Library Management System

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Chapter 1

Hierarchical Index

1.1 Class Hierarchy

This inheritance list is sorted roughly, but not completely, alphabetically:

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JFrame
  addBook 5
  addReader 6
  Booklist 9
  bookRentReturn 10
  Debtorlist 14
  Home 15
  Readerlist 21
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ActionListener
  addBook 5
  addReader 6
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  library.Bookset 11
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  library.ReaderBase 19
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Chapter 2

Class Index

2.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

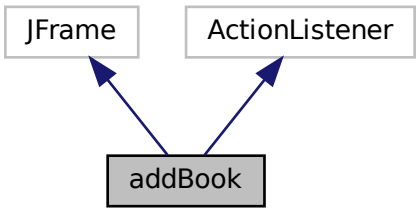
addBook 5
addReader 6
library.Bookset.Book 7
Booklist 9
bookRentReturn 10
library.Bookset 11
library.Database 13
Debtorlist 14
Home 15
library.ReaderBase.Reader 17
library.ReaderBase 19
Readerlist 21
removeBook 22
library.ReaderBase.Rent 23

Chapter 3

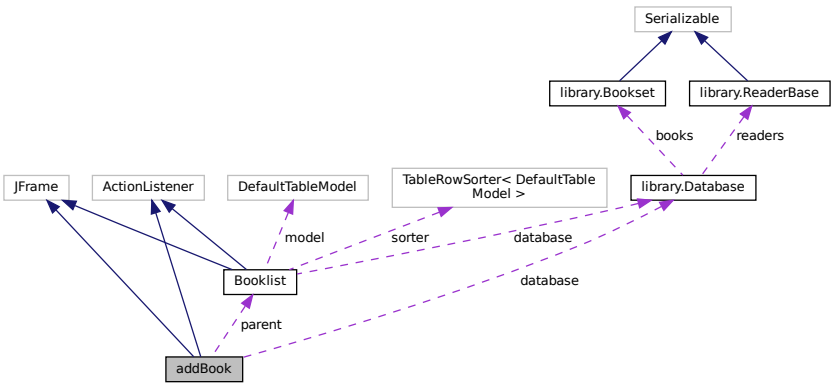
Class Documentation

3.1 addBook Class Reference

Inheritance diagram for addBook:



Collaboration diagram for addBook:



Public Member Functions

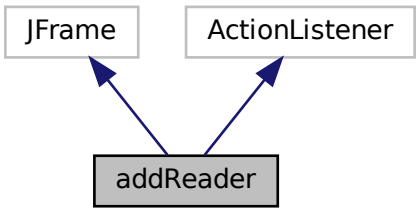
- **addBook** (Database database, Booklist parent)
- void **actionPerformed** (ActionEvent e)

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

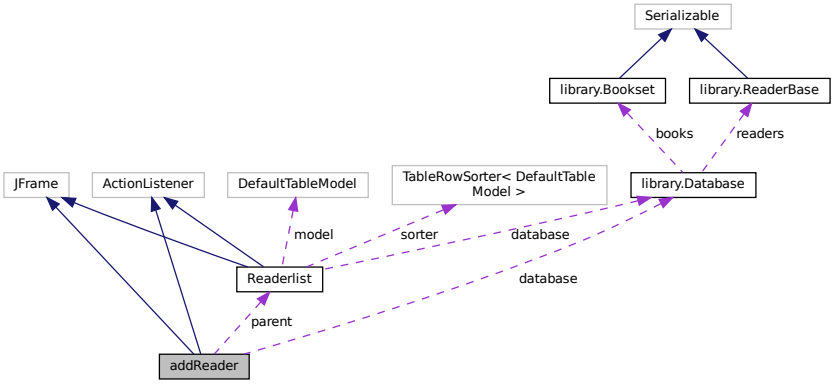
- src/addBook.java

3.2 addReader Class Reference

Inheritance diagram for addReader:



Collaboration diagram for addReader:



Public Member Functions

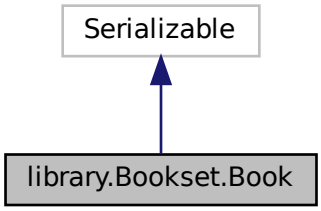
- **addReader** (Database database, Readerlist parent)
- void **actionPerformed** (ActionEvent e)

