Real-Time Twitter Data Stream Analysis

SE-2XB3-G24

Generated by Doxygen 1.8.11

Contents

Chapter 1

Namespace Index

1.1 Packages

Here are the packages with brief descriptions (if available):

Chapter 2

Hierarchical Index

2.1 Class Hierarchy

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

Chapter 3

Class Index

3.1 Class List

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

Chapter 4

File Index

4.1 File List

Here is a list of all files with brief descriptions:

Chapter 5

Namespace Documentation

5.1 Package se2xb3

Packages

- package bootstrap
- package config
- package control
- package data
- package injection
- package io
- package tests

5.2 Package se2xb3.bootstrap

Classes

- class TwitterProcessorApp

5.3 Package se2xb3.config

Classes

- interface AppConfig
- interface Constants

5.4 Package se2xb3.control

Classes

- class AppController
- class Controller
- class EventBus

5.5 Package se2xb3.data

Packages

- package algorithms
- package models
- package processing

Classes

- class DataController
- class DataHandler

5.6 Package se2xb3.data.algorithms

Packages

- package sort

Classes

- class GraphStrategy
- class SearchStrategy
- class SortStrategy
- class WordGraph
- class WordNode

5.7 Package se2xb3.data.algorithms.sort

Packages

- package textbook

Classes

- interface ISort
- class MergeSortStrategy

5.8 Package se2xb3.data.algorithms.sort.textbook

Classes

- class MaxPQ
- class Merge
- class MergeBU
- class MergeX
- class MinPQ

5.9 Package se2xb3.data.models

Classes

- class BoundingBox
- class Place
- class Tweet
- class TweetOld
- class User

5.10 Package se2xb3.data.processing

Classes

- interface IProcessor
- class TweetProcessor

5.11 Package se2xb3.injection

Classes

- class TwitterAppInjector

5.12 Package se2xb3.io

Packages

- package files
- package source
- package web

Classes

- class AsyncMessageLooper
- interface IMessageQueue
- interface IMessageReceiver
- class IOController
- class MessageHandler

5.13 Package se2xb3.io.files

Classes

- class FileFinder

5.14 Package se2xb3.io.source

Classes

- class DataSource
- class FileDataSource
- interface IDataSource

5.15 Package se2xb3.io.web

Packages

- package handlers

Classes

- class JsonParser
- class Trend
- class WebServer

5.16 Package se2xb3.io.web.handlers

Classes

- class CORSHandler
- class TrendHandler

5.17 Package se2xb3.tests

Classes

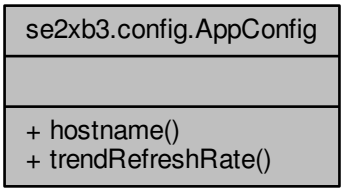
- class FileDataSourceTest
- class TestDataSource

Chapter 6

Class Documentation

6.1 se2xb3.config.AppConfig Interface Reference

Collaboration diagram for se2xb3.config.AppConfig:



Public Member Functions

- String hostname ()
- int trendRefreshRate ()

6.1.1 Detailed Description

Author

Dawson

Version

1.0

Since

4/3/2017

6.1.2 Member Function Documentation

6.1.2.1 String se2xb3.config.AppConfig.hostname ( )

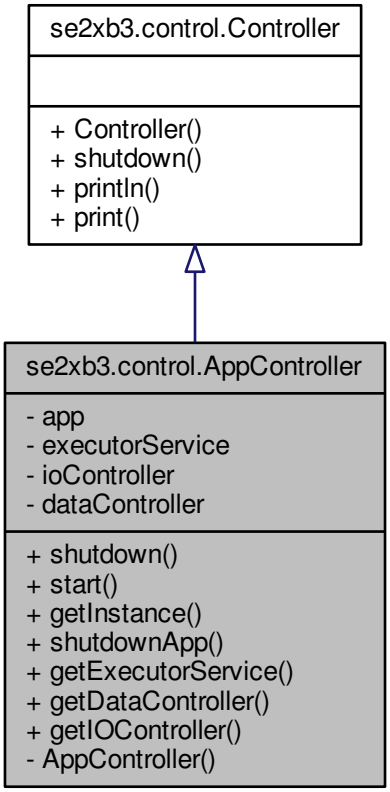
6.1.2.2 int se2xb3.config.AppConfig.trendRefreshRate ( )

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

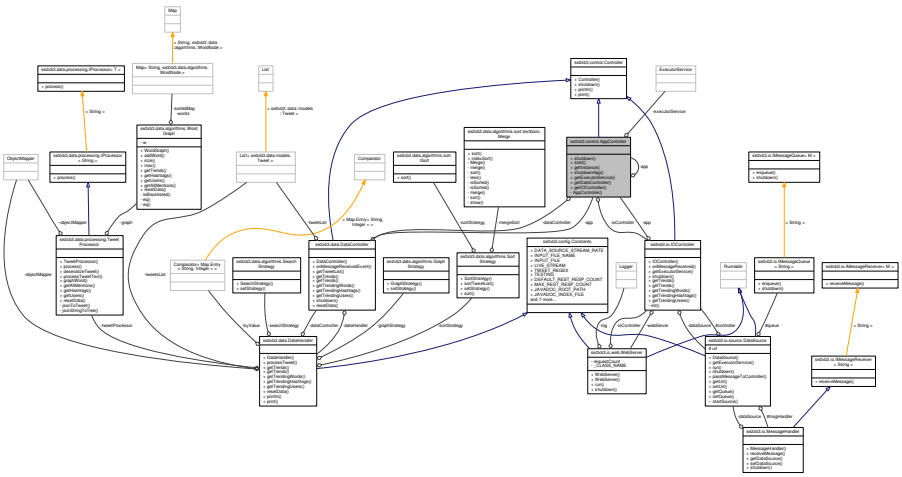
- AppConfig.java

6.2 se2xb3.control.AppController Class Reference

Inheritance diagram for se2xb3.control.AppController:



Collaboration diagram for se2xb3.control.AppController:



Public Member Functions

- void shutdown ()

Static Public Member Functions

- static AppController start ()
- static AppController getInstance ()
- static void shutdownApp ()
- static ExecutorService getExecutorService ()
- static DataController getDataController ()
- static IOController getIOController ()

Private Member Functions

- AppController ()

Static Private Attributes

- static AppController app = getInstance()
- static volatile ExecutorService executorService
- static IOController ioController
- static DataController dataController

6.2.1 Detailed Description

Main app controller.

Author

Dawson Myers

Version

1.0

Since

3/11/2017

6.2.2 Constructor & Destructor Documentation

6.2.2.1 se2xb3.control.AppController.AppController ( ) [private]

Private constructor for singleton instance.

```
27                              {
28          //app = this;
29          executorService = Executors.newFixedThreadPool(5);
30          ioController = new IOController(this);
31          dataController = new DataController(this);
32      }
```

6.2.3 Member Function Documentation

6.2.3.1 static DataController se2xb3.control.AppController.getDataController ( ) [static]

Get instance the data controller instance.

Returns

a reference to the IOController

```
98                                                  {
99          return getInstance().dataController;
100     }
```

6.2.3.2 static ExecutorService se2xb3.control.AppController.getExecutorService ( ) [static]

Return the executorService instance

Returns

executorService the executor service

```
89                                                    {
90          return executorService;
91      }
```

6.2.3.3 static AppController se2xb3.control.AppController.getInstance ( ) [static]

Singleton getter.

Returns

a reference to the app controller

```
49                                              {
50          if (app == null) app = new AppController();
51          return app;
52      }
```

6.2.3.4 static IOController se2xb3.control.AppController.getIOController ( ) [static]

Get instance the data controller instance.

Returns

a reference to the IOController

```
107                                                 {
108         return ioController;
109     }
```

6.2.3.5 void se2xb3.control.AppController.shutdown ( )

Shutdown thread pool.

```
79                              {
80         dataController.shutdown();
81         ioController.shutdown();
82     }
```

6.2.3.6 static void se2xb3.control.AppController.shutdownApp ( ) [static]

Shutdown thread pool.

```
58                                      {
59         app.shutdown();
60         try {
61             System.out.println("attempt to shutdown executor");
62             TimeUnit.SECONDS.sleep(2);
63             executorService.shutdown();
64             executorService.awaitTermination(10, TimeUnit.SECONDS);
65         } catch (InterruptedException e) {
66             System.err.println("tasks interrupted");
67         } finally {
68             if (!executorService.isTerminated()) {
69                 System.err.println("cancel non-finished tasks");
70             }
71             executorService.shutdownNow();
72             System.out.println("shutdown finished");
73         }
74     }
```

6.2.3.7 static AppController se2xb3.control.AppController.start ( ) [static]

Start app.

Returns

a reference to the app controller

```
39                                          {
40 //        if(app == null) app  = new AppController();
41         return getInstance();
42     }
```

6.2.4 Member Data Documentation

6.2.4.1 AppController se2xb3.control.AppController.app = getInstance() [static], [private]

6.2.4.2 DataController se2xb3.control.AppController.dataController [static], [private]

6.2.4.3 volatile ExecutorService se2xb3.control.AppController.executorService [static], [private]

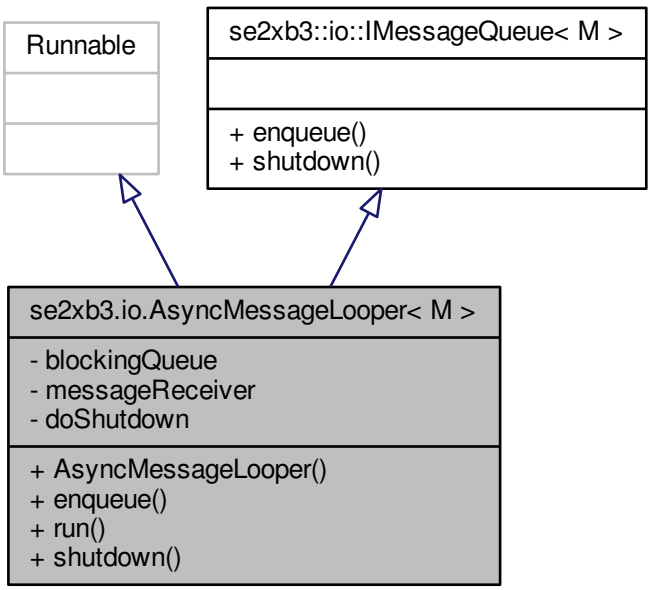
6.2.4.4 IOController se2xb3.control.AppController.ioController [static], [private]

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

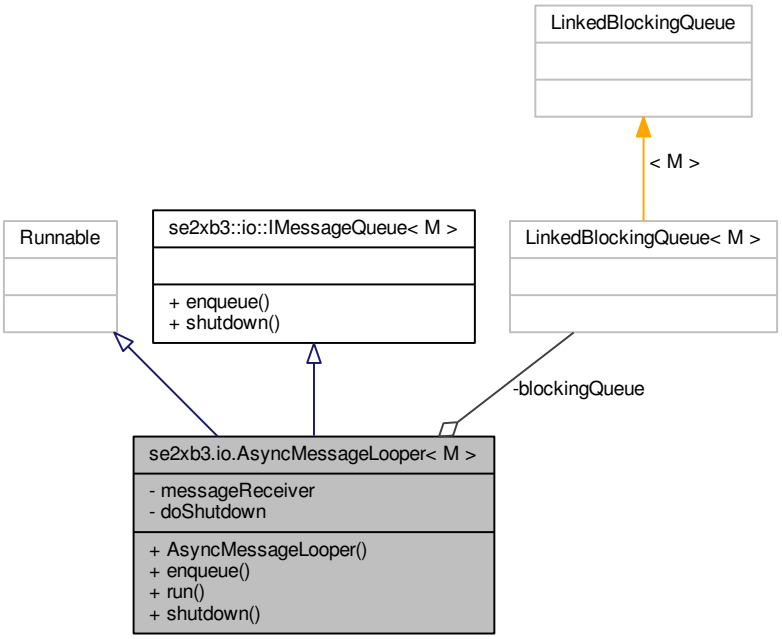
- AppController.java

6.3 se2xb3.io.AsyncMessageLooper< M > Class Template Reference

Inheritance diagram for se2xb3.io.AsyncMessageLooper< M >:



Collaboration diagram for se2xb3.io.AsyncMessageLooper< M >:



Public Member Functions

- AsyncMessageLooper (IMessageReceiver< M > receiver, ExecutorService executorService)
- void enqueue (M msg)
- void run ()
- void shutdown ()

Private Attributes

- volatile LinkedBlockingQueue< M > blockingQueue = new LinkedBlockingQueue<M>()
- IMessageReceiver< M > messageReceiver
- boolean doShutdown = false

6.3.1 Detailed Description

A class that asynchronously decouples incoming messages from the rest of the system by running the buffer in separate thread. It continuously tries to take messages from a blocking queue.

Author

Dawson Myers

Version

1.0

Since

3/11/2017

6.3.2 Constructor & Destructor Documentation

6.3.2.1 se2xb3.io.AsyncMessageLooper< M >.AsyncMessageLooper (IMessageReceiver< M > *receiver,* ExecutorService *executorService*)

Contructor that takes a message receiver

Parameters

receiver	a message receiver
executorService	an executor

```
28                              {
29          messageReceiver = receiver;
30          executorService.execute(this);
31      }
```

6.3.3 Member Function Documentation

6.3.3.1 void se2xb3.io.AsyncMessageLooper< M >.enqueue (M *msg*)

Inserts the specified element into this queue if it is possible to do so immediately without violating capacity restrictions, throwing an IllegalStateException if no space is currently available.

Parameters

msg	a message

Implements se2xb3.io.IMessageQueue< M >.

```
40                                  {
41          blockingQueue.add(msg);
42      }
```

6.3.3.2 void se2xb3.io.AsyncMessageLooper< M >.run ( )

Start message loop thread.

```
47                          {
48          while (!doShutdown) {
49
50              M msg;
51              try {
52                  // Loop forever, taking messages from the queue when available.
53                  msg = blockingQueue.take();
54
55                  //if(msg instanceof String) System.out.println(msg);
56                  messageReceiver.receiveMessage(msg);
57              } catch (InterruptedException e) {
58                  e.printStackTrace();
59              }
60
61          }
62      }
```

6.3.3.3 void se2xb3.io.AsyncMessageLooper< M >.shutdown ( )

Shutdown thhread by breaking out of the message loop.

Implements se2xb3.io.IMessageQueue< M >.

```
68                          {
69          doShutdown = true;
70          blockingQueue.add((M) new Object());
71
72      }
```

6.3.4 Member Data Documentation

6.3.4.1 volatile LinkedBlockingQueue<M> se2xb3.io.AsyncMessageLooper< M >.blockingQueue = new LinkedBlockingQueue<M>() [private]

6.3.4.2 boolean se2xb3.io.AsyncMessageLooper< M >.doShutdown = false [private]

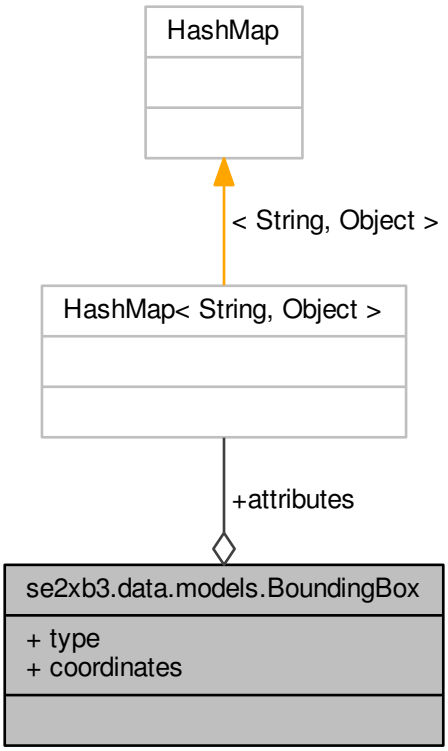
6.3.4.3 IMessageReceiver<M> se2xb3.io.AsyncMessageLooper< M >.messageReceiver [private]

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

- AsyncMessageLooper.java

6.4 se2xb3.data.models.BoundingBox Class Reference

Collaboration diagram for se2xb3.data.models.BoundingBox:



Public Attributes

- String type
- int[ ][ ] coordinates
- HashMap< String, Object > attributes

6.4.1 Member Data Documentation

6.4.1.1 HashMap<String, Object> se2xb3.data.models.BoundingBox.attributes

6.4.1.2 int [ ][ ] se2xb3.data.models.BoundingBox.coordinates

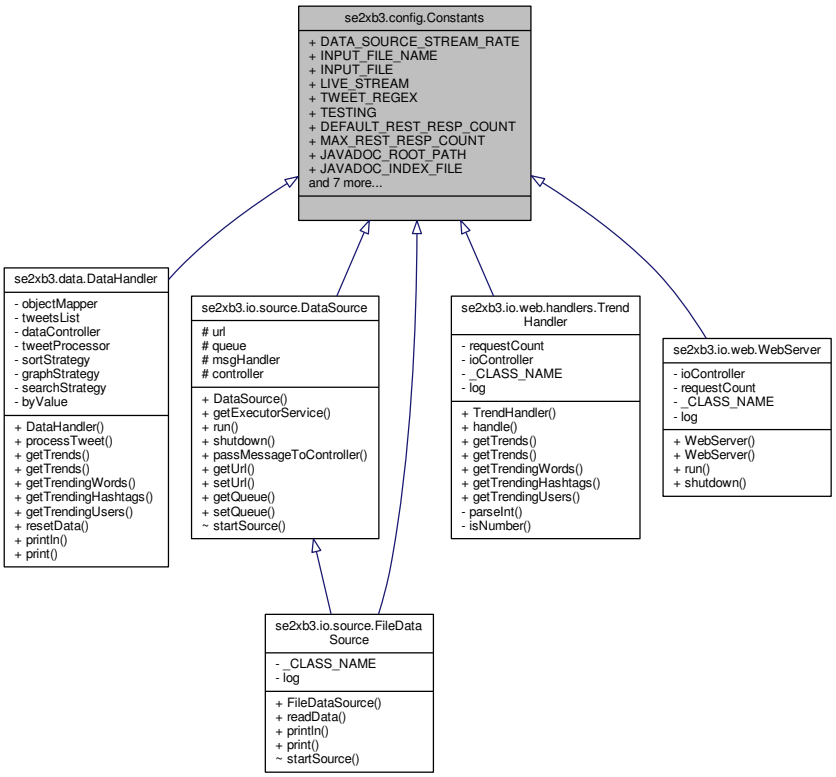
6.4.1.3 String se2xb3.data.models.BoundingBox.type

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

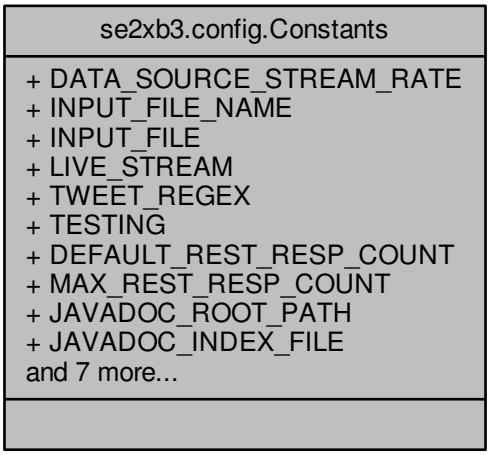
- Place.java

6.5 se2xb3.config.Constants Interface Reference

Inheritance diagram for se2xb3.config.Constants:



Collaboration diagram for se2xb3.config.Constants:



Public Attributes

- int DATA_SOURCE_STREAM_RATE = 500
- String INPUT_FILE_NAME = "tweets-simple-min-100k.txt"
- String INPUT_FILE = "data/tweets-simple-min-100k.txt"
- boolean LIVE_STREAM = false
- String TWEET_REGEX = "([@|#]*\\w)+"
- boolean TESTING = true
- int DEFAULT_REST_RESP_COUNT = 10
- int MAX_REST_RESP_COUNT = 500
- String JAVADOC_ROOT_PATH = "docs"
- String JAVADOC_INDEX_FILE = JAVADOC_ROOT_PATH + "/" + "index.html"
- String WEB_APP_ROOT_PATH = ""
- String WEB_APP_ROOT_FILE = "index.html"
- String REST_TREND_RESOURCE_PATH_REGEX = "trends/:type?/:count?"
- String REST_RESOURCE_TRENDS_ALL = "all"
- String REST_RESOURCE_TRENDS_HASHTAGS = "hashtags"
- String REST_RESOURCE_TRENDS_USERS = "users"
- String REST_REQUEST_NO_MATCH = "NO REST RESOURCE MATCH"

6.5.1 Detailed Description

System constants

Author

Dawson Myers

Version

1.0

Since

3/10/2017

6.5.2 Member Data Documentation

6.5.2.1 int se2xb3.config.Constants.DATA_SOURCE_STREAM_RATE = 500

The rate at which the simulated data source inserts messages into system. The default value is { DATA_SOUR↩ CE_STREAM_RATE}.

