Video_Store

1.0

Generated by Doxygen 1.8.16

Chapter 1

VideoStore - A video store that rents games and DVDs.

The purpose of this assignment is to give you some experience working with inheritance. In this homework, you will implement code for a simple video store.
A video store consists of a list of items (various kinds of games and DVDs) and a list of customers (people who can rent items):

- Different kinds of items may have different policies for how long they may be rented, the cost of rental, and how late fees are calculated.
- Different kinds of customers may have different behavior, when it comes to late fees or other aspects of renting and returning items.

Please note that all cost amounts in the code are expressed in cents, e.g., where the spec says $1.50, your code would use the integer value 150.

1.1 release.notes

This program runs either in python 2.7 or python 3.6

To run the program:

- python VideoStore.py

Chapter 2

Namespace Index

2.1 Namespace List

Here is a list of all namespaces with brief descriptions:

Chapter 3

Hierarchical Index

3.1 Class Hierarchy

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

Chapter 4

Class Index

4.1 Class List

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

Chapter 5

File Index

5.1 File List

Here is a list of all files with brief descriptions:

Chapter 6

Namespace Documentation

6.1 AbstractItem Namespace Reference

Classes

- class AbstractItem

  Partial implementation of the Item interface.

Functions

- def main ()

6.1.1 Detailed Description

Partial implementation of the Item interface.

Author

Paulo Roma

Since

11/07/2017

6.1.2 Function Documentation

6.1.2.1 main()

```
def AbstractItem.main ( )
```

Definition at line 143 of file AbstractItem.py.

6.2 Customer Namespace Reference

Classes

- class Customer

  A Customer is a client of a VideoStore who can rent items.

Functions

- def main ()

6.2.1 Detailed Description

A class describing a customer of the Video Store.

Author

Paulo Roma

Since

11/07/2017

6.2.2 Function Documentation

6.2.2.1 main()

```
def Customer.main ( )
```

Definition at line 147 of file Customer.py.

6.3 GenreSearch Namespace Reference

Classes

- class GenreSearch

  Implementation of SearchCondition that matches items based on the genre (not case sensitive).

6.3.1 Detailed Description

Class for searching items matching a given genre.

Author

Paulo Roma

Since

11/07/2017

6.4 Item Namespace Reference

Classes

- class Item

  This is an abstract class.

Variables

- ABC = object

6.4.1 Detailed Description

A class modeling an item of the Video Store.

Author

Paulo Roma

Since

11/07/2017

6.4.2 Variable Documentation

6.4.2.1 ABC

```
Item.ABC = object
```

Definition at line 15 of file Item.py.

6.5 OverDueItemSearch Namespace Reference

Classes

- class OverDueItemSearch

  A class for matching items with due date before a given date.

6.5.1 Detailed Description

A class for looking for overdue items in the Video Store.

Author

Paulo Roma

Since

26/11/2018

6.6 SearchCondition Namespace Reference

Classes

- class SearchCondition

  Abstraction of a search predicate for items.

Variables

- ABC = object

6.6.1 Detailed Description

A search predicate for items.

Author

Paulo Roma

Since

11/07/2017

6.6.2 Variable Documentation

6.6.2.1 ABC

```
SearchCondition.ABC = object
```

Definition at line 15 of file SearchCondition.py.

6.7 SimpleDate Namespace Reference

Classes

- class SimpleDate

  Date consisting of a year, month, and day.

Functions

- def main ()

  Main program for testing.

6.7.1 Detailed Description

Packages dates in the format yyyy-mm-dd.

Author

Paulo Roma

Since

11/07/2017

6.7.2 Function Documentation

6.7.2.1 main()

```
def SimpleDate.main ( )
```

Main program for testing.

Definition at line 112 of file SimpleDate.py.

6.8 StatusException Namespace Reference

Classes

- class StatusException

  Exception type thrown for invalid operations such as attempting to rent an item that is already rented.

6.8.1 Detailed Description

Exceptions to be thrown when an error has occurred.

Author

Paulo Roma

Since

11/07/2017

6.9 VideoStore Namespace Reference

Classes

- class VideoStore

  VideoStore consists of a list of items and a list of customers who can rent items.

Functions

- def main ()

  Main program for testing.

6.9.1 Detailed Description

A video store that rents DVDs, and Games.

Author

Paulo Roma

Since

11/07/2017

6.9.2 Function Documentation

6.9.2.1 main()

```
def VideoStore.main ( )
```

Main program for testing.

Definition at line 134 of file VideoStore.py.

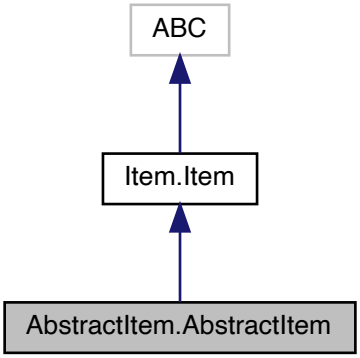
Chapter 7

Class Documentation

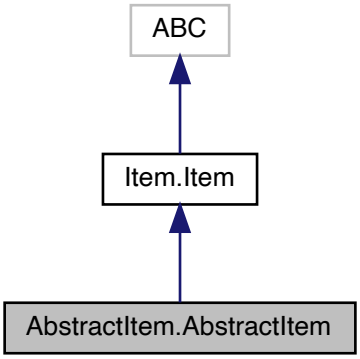
7.1 AbstractItem.AbstractItem Class Reference

Partial implementation of the Item interface.

Inheritance diagram for AbstractItem.AbstractItem:



Collaboration diagram for AbstractItem.AbstractItem:



Public Member Functions

- def __init__ (self, title, genre, barcode)

  Constructs a new Item with the given title, genre, and barcode.
- def isRented (self)

  Returns whether this item is rented.
- def getGenre (self)

  Gets this genre.
- def getDueDate (self)

  Returns this item due date.
- def setDueDate (self, date=None)

  Sets this item due date.
- def getTitle (self)

  Returns this item title.
- def getBarcode (self)

  Returns this item barcode.
- def setReturned (self)

  Returns this item, if it is currently rented.
- def setRented (self, today)

  Rents this item if it is not already rented and sets the due date.
- def __str__ (self)

  Returns a string representation of this item.
- def __repr__ (self)

  Returns a representation of the state of this object as a multiline string.
- def __eq__ (self, obj)

  Determines whether this item is the same as another one based on its barcode.