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

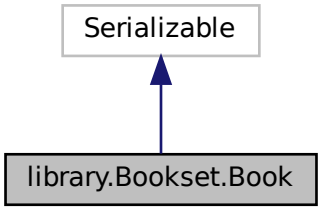
- src/addReader.java

3.3 library.Bookset.Book Class Reference

Inheritance diagram for library.Bookset.Book:



Collaboration diagram for library.Bookset.Book:



Public Member Functions

- Book (int id, String title, String author, String publisher, int publicationYear, int value)
- int **getID** ()
- String **getTitle** ()
- String **getAuthor** ()
- String **getPublisher** ()
- int **getPublicationYear** ()
- int **getValue** ()
- Rent **getRent** ()
- void editBookentry (String title, String author, String publisher, int publicationYear, byte value)
- void setRent (Rent actRent)
- boolean isAvailableToRent ()
- void removeBook ()

3.3.1 Detailed Description

Instance of the book in bookset

3.3.2 Constructor & Destructor Documentation

3.3.2.1 Book()

```
library.Bookset.Book.Book (
            int id,
            String title,
            String author,
            String publisher,
            int publicationYear,
            int value )  [inline]
```

Constructor of a Book class instance Allows to add book to bookset.

See also

addToBookset

General presence, doesn't change when book is borrowed

3.3.3 Member Function Documentation

3.3.3.1 editBookentry()

```
void library.Bookset.Book.editBookentry (
            String title,
            String author,
            String publisher,
            int publicationYear,
            byte value )  [inline]
```

Allows to edit basic information about book

Attention

Doesn't impact the current Rent nor its presence in Bookset

3.3.3.2 isAvailableToRent()

```
boolean library.Bookset.Book.isAvailableToRent ( )  [inline]
```

Gives information whether the book is available to be rent \equiv no one has it borrowed

3.3.3.3 removeBook()

```
void library.Bookset.Book.removeBook ( )  [inline]
```

Assisting function in book removal

See also

removeFromBookset(int id)

3.3.3.4 setRent()

```
void library.Bookset.Book.setRent (
            Rent actRent )  [inline]
```

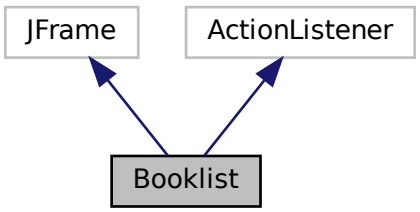
Sets reference to current rent instance in book's entry

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

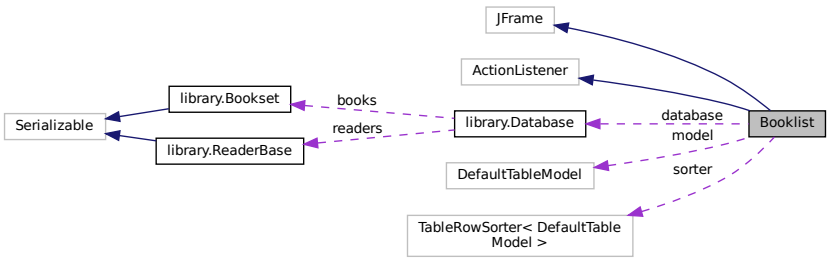
- src/library/Bookset.java

3.4 Booklist Class Reference

Inheritance diagram for Booklist:



Collaboration diagram for Booklist:



Public Member Functions

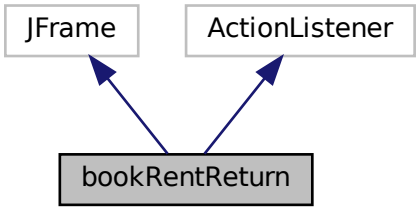
- **Booklist** (Database database)
- void **getBookEntries** ()
- void **actionPerformed** (ActionEvent e)

