
- The method numRating
- The method getItemsRated

Since

1/1/23

Version

1.0

6.21.2 Member Function Documentation

6.21.2.1 addRating()

```
void recommendation_system.raters.Rater.addRating (
            String item,
            double rating )
```

This method adds ratings to the list

Parameters

item	- A String variable representing the IMDB ID of the movies
rating	- A Double variable representing the rating

Implemented in recommendation_system.raters.EfficientRater, and recommendation_system.raters.PlainRater.

Here is the caller graph for this function:

6.21.2.2 getID()

```
String recommendation_system.raters.Rater.getID ( )
```

This method gets the ID of the movie

Returns

String - ID of the movies

Implemented in recommendation_system.raters.EfficientRater, and recommendation_system.raters.PlainRater.

6.21.2.3 getItemsRated()

```
ArrayList< String > recommendation_system.raters.Rater.getItemsRated ( )
```

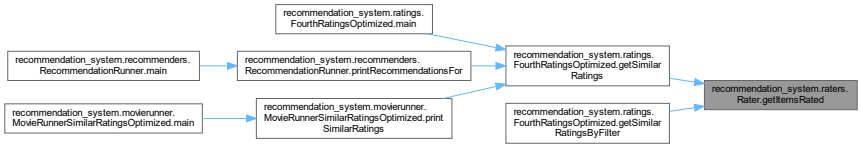
This method gets the list of the rated movies

Returns

Arraylist<String> of the rated movies

Implemented in recommendation_system.raters.EfficientRater, and recommendation_system.raters.PlainRater.

Here is the caller graph for this function:



6.21.2.4 getRating()

```
double recommendation_system.raters.Rater.getRating (
            String item )
```

This method gets the rating of the movie

Parameters

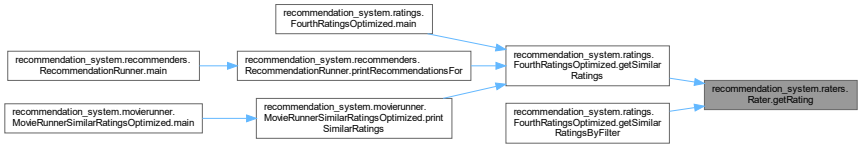
item	- A String variable representing ID

Returns

Double - Rating

Implemented in recommendation_system.raters.EfficientRater, and recommendation_system.raters.PlainRater.

Here is the caller graph for this function:



6.21.2.5 hasRating()

```
boolean recommendation_system.raters.Rater.hasRating (
            String item )
```

This method proves if the list contains the ID of the movie

Parameters

item	- A String variable representing the IMDB ID of the movies

Returns

Boolean - True if the list contains the ID of the movie- False otherwise

Implemented in recommendation_system.raters.EfficientRater, and recommendation_system.raters.PlainRater.

6.21.2.6 numRatings()

```
int recommendation_system.raters.Rater.numRatings ( )
```

This method gets the number of ratings on the list

Returns

Integer - Number of ratings

Implemented in recommendation_system.raters.EfficientRater, and recommendation_system.raters.PlainRater.

The documentation for this interface was generated from the following file:

- src/main/java/recommendation_system/raters/Rater.java

6.22 recommendation_system.raters.RaterDatabase Class Reference

Static Public Member Functions

- static void initialize (String filename)
- static void addRatings (String filename)
- static void addRaterRating (String raterID, String movieID, double rating)
- static Rater getRater (String id)
- static ArrayList< Rater > getRaters ()
- static int size ()

6.22.1 Detailed Description

Class to store all information about raters

The class contains the necessary methods for:

- Initialize HashMap ourRaters
- Add ratings
- Add rater ratings
- Get a rater
- Get the list of the raters
- Get the number of the raters

Since

30/12/22

Version

1.0

6.22.2 Member Function Documentation

6.22.2.1 addRaterRating()

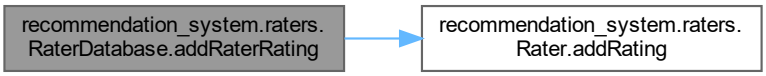
```
static void recommendation_system.raters.RaterDatabase.addRaterRating (
            String raterID,
            String movieID,
            double rating )  [static]
```

This method add the raters

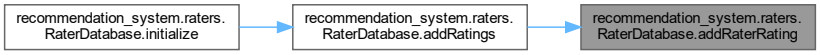
Parameters

raterID	- A String variable representing the ID of the rater
movieID	- A String variable representing the ID of the movie
rating	- A double variable representing the rating

Here is the call graph for this function:



Here is the caller graph for this function:



6.22.2.2 addRatings()

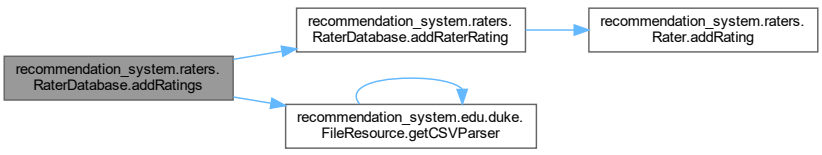
```
static void recommendation_system.raters.RaterDatabase.addRatings (
            String filename )  [static]
```

This method add the ratings

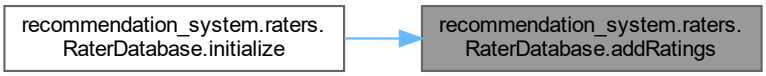
Parameters

filename	- A String variable representing the filename

Here is the call graph for this function:



Here is the caller graph for this function:



6.22.2.3 getRater()

```
static Rater recommendation_system.raters.RaterDatabase.getRater (
            String id )  [static]
```

This method gets raters ID

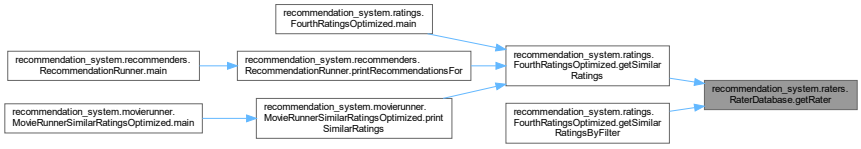
Parameters

id	- A String variable representing the ID of the rater

Returns

Rater - Rater to be analyzed

Here is the caller graph for this function:



6.22.2.4 getRaters()

```
static ArrayList< Rater > recommendation_system.raters.RaterDatabase.getRaters ( )  [static]
```