Private Attributes

- __title
  Title of this item.
- __genre
  Genre of this item.
- __barcode
  Unique Barcode for this item.
- __rented
  Rental status of this item.
- __dueDate
  Due date for this item.

7.1.1 Detailed Description

Partial implementation of the Item interface.

Definition at line 19 of file AbstractItem.py.

7.1.2 Constructor & Destructor Documentation

7.1.2.1 __init__()

```
def AbstractItem.AbstractItem.__init__ (
              self,
              title,
              genre,
              barcode )
```

Constructs a new Item with the given title, genre, and barcode.

This constructor may only be invoked by subclasses.

Parameters

title	the title of the item
genre	the genre of the item
barcode	a unique integer identifier for the item

Definition at line 28 of file AbstractItem.py.

7.1.3 Member Function Documentation

7.1.3.1 __eq__()

```
def AbstractItem.AbstractItem.__eq__ (
              self,
              obj )
```

Determines whether this item is the same as another one based on its barcode.

Parameters

obj	the object to compare to this item

Returns

true if the given object is an AbstractItem with the same barcode as this one

Definition at line 138 of file AbstractItem.py.

References AbstractItem.AbstractItem.getBarcode().

7.1.3.2 __repr__()

```
def AbstractItem.AbstractItem.__repr__ (
              self )
```

Returns a representation of the state of this object as a multiline string.

The format is:

```
type
title
(genre)
status
```

The status is either

```
Rented: yyyy-mm-dd
```

or

```
Available
```

where "yyyy-mm-dd" is the current due date.

Returns

a string representation of this object

Definition at line 119 of file AbstractItem.py.

References AbstractItem.AbstractItem.getDueDate(), AbstractItem.AbstractItem.getGenre(), AbstractItem.AbstractItem.getTitle(), and AbstractItem.AbstractItem.isRented().

7.1.3.3 __str__()

```
def AbstractItem.AbstractItem.__str__ (
              self )
```

Returns a string representation of this item.

Definition at line 95 of file AbstractItem.py.

References AbstractItem.AbstractItem.getTitle().

7.1.3.4 getBarcode()

```
def AbstractItem.AbstractItem.getBarcode (
              self )
```

Returns this item barcode.

Reimplemented from Item.Item.

Definition at line 71 of file AbstractItem.py.

References AbstractItem.AbstractItem.__barcode.

Referenced by AbstractItem.AbstractItem.__eq__(), and AbstractItem.AbstractItem.setReturned().

7.1.3.5 getDueDate()

```
def AbstractItem.AbstractItem.getDueDate (
              self )
```

Returns this item due date.

Reimplemented from Item.Item.

Definition at line 52 of file AbstractItem.py.

References AbstractItem.AbstractItem.__dueDate, and AbstractItem.AbstractItem.__rented.

Referenced by AbstractItem.AbstractItem.__repr__().

7.1.3.6 getGenre()

```
def AbstractItem.AbstractItem.getGenre (
              self )
```

Gets this genre.

Returns

genre.

Reimplemented from Item.Item.

Definition at line 48 of file AbstractItem.py.

References AbstractItem.AbstractItem.__genre.

Referenced by AbstractItem.AbstractItem.__repr__().

7.1.3.7 getTitle()

```
def AbstractItem.AbstractItem.getTitle (
              self )
```

Returns this item title.

Reimplemented from Item.Item.

Definition at line 67 of file AbstractItem.py.

References AbstractItem.AbstractItem.__title.

Referenced by AbstractItem.AbstractItem.__repr__(), and AbstractItem.AbstractItem.__str__().

7.1.3.8 isRented()

```
def AbstractItem.AbstractItem.isRented (
              self )
```

Returns whether this item is rented.

Reimplemented from Item.Item.

Definition at line 41 of file AbstractItem.py.

References AbstractItem.AbstractItem.__rented.

Referenced by AbstractItem.AbstractItem.__repr__(), and AbstractItem.AbstractItem.setReturned().

7.1.3.9 setDueDate()

```
def AbstractItem.AbstractItem.setDueDate (
              self,
              date = None )
```

Sets this item due date.

If a date is given, the item is set as rented.

Parameters

date	due date.

Reimplemented from Item.Item.

Definition at line 62 of file AbstractItem.py.

References AbstractItem.AbstractItem.__dueDate, and AbstractItem.AbstractItem.__rented.

Referenced by AbstractItem.AbstractItem.setReturned().

7.1.3.10 setRented()

```
def AbstractItem.AbstractItem.setRented (
              self,
              today )
```

Rents this item if it is not already rented and sets the due date.

Parameters

today	rental date.

Exceptions

StatusException	

Reimplemented from Item.Item.

Definition at line 90 of file AbstractItem.py.

7.1.3.11 setReturned()

```
def AbstractItem.AbstractItem.setReturned (
              self )
```

Returns this item, if it is currently rented.

Sets its dueDate to None.

Exceptions

StatusException	

Definition at line 79 of file AbstractItem.py.

References AbstractItem.AbstractItem.getBarcode(), AbstractItem.AbstractItem.isRented(), and AbstractItem.↩ AbstractItem.setDueDate().

7.1.4 Member Data Documentation

7.1.4.1 __barcode

`AbstractItem.AbstractItem.__barcode [private]`

Unique Barcode for this item.

Definition at line 34 of file AbstractItem.py.

Referenced by AbstractItem.AbstractItem.getBarcode().

7.1.4.2 __dueDate

`AbstractItem.AbstractItem.__dueDate [private]`

Due date for this item.