6.5.2.2 int se2xb3.config.Constants.DEFAULT_REST_RESP_COUNT = 10

Default count of items to respond to a REST request. The default value is { DEFAULT_REST_RESP_COUNT}.

6.5.2.3 String se2xb3.config.Constants.INPUT_FILE = "data/tweets-simple-min-100k.txt"

The default input file name is set to { INPUT_FILE}.

6.5.2.4 String se2xb3.config.Constants.INPUT_FILE_NAME = "tweets-simple-min-100k.txt"

The default input file name is set to { INPUT_FILE_NAME}.

6.5.2.5 String se2xb3.config.Constants.JAVADOC_INDEX_FILE = JAVADOC_ROOT_PATH + "/" + "index.html"

Javadoc index.html path. The default value is { JAVADOC_INDEX_FILE}.

6.5.2.6 String se2xb3.config.Constants.JAVADOC_ROOT_PATH = "docs"

Javadoc root url path (i.e. the root path for DawsonMyers.ca/docs is "docs"). The default value is { JAVADOC_R↩
OOT_PATH}.

6.5.2.7 boolean se2xb3.config.Constants.LIVE_STREAM = false

True if live streaming is enabled. The default value is { LIVE_STREAM}.

6.5.2.8 int se2xb3.config.Constants.MAX_REST_RESP_COUNT = 500

Maximum count of items that a REST request can ask for (i.e. /trends/users/500). The default value is { MAX_R↩
EST_RESP_COUNT}. This is to stop people from requesting something like this: trends/100000000000.

6.5.2.9 String se2xb3.config.Constants.REST_REQUEST_NO_MATCH = "NO REST RESOURCE MATCH"

REST response message when the request doesn't match any resources. The default value is { REST_REQUE↩
ST_NO_MATCH}.

6.5.2.10 String se2xb3.config.Constants.REST_RESOURCE_TRENDS_ALL = "all"

All word mentions REST resource name. The default value is { REST_RESOURCE_TRENDS_ALL}.

6.5.2.11 String se2xb3.config.Constants.REST_RESOURCE_TRENDS_HASHTAGS = "hashtags"

Hashtag mentions REST resource name. The default value is { REST_RESOURCE_TRENDS_HASHTAGS}.

6.5.2.12 String se2xb3.config.Constants.REST_RESOURCE_TRENDS_USERS = "users"

User mentions REST resource name. The default value is { REST_RESOURCE_TRENDS_USERS}.

6.5.2.13 String se2xb3.config.Constants.REST_TREND_RESOURCE_PATH_REGEX = "trends/:type?/:count?"

The regex for the trend REST resource. The default value is { REST_TREND_RESOURCE_PATH_REGEX}.

6.5.2.14 boolean se2xb3.config.Constants.TESTING = true

6.5.2.15 String se2xb3.config.Constants.TWEET_REGEX = "([@|#]*\\w)+"

The regular expression to parse words, hashtags (words starting with '#'), and users (words starting with '@'). The default value is { TWEET_REGEX}.

6.5.2.16 String se2xb3.config.Constants.WEB_APP_ROOT_FILE = "index.html"

Web app index.html path. This is the file that bootstraps the web app. The default value is { WEB_APP_ROOT_↩ FILE}.

6.5.2.17 String se2xb3.config.Constants.WEB_APP_ROOT_PATH = ""

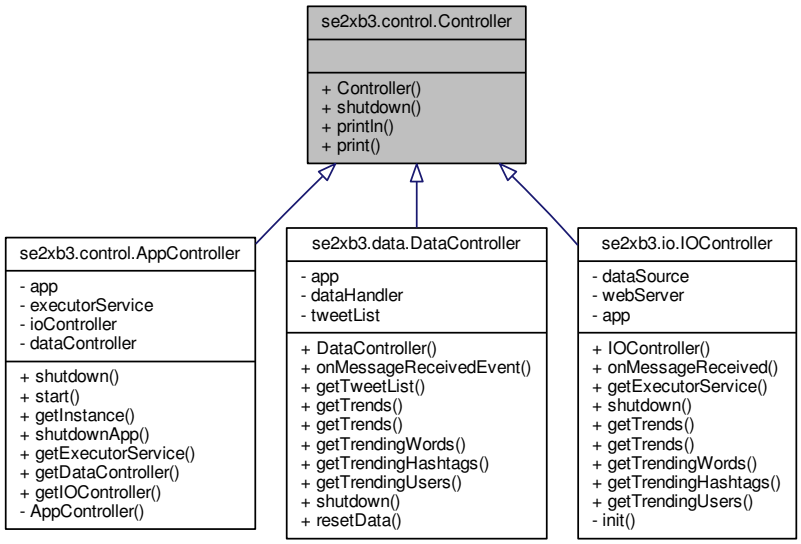
Web app root url path (i.e. the root path for DawsonMyers.ca/ is "" or "/"). This is the url that bootstraps the web app.

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

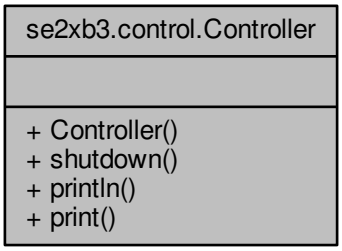
- Constants.java

6.6 se2xb3.control.Controller Class Reference

Inheritance diagram for se2xb3.control.Controller:



Collaboration diagram for se2xb3.control.Controller:



Public Member Functions

- Controller ()
- abstract void shutdown ()

Static Public Member Functions

- static void println (String s)
- static void print (String s)

6.6.1 Detailed Description

Abstract base class for controllers

Author

Dawson Myers

Version

1.0

Since

3/12/2017

6.6.2 Constructor & Destructor Documentation

6.6.2.1 se2xb3.control.Controller.Controller ( )

```
11 {}
```

6.6.3 Member Function Documentation

6.6.3.1 static void se2xb3.control.Controller.print (String *s*) [static]

```
23                                      {
24          System.out.print(s);
25      }
```

6.6.3.2 static void se2xb3.control.Controller.println (String *s*) [static]

```
19                                        {
20          System.out.println(s);
21      }
```

6.6.3.3 abstract void se2xb3.control.Controller.shutdown ( ) [abstract]

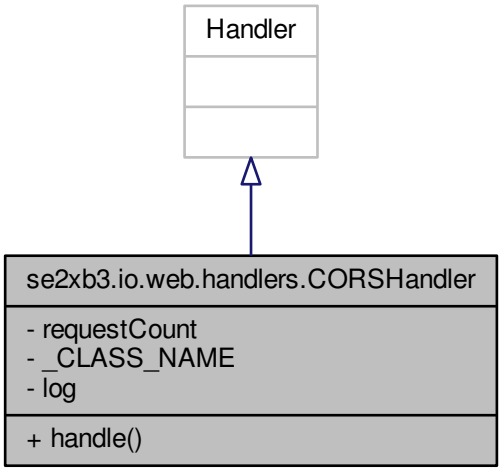
Shutdown blocking queue.

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

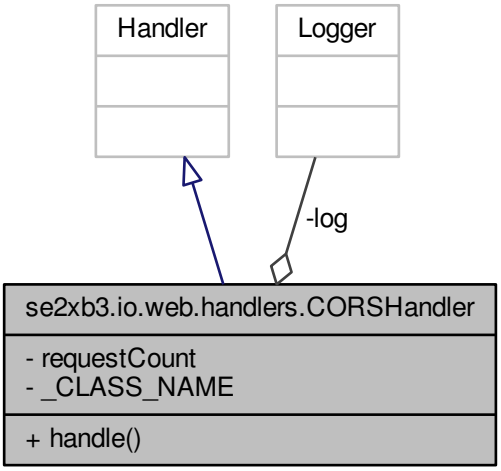
- Controller.java

6.7 se2xb3.io.web.handlers.CORSHandler Class Reference

Inheritance diagram for se2xb3.io.web.handlers.CORSHandler:



Collaboration diagram for se2xb3.io.web.handlers.CORSHandler:



Public Member Functions

- void handle (Context ctx) throws Exception

Private Attributes

- long requestCount = 0

Static Private Attributes

- static final String _CLASS_NAME = CORSHandler.class.getSimpleName()
- static final Logger log = LoggerFactory.getLogger(_CLASS_NAME)

6.7.1 Detailed Description

Add CORS headers for cross-site REST requests.

Author

Dawson Myers

Version

1.0

Since

3/27/2017

6.7.2 Member Function Documentation

6.7.2.1 void se2xb3.io.web.handlers.CORSHandler.handle (Context *ctx*) throws Exception

Handle requests by adding the CORS headers to each request that is processed. Then, continue to the next handler in the chain without sending the response.

Parameters

ctx	the response context

Exceptions

Exception	an exception

```
28                                                  {
29          MutableHeaders headers = ctx.getResponse().getHeaders();
30          headers.set("Access-Control-Allow-Origin", "*");
31          headers.set("Access-Control-Allow-Headers", "x-requested-with, origin, content-type, " +
32                  "accept");
33          headers.set("Access-Control-Allow-Methods", "GET,PUT,POST,DELETE");
34          requestCount++;
35          if (requestCount % 100 == 0) {
36              log.info("Request count = " + requestCount);
37          }
38          // pass to next handler
39          ctx.next();
40      }
```

6.7.3 Member Data Documentation

6.7.3.1 final String se2xb3.io.web.handlers.CORSHandler._CLASS_NAME = CORSHandler.class.getSimpleName() [static], [private]

6.7.3.2 final Logger se2xb3.io.web.handlers.CORSHandler.log = LoggerFactory.getLogger(_CLASS_NAME) [static], [private]

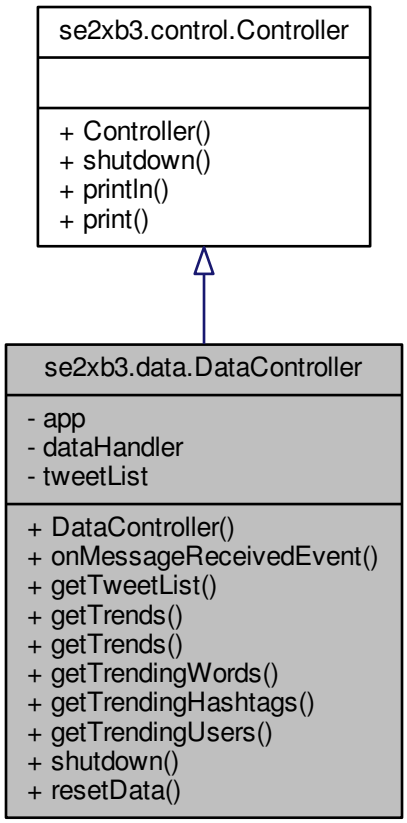
6.7.3.3 long se2xb3.io.web.handlers.CORSHandler.requestCount = 0 [private]

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

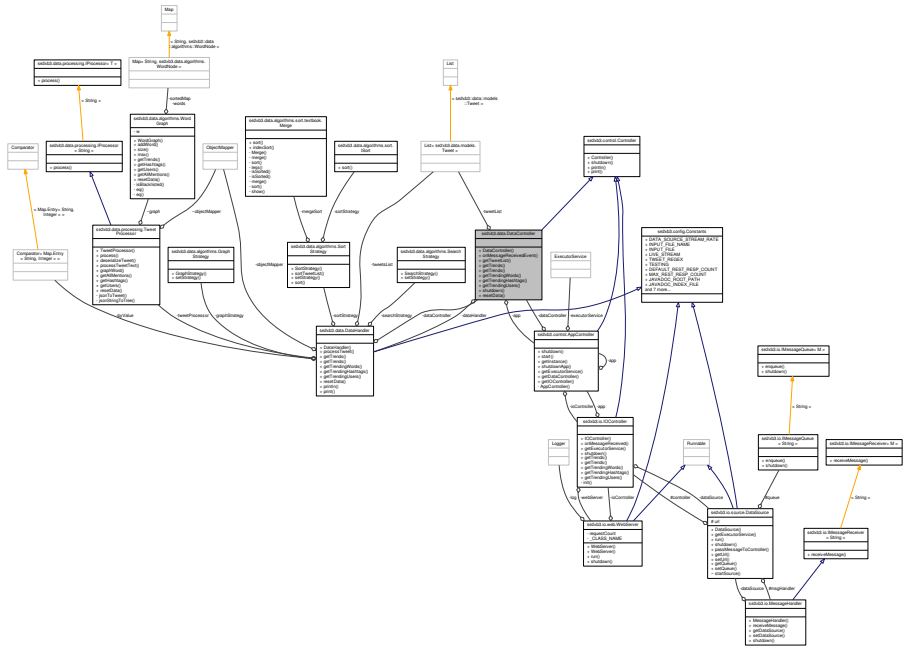
- CORSHandler.java

6.8 se2xb3.data.DataController Class Reference

Inheritance diagram for se2xb3.data.DataController:



Collaboration diagram for se2xb3.data.DataController:



Public Member Functions

- DataController (AppController appController)
- void onMessageReceivedEvent (String msg)
- List< Tweet > getTweetList ()
- List< Map< String, Integer > > getTrends ()
- List< Map< String, Integer > > getTrends (int count)
- Map< String, Integer > getTrendingWords (int count)
- Map< String, Integer > getTrendingHashtags (int count)
- Map< String, Integer > getTrendingUsers (int count)
- void shutdown ()
- void resetData ()

Private Attributes

- AppController app
- DataHandler dataHandler
- List< Tweet > tweetList = new ArrayList<>()

Additional Inherited Members

6.8.1 Detailed Description

A class controls processing and analysis of the tweet data.

Author

Dawson Myers

Version

1.0

Since

3/11/2017

6.8.2 Constructor & Destructor Documentation

6.8.2.1 se2xb3.data.DataController.DataController (AppController *appController*)

Constructor that takes an instance of the AppController.

Parameters

appController	the app controller instance

```
27                                                  {
28          app = appController;
29          dataHandler = new DataHandler(this);
30      }
```

6.8.3 Member Function Documentation

6.8.3.1 Map<String, Integer> se2xb3.data.DataController.getTrendingHashtags (int *count*)

Get trending hashtags.

Parameters

count	number of top trending items to get.

Returns

a map of the top trending items

```
82                                                          {
83          return dataHandler.getTrendingHashtags(count);
84      }
```

6.8.3.2 Map<String, Integer> se2xb3.data.DataController.getTrendingUsers (int *count*)

Get trending users.

Parameters

count	number of top trending items to get.

Returns

a map of the top trending items

```
92                                                          {
93          return dataHandler.getTrendingUsers(count);
94      }
```

6.8.3.3 Map<String, Integer> se2xb3.data.DataController.getTrendingWords (int *count*)

Get trending words.

Parameters

count	the number of top trending items to get

Returns

a map of the top trending items

```
72                                                          {
73          return dataHandler.getTrendingWords(count);
74      }
```

6.8.3.4 List<Map<String, Integer> > se2xb3.data.DataController.getTrends ( )

Get list of trends

Returns

a list of maps of the top trending items

```
53                                                  {
54          return dataHandler.getTrends();
55      }
```

6.8.3.5 List<Map<String, Integer> > se2xb3.data.DataController.getTrends (int *count*)

Get list of trends

Parameters

count	the number of top trending items to get

Returns

a list of maps of the top trending items

```
62                                                          {
63          return dataHandler.getTrends(count);
64      }
```

6.8.3.6 List<Tweet> se2xb3.data.DataController.getTweetList ( )

Get list of trends

Returns

a list of maps of the top trending items

```
45                                      {
46          return tweetList;
47      }
```

6.8.3.7 void se2xb3.data.DataController.onMessageReceivedEvent (String *msg*)

Called whenever a message is received from the IO subsystem.