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

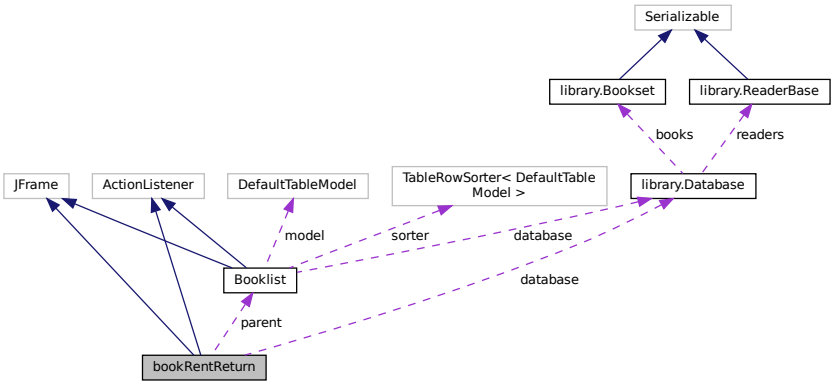
- src/Booklist.java

3.5 bookRentReturn Class Reference

Inheritance diagram for bookRentReturn:



Collaboration diagram for bookRentReturn:



Public Member Functions

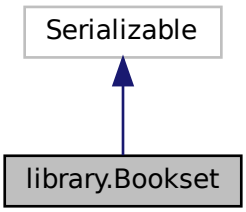
- **bookRentReturn** (Database database, Booklist parent)
- void **actionPerformed** (ActionEvent e)

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

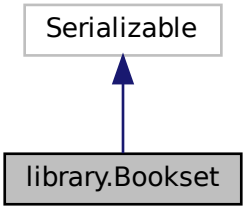
- src/bookRentReturn.java

3.6 library.Bookset Class Reference

Inheritance diagram for library.Bookset:



Collaboration diagram for library.Bookset:



Classes

- class Book

Public Member Functions

- int addToBookset (String title, String author, String publisher, int publicationYear, int value)
- void removeFromBookset (int id) throws CurrentlyRentedException
- int **getNumberOfActiveBooks** ()
- Book **getBook** (int id)
- ArrayList< Book > bookLookupByTitle (String titlePrefix)
- int **getSize** ()

3.6.1 Detailed Description

Represent books' database

3.6.2 Member Function Documentation

3.6.2.1 addToBookset()

```
int library.Bookset.addToBookset (
            String title,
            String author,
            String publisher,
            int publicationYear,
            int value )  [inline]
```

Adds book to the bookset

Returns

Unique book's ID in the bookset

3.6.2.2 bookLookupByTitle()

```
ArrayList<Book> library.Bookset.bookLookupByTitle (
            String titlePrefix )  [inline]
```

Searches for books with titles starting with given prefix

Returns

ArrayList<Book> of matching books

3.6.2.3 removeFromBookset()

```
void library.Bookset.removeFromBookset (
            int id ) throws CurrentlyRentedException  [inline]
```

Disables book's ability to be rented

See also

removeBook() Decrements number of active books in bookset leaving books' positions in database intact

Warning

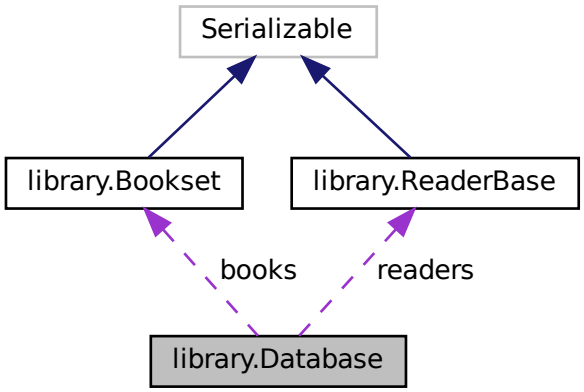
Doesn't remove book's data from database

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

- src/library/Bookset.java

3.7 library.Database Class Reference

Collaboration diagram for library.Database:



Public Member Functions

- ReaderBase getReaders ()
- Bookset getBooks ()
- Database ()
- void writeData ()
- void readData ()

3.7.1 Detailed Description

Database for the whole project

3.7.2 Constructor & Destructor Documentation

3.7.2.1 Database()

```
library.Database.Database ( )  [inline]
```

Simple constructor

3.7.3 Member Function Documentation

3.7.3.1 getBooks()

```
Bookset library.Database.getBooks ( )  [inline]
```

Returns books' database

3.7.3.2 getReaders()

```
ReaderBase library.Database.getReaders ( )  [inline]
```

Returns readers' database

3.7.3.3 readData()

```
void library.Database.readData ( )  [inline]
```

Enables to read stored database. Currently uses serialization mechanism.