Definition at line 38 of file AbstractItem.py.

Referenced by AbstractItem.AbstractItem.getDueDate(), and AbstractItem.AbstractItem.setDueDate().

7.1.4.3 __genre

`AbstractItem.AbstractItem.__genre [private]`

Genre of this item.

Definition at line 32 of file AbstractItem.py.

Referenced by AbstractItem.AbstractItem.getGenre(), and GenreSearch.GenreSearch.matches().

7.1.4.4 __rented

`AbstractItem.AbstractItem.__rented [private]`

Rental status of this item.

Definition at line 36 of file AbstractItem.py.

Referenced by AbstractItem.AbstractItem.getDueDate(), AbstractItem.AbstractItem.isRented(), and AbstractItem.↩ AbstractItem.setDueDate().

7.1.4.5 __title

`AbstractItem.AbstractItem.__title [private]`

Title of this item.

Definition at line 30 of file AbstractItem.py.

Referenced by AbstractItem.AbstractItem.getTitle().

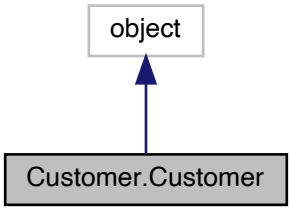
The documentation for this class was generated from the following file:

- AbstractItem.py

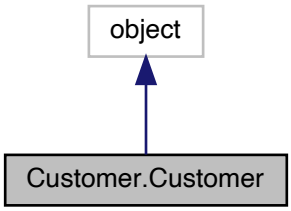
7.2 Customer.Customer Class Reference

A Customer is a client of a VideoStore who can rent items.

Inheritance diagram for Customer.Customer:



Collaboration diagram for Customer.Customer:



Public Member Functions

- def __init__ (self, name)

  Constructs a Customer with the given name.
- def rentItem (self, item, today)

  Rents an item and adds it to this customer's list of items.
- def setBalance (self, fee, date, today)

  Updates the balance of this customer.
- def bringBackItem (self, barcode, today)

  Returns an item that this customer currently has rented and updates the balance if a late fee or credit is due.
- def getBalance (self)

  Returns the balance for this customer.
- def getName (self)

  Returns the name of this customer.
- def makePayment (self, amount)

  Makes a payment on this customer's balance.
- def __str__ (self)

  Returns a string representation of this customer.
- def __repr__ (self)

  Returns a string representation of this customer.
- def canRent (self, today)

  Helper method determines whether this customer already has overdue items.

Private Attributes

- __itemsOut

  Items currently rented by this customer.
- __name

  Name of this customer.
- __balance

  Balance currently owed by this customer.

7.2.1 Detailed Description

A Customer is a client of a VideoStore who can rent items.

A client is identified by a unique name. At any given time a Customer has a list of items currently rented, and a balance representing rental charges, late fees, or credits (where a negative balance indicates a credit). Balances are in cents. Ordinary customers are not allowed to rent new items if they have any items overdue.

Definition at line 26 of file Customer.py.

7.2.2 Constructor & Destructor Documentation

7.2.2.1 __init__()

```
def Customer.Customer.__init__ (
              self,
              name )
```

Constructs a Customer with the given name.

Initially there are no items rented and the balance is zero.

Parameters

name	the new customer's name

Definition at line 34 of file Customer.py.

7.2.3 Member Function Documentation

7.2.3.1 __repr__()

```
def Customer.Customer.__repr__ (
              self )
```

Returns a string representation of this customer.

The format consists of multiple lines. The first line is the patron's name. Subsequent lines are formed from the **repr**() values of the items currently rented, separated by a newline.

Returns

representation of this object as a multi-line string

Definition at line 125 of file Customer.py.

References Customer.Customer.__itemsOut, and Customer.Customer.__name.

7.2.3.2 __str__()

```
def Customer.Customer.__str__ (
              self )
```

Returns a string representation of this customer.

The format is the customer type, name and balance.

Definition at line 114 of file Customer.py.

References Customer.Customer.__itemsOut, Customer.Customer.__name, and Customer.Customer.getBalance().

7.2.3.3 bringBackItem()

```
def Customer.Customer.bringBackItem (
              self,
              barcode,
              today )
```

Returns an item that this customer currently has rented and updates the balance if a late fee or credit is due.

If the item can be successfully returned, this method updates the item's status and removes it from this customer's list of items. If the customer does not have the item rented, a StatusException is thrown.

Parameters

barcode	identifier for the item to be returned
today	the date on which the item is being returned

Exceptions

StatusException	if this customer does not have the given item rented

Definition at line 83 of file Customer.py.

7.2.3.4 canRent()

```
def Customer.Customer.canRent (
              self,
              today )
```

Helper method determines whether this customer already has overdue items.

Parameters

today	the current date

Returns

true if the customer has no overdue items, false otherwise

Definition at line 141 of file Customer.py.

References Customer.Customer.__itemsOut.

Referenced by Customer.Customer.rentItem().

7.2.3.5 getBalance()

```
def Customer.Customer.getBalance (
              self )
```

Returns the balance for this customer.

Returns

this customer's balance

Definition at line 92 of file Customer.py.

References Customer.Customer.__balance.

Referenced by Customer.Customer.__str__().

7.2.3.6 getName()

```
def Customer.Customer.getName (
              self )
```

Returns the name of this customer.

Returns

this customer's name

Definition at line 100 of file Customer.py.

References Customer.Customer.__name.

7.2.3.7 makePayment()

```
def Customer.Customer.makePayment (
              self,
              amount )
```

Makes a payment on this customer's balance.

Parameters

amount	the amount to be paid, in cents

Definition at line 108 of file Customer.py.

References Customer.Customer.__balance.

7.2.3.8 rentItem()

```
def Customer.Customer.rentItem (
              self,
              item,
              today )
```

Rents an item and adds it to this customer's list of items.

If the item can be rented, this method updates the item's status (including the due date) and then adds it to this customer's list of items. If the item cannot be rented to this customer, a StatusException is thrown.