Parameters

msg	a message string

```
36                                                  {
37  //          System.out.println(msg);
38          dataHandler.processTweet(msg);
39      }
```

6.8.3.8 void se2xb3.data.DataController.resetData ( )

```
104                             {
105         dataHandler.resetData();
106     }
```

6.8.3.9 void se2xb3.data.DataController.shutdown ( )

Shutdown.

```
100                             {
101
102     }
```

6.8.4 Member Data Documentation

6.8.4.1 AppController se2xb3.data.DataController.app [private]

6.8.4.2 DataHandler se2xb3.data.DataController.dataHandler [private]

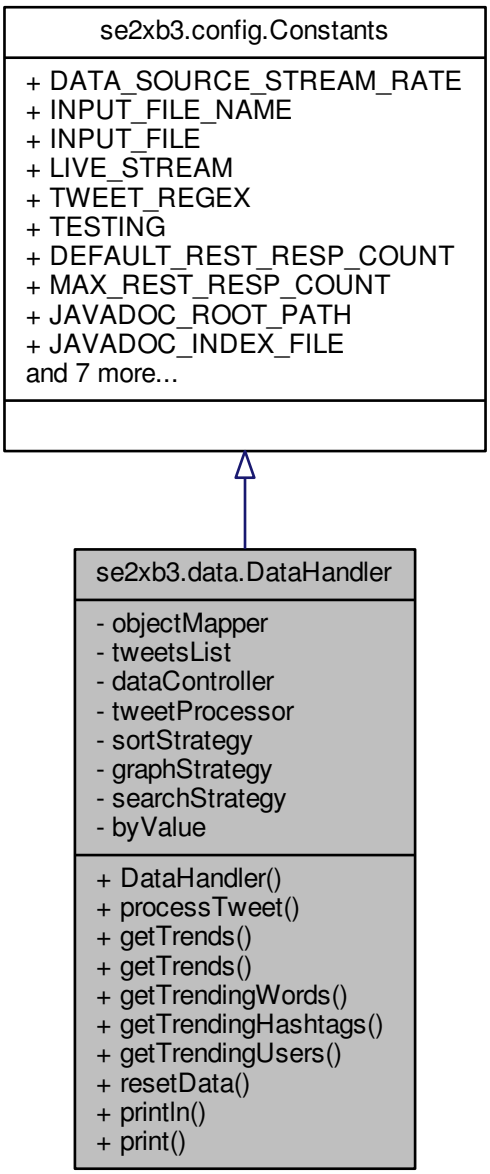
6.8.4.3 List<Tweet> se2xb3.data.DataController.tweetList = new ArrayList<>() [private]

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

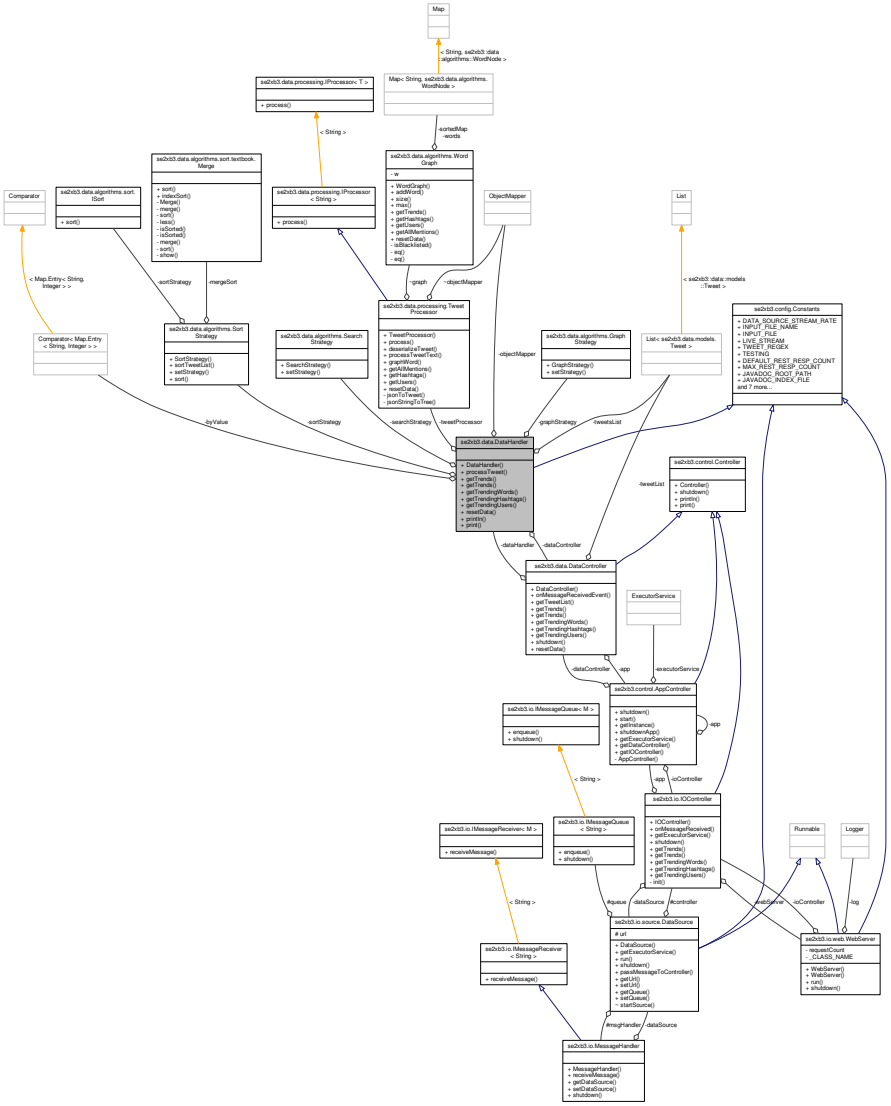
- DataController.java

6.9 se2xb3.data.DataHandler Class Reference

Inheritance diagram for se2xb3.data.DataHandler:



Collaboration diagram for se2xb3.data.DataHandler:



Public Member Functions

- DataHandler (DataController dataController)
- void processTweet (String tweetStr)
- List< Map< String, Integer > > getTrends ()
- List< Map< String, Integer > > getTrends (int count)
- Map< String, Integer > getTrendingWords (int count)
- Map< String, Integer > getTrendingHashtags (int count)
- Map< String, Integer > getTrendingUsers (int count)
- void resetData ()

Static Public Member Functions

- static void println (String s)
- static void print (String s)

Private Attributes

- ObjectMapper objectMapper = new ObjectMapper()
- List< Tweet > tweetsList = new ArrayList<>()
- DataController dataController
- TweetProcessor tweetProcessor = new TweetProcessor()
- SortStrategy sortStrategy = new SortStrategy()
- GraphStrategy graphStrategy = new GraphStrategy()
- SearchStrategy searchStrategy = new SearchStrategy()
- Comparator< Map.Entry< String, Integer > > byValue

Additional Inherited Members

6.9.1 Detailed Description

A class to process tweets and use various algorithms to sort, search, and graph the data.

Author

Dawson Myers

Version

1.0

Since

2/23/2017

6.9.2 Constructor & Destructor Documentation

6.9.2.1 se2xb3.data.DataHandler.DataHandler (DataController *dataController*)

Constructor

Parameters

dataController	a reference to the data controller

```
44                                                  {
45         this.dataController = dataController;
46     }
```

6.9.3 Member Function Documentation

6.9.3.1 Map<String, Integer> se2xb3.data.DataHandler.getTrendingHashtags (int *count*)

Get trending hashtags.

Parameters

count	number of top trending items to get.

Returns

a map containing the top trending items

```
116                                                                 {
117
118         WordNode[] hashtagMentions = tweetProcessor.getHashtags();
119         sortStrategy.sort(hashtagMentions);
120         Map<String, Integer> m = new LinkedHashMap<>();
121         Arrays.stream(hashtagMentions)
122               .limit(count) // only grab the top n number of items
123               .collect(Collectors.toMap(a -> ((WordNode) a).id, a -> ((WordNode) a).size()))
124               .entrySet().stream().sorted(byValue.reversed()).forEachOrdered(a -> m.put(a.getKey
125                 (), a.getValue()));
126         return m;
127     }
```

6.9.3.2 Map<String, Integer> se2xb3.data.DataHandler.getTrendingUsers (int *count*)

Get trending users.

Parameters

count	number of top trending items to get.

Returns

a map containing the top trending items

```
135                                                             {
136         WordNode[] userMentions = tweetProcessor.getUsers();
137         sortStrategy.sort(userMentions);
138         Map<String, Integer> m = new LinkedHashMap<>();
139         Arrays.stream(userMentions)
140               .limit(count)
141               .collect(Collectors.toMap(a -> ((WordNode) a).id, a -> ((WordNode) a).size()))
142               .entrySet().stream().sorted(byValue.reversed()).forEachOrdered(a -> m.put(a.getKey
143                 (), a.getValue()));
144         return m;
145     }
```

6.9.3.3 Map<String, Integer> se2xb3.data.DataHandler.getTrendingWords (int *count*)

Get trending words.

Parameters

count	number of top trending items to get

Returns

a map containing the top trending items

```
95                                                          {
96          WordNode[] allMentions = tweetProcessor.getAllMentions();
97
98          sortStrategy.sort(allMentions);
99          Map<String, Integer> m = new LinkedHashMap<>();
100
101          Arrays.stream(allMentions)
102                .filter(a -> !a.id.contains("http"))
103                .limit(count)
104                .collect(Collectors.toMap(a -> ((WordNode) a).id, a -> ((WordNode) a).size()))
105                .entrySet().stream().sorted(byValue.reversed()).forEachOrdered(a -> m.put(a.getKey
106                  (), a.getValue()));
107          return m;
108      }
```

6.9.3.4 List<Map<String, Integer> > se2xb3.data.DataHandler.getTrends ( )

Get Get trending words.

Returns

list containing the maps of the most popular word, hashtags, and user mentions.

```
69                                                  {
70          return getTrends(DEFAULT_REST_RESP_COUNT);
71      }
```

6.9.3.5 List<Map<String, Integer> > se2xb3.data.DataHandler.getTrends (int *count*)

Get trending words.

Parameters

count	number of top trending items to get.

Returns

list containing the maps of the most popular word, hashtags, and user mentions.

```
79                                                          {
80          List<Map<String, Integer>> trends = new ArrayList<>();
81
82          trends.add(getTrendingWords(count));
83          trends.add(getTrendingHashtags(count));
84          trends.add(getTrendingUsers(count));
85
86          return trends;
87      }
```

6.9.3.6 static void se2xb3.data.DataHandler.print (String *s*) [static]

```
153                                         {
154          System.out.print(s);
155      }
```

6.9.3.7 static void se2xb3.data.DataHandler.println (String *s*) [static]

```
149                                         {
150         System.out.println(s);
151     }
```

6.9.3.8 void se2xb3.data.DataHandler.processTweet (String *tweetStr*)

Process a tweet string by deserializing it into a new tweet object. Then store it in a list and send it for further processing and analysis.

Parameters

tweetStr	a string containing a JSON encoded tweet

```
55                                              {
56         Tweet tweet = tweetProcessor.deserializeTweet(tweetStr);
57
58         // the simulator never cleared this list as it loaded tweets into the system, causing the
59         // memory to run out and cause the program to crash
60         //tweetsList.add(tweet);
61         tweetProcessor.processTweetText(tweet);
62     }
```

6.9.3.9 void se2xb3.data.DataHandler.resetData ( )

```
157                             {
158         tweetProcessor.resetData();
159         tweetsList.clear();
160     }
```

6.9.4 Member Data Documentation

6.9.4.1 Comparator<Map.Entry<String, Integer> > se2xb3.data.DataHandler.byValue [private]

Initial value:

```
=
            (entry1, entry2) -> entry1.getValue().compareTo(entry2.getValue())
```

6.9.4.2 DataController se2xb3.data.DataHandler.dataController [private]

6.9.4.3 GraphStrategy se2xb3.data.DataHandler.graphStrategy = new GraphStrategy() [private]

6.9.4.4 ObjectMapper se2xb3.data.DataHandler.objectMapper = new ObjectMapper() [private]

6.9.4.5 SearchStrategy se2xb3.data.DataHandler.searchStrategy = new SearchStrategy() [private]

6.9.4.6 SortStrategy se2xb3.data.DataHandler.sortStrategy = new SortStrategy() [private]

6.9.4.7 TweetProcessor se2xb3.data.DataHandler.tweetProcessor = new TweetProcessor() [private]

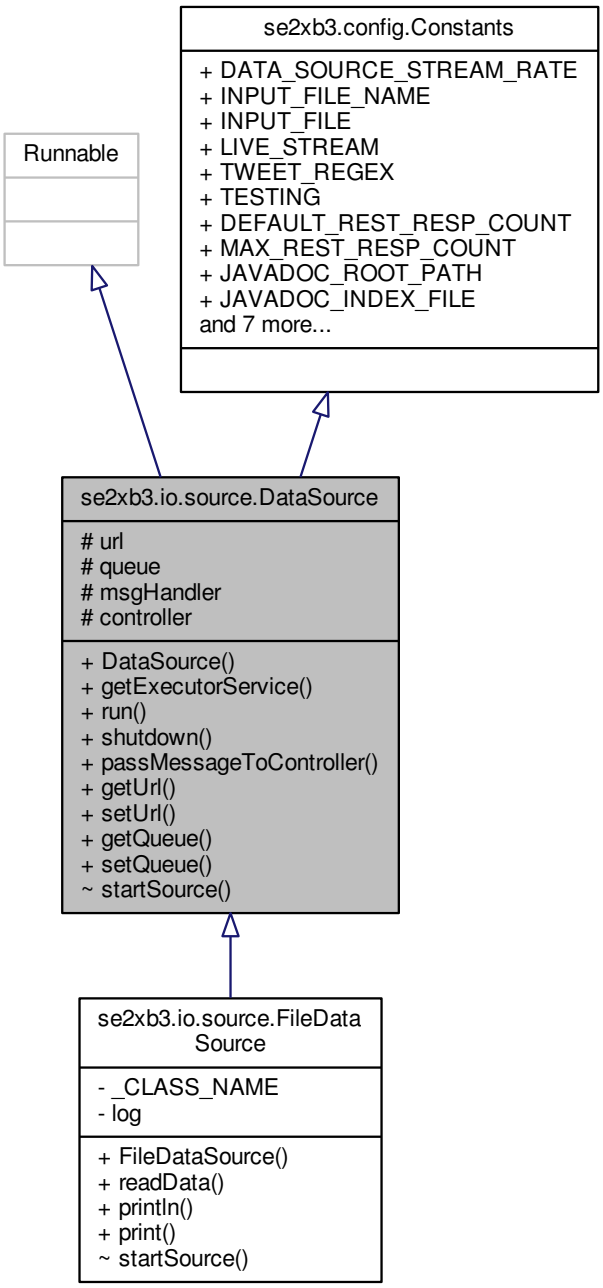
6.9.4.8 List<Tweet> se2xb3.data.DataHandler.tweetsList = new ArrayList<>() [private]

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

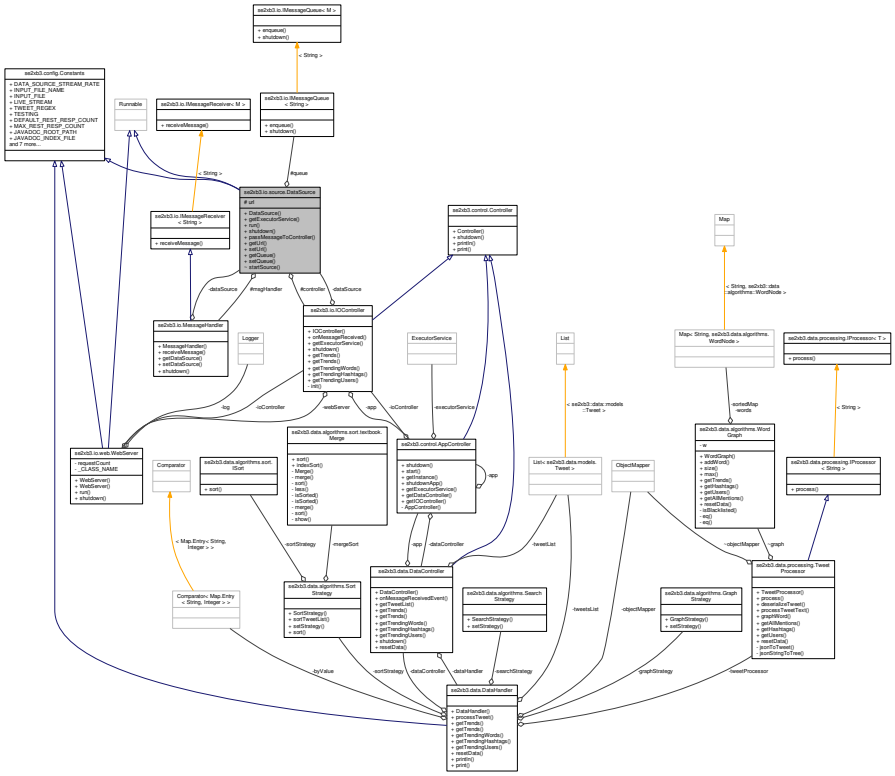
- DataHandler.java

6.10 se2xb3.io.source.DataSource Class Reference

Inheritance diagram for se2xb3.io.source.DataSource:



Collaboration diagram for se2xb3.io.source.DataSource:



Public Member Functions

- DataSource (IOController controller)
- ExecutorService getExecutorService ()
- void run ()
- void shutdown ()
- synchronized void passMessageToController (String msg)
- String getUrl ()
- void setUrl (String url)
- IMessageQueue< String > getQueue ()
- void setQueue (IMessageQueue< String > queue)

Protected Attributes

- String url = Constants.INPUT_FILE
- IMessageQueue< String > queue
- MessageHandler msgHandler
- IOController controller

Package Functions

- abstract void startSource ()

Additional Inherited Members

6.10.1 Detailed Description

Abstract base class for data sources.

Author

Dawson Myers

Version

1.0

Since

3/10/2017

6.10.2 Constructor & Destructor Documentation

6.10.2.1 se2xb3.io.source.DataSource.DataSource (IOController *controller*)

Constructor that takes an IOController.

Parameters

controller	the controller instances

```
38                                                  {
39 //        super("DataSource Thread");
40          this.controller = controller;
41 //        start();
42          // start data source asynchronously.
43          getExecutorService().execute(this);
44      }
```

6.10.3 Member Function Documentation

6.10.3.1 ExecutorService se2xb3.io.source.DataSource.getExecutorService ( )

Return the executorService instance

Returns

executorService

```
52                                                  {
53          return controller.getExecutorService();
54      }
```

6.10.3.2 IMessageQueue<String> se2xb3.io.source.DataSource.getQueue ( )

Get the message queue.

Returns

the queue

```
121                                          {
122         return queue;
123     }
```

6.10.3.3 String se2xb3.io.source.DataSource.getUrl ( )

Get the url string.

Returns

a url string

```
101                             {
102         return url;
103     }
```

6.10.3.4 synchronized void se2xb3.io.source.DataSource.passMessageToController (String *msg*)

Receive new message from message handler and send it to the controller to be processed.

Parameters

msg	a new message string

```
92                                                          {
93         controller.onMessageReceived(msg);
94     }
```

6.10.3.5 void se2xb3.io.source.DataSource.run ( )

Method to run when the thread is started.

```
59                      {
60         // The handler has to be given a ref to this DataSource instance so
61         // that it can pass messages back to the controller using the
62         // passMessageToController() hook in this class. The messages are
63         // passed as they are received from the message buffer.
64         msgHandler = new MessageHandler(this);
65 //        msgHandler = new MessageHandler(controller);
66
67         // The queue is given the handler instance so that messages can be
68         // taken from the queue and given to the handler. The queue runs in a
69         // separate thread.
```

```
70          queue = new AsyncMessageLooper<String>(msgHandler,
      getExecutorService());
71
72          // Now that all the components involved in passing data through the
73          // IO subsystem have been initialized, the data source implementation
74          // can be started and begin feeding messages into it as they are
75          // received.
76          startSource();
77      }
```

6.10.3.6 void se2xb3.io.source.DataSource.setQueue (IMessageQueue< String > *queue*)

Set the message queue.

Parameters

queue	a maessage queue

```
130                                                     {
131 //      public void setQueue(AsyncMessageBuffer<String> queue) {
132           this.queue = queue;
133       }
```

6.10.3.7 void se2xb3.io.source.DataSource.setUrl (String *url*)

Set the url string. This could be any relavent url that is used in conjunction with a data source.

Parameters

url	a url for the data source

```
112                                     {
113           this.url = url;
114       }
```

6.10.3.8 void se2xb3.io.source.DataSource.shutdown ( )

Shutdown blocking queue.

```
82                              {
83          queue.shutdown();
84      }
```

6.10.3.9 abstract void se2xb3.io.source.DataSource.startSource ( ) [abstract],[package]

This method is called when the thread is started. It begins the process of reading data from a data source.