This method get the list of raters

Returns

Arraylist<Rater> of raters

6.22.2.5 initialize()

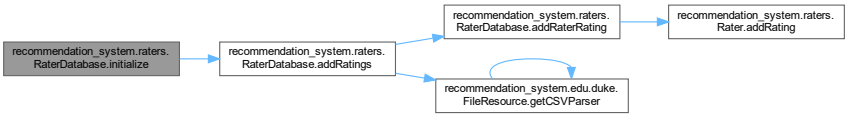
```
static void recommendation_system.raters.RaterDatabase.initialize (
            String filename )  [static]
```

This method initialize the HashMap ourRaters

Parameters

filename	- A String variable representing the filename

Here is the call graph for this function:



6.22.2.6 size()

```
static int recommendation_system.raters.RaterDatabase.size ( )  [static]
```

This method gets the number of raters

Returns

Integer - Number of raters

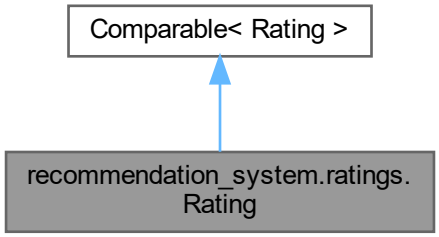
Here is the caller graph for this function:

The documentation for this class was generated from the following file:

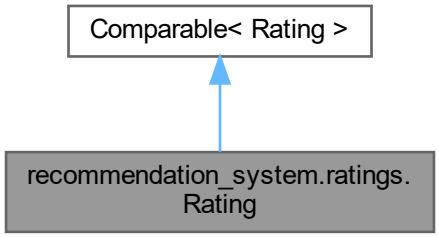
- src/main/java/recommendation_system/raters/RaterDatabase.java

6.23 recommendation_system.ratings.Rating Class Reference

Inheritance diagram for recommendation_system.ratings.Rating:



Collaboration diagram for recommendation_system.ratings.Rating:



Public Member Functions

- Rating (String anItem, double aValue)
- String getItem ()
- double getValue ()
- String toString ()
- int compareTo (Rating other)

6.23.1 Detailed Description

Plain Old Java Object (POJO) class for storing the data about one rating of an item An immutable passive data object (PDO) to represent the rating data

The class contains the necessary methods for:

- A constructor with two parameters to initialize the private variables.
- Two getter methods getItem and getValue.
- A toString method to represent rating information as a String.
- A compareTo method to compare this rating with another rating.

Since

26/12/22

Version

1.0

6.23.2 Constructor & Destructor Documentation

6.23.2.1 Rating()

```
recommendation_system.ratings.Rating.Rating (
            String anItem,
            double aValue )
```

Builder overload

Parameters

anItem	A String variable representing the IMDB ID of the movie
aValue	A double variable representing the rating of the movie

6.23.3 Member Function Documentation

6.23.3.1 compareTo()

```
int recommendation_system.ratings.Rating.compareTo (
            Rating other )
```

This method compare two ratings by their values

Parameters

other	the object to be compared.

Returns

int - -1 lower, 1 higher, 0 equal

6.23.3.2 getItem()

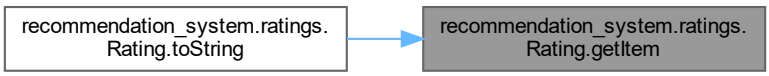
```
String recommendation_system.ratings.Rating.getItem ( )
```

This method gets the IMDB ID of the movie

Returns

String - IMDB ID of the movie

Here is the caller graph for this function:



6.23.3.3 getValue()

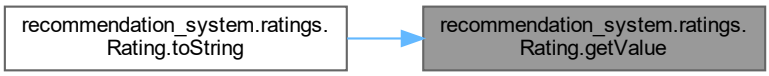
```
double recommendation_system.ratings.Rating.getValue ( )
```

This method gets the value (rating) of the movie

Returns

double - Rating of the movie (it can be used in calculations)

Here is the caller graph for this function:



6.23.3.4 toString()

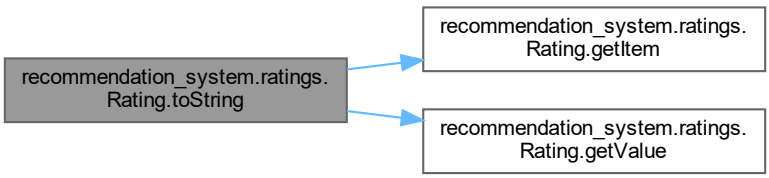
```
String recommendation_system.ratings.Rating.toString ( )
```

This method gets all the rating information

Returns

String - All the rating information

Here is the call graph for this function:

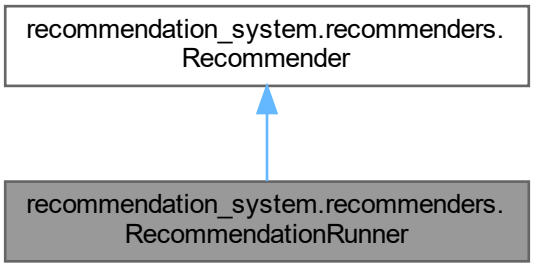


The documentation for this class was generated from the following file:

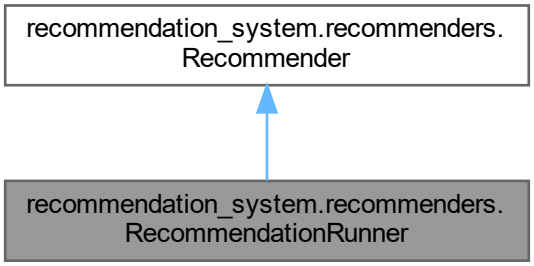
- src/main/java/recommendation_system/ratings/Rating.java

6.24 recommendation_system.recommenders.RecommendationRunner Class Reference

Inheritance diagram for recommendation_system.recommenders.RecommendationRunner:



Collaboration diagram for recommendation_system.recommenders.RecommendationRunner:



Public Member Functions

- String getFilename ()
- void setFilename (String filename)
- Path getPathToFile ()
- void setPathToFile (Path pathToFile)
- ArrayList< String > getItemsToRate ()
- void writeHtmlHead () throws IOException
- void writeCss () throws IOException
- void writeBody (ArrayList< Rating > outID) throws IOException
- void printRecommendationsFor (String webRaterID)

Static Public Member Functions

- static void main (String[ ] args) throws IOException

6.24.1 Detailed Description

Class to run the methods on the recommender interface and write the HTML

The class contains the necessary methods for:

- Get the file name
- Set the file name
- Get the path to file
- Set the path to file
- Get the movies to rate
- Write HTMLHead
- Write CSS
- Write HTMLBody
- Print recommendations

Since

1/1/23

Version

1.0

6.24.2 Member Function Documentation

6.24.2.1 getFilename()

```
String recommendation_system.recommenders.RecommendationRunner.getFilename ( )
```

This method gets the file name of the resulting HTML

Returns

String - filename

6.24.2.2 getItemsToRate()

```
ArrayList< String > recommendation_system.recommenders.RecommendationRunner.getItemsToRate ( )
```

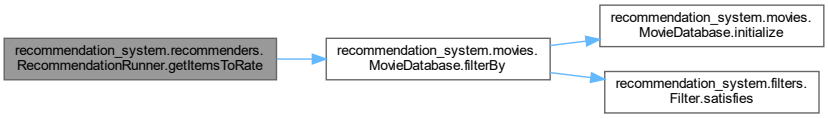
This method randomly pick 10 movie to let the user to rate Modified for our simulation - Now returns zero

Returns

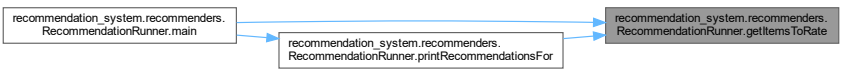
Arraylist<String> of the movies to be rate

Implements recommendation_system.recommenders.Recommender.

Here is the call graph for this function:



Here is the caller graph for this function:



6.24.2.3 getPathToFile()

```
Path recommendation_system.recommenders.RecommendationRunner.getPathToFile ( )
```

This method gets the path to the resulting HTML

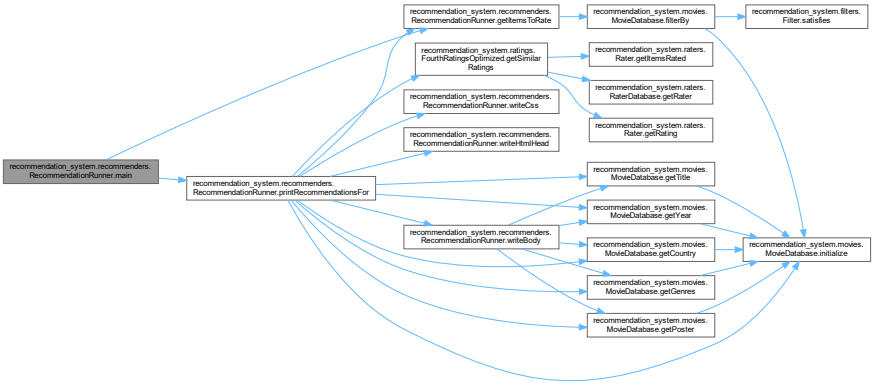
Returns

the pathToFile

6.24.2.4 main()

```
static void recommendation_system.recommenders.RecommendationRunner.main (
            String[] args ) throws IOException  [static]
```

Here is the call graph for this function:



6.24.2.5 printRecommendationsFor()

```
void recommendation_system.recommenders.RecommendationRunner.printRecommendationsFor (
            String webRaterID )
```

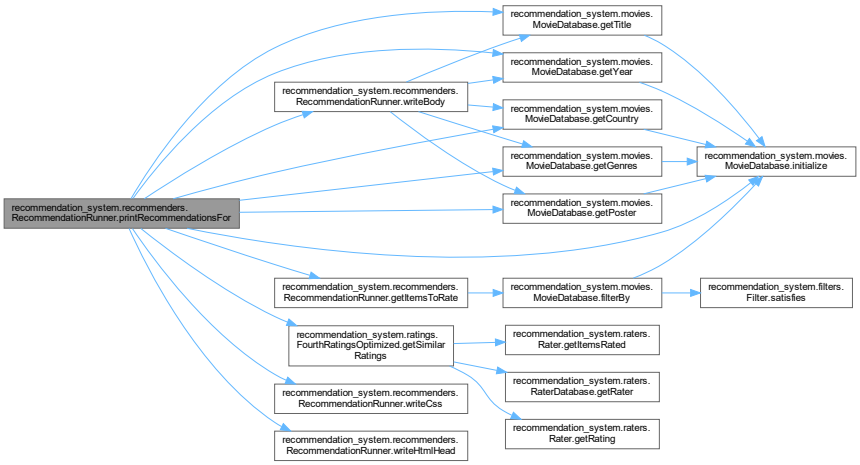
This method prints the recommendations

Parameters

webRaterID	- A String parameter representing a new rater

Implements recommendation_system.recommenders.Recommender.

Here is the call graph for this function:



Here is the caller graph for this function:

6.24.2.6 setFilename()

```
void recommendation_system.recommenders.RecommendationRunner.setFilename (
            String filename )
```

This method Sets the File name to resulting HTML

Parameters

filename	The filename to set

6.24.2.7 setPathToFile()

```
void recommendation_system.recommenders.RecommendationRunner.setPathToFile (
            Path pathToFile )
```

This method set the path to write resulting HTML

Parameters

pathToFile	set the path To write File

6.24.2.8 writeBody()

```
void recommendation_system.recommenders.RecommendationRunner.writeBody (
            ArrayList< Rating > outID ) throws IOException
```

This method writes HTML Body

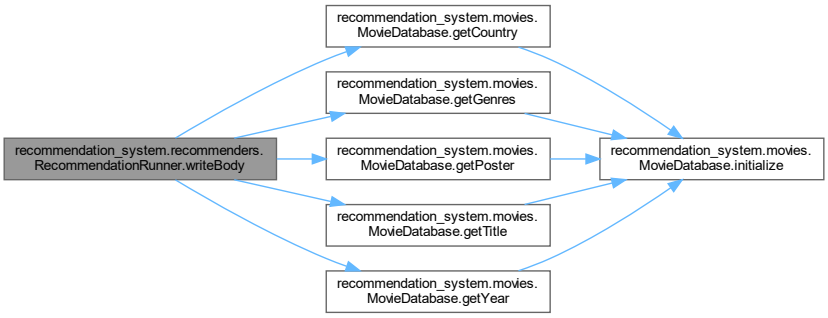
Parameters

outID	- Arraylist<Rating> of the movies

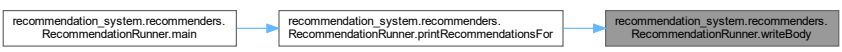
Exceptions

IOException	

Here is the call graph for this function:



Here is the caller graph for this function:



6.24.2.9 writeCss()

```
void recommendation_system.recommenders.RecommendationRunner.writeCss ( ) throws IOException
```

This method writes CSS

Exceptions

IOException	

Here is the caller graph for this function:

6.24.2.10 writeHtmlHead()

```
void recommendation_system.recommenders.RecommendationRunner.writeHtmlHead ( ) throws IOException
```

This method writes HTML Head

Exceptions

IOException	

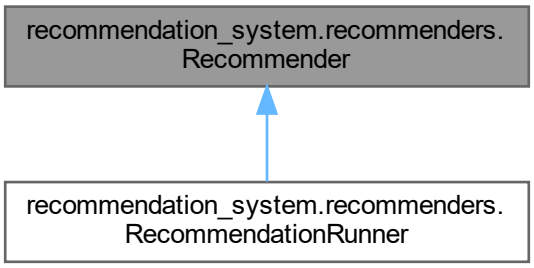
Here is the caller graph for this function:

The documentation for this class was generated from the following file:

- src/main/java/recommendation_system/recommenders/RecommendationRunner.java

6.25 recommendation_system.recommenders.Recommender Interface Reference

Inheritance diagram for recommendation_system.recommenders.Recommender:



Public Member Functions

- ArrayList< String > getItemsToRate ()
- void printRecommendationsFor (String webRaterID)

6.25.1 Detailed Description

This interface allows the code to be integrated with the web site

The Interface contains:

- The method getItemsToRate
- The method printRecommendationsFor with one String parameter representing a new rater

Since

1/1/23

Version

1.0

6.25.2 Member Function Documentation

6.25.2.1 getItemsToRate()

```
ArrayList< String > recommendation_system.recommenders.Recommender.getItemsToRate ( )
```

This method returns a list of movie IDs that will be used to look up the movies in the MovieDatabase and present them to users to rate

Returns

Arraylist<String> of the movies to rate

Implemented in recommendation_system.recommenders.RecommendationRunner.

6.25.2.2 printRecommendationsFor()

```
void recommendation_system.recommenders.Recommender.printRecommendationsFor (
            String webRaterID )
```

This method prints out an HTML table of the movies recommended for the given rater

Parameters

webRaterID	- A String parameter representing a new rater

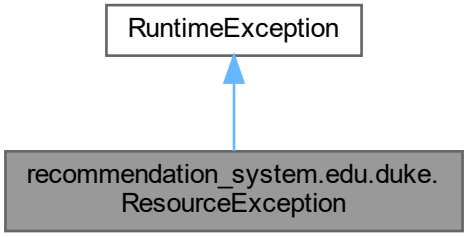
Implemented in recommendation_system.recommenders.RecommendationRunner.

The documentation for this interface was generated from the following file:

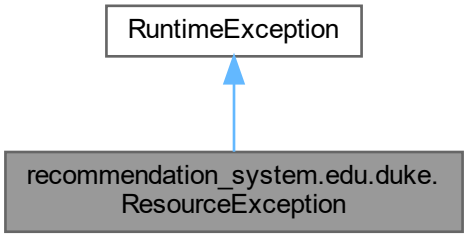
- src/main/java/recommendation_system/recommenders/Recommender.java

6.26 recommendation_system.edu.duke.ResourceException Class Reference

Inheritance diagram for recommendation_system.edu.duke.ResourceException:



Collaboration diagram for recommendation_system.edu.duke.ResourceException:



Public Member Functions

- ResourceException (String message)
- ResourceException (String message, Throwable cause)

6.26.1 Constructor & Destructor Documentation

6.26.1.1 ResourceException() [1/2]

```
recommendation_system.edu.duke.ResourceException.ResourceException (
            String message )
```

6.26.1.2 ResourceException() [2/2]

```
recommendation_system.edu.duke.ResourceException.ResourceException (
            String message,
            Throwable cause )
```

The documentation for this class was generated from the following file:

- src/main/java/recommendation_system/edu/duke/ResourceException.java

6.27 recommendation_system.ratings.SecondRatings Class Reference

Public Member Functions

- SecondRatings ()
- SecondRatings (String movieFile, String ratingFile)
- int getMovieSize ()
- int getRaterSize ()
- ArrayList< Rating > getAverageRatings (int minimalRaters)
- String getTitle (String movieID)
- String getID (String title)

Static Public Member Functions

- static void main (String[ ] args)

6.27.1 Detailed Description

Class to do many of the calculations focusing on computing averages on movie ratings. - Phase 2

The class contains the necessary methods for:

- Get the number of films to analyze.
- Get the number of raters to analyze.
- Get the average rating given to a movie by its raters.
- Get the rating of movies with their average.
- Obtain the title of a movie by its ID and vice versa.

Since

26/12/22

Version

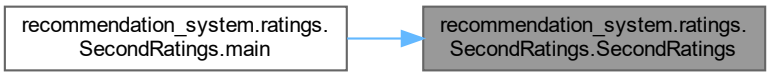
1.0

6.27.2 Constructor & Destructor Documentation

6.27.2.1 SecondRatings() [1/2]

```
recommendation_system.ratings.SecondRatings.SecondRatings ( )
```

Default builder Here is the caller graph for this function:



6.27.2.2 SecondRatings() [2/2]

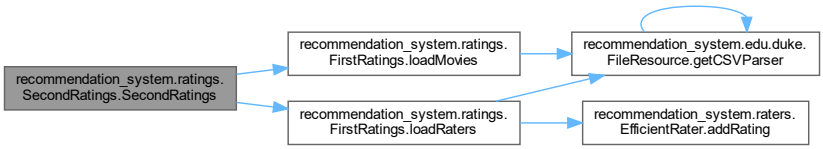
```
recommendation_system.ratings.SecondRatings.SecondRatings (
            String movieFile,
            String ratingFile )
```

Builder overload

Parameters

movieFile	Database of our movies
ratingFile	Database of our ratings

Here is the call graph for this function:



6.27.3 Member Function Documentation

6.27.3.1 getAverageRatings()

```
ArrayList< Rating > recommendation_system.ratings.SecondRatings.getAverageRatings (
            int minimalRaters )
```