Parameters

item	the item to be rented
today	the date on which the item is being rented

Exceptions

StatusException	if the item cannot be rented to this customer for any reason

Definition at line 54 of file Customer.py.

References Customer.Customer.__balance, Customer.Customer.__itemsOut, and Customer.Customer.canRent().

7.2.3.9 setBalance()

```
def Customer.Customer.setBalance (
              self,
              fee,
              date,
              today )
```

Updates the balance of this customer.

Parameters

fee	late fee.
date	due date.
today	return date.

Definition at line 67 of file Customer.py.

References Customer.Customer.__balance.

7.2.4 Member Data Documentation

7.2.4.1 __balance

```
Customer.Customer.__balance  [private]
```

Balance currently owed by this customer.

Definition at line 40 of file Customer.py.

Referenced by Customer.Customer.getBalance(), Customer.Customer.makePayment(), Customer.Customer.rentItem(), and Customer.Customer.setBalance().

7.2.4.2 __itemsOut

`Customer.Customer.__itemsOut [private]`

Items currently rented by this customer.

Definition at line 36 of file Customer.py.

Referenced by Customer.Customer.__repr__(), Customer.Customer.__str__(), Customer.Customer.canRent(), and Customer.Customer.rentItem().

7.2.4.3 __name

`Customer.Customer.__name [private]`

Name of this customer.

Definition at line 38 of file Customer.py.

Referenced by Customer.Customer.__repr__(), Customer.Customer.__str__(), and Customer.Customer.getName().

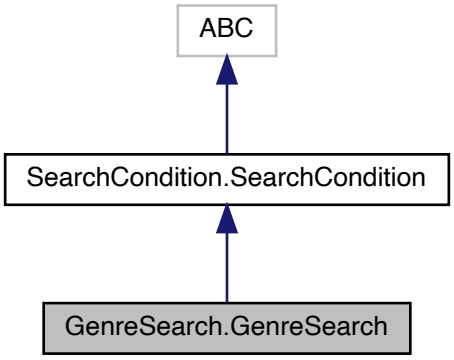
The documentation for this class was generated from the following file:

- Customer.py

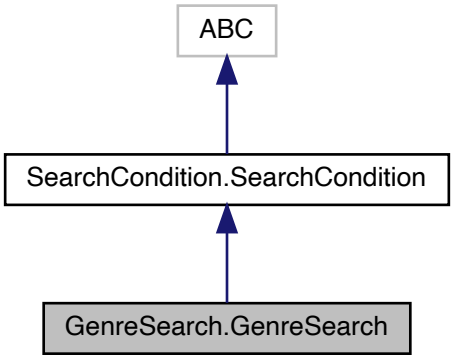
7.3 GenreSearch.GenreSearch Class Reference

Implementation of SearchCondition that matches items based on the genre (not case sensitive).

Inheritance diagram for GenreSearch.GenreSearch:



Collaboration diagram for GenreSearch.GenreSearch:



Public Member Functions

- def __init__ (self, genre)

  Constructs a GenreSearch for the given value.
- def matches (self, item)

  Matches this genre with the genre of a given item.

Private Attributes

- __genre
  The genre we are searching for.

7.3.1 Detailed Description

Implementation of SearchCondition that matches items based on the genre (not case sensitive).

Definition at line 17 of file GenreSearch.py.

7.3.2 Constructor & Destructor Documentation

7.3.2.1 __init__()

```
def GenreSearch.GenreSearch.__init__ (
              self,
              genre )
```

Constructs a GenreSearch for the given value.

Parameters

genre	the genre to search for

Definition at line 24 of file GenreSearch.py.

7.3.3 Member Function Documentation

7.3.3.1 matches()

```
def GenreSearch.GenreSearch.matches (
              self,
              item )
```

Matches this genre with the genre of a given item.

Parameters

item	containing the genre to compare to.

Reimplemented from SearchCondition.SearchCondition.

Definition at line 33 of file GenreSearch.py.

References GenreSearch.GenreSearch.__genre, and AbstractItem.AbstractItem.__genre.

7.3.4 Member Data Documentation

7.3.4.1 __genre

`GenreSearch.GenreSearch.__genre [private]`

The genre we are searching for.

Definition at line 26 of file GenreSearch.py.

Referenced by GenreSearch.GenreSearch.matches().

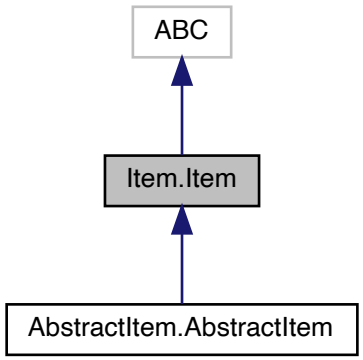
The documentation for this class was generated from the following file:

- GenreSearch.py

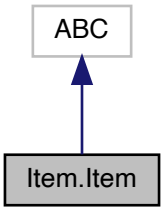
7.4 Item.Item Class Reference

This is an abstract class.

Inheritance diagram for Item.Item:



Collaboration diagram for Item.Item:



Public Member Functions

- def setRented (self, today)

  Rents this item if it is not already rented and sets the due date.
- def setReturned (self, today)

  Returns this item, if it is currently rented.
- def setDueDate (self, date=None)

  Sets this item due date.
- def getRentalCost (self)

  Returns the cost to rent this item.
- def getRentalDays (self)

  Returns the number of days allowed to keep this item.
- def calculateLateFee (self, today)

  Calculates the late fee (or bonus) that would be charged (or applied) for returning the item on the given date.
- def getGenre (self)

  Returns a String representing the genre of this item.
- def isRented (self)

  Determines whether this item is currently rented.
- def getDueDate (self)

  Returns the due date for this item if it is currently rented, or null if the item is not rented.
- def getTitle (self)

  Returns the title of this item.
- def getBarcode (self)

  Returns the integer barcode for this item.

Static Private Attributes

- __metaclass__ = ABCMeta

7.4.1 Detailed Description

This is an abstract class.