6.10.4 Member Data Documentation

6.10.4.1 IOController se2xb3.io.source.DataSource.controller [protected]

6.10.4.2 MessageHandler se2xb3.io.source.DataSource.msgHandler [protected]

6.10.4.3 IMessageQueue<String> se2xb3.io.source.DataSource.queue [protected]

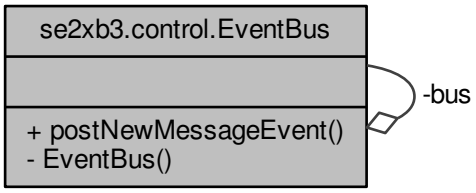
6.10.4.4 String se2xb3.io.source.DataSource.url = Constants.INPUT_FILE [protected]

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

- DataSource.java

6.11 se2xb3.control.EventBus Class Reference

Collaboration diagram for se2xb3.control.EventBus:



Static Public Member Functions

- static void postNewMessageEvent (String msg)

Private Member Functions

- EventBus ()

Static Private Attributes

- static EventBus bus = null

6.11.1 Detailed Description

A class to containing observable events using an eventbus.

Author

Dawson Myers

Version

1.0

Since

3/11/2017

6.11.2 Constructor & Destructor Documentation

6.11.2.1 se2xb3.control.EventBus.EventBus ( ) [private]

Constructor for singleton instance of EventBus.

```
21                          {
22 //         eventBus = new MBassador();
23     }
```

6.11.3 Member Function Documentation

6.11.3.1 static void se2xb3.control.EventBus.postNewMessageEvent (String *msg*) [static]

Singleton getter. Post new message to be processed.

Parameters

msg	a message string

```
38                                                  {
39         AppController.getDataController().onMessageReceivedEvent(msg);
40     }
```

6.11.4 Member Data Documentation

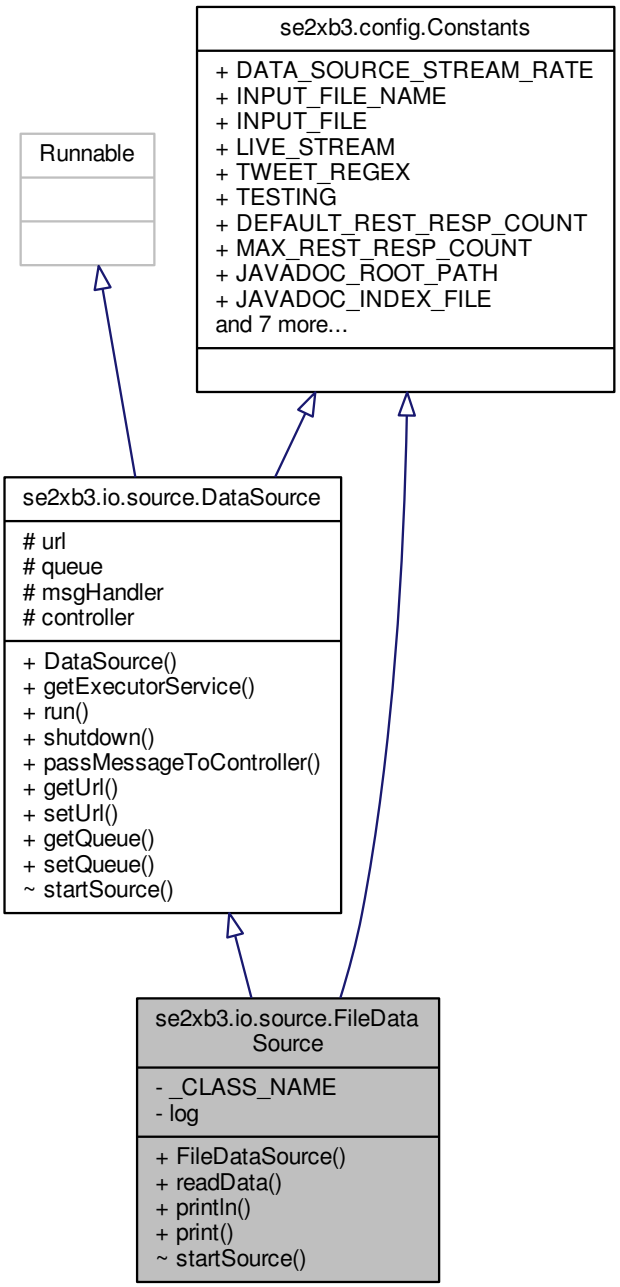
6.11.4.1 EventBus se2xb3.control.EventBus.bus = null [static], [private]

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

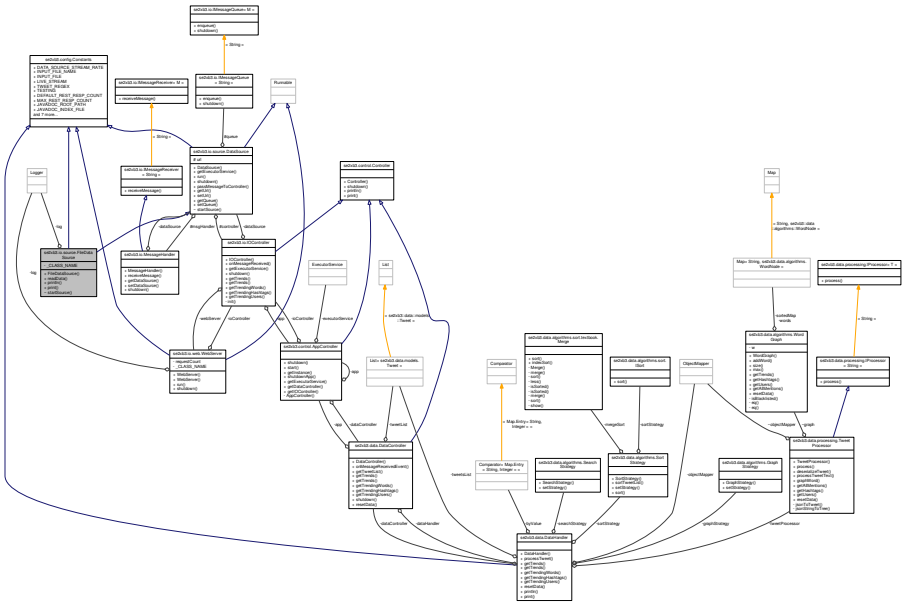
- EventBus.java

6.12 se2xb3.io.source.FileDataSource Class Reference

Inheritance diagram for se2xb3.io.source.FileDataSource:



Collaboration diagram for se2xb3.io.source.FileDataSource:



Public Member Functions

- FileDataSource (IOController controller)
- void readData ()

Static Public Member Functions

- static void println (String s)
- static void print (String s)

Package Functions

- void startSource ()

Static Private Attributes

- static final String _CLASS_NAME = FileDataSource.class.getSimpleName()
- static final Logger log = getLogger(_CLASS_NAME)

Additional Inherited Members

6.12.1 Detailed Description

A class that extends the abstract class DataSource that is used to read data from a file and stream it into the system as each line is read.

Author

Dawson Myers

Version

1.0

Since

3/10/2017

6.12.2 Constructor & Destructor Documentation

6.12.2.1 se2xb3.io.source.FileDataSource.FileDataSource (IOController *controller*)

Constructor that takes an IOController instance.

Parameters

controller	an instance of the IOController

```
29                                                  {
30          super(controller);
31          setUrl(INPUT_FILE);
32      }
```

6.12.3 Member Function Documentation

6.12.3.1 static void se2xb3.io.source.FileDataSource.print (String *s*) [static]

```
107                                         {
108         System.out.print(s);
109     }
```

6.12.3.2 static void se2xb3.io.source.FileDataSource.println (String *s*) [static]

```
103                                           {
104         System.out.println(s);
105     }
```

6.12.3.3 void se2xb3.io.source.FileDataSource.readData ( )

Begin reading tweets from a file. Each line of text is one JSON encoded tweet. The strings are added to the queue as they are read.

```
48                          {
49         //log.info("Beginning to read from file");
50         File file = new File(INPUT_FILE);
51 
52         String filePath = "";
53 
54         // check is INPUT_FILE exists, if not, try to find it using INPUT_FILE_NAME
55         if (!file.exists()) {
56             log.info("INPUT_FILE " + INPUT_FILE + " not found. Beginning recursive search for
       it");
57             filePath = FileFinder.findFileByName(INPUT_FILE_NAME, "txt");
58         }
59 
60         // if length is greater than 1, a file was found
61         if (filePath.length() > 0) {
62             log.info("Input file " + INPUT_FILE_NAME + " found at path " +  filePath);
63             url = filePath;
64         }
65 
66         while (true) {
67             try (BufferedReader br = new BufferedReader(new FileReader(url))) {
68                 String line = "";
69                 log.info("Beginning to read from file");
70                 int count = 0;
71 
72                 // read all lines in file and insert them into the queue
73                 while ((line = br.readLine()) != null) {
74                     //count++;
75                     // simulate stream
76                     try {
77                         Thread.sleep(DATA_SOURCE_STREAM_RATE);
78                     } catch (InterruptedException e) {
79                         e.printStackTrace();
80                     }
81 //                  queue.enqueue("Msg "+count++);
82                     queue.enqueue(line);
83                 }
84 
85 //                reset data and read it back in again
86                 AppController.getDataController().resetData();
87 
88 //              println("Finished reading file");
89                 log.info("Finished reading file. Read " + count + " lines of data");
90                 //if(TestDataSource.testing) TestDataSource.endTest();
91 
92             } catch (FileNotFoundException e) {
93                 e.printStackTrace();
94             } catch (IOException e) {
95                 e.printStackTrace();
96             }
97         }
98 
99     }
```

6.12.3.4 void se2xb3.io.source.FileDataSource.startSource ( ) [package]

This method is called when the thread is started (a hook). It begins the process of reading data from a data source.

```
39                          {
40         readData();
41     }
```

6.12.4 Member Data Documentation

6.12.4.1 final String se2xb3.io.source.FileDataSource._CLASS_NAME = FileDataSource.class.getSimpleName() [static], [private]

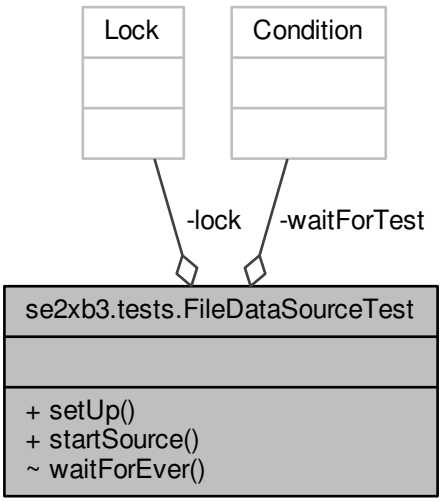
6.12.4.2 final Logger se2xb3.io.source.FileDataSource.log = getLogger(_CLASS_NAME) [static], [private]

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

- FileDataSource.java

6.13 se2xb3.tests.FileDataSourceTest Class Reference

Collaboration diagram for se2xb3.tests.FileDataSourceTest:



Public Member Functions

- void setUp () throws Exception
- synchronized void startSource () throws Exception

Package Functions

- synchronized void waitForEver ()

Private Attributes

- final Lock lock = new ReentrantLock()
- final Condition waitForTest = lock.newCondition()

6.13.1 Detailed Description

Author

Dawson Myers

Version

1.0

Since

3/11/2017

6.13.2 Member Function Documentation

6.13.2.1 void se2xb3.tests.FileDataSourceTest.setUp ( ) throws Exception

```
23                                          {
24
25      }
```

6.13.2.2 synchronized void se2xb3.tests.FileDataSourceTest.startSource ( ) throws Exception

```
31                                                              {
32          IOController controller = new IOController(AppController.getInstance());
33          FileDataSource source = new FileDataSource(controller);
34          Thread.currentThread().wait();
35
36          waitForEver();
37      }
```

6.13.2.3 synchronized void se2xb3.tests.FileDataSourceTest.waitForEver ( ) [package]

```
40                                      {
41          try {
42              lock.lock();
43              while (true)
44                  waitForTest.await();
45          } catch (InterruptedException e) {
46              e.printStackTrace();
47          } finally {
48              lock.unlock();
49          }
50      }
```

6.13.3 Member Data Documentation

6.13.3.1 final Lock se2xb3.tests.FileDataSourceTest.lock = new ReentrantLock() [private]

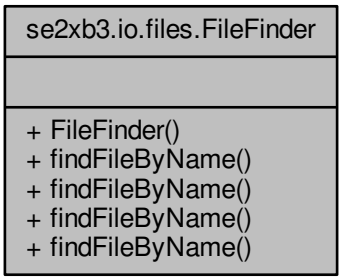
6.13.3.2 final Condition se2xb3.tests.FileDataSourceTest.waitForTest = lock.newCondition() [private]

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

- FileDataSourceTest.java

6.14 se2xb3.io.files.FileFinder Class Reference

Collaboration diagram for se2xb3.io.files.FileFinder:



Public Member Functions

- FileFinder ()

Static Public Member Functions

- static String findFileByName (String name, String extensions)
- static String findFileByName (String name, String rootDir, String extensions)
- static String findFileByName (String name, String rootDir, String extensions, boolean recursive)
- static String findFileByName (String name, String rootDir, String[ ] extensions, boolean recursive)

6.14.1 Detailed Description

A class to recursively find files.

Author

Dawson Myers

Version

1.0

Since

3/29/2017

6.14.2 Constructor & Destructor Documentation

6.14.2.1 se2xb3.io.files.FileFinder.FileFinder ( )

```
18 {}
```

6.14.3 Member Function Documentation

6.14.3.1 static String se2xb3.io.files.FileFinder.findFileByName (String *name,* String *extensions*) [static]

```
20                                                                  {
21         return findFileByName(name, ".", new String[]{extensions}, true);
22     }
```

6.14.3.2 static String se2xb3.io.files.FileFinder.findFileByName (String *name,* String *rootDir,* String *extensions*) [static]

```
23                                                                                  {
24         return findFileByName(name, rootDir, new String[]{extensions}, true);
25     }
```

6.14.3.3 static String se2xb3.io.files.FileFinder.findFileByName (String *name,* String *rootDir,* String *extensions,* boolean *recursive*) [static]

```
26                                                                                                                  {
27          return findFileByName(name, rootDir, new String[]{extensions}, recursive);
28      }
```

6.14.3.4 static String se2xb3.io.files.FileFinder.findFileByName (String *name,* String *rootDir,* String[ ] *extensions,* boolean *recursive*) [static]

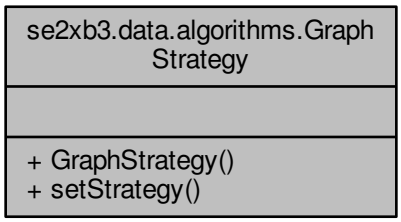
```
29
        {
30
31          File root = new File(rootDir);
32
33          //String[] extensions = { "xml", "java", "dat" };
34
35          Collection files = FileUtils.listFiles(root, extensions, recursive);
36
37          String filePath = "";
38
39          for (Iterator iterator = files.iterator(); iterator.hasNext();) {
40              File file = (File) iterator.next();
41              if (file.getName() != null && file.getName().equals(name)){
42                  filePath = file.getAbsolutePath();
43              }
44          }
45
46          if (filePath.length() == 0) {
47              try {
48                  throw new FileNotFoundException("Could not find file " + name + "in root dir " +
49                                                                          rootDir);
50              } catch (FileNotFoundException e) {
51                  e.printStackTrace();
52              }
53          }
54
55          return filePath;
56      }
```

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

- FileFinder.java

6.15 se2xb3.data.algorithms.GraphStrategy Class Reference

Collaboration diagram for se2xb3.data.algorithms.GraphStrategy:



Public Member Functions

- GraphStrategy ()
- void setStrategy ()

6.15.1 Detailed Description

Author

Dawson Myers

Version

1.0

Since

3/12/2017

6.15.2 Constructor & Destructor Documentation

6.15.2.1 se2xb3.data.algorithms.GraphStrategy.GraphStrategy ( )

```
10 {}
```

6.15.3 Member Function Documentation

6.15.3.1 void se2xb3.data.algorithms.GraphStrategy.setStrategy ( )

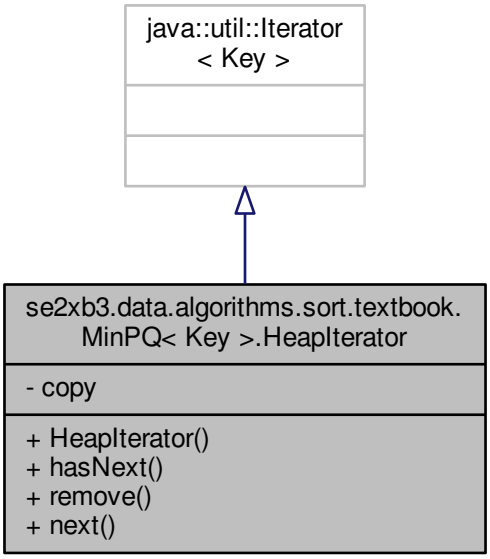
```
12                                  {
13
14     }
```

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

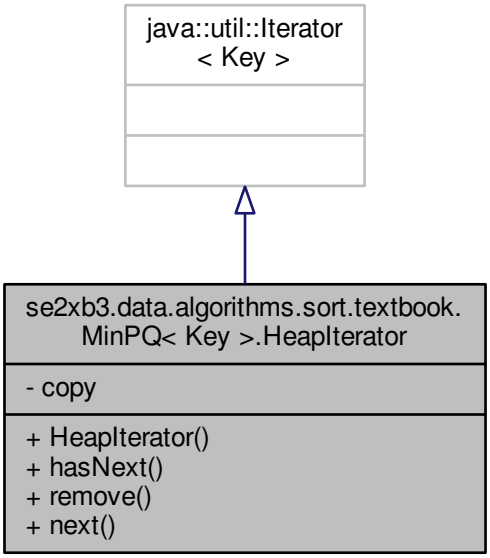
- GraphStrategy.java

6.16 se2xb3.data.algorithms.sort.textbook.MinPQ< Key >.HeapIterator Class Reference

Inheritance diagram for se2xb3.data.algorithms.sort.textbook.MinPQ< Key >.HeapIterator:



Collaboration diagram for se2xb3.data.algorithms.sort.textbook.MinPQ< Key >.HeapIterator:



Public Member Functions

- HeapIterator ()
- boolean hasNext ()
- void remove ()
- Key next ()

Private Attributes

- MinPQ< Key > copy

6.16.1 Constructor & Destructor Documentation

6.16.1.1 se2xb3.data.algorithms.sort.textbook.MinPQ< Key >.HeapIterator.HeapIterator ( )

```
253                                 {
254             if (comparator == null) copy = new MinPQ<Key>(size());
255             else                    copy = new MinPQ<Key>(size(),
    comparator);
256             for (int i = 1; i <= n; i++)
257                 copy.insert(pq[i]);
258         }
```