3.7.3.4 writeData()

```
void library.Database.writeData ( )  [inline]
```

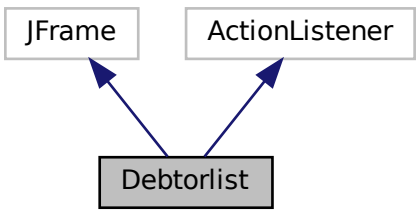
Enables to write database on the disk. Currently uses serialization mechanism. Stored in 'data' subdirectory.

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

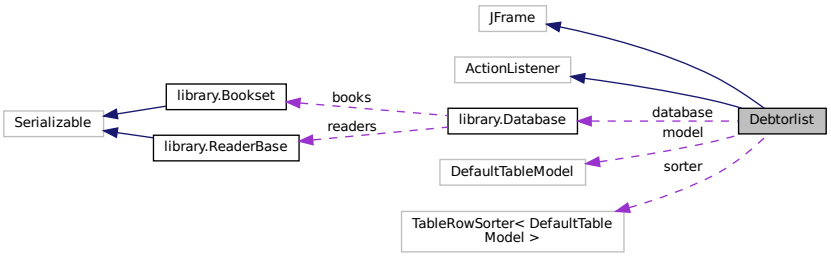
- src/library/Database.java

3.8 Debtorlist Class Reference

Inheritance diagram for Debtorlist:



Collaboration diagram for Debtorlist:



Public Member Functions

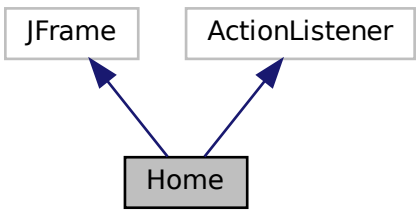
- **Debtorlist** (Database database)
- void **getReaderEntries** ()
- void **actionPerformed** (ActionEvent e)

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

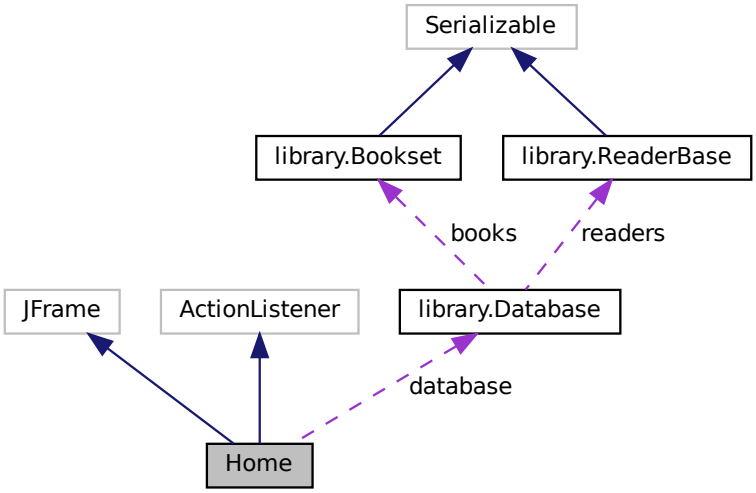
- src/Debtorlist.java

3.9 Home Class Reference

Inheritance diagram for Home:



Collaboration diagram for Home:



Public Member Functions

- **Home** (Database database)
- void **actionPerformed** (ActionEvent e)

Static Public Member Functions

- static void generateRandomDatabase (Database database, int howManyBooks, int howManyReaders)
- static void **main** (String[ ] args)

3.9.1 Member Function Documentation

3.9.1.1 generateRandomDatabase()

```
static void Home.generateRandomDatabase (
            Database database,
            int howManyBooks,
            int howManyReaders )  [inline], [static]
```

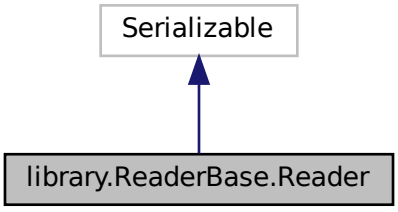
Allows to generate random database for developer tests