This method gets the average ratings

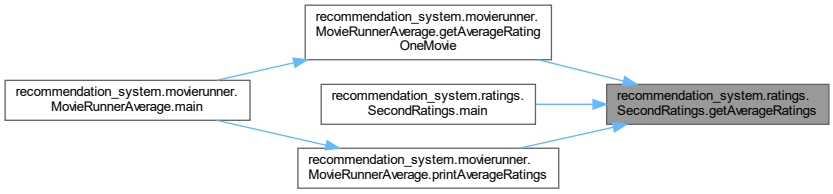
Parameters

minimalRaters	Minimum number of raters required to make an average

Returns

ArrayList<Rating> - Rating of movies with their average

Here is the caller graph for this function:



6.27.3.2 getID()

```
String recommendation_system.ratings.SecondRatings.getID (
            String title )
```

This method gets the ID of the movies

Parameters

title	A String variable for the movie's title

Returns

String - Variable representing the IMDB ID of the movie

6.27.3.3 getMovieSize()

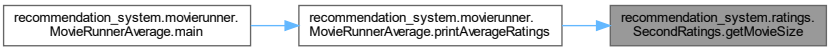
```
int recommendation_system.ratings.SecondRatings.getMovieSize ( )
```

This method gets the number of films to analyze

Returns

int - Number of films to analyze

Here is the caller graph for this function:



6.27.3.4 getRaterSize()

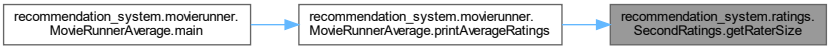
```
int recommendation_system.ratings.SecondRatings.getRaterSize ( )
```

This method gets the number of the raters to analyze

Returns

int - Number of Raters to analyze

Here is the caller graph for this function:



6.27.3.5 getTitle()

```
String recommendation_system.ratings.SecondRatings.getTitle (
            String movieID )
```

This method gets the title of the movies

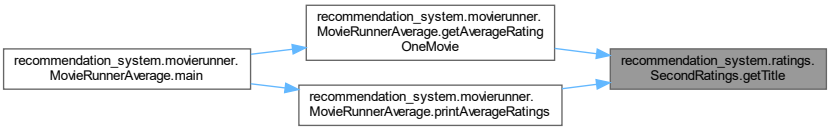
Parameters

movieID	A String variable representing the IMDB ID of the movie

Returns

String - Movie's title

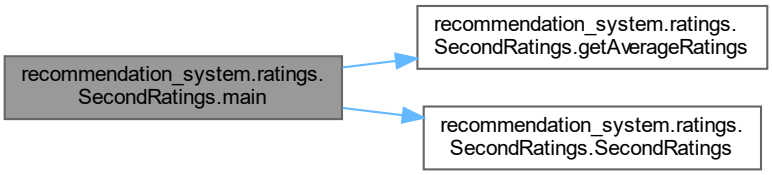
Here is the caller graph for this function:



6.27.3.6 main()

```
static void recommendation_system.ratings.SecondRatings.main (
            String[] args )  [static]
```

Here is the call graph for this function:



The documentation for this class was generated from the following file:

- src/main/java/recommendation_system/ratings/SecondRatings.java

6.28 recommendation_system.edu.duke.Shape Class Reference

Public Member Functions

- Shape ()
- Shape (FileResource file)
- void addPoint (Point p)
- Point getLastPoint ()
- Iterable< Point > getPoints ()

6.28.1 Constructor & Destructor Documentation

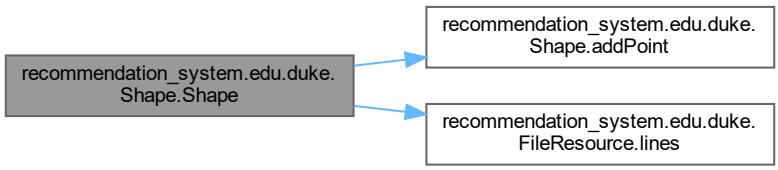
6.28.1.1 Shape() [1/2]

```
recommendation_system.edu.duke.Shape.Shape ( )
```

6.28.1.2 Shape() [2/2]

```
recommendation_system.edu.duke.Shape.Shape (
            FileResource file )
```

Here is the call graph for this function:

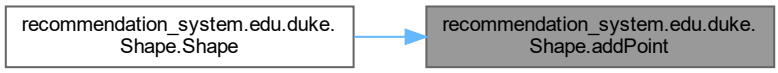


6.28.2 Member Function Documentation

6.28.2.1 addPoint()

```
void recommendation_system.edu.duke.Shape.addPoint (
            Point p )
```

Here is the caller graph for this function:



6.28.2.2 getLastPoint()

```
Point recommendation_system.edu.duke.Shape.getLastPoint ( )
```

6.28.2.3 getPoints()

```
Iterable< Point > recommendation_system.edu.duke.Shape.getPoints ( )
```

The documentation for this class was generated from the following file:

- src/main/java/recommendation_system/edu/duke/Shape.java

6.29 recommendation_system.edu.duke.StorageResource Class Reference

Public Member Functions

- StorageResource ()
- StorageResource (StorageResource other)
- void clear ()
- void add (String s)
- int size ()
- boolean contains (String s)
- Iterable< String > data ()

6.29.1 Constructor & Destructor Documentation

6.29.1.1 StorageResource() [1/2]

```
recommendation_system.edu.duke.StorageResource.StorageResource ( )
```

6.29.1.2 StorageResource() [2/2]

```
recommendation_system.edu.duke.StorageResource.StorageResource (
            StorageResource other )
```

6.29.2 Member Function Documentation

6.29.2.1 add()

```
void recommendation_system.edu.duke.StorageResource.add (
            String s )
```

6.29.2.2 clear()

```
void recommendation_system.edu.duke.StorageResource.clear ( )
```

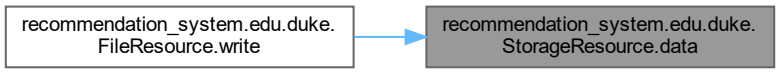
6.29.2.3 contains()

```
boolean recommendation_system.edu.duke.StorageResource.contains (
            String s )
```

6.29.2.4 data()

```
Iterable< String > recommendation_system.edu.duke.StorageResource.data ( )
```

Here is the caller graph for this function:



6.29.2.5 size()

```
int recommendation_system.edu.duke.StorageResource.size ( )
```

The documentation for this class was generated from the following file:

- src/main/java/recommendation_system/edu/duke/StorageResource.java

6.30 recommendation_system.ratings.ThirdRatings Class Reference

Public Member Functions

- ThirdRatings ()
- ThirdRatings (String ratingFile)
- int getRaterSize ()
- ArrayList< Rating > getAverageRatings (int minimalRaters)
- ArrayList< Rating > getAverageRatingsByFilter (int minimalRaters, Filter f)

Static Public Member Functions

- static void main (String[ ] args)

6.30.1 Detailed Description

Class to find the average rating of movies using different filters - Phase 3

The class contains the necessary methods for:

- Get a similarity rating for each rater
- Get a average ratings
- Get a average ratings by filters

Since

1/1/23

Version

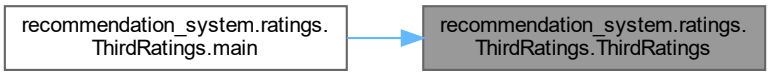
1.0

6.30.2 Constructor & Destructor Documentation

6.30.2.1 ThirdRatings() [1/2]

```
recommendation_system.ratings.ThirdRatings.ThirdRatings ( )
```

Default Builder Here is the caller graph for this function:



6.30.2.2 ThirdRatings() [2/2]

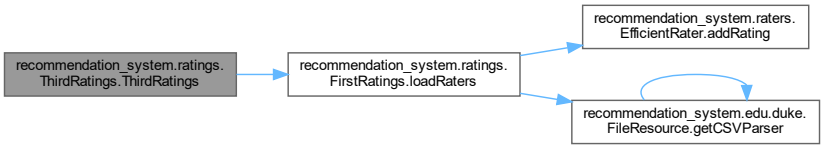
```
recommendation_system.ratings.ThirdRatings.ThirdRatings (
            String ratingFile )
```

Builder overload

Parameters

ratingFile	A String variable representing the rating file

Here is the call graph for this function:



6.30.3 Member Function Documentation

6.30.3.1 getAverageRatings()

```
ArrayList< Rating > recommendation_system.ratings.ThirdRatings.getAverageRatings (
            int minimalRaters )
```

This method gets the average ratings

Parameters

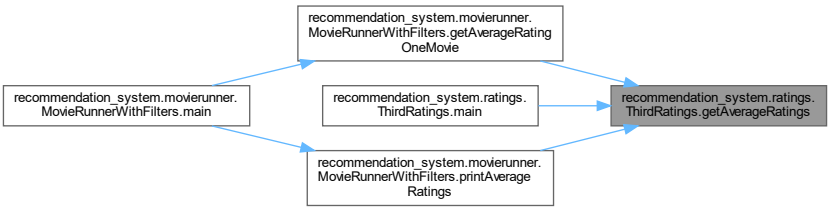
minimalRaters	- Minimum number of raters required to make an average

Returns

ArrayList<Rating> - Rating of movies with their average

Here is the call graph for this function:

Here is the caller graph for this function:



6.30.3.2 getAverageRatingsByFilter()

```
ArrayList< Rating > recommendation_system.ratings.ThirdRatings.getAverageRatingsByFilter (
            int minimalRaters,
            Filter f )
```

This method creates a list of all the movies that have at least minimalRaters ratings and satisfies the filter criteria

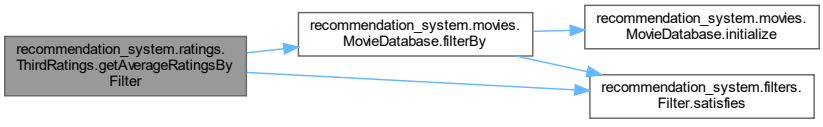
Parameters

minimalRaters	Minimum number of raters required to make an average
f	Represents filters

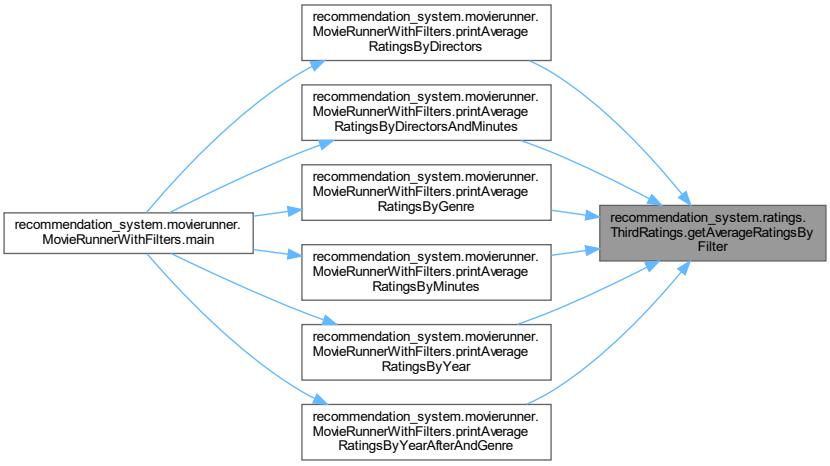
Returns

ArrayList<Rating> - Rating of movies with their average

Here is the call graph for this function:



Here is the caller graph for this function:



6.30.3.3 getRaterSize()

```
int recommendation_system.ratings.ThirdRatings.getRaterSize ( )
```

This method gets the number of the raters

Returns

Integer - Number of raters

Here is the caller graph for this function:

6.30.3.4 main()

```
static void recommendation_system.ratings.ThirdRatings.main (
            String[] args )  [static]
```

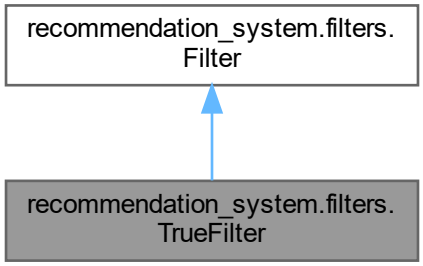
Here is the call graph for this function:

The documentation for this class was generated from the following file:

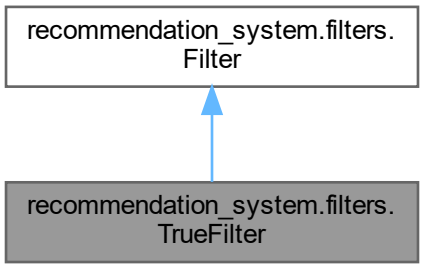
- src/main/java/recommendation_system/ratings/ThirdRatings.java

6.31 recommendation_system.filters.TrueFilter Class Reference

Inheritance diagram for recommendation_system.filters.TrueFilter:



Collaboration diagram for recommendation_system.filters.TrueFilter:



Public Member Functions

- boolean satisfies (String id)

6.31.1 Detailed Description

This class can be used to select every movie from MovieDatabase

The class contains the necessary methods for:

- Select every movie from the movie database

Since

13/12/22

Version

1.0

6.31.2 Member Function Documentation

6.31.2.1 satisfies()

```
boolean recommendation_system.filters.TrueFilter.satisfies (
            String id )
```

Parameters

id	A string variable representing the ID of the movie

Returns

Boolean - It's satisfies method always returns true.