6.16.2 Member Function Documentation

6.16.2.1 boolean se2xb3.data.algorithms.sort.textbook.MinPQ< Key >.HeapIterator.hasNext ( )

```
260 { return !copy.isEmpty();                     }
```

6.16.2.2 Key se2xb3.data.algorithms.sort.textbook.MinPQ< Key >.HeapIterator.next ( )

```
263                             {
264             if (!hasNext()) throw new NoSuchElementException();
265             return copy.delMin();
266         }
```

6.16.2.3 void se2xb3.data.algorithms.sort.textbook.MinPQ< Key >.HeapIterator.remove ( )

```
261 { throw new UnsupportedOperationException();  }
```

6.16.3 Member Data Documentation

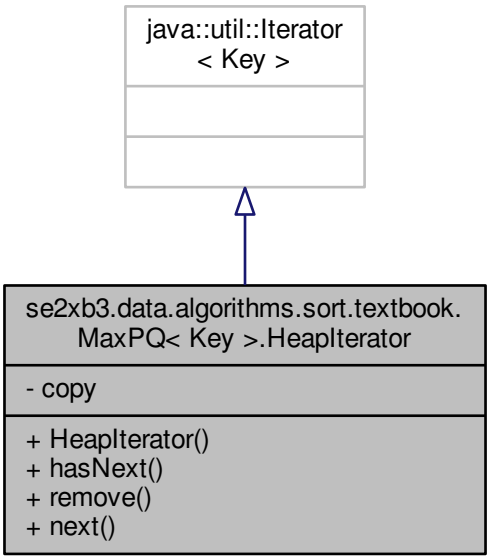
6.16.3.1 MinPQ<Key> se2xb3.data.algorithms.sort.textbook.MinPQ< Key >.HeapIterator.copy [private]

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

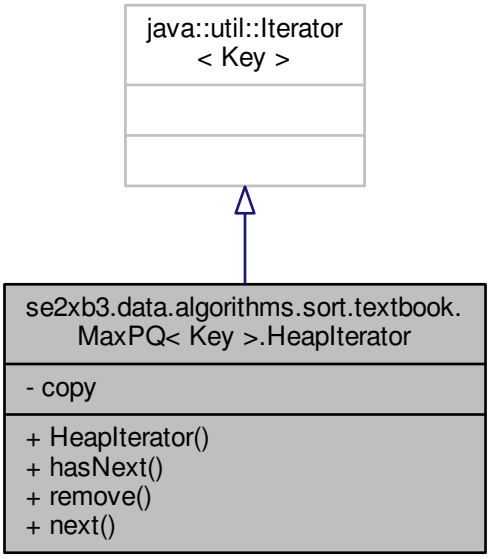
- MinPQ.java

6.17 se2xb3.data.algorithms.sort.textbook.MaxPQ< Key >.HeapIterator Class Reference

Inheritance diagram for se2xb3.data.algorithms.sort.textbook.MaxPQ< Key >.HeapIterator:



Collaboration diagram for se2xb3.data.algorithms.sort.textbook.MaxPQ< Key >.HeapIterator:



Public Member Functions

- HeapIterator ()
- boolean hasNext ()
- void remove ()
- Key next ()

Private Attributes

- MaxPQ< Key > copy

6.17.1 Constructor & Destructor Documentation

6.17.1.1 se2xb3.data.algorithms.sort.textbook.MaxPQ< Key >.HeapIterator.HeapIterator ( )

```
264                                 {
265             if (comparator == null) copy = new MaxPQ<Key>(size());
266             else                    copy = new MaxPQ<Key>(size(),
    comparator);
267             for (int i = 1; i <= n; i++)
268                 copy.insert(pq[i]);
269         }
```

6.17.2 Member Function Documentation

6.17.2.1 boolean se2xb3.data.algorithms.sort.textbook.MaxPQ< Key >.HeapIterator.hasNext ( )

```
271 { return !copy.isEmpty();                     }
```

6.17.2.2 Key se2xb3.data.algorithms.sort.textbook.MaxPQ< Key >.HeapIterator.next ( )

```
274                             {
275             if (!hasNext()) throw new NoSuchElementException();
276             return copy.delMax();
277         }
```

6.17.2.3 void se2xb3.data.algorithms.sort.textbook.MaxPQ< Key >.HeapIterator.remove ( )

```
272 { throw new UnsupportedOperationException();  }
```

6.17.3 Member Data Documentation

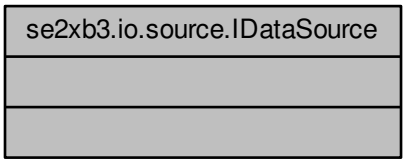
6.17.3.1 MaxPQ<Key> se2xb3.data.algorithms.sort.textbook.MaxPQ< Key >.HeapIterator.copy [private]

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

- MaxPQ.java

6.18 se2xb3.io.source.IDataSource Interface Reference

Collaboration diagram for se2xb3.io.source.IDataSource:



6.18.1 Detailed Description

Author

Dawson

Version

1.0

Since

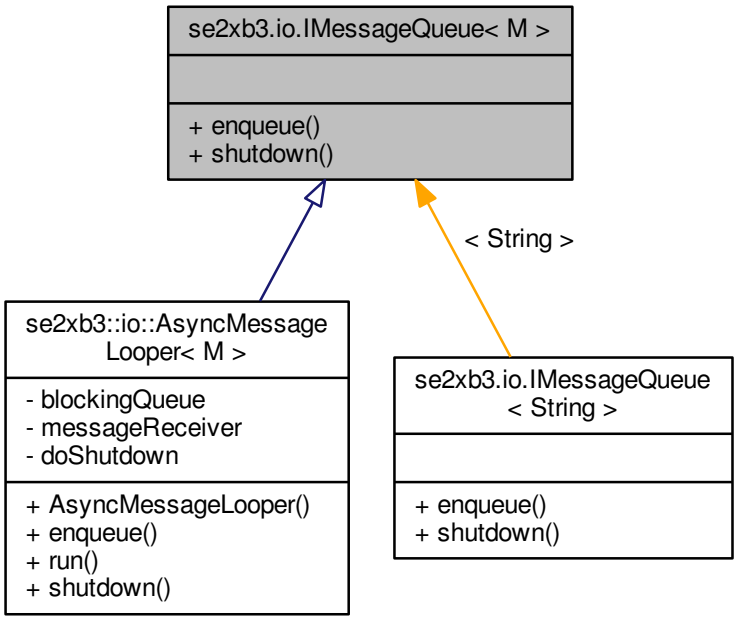
3/11/2017

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

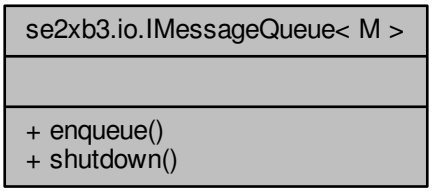
- IDataSource.java

6.19 se2xb3.io.IMessageQueue< M > Interface Template Reference

Inheritance diagram for se2xb3.io.IMessageQueue< M >:



Collaboration diagram for se2xb3.io.IMessageQueue< M >:



Public Member Functions

- void enqueue (M msg)
- void shutdown ()

6.19.1 Detailed Description

An interface for a message queue.

Author

Dawson

Version

1.0

Since

3/11/2017

6.19.2 Member Function Documentation

6.19.2.1 void se2xb3.io.IMessageQueue< M >.enqueue (M *msg*)

Inserts the specified element into a queue.

Parameters

msg	a message

Implemented in se2xb3.io.AsyncMessageLooper< M >.

6.19.2.2 void se2xb3.io.IMessageQueue< M >.shutdown ( )

Shutdown.

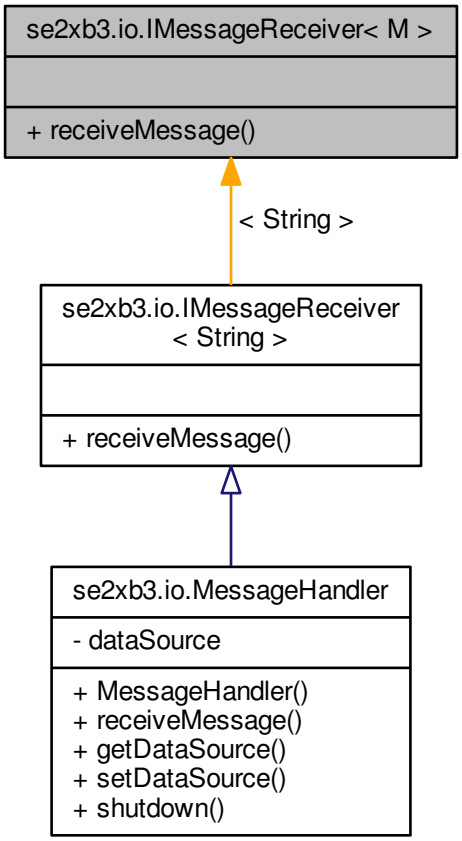
Implemented in se2xb3.io.AsyncMessageLooper< M >.

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

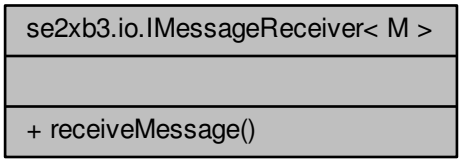
- IMessageQueue.java

6.20 se2xb3.io.IMessageReceiver< M > Interface Template Reference

Inheritance diagram for se2xb3.io.IMessageReceiver< M >:



Collaboration diagram for se2xb3.io.IMessageReceiver< M >:



Public Member Functions

- void receiveMessage (M msg)

6.20.1 Detailed Description

Author

Dawson

Version

1.0

Since

3/11/2017

6.20.2 Member Function Documentation

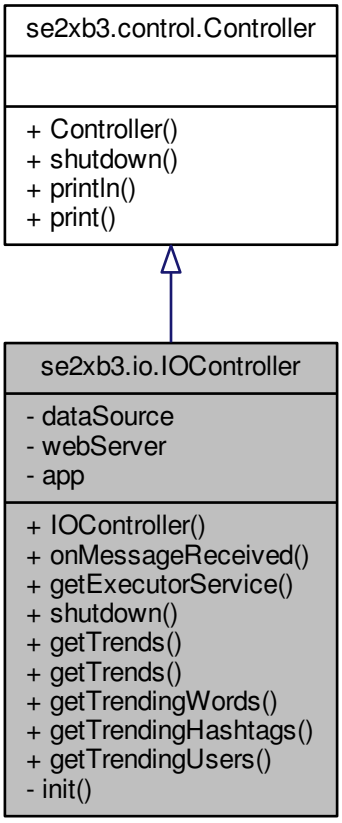
6.20.2.1 void se2xb3.io.IMessageReceiver< M >.receiveMessage (M *msg*)

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

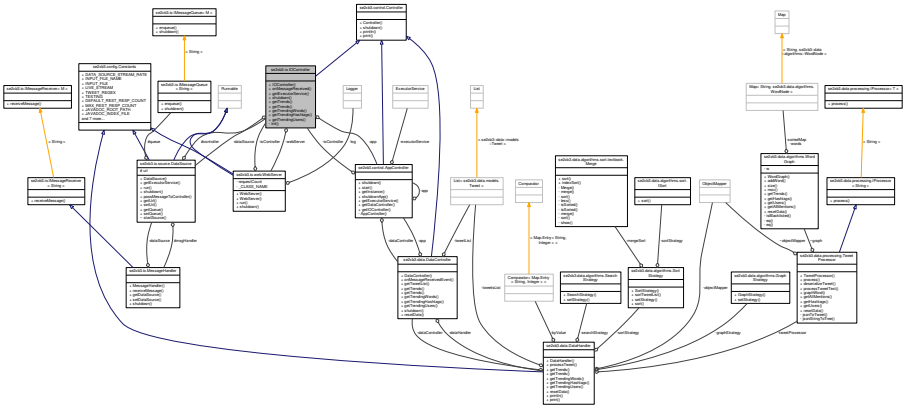
- IMessageReceiver.java

6.21 se2xb3.io.IOController Class Reference

Inheritance diagram for se2xb3.io.IOController:



Collaboration diagram for se2xb3.io.IOController:



Public Member Functions

- IOController (AppController appController)
- void onMessageReceived (String msg)
- ExecutorService getExecutorService ()
- void shutdown ()
- List< Map< String, Integer > > getTrends ()
- List< Map< String, Integer > > getTrends (int count)
- Map< String, Integer > getTrendingWords (int count)
- Map< String, Integer > getTrendingHashtags (int count)
- Map< String, Integer > getTrendingUsers (int count)

Private Member Functions

- void init ()

Private Attributes

- DataSource dataSource
- WebServer webServer

Static Private Attributes

- static AppController app

Additional Inherited Members

6.21.1 Detailed Description

Controls all subsystems that involve input/output operations with external resources.

The first subsystem is a DataSource which is an abstract class that can be implemented for any external data source (e.g. Twitter/Facebook/Instagram streams, IoT message brokers, databases, etc.). FileDataSource is a concrete implementation of DataSource and is used in the current system setup. It simulates a stream of tweets by reading prerecorded tweets from a file and then inserting them one at a time into the system to be processed.

The second subsystem is a web server. It provides a REST endpoint that provides data trends from the processed tweets. It also serves an AngularJs web app.

Author

Dawson Myers

Version

1.0

Since

3/11/2017

6.21.2 Constructor & Destructor Documentation

6.21.2.1 se2xb3.io.IOController.IOController (AppController *appController*)

A constructor that takes an instance of the AppConstroller.

Parameters

appController	the controller instance

```
45                                                  {
46          app = appController;
47          init();
48      }
```

6.21.3 Member Function Documentation

6.21.3.1 ExecutorService se2xb3.io.IOController.getExecutorService ( )

Return the executorService instance

Returns

executorService

```
76                                          {
77          return AppController.getExecutorService();
78      }
```

6.21.3.2 Map<String, Integer> se2xb3.io.IOController.getTrendingHashtags (int *count*)

Get trending hashtags.

Parameters

count	number of top trending items to get.

Returns

a map containing the top trending items

```
125                                                         {
126          count =   abs(count);
127          return AppController.getDataController().getTrendingHashtags(count);
128      }
```

6.21.3.3 Map<String, Integer> se2xb3.io.IOController.getTrendingUsers (int *count*)

Get trending users.

Parameters

count	number of top trending items to get.

Returns

a map containing the top trending items

```
136                                                                 {
137         count =   abs(count);
138         return AppController.getDataController().getTrendingUsers(count);
139     }
```

6.21.3.4 Map<String, Integer> se2xb3.io.IOController.getTrendingWords (int *count*)

Get trending words.

Parameters

count	number of top trending items to get.

Returns

a map containing the top trending items

```
114                                                                 {
115         count =   abs(count);
116         return AppController.getDataController().getTrendingWords(count);
117     }
```

6.21.3.5 List<Map<String, Integer> > se2xb3.io.IOController.getTrends ( )

Get trends from data controller

Returns

list of trends

```
93                                              {
94         return AppController.getDataController().getTrends();
95     }
```

6.21.3.6 List<Map<String, Integer> > se2xb3.io.IOController.getTrends (int *count*)

Get trends from data controller

Parameters

count	the number of trends to get

Returns

list of trends

```
103                                                                 {
104         count =   abs(count);
105         return AppController.getDataController().getTrends(count);
106     }
```

6.21.3.7 void se2xb3.io.IOController.init ( ) [private]

Initialize the controller by creating a new data source instance.

```
53                          {
54         dataSource = new FileDataSource(this);
55         webServer = new WebServer(this);
56         getExecutorService().execute(webServer);
57     }
```

6.21.3.8 void se2xb3.io.IOController.onMessageReceived (String *msg*)

Post the message to the event bus so that it can be delivered for processing.

Parameters

msg	a message string

```
66                                              {
67 //        EventBus.postNewMessageEvent(msg);
68         AppController.getDataController().onMessageReceivedEvent(msg);
69     }
```

6.21.3.9 void se2xb3.io.IOController.shutdown ( )

Shutdown blocking queue thread.

```
84                              {
85         dataSource.shutdown();
86     }
```

6.21.4 Member Data Documentation

6.21.4.1 AppController se2xb3.io.IOController.app [static], [private]

6.21.4.2 DataSource se2xb3.io.IOController.dataSource [private]

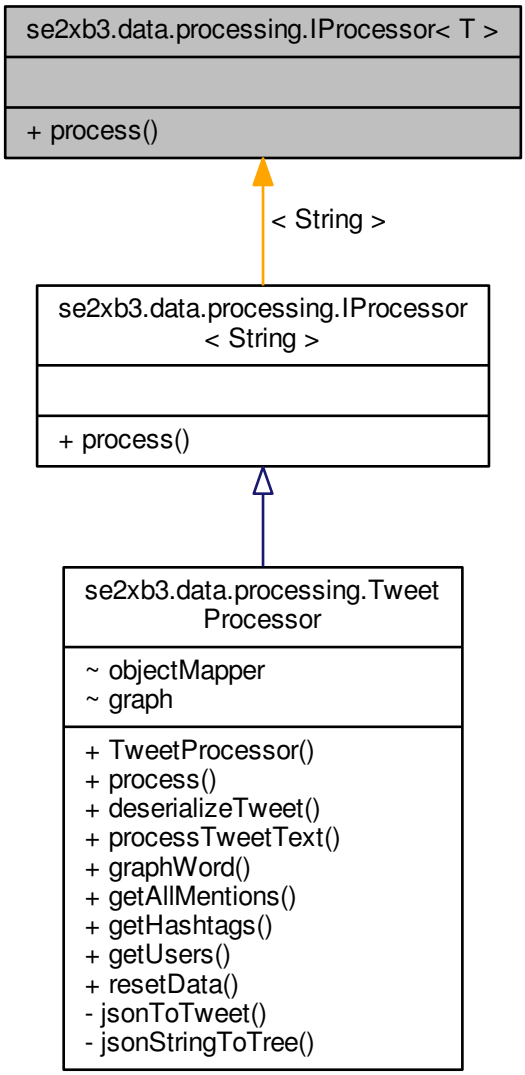
6.21.4.3 WebServer se2xb3.io.IOController.webServer [private]

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

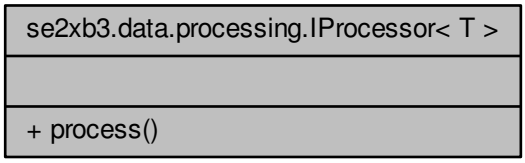
- IOController.java

6.22 se2xb3.data.processing.IProcessor< T > Interface Template Reference

Inheritance diagram for se2xb3.data.processing.IProcessor< T >:



Collaboration diagram for se2xb3.data.processing.IProcessor< T >:



Public Member Functions

- Object process (T t)

6.22.1 Detailed Description

Classes that implement this interface provide a strategy for processing an instance of a generic parametrized type.