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

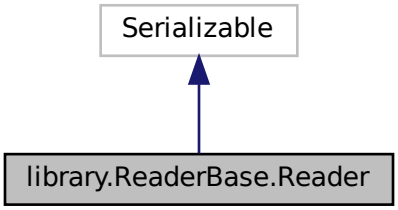
- src/Home.java

3.10 library.ReaderBase.Reader Class Reference

Inheritance diagram for library.ReaderBase.Reader:



Collaboration diagram for library.ReaderBase.Reader:



Public Member Functions

- **Reader** (int id, String name, String surname, int phoneNumber)
- int **getID** ()
- void **setName** (String name)
- String **getName** ()
- String **getSurname** ()
- int **getPhoneNumber** ()
- int **getNumberOfRents** ()
- void **setSurname** (String surname)
- void **setPhoneNumber** (int phoneNumber)
- Rent findBookInRents (Book book) throws BookNotRented
- void rentBook (Book bookToRent, LocalDate startDate) throws CurrentlyRentedException, RentCapacity↩ Achieved
- void returnBook (Book returnedBook) throws BookNotRented

3.10.1 Member Function Documentation

3.10.1.1 findBookInRents()

```
Rent library.ReaderBase.Reader.findBookInRents (
            Book book ) throws BookNotRented  [inline]
```

Does a lookup through specified reader's rents in order to find there specific book

3.10.1.2 rentBook()

```
void library.ReaderBase.Reader.rentBook (
            Book bookToRent,
            LocalDate startDate ) throws CurrentlyRentedException, RentCapacityAchieved  [inline]
```

Begins rent and sets the book status as unavailable

See also

setRent

3.10.1.3 returnBook()

```
void library.ReaderBase.Reader.returnBook (
            Book returnedBook ) throws BookNotRented  [inline]
```

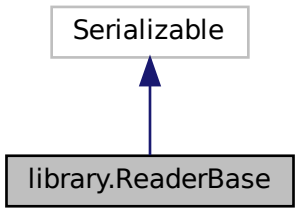
Ends rent and enables the book to be rent

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

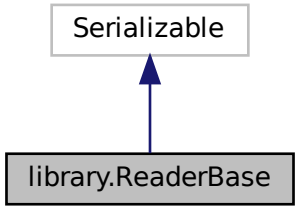
- src/library/ReaderBase.java

3.11 library.ReaderBase Class Reference

Inheritance diagram for library.ReaderBase:



Collaboration diagram for library.ReaderBase:



Classes

- class Reader
- class Rent

Public Member Functions

- void addReader (String name, String surname, int phoneNumber)
- ArrayList< Reader > getListOfDebtors ()
- ArrayList< Reader > readerLookupBySurname (String surnamePrefix)
- int **getSize** ()
- Reader getReader (int id)

3.11.1 Detailed Description

Redaers' database

3.11.2 Member Function Documentation

3.11.2.1 addReader()

```
void library.ReaderBase.addReader (
            String name,
            String surname,
            int phoneNumber )  [inline]
```

Allows to add a reader into the database

3.11.2.2 getListOfDebtors()

```
ArrayList<Reader> library.ReaderBase.getListOfDebtors ( )  [inline]
```

Creates list of people who missed the deadline to return the book they rented

3.11.2.3 getReader()

```
Reader library.ReaderBase.getReader (
            int id )  [inline]
```

Returns reader specified by an ID (counting from 1)

3.11.2.4 readerLookupBySurname()

```
ArrayList<Reader> library.ReaderBase.readerLookupBySurname (
            String surnamePrefix )  [inline]
```

Searches for readers with surnames starting with given prefix

Returns

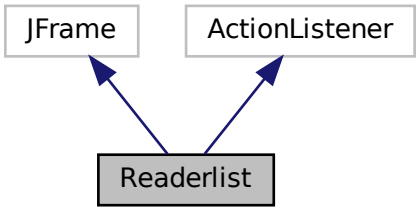
ArrayList<Book> of matching books

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

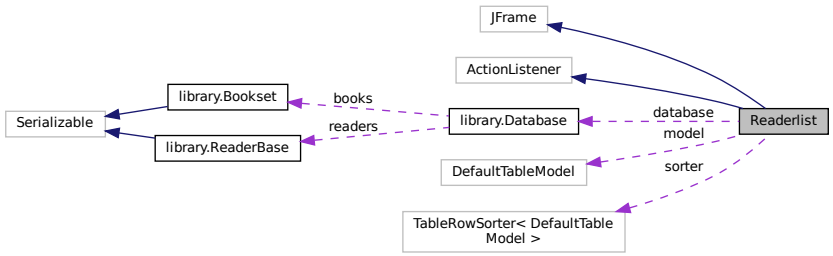
- src/library/ReaderBase.java

3.12 Readerlist Class Reference

Inheritance diagram for Readerlist:



Collaboration diagram for Readerlist:



Public Member Functions

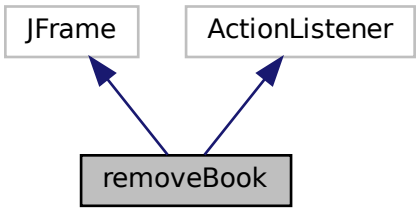
- **Readerlist** (Database database)
- void **getReaderEntries** ()
- void **actionPerformed** (ActionEvent e)

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

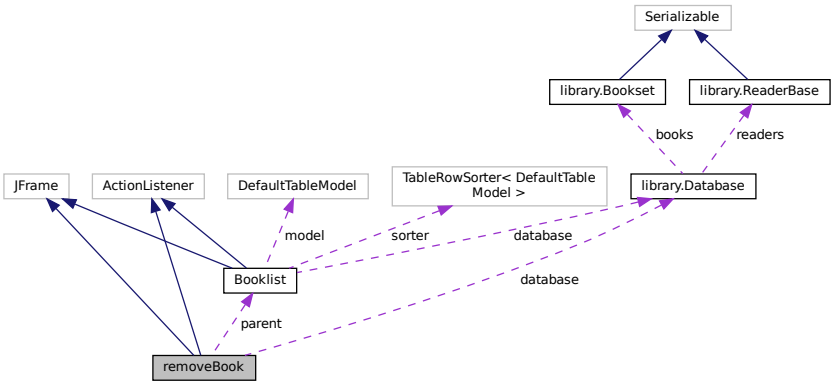
- src/Readerlist.java

3.13 removeBook Class Reference

Inheritance diagram for removeBook:



Collaboration diagram for removeBook:



Public Member Functions

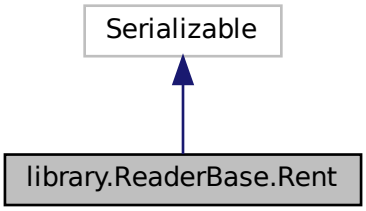
- **removeBook** (Database database, Booklist parent)
- void **actionPerformed** (ActionEvent e)

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

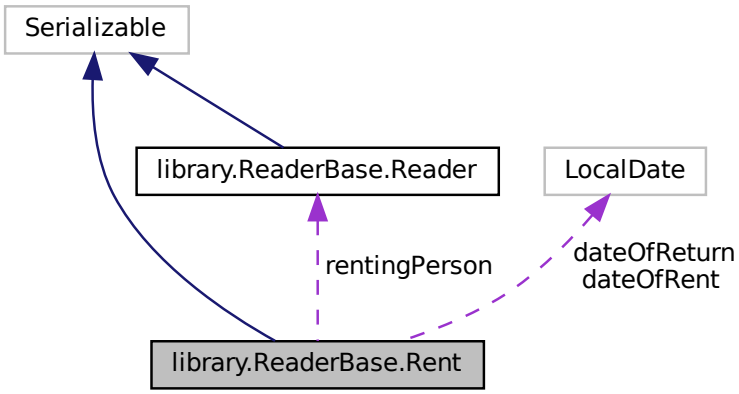
- src/removeBook.java

3.14 library.ReaderBase.Rent Class Reference

Inheritance diagram for library.ReaderBase.Rent:



Collaboration diagram for library.ReaderBase.Rent:



Public Member Functions

- **Rent** (Book rentedBook, Reader renter, LocalDate dateOfRent)
- Reader **getRenter** ()
- void prolongRent (int prolongationDays)

3.14.1 Detailed Description

Instance of rent of a book

3.14.2 Member Function Documentation

3.14.2.1 prolongRent()

```
void library.ReaderBase.Rent.prolongRent (
            int prolongationDays )  [inline]
```

Sets further date of return for a rent

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

- src/library/ReaderBase.java

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