Implements recommendation_system.filters.Filter.

The documentation for this class was generated from the following file:

- src/main/java/recommendation_system/filters/TrueFilter.java

6.32 recommendation_system.edu.duke.URLResource Class Reference

Public Member Functions

- URLResource (String name)
- Iterable< String > lines ()
- Iterable< String > words ()
- String asString ()
- CSVParser getCSVParser ()
- CSVParser getCSVParser (boolean withHeader)
- CSVParser getCSVParser (boolean withHeader, String delimiter)
- Iterable< String > getCSVHeaders (CSVParser parser)

6.32.1 Constructor & Destructor Documentation

6.32.1.1 URLResource()

```
recommendation_system.edu.duke.URLResource.URLResource (
            String name )
```

6.32.2 Member Function Documentation

6.32.2.1 asString()

```
String recommendation_system.edu.duke.URLResource.asString ( )
```

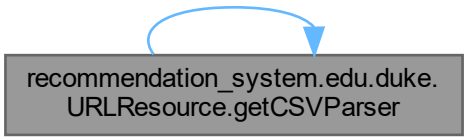
6.32.2.2 getCSVHeaders()

```
Iterable< String > recommendation_system.edu.duke.URLResource.getCSVHeaders (
            CSVParser parser )
```

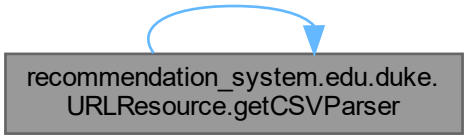
6.32.2.3 getCSVParser() [1/3]

```
CSVParser recommendation_system.edu.duke.URLResource.getCSVParser ( )
```

Here is the call graph for this function:



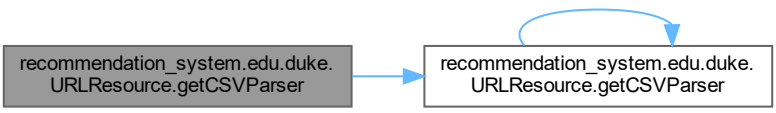
Here is the caller graph for this function:



6.32.2.4 getCSVParser() [2/3]

```
CSVParser recommendation_system.edu.duke.URLResource.getCSVParser (
            boolean withHeader )
```

Here is the call graph for this function:



6.32.2.5 getCSVParser() [3/3]

```
CSVParser recommendation_system.edu.duke.URLResource.getCSVParser (
            boolean withHeader,
            String delimiter )
```

6.32.2.6 lines()

```
Iterable< String > recommendation_system.edu.duke.URLResource.lines ( )
```

6.32.2.7 words()

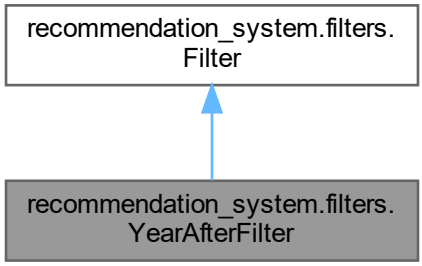
```
Iterable< String > recommendation_system.edu.duke.URLResource.words ( )
```

The documentation for this class was generated from the following file:

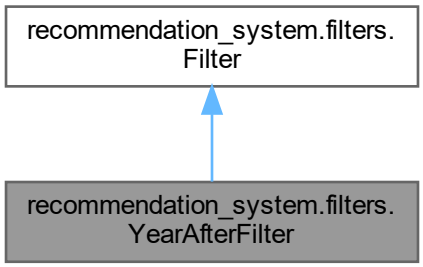
- src/main/java/recommendation_system/edu/duke/URLResource.java

6.33 recommendation_system.filters.YearAfterFilter Class Reference

Inheritance diagram for recommendation_system.filters.YearAfterFilter:



Collaboration diagram for recommendation_system.filters.YearAfterFilter:



Public Member Functions

- YearAfterFilter (int year)
- boolean satisfies (String id)

6.33.1 Detailed Description

This class filters the movies released after or on the specific year that the user wants.

The class contains the necessary methods for:

- Filtering movies based on their released date

Since

13/12/22

Version

1.0

6.33.2 Constructor & Destructor Documentation

6.33.2.1 YearAfterFilter()

```
recommendation_system.filters.YearAfterFilter.YearAfterFilter (
            int year )
```

Builder overload

Parameters

year	An integer variable representing the release year

6.33.3 Member Function Documentation

6.33.3.1 satisfies()

```
boolean recommendation_system.filters.YearAfterFilter.satisfies (
            String id )
```

This method proves if the movie was released after or on a certain year

Parameters

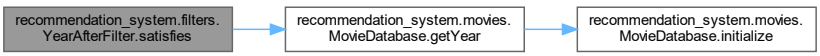
id	A string variable representing the ID of the movie

Returns

Boolean - True if movie was released after or on the year that the user wants to filter - False otherwise

Implements recommendation_system.filters.Filter.

Here is the call graph for this function:



The documentation for this class was generated from the following file:

- src/main/java/recommendation_system/filters/YearAfterFilter.java

Chapter 7

File Documentation

7.1 src/main/java/recommendation_system/edu/duke/Directory↩ Resource.java File Reference

Classes

- class recommendation_system.edu.duke.DirectoryResource

Packages

- package recommendation_system.edu.duke

7.2 src/main/java/recommendation_system/edu/duke/FileResource.java File Reference

Classes

- class recommendation_system.edu.duke.FileResource

Packages

- package recommendation_system.edu.duke

7.3 src/main/java/recommendation_system/edu/duke/FileSelector.java File Reference

Classes

- class **recommendation_system.edu.duke.FileSelector**
- class **recommendation_system.edu.duke.FileSelector.ChooserFilter**

Packages

- package recommendation_system.edu.duke

7.4 src/main/java/recommendation_system/edu/duke/ImageFrame.java File Reference

Classes

- class **recommendation_system.edu.duke.ImageFrame**
- class **recommendation_system.edu.duke.ImageFrame.ImagePanel**