All methods here must be implemented elsewhere.

An item represents a movie or game that can be rented from a video store. Each item has a title, a genre, and a unique integer identifier called a barcode. An item can be rented or available, and if rented it has a due date.

Definition at line 25 of file Item.py.

7.4.2 Member Function Documentation

7.4.2.1 calculateLateFee()

```
def Item.Item.calculateLateFee (
              self,
              today )
```

Calculates the late fee (or bonus) that would be charged (or applied) for returning the item on the given date.

Parameters

today	the date on which the item is being returned

Returns

the late fee or bonus for returning the item on the given date, or zero if the item is not currently rented

Definition at line 87 of file Item.py.

7.4.2.2 getBarcode()

```
def Item.Item.getBarcode (
              self )
```

Returns the integer barcode for this item.

Returns

barcode of this item

Reimplemented in AbstractItem.AbstractItem.

Definition at line 133 of file Item.py.

7.4.2.3 getDueDate()

```
def Item.Item.getDueDate (
              self )
```

Returns the due date for this item if it is currently rented, or null if the item is not rented.

Returns

due date for this item

Reimplemented in AbstractItem.AbstractItem.

Definition at line 115 of file Item.py.

7.4.2.4 getGenre()

```
def Item.Item.getGenre (
              self )
```

Returns a String representing the genre of this item.

Returns

genre of this item

Reimplemented in AbstractItem.AbstractItem.

Definition at line 96 of file Item.py.

7.4.2.5 getRentalCost()

```
def Item.Item.getRentalCost (
              self )
```

Returns the cost to rent this item.

Returns

cost to rent the item

Definition at line 66 of file Item.py.

7.4.2.6 getRentalDays()

```
def Item.Item.getRentalDays (
              self )
```

Returns the number of days allowed to keep this item.

Returns

number of allowed rental days.

Definition at line 74 of file Item.py.

7.4.2.7 getTitle()

```
def Item.Item.getTitle (
              self )
```

Returns the title of this item.

Returns

title of this item

Reimplemented in AbstractItem.AbstractItem.

Definition at line 124 of file Item.py.

7.4.2.8 isRented()

```
def Item.Item.isRented (
              self )
```

Determines whether this item is currently rented.

Returns

true if this item is rented, false otherwise

Reimplemented in AbstractItem.AbstractItem.

Definition at line 105 of file Item.py.

7.4.2.9 setDueDate()

```
def Item.Item.setDueDate (
              self,
              date = None )
```

Sets this item due date.

If a date is given, the item is set as rented.

Parameters

date	due date.

Reimplemented in AbstractItem.AbstractItem.

Definition at line 57 of file Item.py.

7.4.2.10 setRented()

```
def Item.Item.setRented (
              self,
              today )
```

Rents this item if it is not already rented and sets the due date.

Parameters

today	the date on which this item is being rented

Exceptions

StatusException	if the item cannot be rented

Reimplemented in AbstractItem.AbstractItem.

Definition at line 37 of file Item.py.

7.4.2.11 setReturned()

```
def Item.Item.setReturned (
              self,
              today )
```

Returns this item, if it is currently rented.

Parameters

today	the date on which the item is being returned

Exceptions

StatusException	if the item is not currently rented

Definition at line 48 of file Item.py.

7.4.3 Member Data Documentation

7.4.3.1 __metaclass__

```
Item.Item.__metaclass__ = ABCMeta  [static], [private]
```

Definition at line 26 of file Item.py.

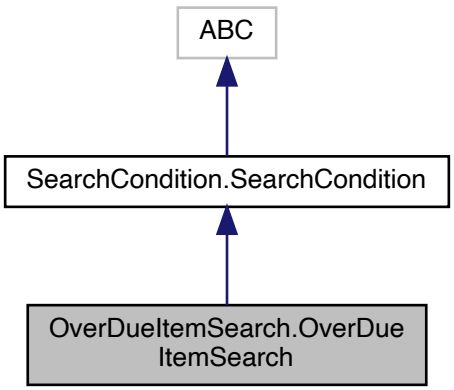
The documentation for this class was generated from the following file:

- Item.py

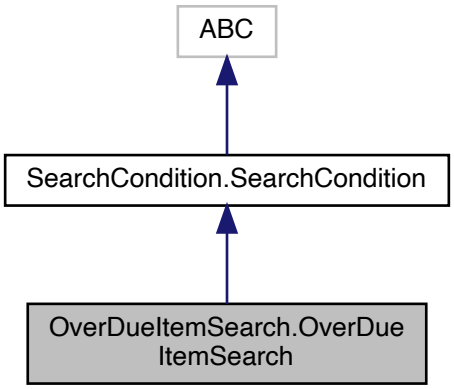
7.5 OverDueItemSearch.OverDueItemSearch Class Reference

A class for matching items with due date before a given date.

Inheritance diagram for OverDueItemSearch.OverDueItemSearch:



Collaboration diagram for OverDueItemSearch.OverDueItemSearch:



Public Member Functions

- def __init__ (self, date)

  Constructor.
- def matches (self, item)

  Return True if the item's due date is before a given date.

Private Attributes

- __date

  date for the search.

7.5.1 Detailed Description

A class for matching items with due date before a given date.

Definition at line 16 of file OverDueItemSearch.py.

7.5.2 Constructor & Destructor Documentation

7.5.2.1 __init__()

```
def OverDueItemSearch.OverDueItemSearch.__init__ (
              self,
              date )
```

Constructor.

Parameters

date	given date.

Definition at line 21 of file OverDueItemSearch.py.

7.5.3 Member Function Documentation

7.5.3.1 matches()

```
def OverDueItemSearch.OverDueItemSearch.matches (
              self,
              item )
```

Return True if the item's due date is before a given date.

Returns

match with due dates smaller then date.

Reimplemented from SearchCondition.SearchCondition.

Definition at line 30 of file OverDueItemSearch.py.