Author

Dawson

Version

1.0

Since

3/11/2017

6.22.2 Member Function Documentation

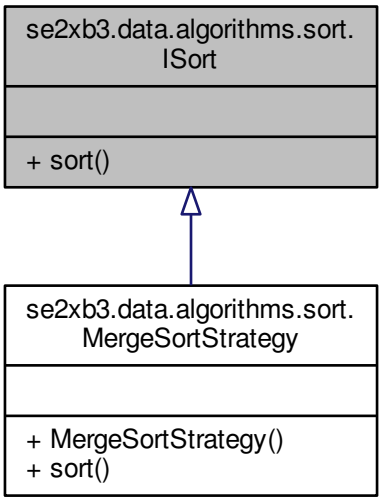
6.22.2.1 Object se2xb3.data.processing.IProcessor< T >.process (T *t*)

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

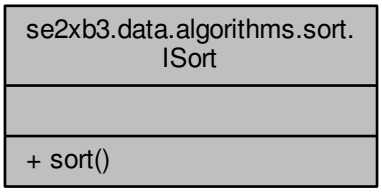
- IProcessor.java

6.23 se2xb3.data.algorithms.sort.ISort Interface Reference

Inheritance diagram for se2xb3.data.algorithms.sort.ISort:



Collaboration diagram for se2xb3.data.algorithms.sort.ISort:



Public Member Functions

- void sort (Comparable[ ] a)

6.23.1 Detailed Description

Author

Dawson Myers

Version

1.0

Since

3/26/2017

6.23.2 Member Function Documentation

6.23.2.1 void se2xb3.data.algorithms.sort.ISort.sort (Comparable[ ] *a*)

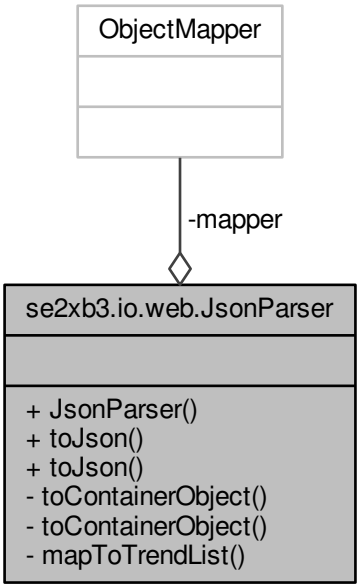
Implemented in se2xb3.data.algorithms.sort.MergeSortStrategy.

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

- ISort.java

6.24 se2xb3.io.web.JsonParser Class Reference

Collaboration diagram for se2xb3.io.web.JsonParser:



Public Member Functions

- JsonParser ()

Static Public Member Functions

- static String toJson (List< Map< String, Integer >> list)
- static String toJson (Map< String, Integer > map)

Static Private Member Functions

- static List< List< Trend > > toContainerObject (List< Map< String, Integer >> trends)
- static List< Trend > toContainerObject (Map< String, Integer > trends)
- static List< Trend > mapToTrendList (Map< String, Integer > trendMap)

Static Private Attributes

- static ObjectMapper mapper = new ObjectMapper()

6.24.1 Detailed Description

A class to handle JSON encoding and decoding for the web server.

Author

Dawson Myers

Version

1.0

Since

3/26/2017

6.24.2 Constructor & Destructor Documentation

6.24.2.1 se2xb3.io.web.JsonParser.JsonParser ( )

```
21 {}
```

6.24.3 Member Function Documentation

6.24.3.1 static List<Trend> se2xb3.io.web.JsonParser.mapToTrendList (Map< String, Integer > *trendMap*) [static], [private]

Convert a

```
Map<String, Integer>
```

to a list of trends

```
List<Trend>
```

.

Parameters

trendMap	trend data to be converted into trend pojos

Returns

map of trend pojos

```
86                                                                          {
87          List<Trend> trendList = new ArrayList<>();
88
89          trendMap
90                  .entrySet()
91                  .stream()
92                  .forEachOrdered(a -> trendList.add(new Trend(a.getKey(), a.getValue())));
93
94          return trendList;
95      }
```

6.24.3.2 static List<List<Trend> > se2xb3.io.web.JsonParser.toContainerObject (List< Map< String, Integer >> *trends*) [static], [private]

Convert trends to a list of list of trends. This is done to give the trends proper format when converting to JSON.

Parameters

trends	trend data to be converted into trend pojos

```
60                                                                                  {
61          List<List<Trend>> t = new ArrayList<>();
62
63          for (int i = 0; i < trends.size(); i++) {
64              t.add(mapToTrendList(trends.get(i)));
65          }
66
67          return t;
68      }
```

6.24.3.3 static List<Trend> se2xb3.io.web.JsonParser.toContainerObject (Map< String, Integer > *trends*) [static], [private]

Convert trends to a list of list of trends. This is done to give the trends proper format when converting to JSON.

Parameters

trends	trend data to be converted into trend pojos

```
76                                                                          {
77          return mapToTrendList(trends);
78      }
```

6.24.3.4 static String se2xb3.io.web.JsonParser.toJson (List< Map< String, Integer >> *list*) [static]

Convert trends to a JSON encoded string.

Parameters

list	an object to be serialized into a JSON string

Returns

a JSON encoded string

```
30                                                                  {
31         try {
32             return mapper.writeValueAsString(toContainerObject(list));
33         } catch (JsonProcessingException e) {
34             e.printStackTrace();
35         }
36         return "none";
37     }
```

6.24.3.5 static String se2xb3.io.web.JsonParser.toJson (Map< String, Integer > *map*) [static]

Convert trends to a JSON encoded string.

Parameters

map	an object to be serialized into a JSON string

Returns

a JSON encoded string

```
45                                                          {
46         try {
47             return mapper.writeValueAsString(toContainerObject(map));
48         } catch (JsonProcessingException e) {
49             e.printStackTrace();
50         }
51         return "none";
52     }
```

6.24.4 Member Data Documentation

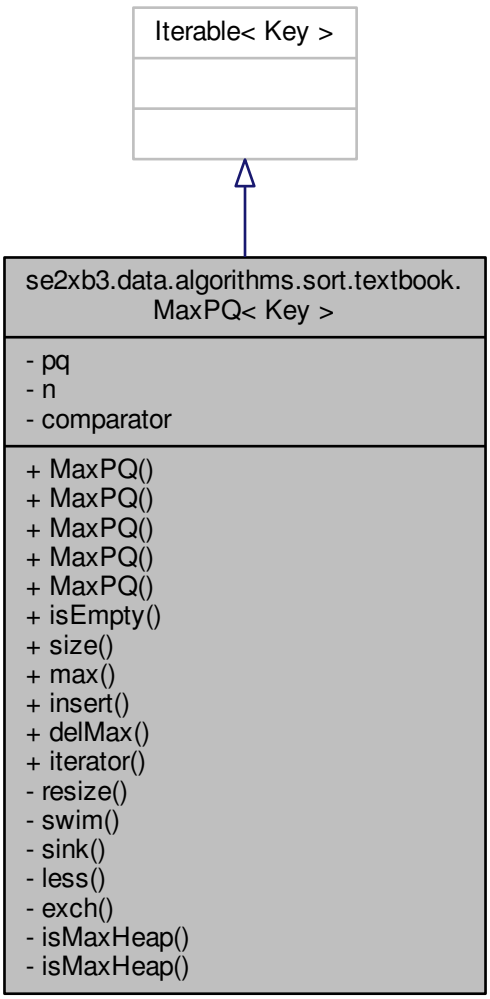
6.24.4.1 ObjectMapper se2xb3.io.web.JsonParser.mapper = new ObjectMapper() [static], [private]

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

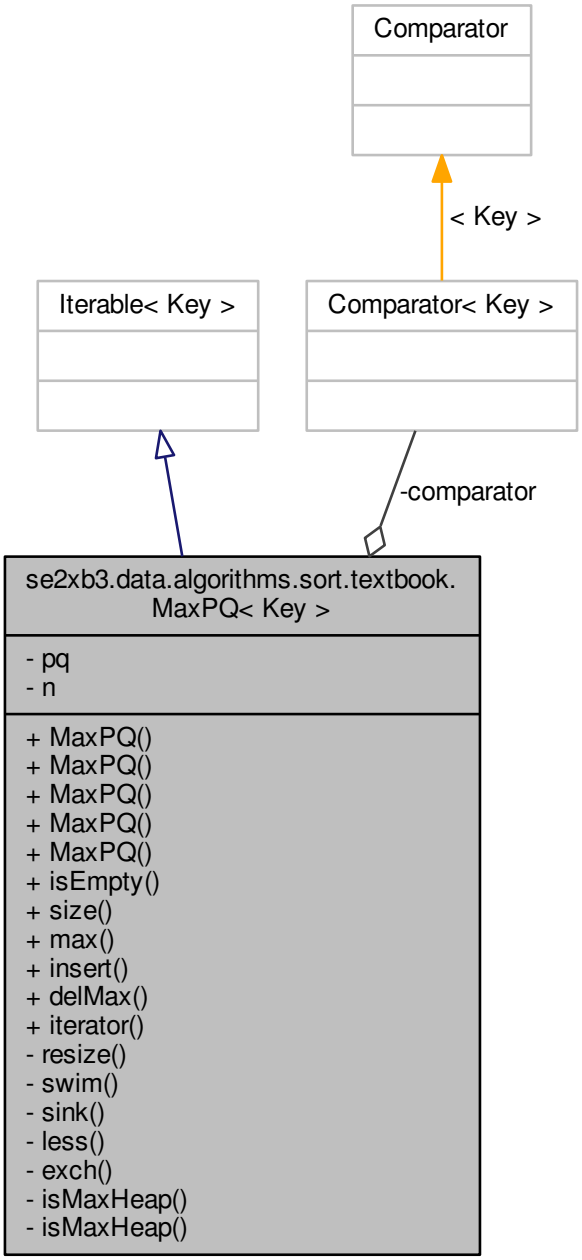
- JsonParser.java

6.25 se2xb3.data.algorithms.sort.textbook.MaxPQ< Key > Class Template Reference

Inheritance diagram for se2xb3.data.algorithms.sort.textbook.MaxPQ< Key >:



Collaboration diagram for se2xb3.data.algorithms.sort.textbook.MaxPQ< Key >:



Classes

- class HeapIterator

Public Member Functions

- MaxPQ (int initCapacity)

- MaxPQ ()
- MaxPQ (int initCapacity, Comparator< Key > comparator)
- MaxPQ (Comparator< Key > comparator)
- MaxPQ (Key[ ] keys)
- boolean isEmpty ()
- int size ()
- Key max ()
- void insert (Key x)
- Key delMax ()
- Iterator< Key > iterator ()

Private Member Functions

- void resize (int capacity)
- void swim (int k)
- void sink (int k)
- boolean less (int i, int j)
- void exch (int i, int j)
- boolean isMaxHeap ()
- boolean isMaxHeap (int k)

Private Attributes

- Key[ ] pq
- int n
- Comparator< Key > comparator

6.25.1 Detailed Description

The

`MaxPQ`

class represents a priority queue of generic keys. It supports the usual *insert* and *delete-the-maximum* operations, along with methods for peeking at the maximum key, testing if the priority queue is empty, and iterating through the keys.

This implementation uses a binary heap. The *insert* and *delete-the-maximum* operations take logarithmic amortized time. The *max*, *size*, and *is-empty* operations take constant time. Construction takes time proportional to the specified capacity or the number of items used to initialize the data structure.

For additional documentation, see `Section 2.4` of *Algorithms, 4th Edition* by Robert Sedgewick and Kevin Wayne.

Author

Robert Sedgewick
Kevin Wayne

Parameters

<Key>	the generic type of key on this priority queue

6.25.2 Constructor & Destructor Documentation

6.25.2.1 se2xb3.data.algorithms.sort.textbook.MaxPQ< Key >.MaxPQ (int *initCapacity*)

Initializes an empty priority queue with the given initial capacity.

Parameters

initCapacity	the initial capacity of this priority queue

```
60                                      {
61          pq = (Key[]) new Object[initCapacity + 1];
62          n = 0;
63      }
```

6.25.2.2 se2xb3.data.algorithms.sort.textbook.MaxPQ< Key >.MaxPQ ( )

Initializes an empty priority queue.

```
68                      {
69          this(1);
70      }
```

6.25.2.3 se2xb3.data.algorithms.sort.textbook.MaxPQ< Key >.MaxPQ (int *initCapacity,* Comparator< Key > *comparator*)

Initializes an empty priority queue with the given initial capacity, using the given comparator.

Parameters

initCapacity	the initial capacity of this priority queue
comparator	the order in which to compare the keys

```
79                                                                  {
80          this.comparator = comparator;
81          pq = (Key[]) new Object[initCapacity + 1];
82          n = 0;
83      }
```

6.25.2.4 se2xb3.data.algorithms.sort.textbook.MaxPQ< Key >.MaxPQ (Comparator< Key > *comparator*)

Initializes an empty priority queue using the given comparator.

Parameters

comparator	the order in which to compare the keys

```
90                                          {
91         this(1, comparator);
92     }
```

6.25.2.5 se2xb3.data.algorithms.sort.textbook.MaxPQ< Key >.MaxPQ (Key[ ] *keys*)

Initializes a priority queue from the array of keys. Takes time proportional to the number of keys, using sink-based heap construction.

Parameters

keys	the array of keys

```
100                             {
101         n = keys.length;
102         pq = (Key[]) new Object[keys.length + 1];
103         for (int i = 0; i < n; i++)
104             pq[i+1] = keys[i];
105         for (int k = n/2; k >= 1; k--)
106             sink(k);
107         assert isMaxHeap();
108     }
```

6.25.3 Member Function Documentation

6.25.3.1 Key se2xb3.data.algorithms.sort.textbook.MaxPQ< Key >.delMax ( )

Removes and returns a largest key on this priority queue.

Returns

a largest key on this priority queue

Exceptions

NoSuchElementException	if this priority queue is empty

```
175                         {
176         if (isEmpty()) throw new NoSuchElementException("Priority queue underflow");
177         Key max = pq[1];
178         exch(1, n--);
179         sink(1);
180         pq[n+1] = null;     // to avoid loiterig and help with garbage collection
181         if ((n > 0) && (n == (pq.length - 1) / 4)) resize(pq.length / 2);
182         assert isMaxHeap();
183         return max;
184     }
```

6.25.3.2 void se2xb3.data.algorithms.sort.textbook.MaxPQ< Key >.exch (int *i*, int *j*) [private]

```
220                                     {
221         Key swap = pq[i];
222         pq[i] = pq[j];
223         pq[j] = swap;
224     }
```

6.25.3.3 void se2xb3.data.algorithms.sort.textbook.MaxPQ< Key >.insert (Key *x*)

Adds a new key to this priority queue.

Parameters

x	the new key to add to this priority queue

```
158                                 {
159
160         // double size of array if necessary
161         if (n >= pq.length - 1) resize(2 * pq.length);
162
163         // add x, and percolate it up to maintain heap invariant
164         pq[++n] = x;
165         swim(n);
166         assert isMaxHeap();
167     }
```

6.25.3.4 boolean se2xb3.data.algorithms.sort.textbook.MaxPQ< Key >.isEmpty ( )

Returns true if this priority queue is empty.

Returns

`true`
if this priority queue is empty;

`false`

otherwise

```
118                                 {
119         return n == 0;
120     }
```

6.25.3.5 boolean se2xb3.data.algorithms.sort.textbook.MaxPQ< Key >.isMaxHeap ( ) [private]

```
227                                     {
228         return isMaxHeap(1);
229     }
```

6.25.3.6 boolean se2xb3.data.algorithms.sort.textbook.MaxPQ< Key >.isMaxHeap (int *k*) [private]

```
232                                     {
233         if (k > n) return true;
234         int left = 2*k;
235         int right = 2*k + 1;
236         if (left  <= n && less(k, left))  return false;
237         if (right <= n && less(k, right)) return false;
238         return isMaxHeap(left) && isMaxHeap(right);
239     }
```

6.25.3.7 Iterator<Key> se2xb3.data.algorithms.sort.textbook.MaxPQ< Key >.iterator ( )

Returns an iterator that iterates over the keys on this priority queue in descending order. The iterator doesn't implement

```
remove()
```

since it's optional.

Returns

an iterator that iterates over the keys in descending order

```
253                                     {
254         return new HeapIterator();
255     }
```

6.25.3.8 boolean se2xb3.data.algorithms.sort.textbook.MaxPQ< Key >.less (int *i*, int *j*) [private]

```
211                                       {
212         if (comparator == null) {
213             return ((Comparable<Key>) pq[i]).compareTo(pq[j]) < 0;
214         }
215         else {
216             return comparator.compare(pq[i], pq[j]) < 0;
217         }
218     }
```

6.25.3.9 Key se2xb3.data.algorithms.sort.textbook.MaxPQ< Key >.max ( )

Returns a largest key on this priority queue.

Returns

a largest key on this priority queue

Exceptions

NoSuchElementException	if this priority queue is empty

```
137                     {
138         if (isEmpty()) throw new NoSuchElementException("Priority queue underflow");
139         return pq[1];
140     }
```

6.25.3.10 void se2xb3.data.algorithms.sort.textbook.MaxPQ< Key >.resize (int *capacity*) [private]

```
143                                     {
144         assert capacity > n;
145         Key[] temp = (Key[]) new Object[capacity];
146         for (int i = 1; i <= n; i++) {
147             temp[i] = pq[i];
148         }
149         pq = temp;
150     }
```

6.25.3.11 void se2xb3.data.algorithms.sort.textbook.MaxPQ< Key >.sink (int *k*) [private]

```
198                                 {
199         while (2*k <= n) {
200             int j = 2*k;
201             if (j < n && less(j, j+1)) j++;
202             if (!less(k, j)) break;
203             exch(k, j);
204             k = j;
205         }
206     }
```

6.25.3.12 int se2xb3.data.algorithms.sort.textbook.MaxPQ< Key >.size ( )

Returns the number of keys on this priority queue.

Returns

the number of keys on this priority queue

```
127                     {
128         return n;
129     }
```

6.25.3.13 void se2xb3.data.algorithms.sort.textbook.MaxPQ< Key >.swim (int *k*) [private]

```
191                                 {
192         while (k > 1 && less(k/2, k)) {
193             exch(k, k/2);
194             k = k/2;
195         }
196     }
```

6.25.4 Member Data Documentation

6.25.4.1 Comparator<Key> se2xb3.data.algorithms.sort.textbook.MaxPQ< Key >.comparator [private]

6.25.4.2 int se2xb3.data.algorithms.sort.textbook.MaxPQ< Key >.n [private]

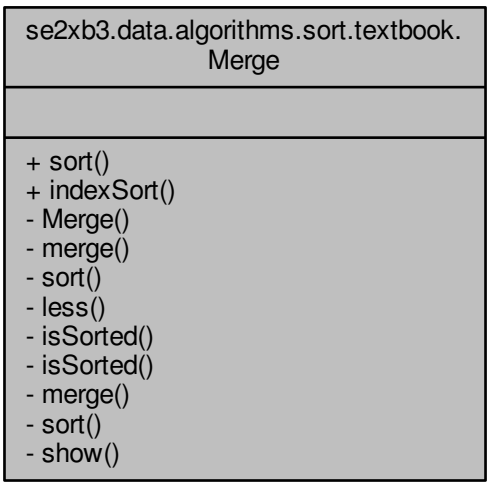
6.25.4.3 Key [ ] se2xb3.data.algorithms.sort.textbook.MaxPQ< Key >.pq [private]

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

- MaxPQ.java

6.26 se2xb3.data.algorithms.sort.textbook.Merge Class Reference

Collaboration diagram for se2xb3.data.algorithms.sort.textbook.Merge:



Static Public Member Functions

- static void sort (Comparable[ ] a)
- static int[ ] indexSort (Comparable[ ] a)

Private Member Functions

- Merge ()

Static Private Member Functions

- static void merge (Comparable[ ] a, Comparable[ ] aux, int lo, int mid, int hi)
- static void sort (Comparable[ ] a, Comparable[ ] aux, int lo, int hi)
- static boolean less (Comparable v, Comparable w)
- static boolean isSorted (Comparable[ ] a)
- static boolean isSorted (Comparable[ ] a, int lo, int hi)
- static void merge (Comparable[ ] a, int[ ] index, int[ ] aux, int lo, int mid, int hi)
- static void sort (Comparable[ ] a, int[ ] index, int[ ] aux, int lo, int hi)
- static void show (Comparable[ ] a)

6.26.1 Detailed Description

The

`Merge`

class provides static methods for sorting an array using mergesort.