Packages

- package recommendation_system.edu.duke

7.5 src/main/java/recommendation_system/edu/duke/Image↩ Resource.java File Reference

Classes

- class recommendation_system.edu.duke.ImageResource

Packages

- package recommendation_system.edu.duke

7.6 src/main/java/recommendation_system/edu/duke/Pixel.java File Reference

Classes

- class recommendation_system.edu.duke.Pixel

Packages

- package recommendation_system.edu.duke

7.7 src/main/java/recommendation_system/edu/duke/Point.java File Reference

Classes

- class recommendation_system.edu.duke.Point

Packages

- package recommendation_system.edu.duke

7.8 src/main/java/recommendation_system/edu/duke/RangeResource.java File Reference

Classes

- class recommendation_system.edu.duke.RangeResource

Packages

- package recommendation_system.edu.duke

7.9 src/main/java/recommendation_system/edu/duke/ResourceException.java File Reference

Classes

- class recommendation_system.edu.duke.ResourceException

Packages

- package recommendation_system.edu.duke

7.10 src/main/java/recommendation_system/edu/duke/Shape.java File Reference

Classes

- class recommendation_system.edu.duke.Shape

Packages

- package recommendation_system.edu.duke

7.11 src/main/java/recommendation_system/edu/duke/StorageResource.java File Reference

Classes

- class recommendation_system.edu.duke.StorageResource

Packages

- package recommendation_system.edu.duke

7.12 src/main/java/recommendation_system/edu/duke/TextIterable.java File Reference

Classes

- class **recommendation_system.edu.duke.TextIterable**

Packages

- package recommendation_system.edu.duke

7.13 src/main/java/recommendation_system/edu/duke/↩ URLResource.java File Reference

Classes

- class recommendation_system.edu.duke.URLResource

Packages

- package recommendation_system.edu.duke

7.14 src/main/java/recommendation_system/filters/AllFilters.java File Reference

Classes

- class recommendation_system.filters.AllFilters

Packages

- package recommendation_system.filters

7.15 src/main/java/recommendation_system/filters/DirectorsFilter.java File Reference

Classes

- class recommendation_system.filters.DirectorsFilter

Packages

- package recommendation_system.filters

7.16 src/main/java/recommendation_system/filters/Filter.java File Reference

Classes

- interface recommendation_system.filters.Filter

Packages

- package recommendation_system.filters

7.17 src/main/java/recommendation_system/filters/GenreFilter.java File Reference

Classes

- class recommendation_system.filters.GenreFilter

Packages

- package recommendation_system.filters

7.18 src/main/java/recommendation_system/filters/MinutesFilter.java File Reference

Classes

- class recommendation_system.filters.MinutesFilter

Packages

- package recommendation_system.filters

7.19 src/main/java/recommendation_system/filters/TrueFilter.java File Reference

Classes

- class recommendation_system.filters.TrueFilter

Packages

- package recommendation_system.filters

7.20 src/main/java/recommendation_system/filters/YearAfterFilter.java File Reference

Classes

- class recommendation_system.filters.YearAfterFilter

Packages

- package recommendation_system.filters

7.21 src/main/java/recommendation_system/movierunner/MovieRunnerAverage.java File Reference

Classes

- class recommendation_system.movierunner.MovieRunnerAverage

Packages

- package recommendation_system.movierunner

7.22 src/main/java/recommendation_system/movierunner/MovieRunnerSimilarRatingsOptimized.java File Reference

Classes

- class recommendation_system.movierunner.MovieRunnerSimilarRatingsOptimized

Packages

- package recommendation_system.movierunner

7.23 src/main/java/recommendation_system/movierunner/MovieRunnerWithFilters.java File Reference

Classes

- class recommendation_system.movierunner.MovieRunnerWithFilters

Packages

- package recommendation_system.movierunner

7.24 src/main/java/recommendation_system/movies/Movie.java File Reference

Classes

- class recommendation_system.movies.Movie

Packages

- package recommendation_system.movies

7.25 src/main/java/recommendation_system/movies/MovieDatabase.java File Reference

Classes

- class recommendation_system.movies.MovieDatabase

Packages

- package recommendation_system.movies

7.26 src/main/java/recommendation_system/raters/EfficientRater.java File Reference

Classes

- class recommendation_system.raters.EfficientRater

Packages

- package recommendation_system.raters

7.27 src/main/java/recommendation_system/raters/PlainRater.java File Reference

Classes

- class recommendation_system.raters.PlainRater

Packages

- package recommendation_system.raters

7.28 src/main/java/recommendation_system/raters/Rater.java File Reference

Classes

- interface recommendation_system.raters.Rater

Packages

- package recommendation_system.raters

7.29 src/main/java/recommendation_system/raters/RaterDatabase.java File Reference

Classes

- class recommendation_system.raters.RaterDatabase

Packages

- package recommendation_system.raters

7.30 src/main/java/recommendation_system/ratings/FirstRatings.java File Reference

Classes

- class recommendation_system.ratings.FirstRatings

Packages

- package recommendation_system.ratings

7.31 src/main/java/recommendation_system/ratings/FourthRatings↩ Optimized.java File Reference

Classes

- class recommendation_system.ratings.FourthRatingsOptimized

Packages

- package recommendation_system.ratings

7.32 src/main/java/recommendation_system/ratings/Rating.java File Reference

Classes

- class recommendation_system.ratings.Rating

Packages

- package recommendation_system.ratings

7.33 src/main/java/recommendation_system/ratings/SecondRatings.java File Reference

Classes

- class recommendation_system.ratings.SecondRatings

Packages

- package recommendation_system.ratings

7.34 src/main/java/recommendation_system/ratings/ThirdRatings.java File Reference

Classes

- class recommendation_system.ratings.ThirdRatings

Packages

- package recommendation_system.ratings

7.35 src/main/java/recommendation_system/recommenders/↩ RecommendationRunner.java File Reference

Classes

- class recommendation_system.recommenders.RecommendationRunner

Packages

- package recommendation_system.recommenders

7.36 src/main/java/recommendation_system/recommenders/↩ Recommender.java File Reference

Classes

- interface recommendation_system.recommenders.Recommender

Packages

- package recommendation_system.recommenders

7.37 src/test/java/recommendation_system/RecommendationRunner↩ Test.java File Reference

Classes

- class **recommendation_system.RecommendationRunnerTest**

Packages

- package recommendation_system

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