References OverDueItemSearch.OverDueItemSearch.__date.

7.5.4 Member Data Documentation

7.5.4.1 __date

```
OverDueItemSearch.OverDueItemSearch.__date  [private]
```

date for the search.

Definition at line 23 of file OverDueItemSearch.py.

Referenced by SimpleDate.SimpleDate.__eq__(), SimpleDate.SimpleDate.__repr__(), SimpleDate.SimpleDate.__str↩__(), SimpleDate.SimpleDate.daysUntil(), and OverDueItemSearch.OverDueItemSearch.matches().

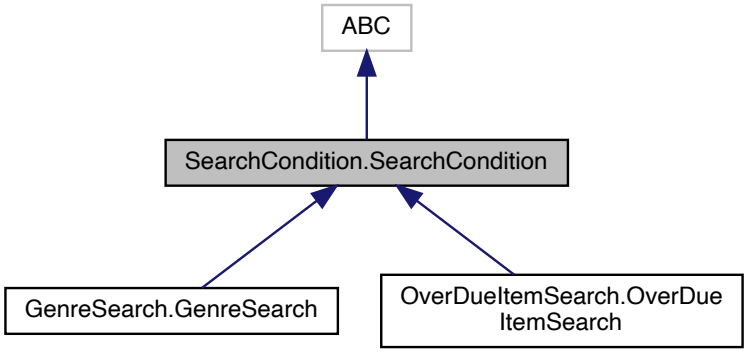
The documentation for this class was generated from the following file:

- OverDueItemSearch.py

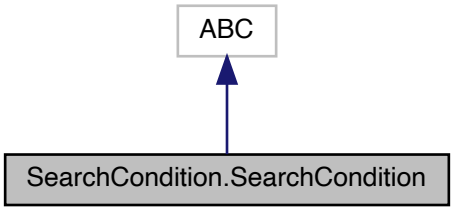
7.6 SearchCondition.SearchCondition Class Reference

Abstraction of a search predicate for items.

Inheritance diagram for SearchCondition.SearchCondition:



Collaboration diagram for SearchCondition.SearchCondition:



Public Member Functions

- def matches (self, item)

  Determine whether the given item matches this search condition's criteria for inclusion.

Static Private Attributes

- __metaclass__ = ABCMeta

7.6.1 Detailed Description

Abstraction of a search predicate for items.

Subtypes can customize the nature of the search:

- e.g., exact title, title keywords, genre, etc.

Definition at line 22 of file SearchCondition.py.

7.6.2 Member Function Documentation

7.6.2.1 matches()

```
def SearchCondition.SearchCondition.matches (
              self,
              item )
```

Determine whether the given item matches this search condition's criteria for inclusion.

Parameters

item	the item to be checked

Returns

true if the item matches this condition's criteria, false otherwise

Reimplemented in GenreSearch.GenreSearch, and OverDueItemSearch.OverDueItemSearch.

Definition at line 33 of file SearchCondition.py.

7.6.3 Member Data Documentation

7.6.3.1 __metaclass__

```
SearchCondition.SearchCondition.__metaclass__ = ABCMeta  [static], [private]
```

Definition at line 23 of file SearchCondition.py.

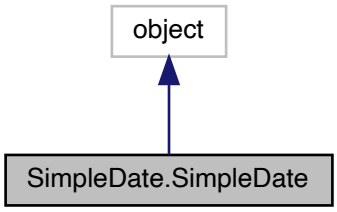
The documentation for this class was generated from the following file:

- SearchCondition.py

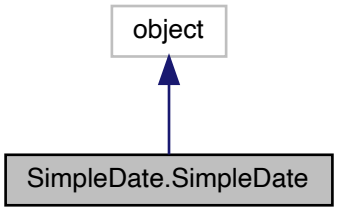
7.7 SimpleDate.SimpleDate Class Reference

Date consisting of a year, month, and day.

Inheritance diagram for SimpleDate.SimpleDate:



Collaboration diagram for SimpleDate.SimpleDate:



Public Member Functions

- def __init__ (self, year, month, day, hour=0, min=0, sec=0)

  Constructs a SimpleDate with the given year, month, and day.
- def SimpleDateFromDays (self, additionalDays)

  Returns a SimpleDate that is a given number of days after this date.
- def isBefore (self, other)

  Determines whether this date is strictly earlier than the given date.
- def daysUntil (self, other)

  Returns the number of days from this date until the given date.
- def __eq__ (self, other)

Operator ==.

- def __lt__ (self, other)

  Operator <.
- def __add__ (self, ndays)

  Operator +.
- def __sub__ (self, other)

  Operator -.
- def __repr__ (self)

  Prints this simpleDate in the format hour:min:sec day-month-year.
- def __str__ (self)

  Prints this simpleDate in the format year-month-day.

Static Public Member Functions

- def today ()

  Return today's date.
- def todayNow (delta=3)

  Return today's date and time.

Static Public Attributes

- int MILLIS_IN_24_HOURS = 1000 ∗ 60 ∗ 60 ∗ 24

  Number of milliseconds in one day.

Private Attributes

- __date

  Holds the date in this SimpleDate object.

7.7.1 Detailed Description

Date consisting of a year, month, and day.

Definition at line 17 of file SimpleDate.py.

7.7.2 Constructor & Destructor Documentation

7.7.2.1 __init__()

```
def SimpleDate.SimpleDate.__init__ (
              self,
              year,
              month,
              day,
              hour = 0,
              min = 0,
              sec = 0 )
```

Constructs a SimpleDate with the given year, month, and day.

Parameters

year	four-digit year
month	1-based month number
day	1-based day of month
hour	24-based hour time
min	minutes of time
sec	seconds of time

See also

https://www.tutorialspoint.com/python/time_strptime.htm
https://docs.python.org/3/library/datetime.html

Definition at line 46 of file SimpleDate.py.

7.7.3 Member Function Documentation

7.7.3.1 __add__()

```
def SimpleDate.SimpleDate.__add__ (
              self,
              ndays )
```

Operator +.