For additional documentation, see `Section 2.2` of *Algorithms, 4th Edition* by Robert Sedgewick and Kevin Wayne. For an optimized version, see MergeX.

Author

Robert Sedgewick
Kevin Wayne

6.26.2 Constructor & Destructor Documentation

6.26.2.1 se2xb3.data.algorithms.sort.textbook.Merge.Merge ( ) [private]

`40 { }`

6.26.3 Member Function Documentation

6.26.3.1 static int [ ] se2xb3.data.algorithms.sort.textbook.Merge.indexSort (Comparable[ ] *a*) [static]

Returns a permutation that gives the elements in the array in ascending order.

Parameters

a	the array

Returns

a permutation

`p[]`

such that

`a[p[0]]`

,

`a[p[1]]`

, ...,

`a[p[N-1]]`

are in ascending order

```
136                                                 {
137         int n = a.length;
138         int[] index = new int[n];
139         for (int i = 0; i < n; i++)
140             index[i] = i;
141
142         int[] aux = new int[n];
143         sort(a, index, aux, 0, n-1);
144         return index;
145     }
```

6.26.3.2 static boolean se2xb3.data.algorithms.sort.textbook.Merge.isSorted (Comparable[ ] *a*) [static], [private]

```
98                                                  {
99         return isSorted(a, 0, a.length - 1);
100     }
```

6.26.3.3 static boolean se2xb3.data.algorithms.sort.textbook.Merge.isSorted (Comparable[ ] *a,* int *lo,* int *hi*) [static], [private]

```
102                                                                 {
103         for (int i = lo + 1; i <= hi; i++)
104             if (less(a[i], a[i-1])) return false;
105         return true;
106     }
```

6.26.3.4 static boolean se2xb3.data.algorithms.sort.textbook.Merge.less (Comparable *v,* Comparable *w*) [static], [private]

```
91                                                  {
92         return v.compareTo(w) < 0;
93     }
```

6.26.3.5 static void se2xb3.data.algorithms.sort.textbook.Merge.merge (Comparable[ ] *a,* Comparable[ ] *aux,* int *lo,* int *mid,* int *hi*) [static], [private]

```
43                                                                                  {
44         // precondition: a[lo .. mid] and a[mid+1 .. hi] are sorted subarrays
45         assert isSorted(a, lo, mid);
46         assert isSorted(a, mid+1, hi);
47
48         // copy to aux[]
49         for (int k = lo; k <= hi; k++) {
50             aux[k] = a[k];
51         }
52
53         // merge back to a[]
54         int i = lo, j = mid+1;
55         for (int k = lo; k <= hi; k++) {
56             if      (i > mid)              a[k] = aux[j++];
57             else if (j > hi)               a[k] = aux[i++];
58             else if (less(aux[j], aux[i])) a[k] = aux[j++];
59             else                           a[k] = aux[i++];
60         }
61
62         // postcondition: a[lo .. hi] is sorted
63         assert isSorted(a, lo, hi);
64     }
```

6.26.3.6 static void se2xb3.data.algorithms.sort.textbook.Merge.merge (Comparable[ ] *a,* int[ ] *index,* int[ ] *aux,* int *lo,* int *mid,* int *hi*) [static],[private]

```
113                                                                                                 {
114
115         // copy to aux[]
116         for (int k = lo; k <= hi; k++) {
117             aux[k] = index[k];
118         }
119
120         // merge back to a[]
121         int i = lo, j = mid+1;
122         for (int k = lo; k <= hi; k++) {
123             if      (i > mid)                    index[k] = aux[j++];
124             else if (j > hi)                     index[k] = aux[i++];
125             else if (less(a[aux[j]], a[aux[i]])) index[k] = aux[j++];
126             else                                 index[k] = aux[i++];
127         }
128     }
```

6.26.3.7 static void se2xb3.data.algorithms.sort.textbook.Merge.show (Comparable[ ] *a*) [static],[private]

```
157                                             {
158         for (int i = 0; i < a.length; i++) {
159 //            StdOut.println(a[i]);
160         }
161     }
```

6.26.3.8 static void se2xb3.data.algorithms.sort.textbook.Merge.sort (Comparable[ ] *a,* Comparable[ ] *aux,* int *lo,* int *hi*) [static],[private]

```
67                                                                                  {
68         if (hi <= lo) return;
69         int mid = lo + (hi - lo) / 2;
70         sort(a, aux, lo, mid);
71         sort(a, aux, mid + 1, hi);
72         merge(a, aux, lo, mid, hi);
73     }
```

6.26.3.9 static void se2xb3.data.algorithms.sort.textbook.Merge.sort (Comparable[ ] *a*) [static]

Rearranges the array in ascending order, using the natural order.

Parameters

a	the array to be sorted

```
79                                          {
80         Comparable[] aux = new Comparable[a.length];
81         sort(a, aux, 0, a.length-1);
82         assert isSorted(a);
83     }
```

6.26.3.10 static void se2xb3.data.algorithms.sort.textbook.Merge.sort (Comparable[ ] *a,* int[ ] *index,* int[ ] *aux,* int *lo,* int *hi*) [static],[private]

```
148                                                                                 {
```

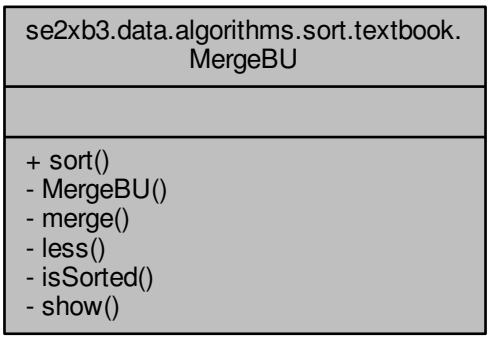
```
149         if (hi <= lo) return;
150         int mid = lo + (hi - lo) / 2;
151         sort(a, index, aux, lo, mid);
152         sort(a, index, aux, mid + 1, hi);
153         merge(a, index, aux, lo, mid, hi);
154     }
```

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

- Merge.java

6.27 se2xb3.data.algorithms.sort.textbook.MergeBU Class Reference

Collaboration diagram for se2xb3.data.algorithms.sort.textbook.MergeBU:



Static Public Member Functions

- static void sort (Comparable[ ] a)

Private Member Functions

- MergeBU ()

Static Private Member Functions

- static void merge (Comparable[ ] a, Comparable[ ] aux, int lo, int mid, int hi)
- static boolean less (Comparable v, Comparable w)
- static boolean isSorted (Comparable[ ] a)
- static void show (Comparable[ ] a)

6.27.1 Detailed Description

The

MergeBU

class provides static methods for sorting an array using bottom-up mergesort.

For additional documentation, see Section 2.1 of *Algorithms, 4th Edition* by Robert Sedgewick and Kevin Wayne.

Author

Robert Sedgewick
Kevin Wayne

6.27.2 Constructor & Destructor Documentation

6.27.2.1 se2xb3.data.algorithms.sort.textbook.MergeBU.MergeBU ( ) [private]

```
40 { }
```

6.27.3 Member Function Documentation

6.27.3.1 static boolean se2xb3.data.algorithms.sort.textbook.MergeBU.isSorted (Comparable[ ] *a*) [static], [private]

```
91                                                  {
92         for (int i = 1; i < a.length; i++)
93             if (less(a[i], a[i-1])) return false;
94         return true;
95     }
```

6.27.3.2 static boolean se2xb3.data.algorithms.sort.textbook.MergeBU.less (Comparable *v,* Comparable *w*) [static], [private]

```
83                                                      {
84         return v.compareTo(w) < 0;
85     }
```

6.27.3.3 static void se2xb3.data.algorithms.sort.textbook.MergeBU.merge (Comparable[ ] *a,* Comparable[ ] *aux,* int *lo,* int *mid,* int *hi*) [static], [private]

```
43                                                                                          {
44
45         // copy to aux[]
46         for (int k = lo; k <= hi; k++) {
47             aux[k] = a[k];
48         }
49
50         // merge back to a[]
51         int i = lo, j = mid+1;
52         for (int k = lo; k <= hi; k++) {
53             if      (i > mid)              a[k] = aux[j++];  // this copying is unneccessary
54             else if (j > hi)               a[k] = aux[i++];
55             else if (less(aux[j], aux[i])) a[k] = aux[j++];
56             else                           a[k] = aux[i++];
57         }
58
59     }
```

6.27.3.4 static void se2xb3.data.algorithms.sort.textbook.MergeBU.show (Comparable[ ] *a*) [static], [private]

```
98                                                  {
99          for (int i = 0; i < a.length; i++) {
100 //              StdOut.println(a[i]);
101          }
102     }
```

6.27.3.5 static void se2xb3.data.algorithms.sort.textbook.MergeBU.sort (Comparable[ ] *a*) [static]

Rearranges the array in ascending order, using the natural order.

Parameters

a	the array to be sorted

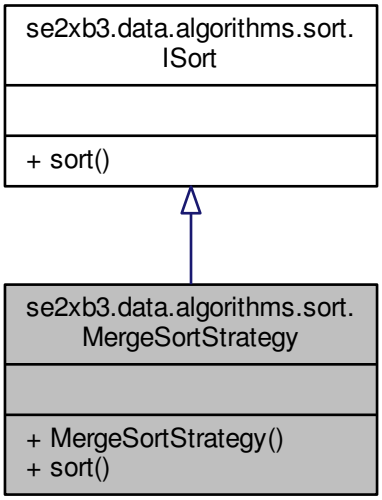
```
65                                                  {
66          int n = a.length;
67          Comparable[] aux = new Comparable[n];
68          for (int len = 1; len < n; len *= 2) {
69              for (int lo = 0; lo < n-len; lo += len+len) {
70                  int mid  = lo+len-1;
71                  int hi = Math.min(lo+len+len-1, n-1);
72                  merge(a, aux, lo, mid, hi);
73              }
74          }
75          assert isSorted(a);
76      }
```

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

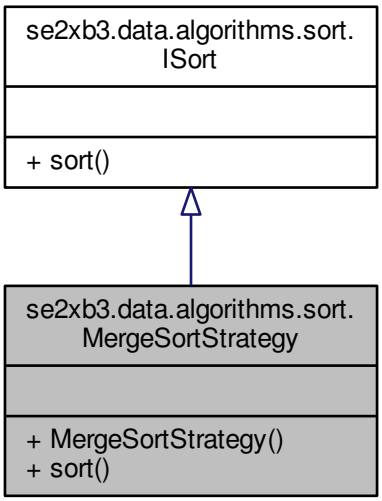
- MergeBU.java

6.28 se2xb3.data.algorithms.sort.MergeSortStrategy Class Reference

Inheritance diagram for se2xb3.data.algorithms.sort.MergeSortStrategy:



Collaboration diagram for se2xb3.data.algorithms.sort.MergeSortStrategy:



Public Member Functions

- MergeSortStrategy ()
- void sort (Comparable[ ] a)

6.28.1 Detailed Description

Author

Dawson Myers

Version

1.0

Since

3/26/2017

6.28.2 Constructor & Destructor Documentation

6.28.2.1 se2xb3.data.algorithms.sort.MergeSortStrategy.MergeSortStrategy ( )

```
12 {}
```

6.28.3 Member Function Documentation

6.28.3.1 void se2xb3.data.algorithms.sort.MergeSortStrategy.sort (Comparable[ ] *a*)

Implements se2xb3.data.algorithms.sort.ISort.

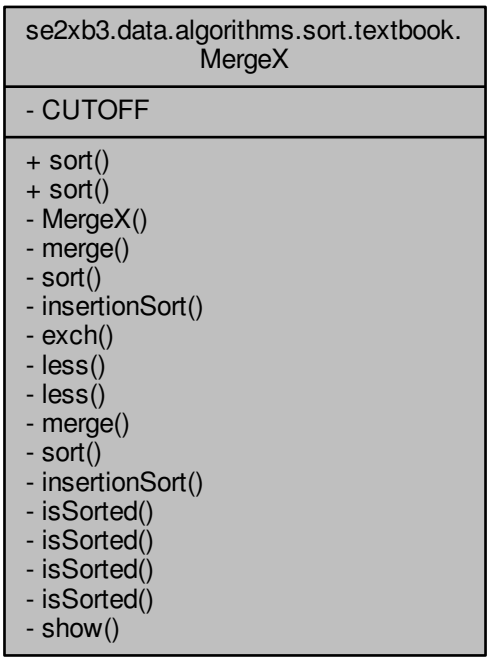
```
15                                      {
16         Merge.sort(a);
17     }
```

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

- MergeSortStrategy.java

6.29 se2xb3.data.algorithms.sort.textbook.MergeX Class Reference

Collaboration diagram for se2xb3.data.algorithms.sort.textbook.MergeX:



Static Public Member Functions

- static void sort (Comparable[ ] a)
- static void sort (Object[ ] a, Comparator comparator)

Private Member Functions

- MergeX ()

Static Private Member Functions

- static void merge (Comparable[ ] src, Comparable[ ] dst, int lo, int mid, int hi)
- static void sort (Comparable[ ] src, Comparable[ ] dst, int lo, int hi)
- static void insertionSort (Comparable[ ] a, int lo, int hi)
- static void exch (Object[ ] a, int i, int j)
- static boolean less (Comparable a, Comparable b)
- static boolean less (Object a, Object b, Comparator comparator)
- static void merge (Object[ ] src, Object[ ] dst, int lo, int mid, int hi, Comparator comparator)
- static void sort (Object[ ] src, Object[ ] dst, int lo, int hi, Comparator comparator)
- static void insertionSort (Object[ ] a, int lo, int hi, Comparator comparator)
- static boolean isSorted (Comparable[ ] a)
- static boolean isSorted (Comparable[ ] a, int lo, int hi)
- static boolean isSorted (Object[ ] a, Comparator comparator)
- static boolean isSorted (Object[ ] a, int lo, int hi, Comparator comparator)
- static void show (Object[ ] a)

Static Private Attributes

- static final int CUTOFF = 7

6.29.1 Detailed Description

The

MergeX

class provides static methods for sorting an array using an optimized version of mergesort.

For additional documentation, see Section 2.2 of *Algorithms, 4th Edition* by Robert Sedgewick and Kevin Wayne.

Author

Robert Sedgewick
Kevin Wayne

6.29.2 Constructor & Destructor Documentation

6.29.2.1 se2xb3.data.algorithms.sort.textbook.MergeX.MergeX ( ) [private]

```
43 { }
```

6.29.3 Member Function Documentation

6.29.3.1 static void se2xb3.data.algorithms.sort.textbook.MergeX.exch (Object[ ] *a,* int *i,* int *j*) [static], [private]

```
110                                                 {
111         Object swap = a[i];
112         a[i] = a[j];
113         a[j] = swap;
114     }
```

6.29.3.2 static void se2xb3.data.algorithms.sort.textbook.MergeX.insertionSort (Comparable[ ] *a,* int *lo,* int *hi*) [static], [private]

```
98                                                                  {
99          for (int i = lo; i <= hi; i++)
100             for (int j = i; j > lo && less(a[j], a[j-1]); j--)
101                 exch(a, j, j-1);
102     }
```

6.29.3.3 static void se2xb3.data.algorithms.sort.textbook.MergeX.insertionSort (Object[ ] *a,* int *lo,* int *hi,* Comparator *comparator*) [static], [private]

```
182                                                                                 {
183         for (int i = lo; i <= hi; i++)
184             for (int j = i; j > lo && less(a[j], a[j-1], comparator); j--)
185                 exch(a, j, j-1);
186     }
```

6.29.3.4 static boolean se2xb3.data.algorithms.sort.textbook.MergeX.isSorted (Comparable[ ] *a*) [static], [private]

```
192                                                 {
193         return isSorted(a, 0, a.length - 1);
194     }
```

6.29.3.5 static boolean se2xb3.data.algorithms.sort.textbook.MergeX.isSorted (Comparable[ ] *a,* int *lo,* int *hi*) [static], [private]

```
196                                                                 {
197         for (int i = lo + 1; i <= hi; i++)
198             if (less(a[i], a[i-1])) return false;
199         return true;
200     }
```

6.29.3.6 static boolean se2xb3.data.algorithms.sort.textbook.MergeX.isSorted (Object[ ] *a,* Comparator *comparator*) [static], [private]

```
202                                                                   {
203         return isSorted(a, 0, a.length - 1, comparator);
204     }
```

6.29.3.7 static boolean se2xb3.data.algorithms.sort.textbook.MergeX.isSorted (Object[ ] *a,* int *lo,* int *hi,* Comparator *comparator*) [static], [private]

```
206                                                                                 {
207         for (int i = lo + 1; i <= hi; i++)
208             if (less(a[i], a[i-1], comparator)) return false;
209         return true;
210     }
```

6.29.3.8 static boolean se2xb3.data.algorithms.sort.textbook.MergeX.less (Comparable *a,* Comparable *b*) [static], [private]

```
117                                                 {
118         return a.compareTo(b) < 0;
119     }
```

6.29.3.9 static boolean se2xb3.data.algorithms.sort.textbook.MergeX.less (Object *a,* Object *b,* Comparator *comparator*) [static], [private]

```
122                                                                 {
123         return comparator.compare(a, b) < 0;
124     }
```

6.29.3.10 static void se2xb3.data.algorithms.sort.textbook.MergeX.merge (Comparable[ ] *src,* Comparable[ ] *dst,* int *lo,* int *mid,* int *hi*) [static], [private]

```
45                                                                                                  {
46
47          // precondition: src[lo .. mid] and src[mid+1 .. hi] are sorted subarrays
48          assert isSorted(src, lo, mid);
49          assert isSorted(src, mid+1, hi);
50
51          int i = lo, j = mid+1;
52          for (int k = lo; k <= hi; k++) {
53              if      (i > mid)              dst[k] = src[j++];
54              else if (j > hi)               dst[k] = src[i++];
55              else if (less(src[j], src[i])) dst[k] = src[j++];   // to ensure stability
56              else                           dst[k] = src[i++];
57          }
58
59          // postcondition: dst[lo .. hi] is sorted subarray
60          assert isSorted(dst, lo, hi);
61      }
```

6.29.3.11 static void se2xb3.data.algorithms.sort.textbook.MergeX.merge (Object[ ] *src,* Object[ ] *dst,* int *lo,* int *mid,* int *hi,* Comparator *comparator*) [static], [private]

```
143                                                                                                                 {
144
145         // precondition: src[lo .. mid] and src[mid+1 .. hi] are sorted subarrays
146         assert isSorted(src, lo, mid, comparator);
147         assert isSorted(src, mid+1, hi, comparator);
148
149         int i = lo, j = mid+1;
150         for (int k = lo; k <= hi; k++) {
151             if      (i > mid)                           dst[k] = src[j++];
152             else if (j > hi)                            dst[k] = src[i++];
153             else if (less(src[j], src[i], comparator)) dst[k] = src[j++];
154             else                                        dst[k] = src[i++];
155         }
156
157         // postcondition: dst[lo .. hi] is sorted subarray
158         assert isSorted(dst, lo, hi, comparator);
159     }
```

6.29.3.12 static void se2xb3.data.algorithms.sort.textbook.MergeX.show (Object[ ] *a*) [static], [private]

```
213                                          {
214         for (int i = 0; i < a.length; i++) {
215             //StdOut.println(a[i]);
216         }
217     }
```

6.29.3.13 static void se2xb3.data.algorithms.sort.textbook.MergeX.sort (Comparable[ ] *src,* Comparable[ ] *dst,* int *lo,* int *hi*) [static], [private]

```
63                                                                                                  {
64          // if (hi <= lo) return;
65          if (hi <= lo + CUTOFF) {
66              insertionSort(dst, lo, hi);
67              return;
68          }
69          int mid = lo + (hi - lo) / 2;
70          sort(dst, src, lo, mid);
71          sort(dst, src, mid+1, hi);
72
73          // if (!less(src[mid+1], src[mid])) {
74          //    for (int i = lo; i <= hi; i++) dst[i] = src[i];
75          //    return;
76          // }
77
78          // using System.arraycopy() is a bit faster than the above loop
79          if (!less(src[mid+1], src[mid])) {
80              System.arraycopy(src, lo, dst, lo, hi - lo + 1);
81              return;
82          }
83
84          merge(src, dst, lo, mid, hi);
85      }
```

6.29.3.14 static void se2xb3.data.algorithms.sort.textbook.MergeX.sort (Comparable[ ] *a*) [static]

Rearranges the array in ascending order, using the natural order.