Adds ndays to this date.

Definition at line 91 of file SimpleDate.py.

References SimpleDate.SimpleDate.SimpleDateFromDays().

7.7.3.2 __eq__()

```
def SimpleDate.SimpleDate.__eq__ (
              self,
              other )
```

Operator ==.

Definition at line 83 of file SimpleDate.py.

References OverDueItemSearch.OverDueItemSearch.__date, and SimpleDate.SimpleDate.__date.

7.7.3.3 __lt__()

```
def SimpleDate.SimpleDate.__lt__ (
              self,
              other )
```

Operator $<$.

Definition at line 87 of file SimpleDate.py.

References SimpleDate.SimpleDate.isBefore().

7.7.3.4 __repr__()

```
def SimpleDate.SimpleDate.__repr__ (
              self )
```

Prints this simpleDate in the format hour:min:sec day-month-year.

Definition at line 101 of file SimpleDate.py.

References OverDueItemSearch.OverDueItemSearch.__date, and SimpleDate.SimpleDate.__date.

7.7.3.5 __str__()

```
def SimpleDate.SimpleDate.__str__ (
              self )
```

Prints this simpleDate in the format year-month-day.

Definition at line 107 of file SimpleDate.py.

References OverDueItemSearch.OverDueItemSearch.__date, and SimpleDate.SimpleDate.__date.

7.7.3.6 __sub__()

```
def SimpleDate.SimpleDate.__sub__ (
              self,
              other )
```

Operator -.

Number of days between this and other.

Returns

(other - self) in days.

Definition at line 96 of file SimpleDate.py.

7.7.3.7 daysUntil()

```
def SimpleDate.SimpleDate.daysUntil (
              self,
              other )
```

Returns the number of days from this date until the given date.

Returns a negative number if this date after the given date.

Parameters

other	the future date

Returns

number of days until the given date (negative if it is in the past)

Definition at line 78 of file SimpleDate.py.

References OverDueItemSearch.OverDueItemSearch.__date, and SimpleDate.SimpleDate.__date.

Referenced by SimpleDate.SimpleDate.isBefore().

7.7.3.8 isBefore()

```
def SimpleDate.SimpleDate.isBefore (
              self,
              other )
```

Determines whether this date is strictly earlier than the given date.

Parameters

other	

Returns

true if this date is strictly before the given date. false otherwise

Definition at line 69 of file SimpleDate.py.

References SimpleDate.SimpleDate.daysUntil().

Referenced by SimpleDate.SimpleDate.__lt__().

7.7.3.9 SimpleDateFromDays()

```
def SimpleDate.SimpleDate.SimpleDateFromDays (
              self,
              additionalDays )
```

Returns a SimpleDate that is a given number of days after this date.

Parameters

additionalDays	the number of days to be added to this date

Definition at line 56 of file SimpleDate.py.

Referenced by SimpleDate.SimpleDate.__add__().

7.7.3.10 today()

```
def SimpleDate.SimpleDate.today ( )  [static]
```

Return today's date.

Definition at line 24 of file SimpleDate.py.

7.7.3.11 todayNow()

```
def SimpleDate.SimpleDate.todayNow (
              delta = 3 )  [static]
```

Return today's date and time.

Definition at line 30 of file SimpleDate.py.

7.7.4 Member Data Documentation

7.7.4.1 __date

```
SimpleDate.SimpleDate.__date  [private]
```

Holds the date in this SimpleDate object.

Definition at line 49 of file SimpleDate.py.

Referenced by SimpleDate.SimpleDate.__eq__(), SimpleDate.SimpleDate.__repr__(), SimpleDate.SimpleDate.__str__(), and SimpleDate.SimpleDate.daysUntil().

7.7.4.2 MILLIS_IN_24_HOURS

```
int SimpleDate.SimpleDate.MILLIS_IN_24_HOURS = 1000 * 60 * 60 * 24  [static]
```

Number of milliseconds in one day.

Definition at line 20 of file SimpleDate.py.

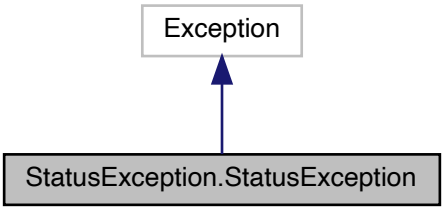
The documentation for this class was generated from the following file:

- SimpleDate.py

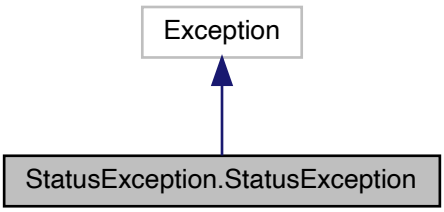
7.8 StatusException.StatusException Class Reference

Exception type thrown for invalid operations such as attempting to rent an item that is already rented.

Inheritance diagram for StatusException.StatusException:



Collaboration diagram for StatusException.StatusException:



Public Member Functions

- def __init__ (self, msg)

  Constructs a StatusException with the given message.

Public Attributes

- msg

7.8.1 Detailed Description

Exception type thrown for invalid operations such as attempting to rent an item that is already rented.

Definition at line 16 of file StatusException.py.

7.8.2 Constructor & Destructor Documentation

7.8.2.1 __init__()

```
def StatusException.StatusException.__init__ (
            self,
            msg )
```

Constructs a StatusException with the given message.

Parameters

msg	message for this exception

Definition at line 22 of file StatusException.py.

7.8.3 Member Data Documentation

7.8.3.1 msg

`StatusException.StatusException.msg`

hold the error message.

Definition at line 27 of file StatusException.py.

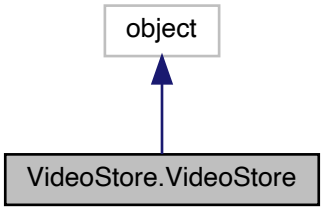
The documentation for this class was generated from the following file:

- StatusException.py

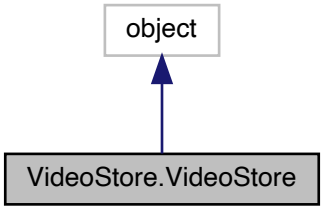
7.9 VideoStore.VideoStore Class Reference

VideoStore consists of a list of items and a list of customers who can rent items.

Inheritance diagram for VideoStore.VideoStore:



Collaboration diagram for VideoStore.VideoStore:



Public Member Functions

- def __init__ (self)

  Constructs a VideoStore that initially has no items and no customers.
- def addItem (self, item)

  Adds an item to this store's list of items, provided that there is not already an item with the same barcode.
- def addCustomer (self, customer)

  Adds a customer to this store's list of customers.
- def findUser (self, name)

  Returns the customer with the given name.
- def search (self, condition)

  Search the store's collection for items satisfying the given SearchCondition.
- def __str__ (self)

  Returns the set of users and items in this store.
- def __repr__ (self)

  Returns the set of users and items in this store.

Private Attributes

- __items

  The items in this store.
- __customers

  The list of customers of this store.

7.9.1 Detailed Description

VideoStore consists of a list of items and a list of customers who can rent items.

Definition at line 36 of file VideoStore.py.

7.9.2 Constructor & Destructor Documentation

7.9.2.1 __init__()

```
def VideoStore.VideoStore.__init__ (
              self )
```

Constructs a VideoStore that initially has no items and no customers.

Definition at line 41 of file VideoStore.py.

7.9.3 Member Function Documentation

7.9.3.1 __repr__()

```
def VideoStore.VideoStore.__repr__ (
              self )
```

Returns the set of users and items in this store.

Returns

a string with all users and items.

Definition at line 121 of file VideoStore.py.

References VideoStore.VideoStore.__customers, and VideoStore.VideoStore.__items.

7.9.3.2 __str__()

```
def VideoStore.VideoStore.__str__ (
              self )
```

Returns the set of users and items in this store.

Returns

a string with all users and items.

Definition at line 104 of file VideoStore.py.

References VideoStore.VideoStore.__customers, and VideoStore.VideoStore.__items.

7.9.3.3 addCustomer()

```
def VideoStore.VideoStore.addCustomer (
              self,
              customer )
```

Adds a customer to this store's list of customers.

Parameters

customer	the customer to be added

Returns

customer

Definition at line 65 of file VideoStore.py.

References VideoStore.VideoStore.__customers.

7.9.3.4 addItem()

```
def VideoStore.VideoStore.addItem (
              self,
              item )
```

Adds an item to this store's list of items, provided that there is not already an item with the same barcode.

Parameters

item	the item to be added

Returns

item

Definition at line 54 of file VideoStore.py.

References VideoStore.VideoStore.__items.

7.9.3.5 findUser()

```
def VideoStore.VideoStore.findUser (
              self,
              name )
```

Returns the customer with the given name.

Parameters

name	the name of the customer to search for

Returns

the customer

Definition at line 78 of file VideoStore.py.

References VideoStore.VideoStore.__customers.

7.9.3.6 search()

```
def VideoStore.VideoStore.search (
              self,
              condition )
```

Search the store's collection for items satisfying the given SearchCondition.

Parameters

condition	the SearchCondition

Returns

list of items satisfying the condition

Definition at line 92 of file VideoStore.py.

References VideoStore.VideoStore.__items.

7.9.4 Member Data Documentation

7.9.4.1 __customers

```
VideoStore.VideoStore.__customers  [private]
```

The list of customers of this store.

Definition at line 45 of file VideoStore.py.

Referenced by VideoStore.VideoStore.__repr__(), VideoStore.VideoStore.__str__(), VideoStore.VideoStore.addCustomer(), and VideoStore.VideoStore.findUser().

7.9.4.2 __items

`VideoStore.VideoStore.__items [private]`

The items in this store.

Definition at line 43 of file VideoStore.py.

Referenced by VideoStore.VideoStore.__repr__(), VideoStore.VideoStore.__str__(), VideoStore.VideoStore.addItem(), and VideoStore.VideoStore.search().

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

- VideoStore.py

Chapter 8

File Documentation

8.1 AbstractItem.py File Reference

Classes

- class AbstractItem.AbstractItem

  Partial implementation of the Item interface.

Namespaces

- AbstractItem

Functions

- def AbstractItem.main ()

8.2 Customer.py File Reference

Classes

- class Customer.Customer

  A Customer is a client of a VideoStore who can rent items.

Namespaces

- Customer

Functions

- def Customer.main ()

8.3 GenreSearch.py File Reference

Classes

- class GenreSearch.GenreSearch

  Implementation of SearchCondition that matches items based on the genre (not case sensitive).

Namespaces

- GenreSearch

8.4 Item.py File Reference

Classes

- class Item.Item

  This is an abstract class.

Namespaces

- Item

Variables

- Item.ABC = object

8.5 OverDueItemSearch.py File Reference

Classes

- class OverDueItemSearch.OverDueItemSearch

  A class for matching items with due date before a given date.

Namespaces

- OverDueItemSearch

8.6 SearchCondition.py File Reference

Classes

- class SearchCondition.SearchCondition

  Abstraction of a search predicate for items.

Namespaces

- SearchCondition

Variables

- SearchCondition.ABC = object

8.7 SimpleDate.py File Reference

Classes

- class SimpleDate.SimpleDate

  Date consisting of a year, month, and day.

Namespaces

- SimpleDate

Functions

- def SimpleDate.main ()

  Main program for testing.

8.8 StatusException.py File Reference

Classes

- class StatusException.StatusException

  Exception type thrown for invalid operations such as attempting to rent an item that is already rented.

Namespaces

- StatusException

8.9 VideoStore.py File Reference

Classes

- class VideoStore.VideoStore

  VideoStore consists of a list of items and a list of customers who can rent items.

Namespaces

- VideoStore

Functions

- def VideoStore.main ()

  Main program for testing.

Index