Parameters

a	the array to be sorted

```
91                                          {
92         Comparable[] aux = a.clone();
93         sort(aux, a, 0, a.length-1);
94         assert isSorted(a);
95     }
```

6.29.3.15 static void se2xb3.data.algorithms.sort.textbook.MergeX.sort (Object[ ] *a,* Comparator *comparator*) [static]

Rearranges the array in ascending order, using the provided order.

Parameters

a	the array to be sorted
comparator	the comparator that defines the total order

```
137                                                     {
138         Object[] aux = a.clone();
139         sort(aux, a, 0, a.length-1, comparator);
140         assert isSorted(a, comparator);
141     }
```

6.29.3.16 static void se2xb3.data.algorithms.sort.textbook.MergeX.sort (Object[ ] *src,* Object[ ] *dst,* int *lo,* int *hi,* Comparator *comparator*) [static], [private]

```
162                                                                                     {
163         // if (hi <= lo) return;
164         if (hi <= lo + CUTOFF) {
165             insertionSort(dst, lo, hi, comparator);
166             return;
167         }
168         int mid = lo + (hi - lo) / 2;
169         sort(dst, src, lo, mid, comparator);
170         sort(dst, src, mid+1, hi, comparator);
171
172         // using System.arraycopy() is a bit faster than the above loop
173         if (!less(src[mid+1], src[mid], comparator)) {
174             System.arraycopy(src, lo, dst, lo, hi - lo + 1);
175             return;
176         }
177
178         merge(src, dst, lo, mid, hi, comparator);
179     }
```

6.29.4 Member Data Documentation

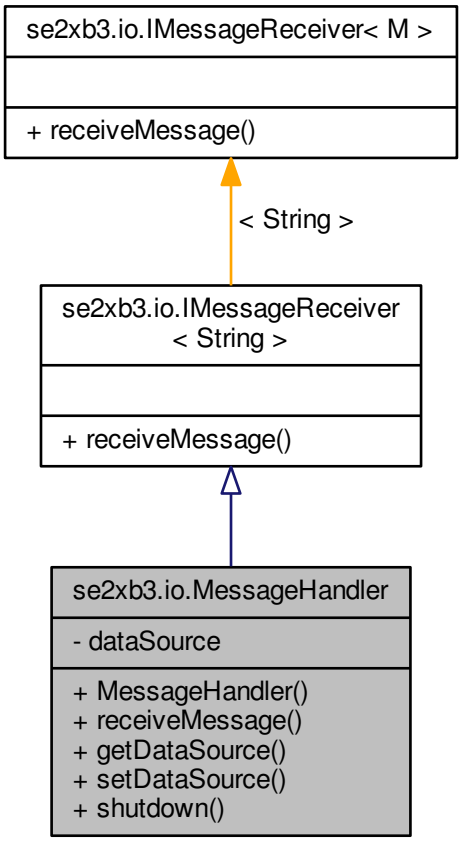
6.29.4.1 final int se2xb3.data.algorithms.sort.textbook.MergeX.CUTOFF = 7 [static], [private]

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

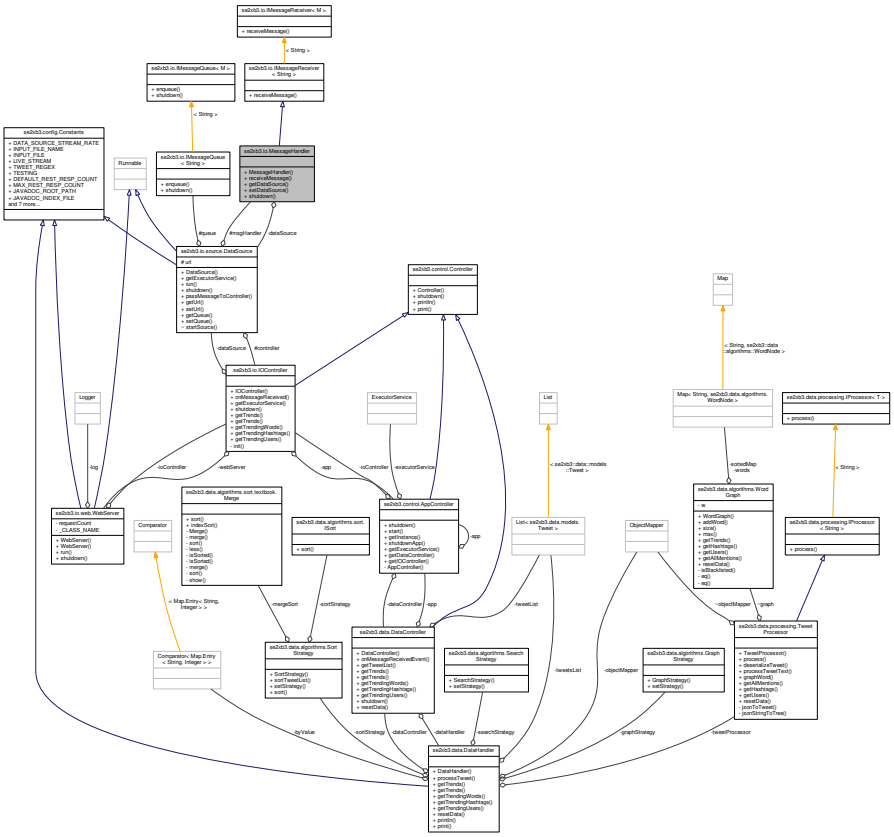
- MergeX.java

6.30 se2xb3.io.MessageHandler Class Reference

Inheritance diagram for se2xb3.io.MessageHandler:



Collaboration diagram for se2xb3.io.MessageHandler:



Public Member Functions

- MessageHandler (DataSource dataSource)
- synchronized void receiveMessage (String msg)
- DataSource getDataSource ()
- void setDataSource (DataSource dataSource)
- void shutdown ()

Private Attributes

- DataSource dataSource

6.30.1 Detailed Description

A class that handles messages from a data source. When a data source receives a message it inserts it into an implementation of IMessageQueue and then waits for more messages to arrive. Messages are then taken from the queue as fast as they can be processed and passed to the message handler by calling receiveMessage() on it. The message is then passed to the IOController instance where it is then sent to be processed by the data controller.

Author

Dawson Myers

Version

1.0

Since

3/11/2017

6.30.2 Constructor & Destructor Documentation

6.30.2.1 se2xb3.io.MessageHandler.MessageHandler (DataSource *dataSource*)

Constructor that takes a DataSource instance. This reference is required so that messages from the data source can be passed back to the controller using the onMessageReceived() hook.

Parameters

dataSource	a data source implementation

```
31                                                  {
32          this.dataSource = dataSource;
33      }
```

6.30.3 Member Function Documentation

6.30.3.1 DataSource se2xb3.io.MessageHandler.getDataSource ( )

Get DataSource instance.

Returns

a data source implementation

```
51                                          {
52          return dataSource;
53      }
```

6.30.3.2 synchronized void se2xb3.io.MessageHandler.receiveMessage (String *msg*)

Receive new message from message queue and send it to be processed.

Parameters

msg	a string message

```
42                                                      {
43          dataSource.passMessageToController(msg);
44      }
```

6.30.3.3 void se2xb3.io.MessageHandler.setDataSource (DataSource *dataSource*)

Set DataSource instance.

Parameters

dataSource	a data source implementation

```
60                                                  {
61          this.dataSource = dataSource;
62      }
```

6.30.3.4 void se2xb3.io.MessageHandler.shutdown ( )

Shutdown.

```
67                              {
68      }
```

6.30.4 Member Data Documentation

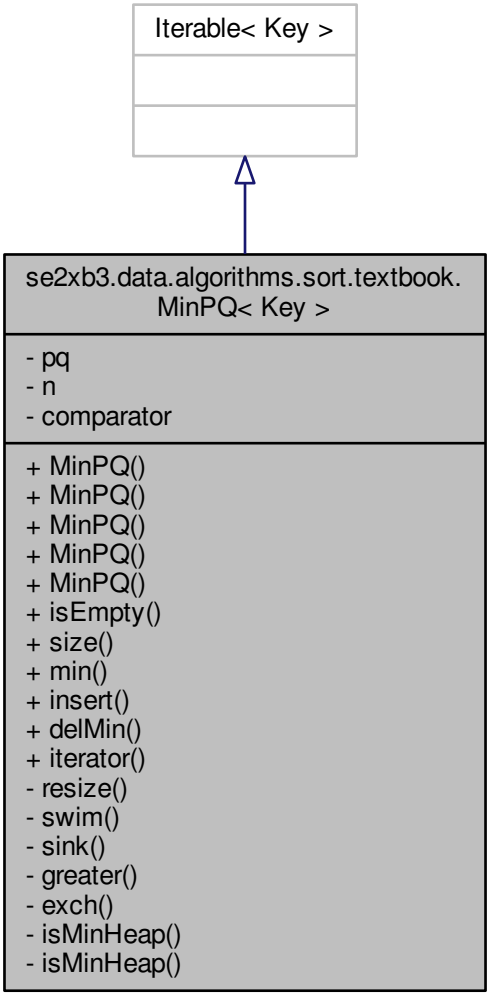
6.30.4.1 DataSource se2xb3.io.MessageHandler.dataSource [private]

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

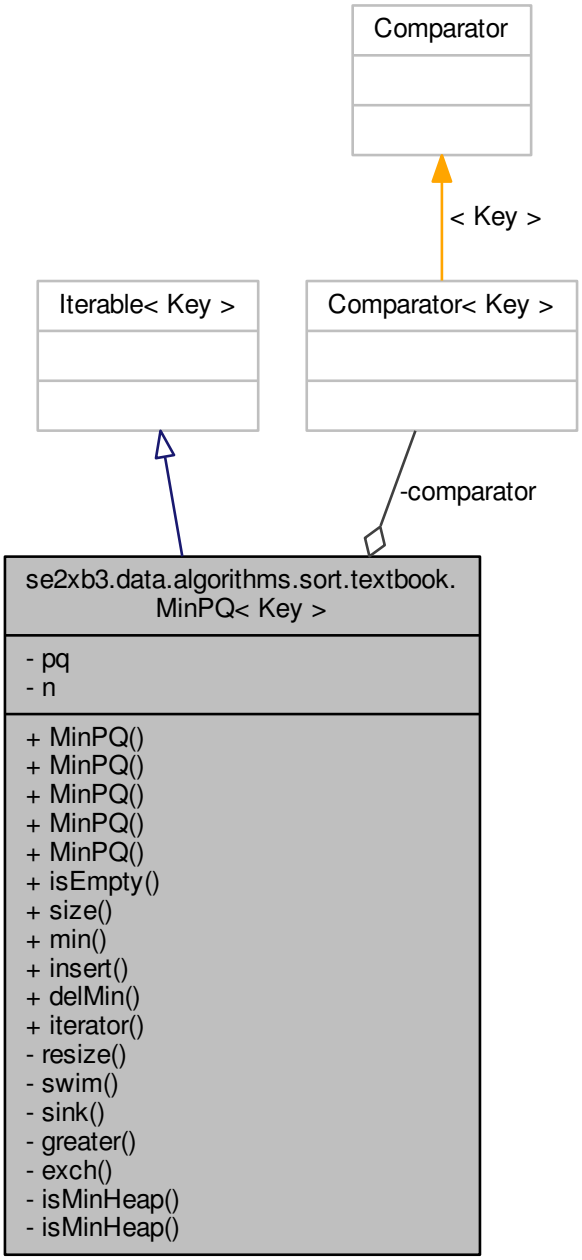
- MessageHandler.java

6.31 se2xb3.data.algorithms.sort.textbook.MinPQ< Key > Class Template Reference

Inheritance diagram for se2xb3.data.algorithms.sort.textbook.MinPQ< Key >:



Collaboration diagram for se2xb3.data.algorithms.sort.textbook.MinPQ< Key >:



Classes

- class HeapIterator

Public Member Functions

- MinPQ (int initCapacity)

- MinPQ ()
- MinPQ (int initCapacity, Comparator< Key > comparator)
- MinPQ (Comparator< Key > comparator)
- MinPQ (Key[ ] keys)
- boolean isEmpty ()
- int size ()
- Key min ()
- void insert (Key x)
- Key delMin ()
- Iterator< Key > iterator ()

Private Member Functions

- void resize (int capacity)
- void swim (int k)
- void sink (int k)
- boolean greater (int i, int j)
- void exch (int i, int j)
- boolean isMinHeap ()
- boolean isMinHeap (int k)

Private Attributes

- Key[ ] pq
- int n
- Comparator< Key > comparator

6.31.1 Detailed Description

The

`MinPQ`

class represents a priority queue of generic keys. It supports the usual *insert* and *delete-the-minimum* operations, along with methods for peeking at the minimum key, testing if the priority queue is empty, and iterating through the keys.

This implementation uses a binary heap. The *insert* and *delete-the-minimum* operations take logarithmic amortized time. The *min*, *size*, and *is-empty* operations take constant time. Construction takes time proportional to the specified capacity or the number of items used to initialize the data structure.

For additional documentation, see `Section 2.4` of *Algorithms, 4th Edition* by Robert Sedgewick and Kevin Wayne.

Author

Robert Sedgewick
Kevin Wayne

Parameters

<Key>	the generic type of key on this priority queue

6.31.2 Constructor & Destructor Documentation

6.31.2.1 se2xb3.data.algorithms.sort.textbook.MinPQ< Key >.MinPQ (int *initCapacity*)

Initializes an empty priority queue with the given initial capacity.

Parameters

initCapacity	the initial capacity of this priority queue

```
58                                      {
59          pq = (Key[]) new Object[initCapacity + 1];
60          n = 0;
61      }
```

6.31.2.2 se2xb3.data.algorithms.sort.textbook.MinPQ< Key >.MinPQ ( )

Initializes an empty priority queue.

```
66                      {
67          this(1);
68      }
```

6.31.2.3 se2xb3.data.algorithms.sort.textbook.MinPQ< Key >.MinPQ (int *initCapacity*, Comparator< Key > *comparator*)

Initializes an empty priority queue with the given initial capacity, using the given comparator.

Parameters

initCapacity	the initial capacity of this priority queue
comparator	the order to use when comparing keys

```
77                                                              {
78          this.comparator = comparator;
79          pq = (Key[]) new Object[initCapacity + 1];
80          n = 0;
81      }
```

6.31.2.4 se2xb3.data.algorithms.sort.textbook.MinPQ< Key >.MinPQ (Comparator< Key > *comparator*)

Initializes an empty priority queue using the given comparator.

Parameters

comparator	the order to use when comparing keys

```
88                                          {
89         this(1, comparator);
90     }
```

6.31.2.5 se2xb3.data.algorithms.sort.textbook.MinPQ< Key >.MinPQ (Key[ ] *keys*)

Initializes a priority queue from the array of keys.

Takes time proportional to the number of keys, using sink-based heap construction.

Parameters

keys	the array of keys

```
99                              {
100         n = keys.length;
101         pq = (Key[]) new Object[keys.length + 1];
102         for (int i = 0; i < n; i++)
103             pq[i+1] = keys[i];
104         for (int k = n/2; k >= 1; k--)
105             sink(k);
106         assert isMinHeap();
107     }
```

6.31.3 Member Function Documentation

6.31.3.1 Key se2xb3.data.algorithms.sort.textbook.MinPQ< Key >.delMin ( )

Removes and returns a smallest key on this priority queue.

Returns

a smallest key on this priority queue

Exceptions

NoSuchElementException	if this priority queue is empty

```
170                         {
171         if (isEmpty()) throw new NoSuchElementException("Priority queue underflow");
172         exch(1, n);
173         Key min = pq[n--];
174         sink(1);
175         pq[n+1] = null;         // avoid loitering and help with garbage collection
176         if ((n > 0) && (n == (pq.length - 1) / 4)) resize(pq.length  / 2);
177         assert isMinHeap();
178         return min;
179     }
```

6.31.3.2 void se2xb3.data.algorithms.sort.textbook.MinPQ< Key >.exch (int *i*, int *j*) [private]

```
215                                     {
216         Key swap = pq[i];
217         pq[i] = pq[j];
218         pq[j] = swap;
219     }
```

6.31.3.3 boolean se2xb3.data.algorithms.sort.textbook.MinPQ< Key >.greater (int *i*, int *j*) [private]

```
206                                         {
207         if (comparator == null) {
208             return ((Comparable<Key>) pq[i]).compareTo(pq[j]) > 0;
209         }
210         else {
211             return comparator.compare(pq[i], pq[j]) > 0;
212         }
213     }
```

6.31.3.4 void se2xb3.data.algorithms.sort.textbook.MinPQ< Key >.insert (Key *x*)

Adds a new key to this priority queue.

Parameters

x	the key to add to this priority queue

```
154                               {
155         // double size of array if necessary
156         if (n == pq.length - 1) resize(2 * pq.length);
157
158         // add x, and percolate it up to maintain heap invariant
159         pq[++n] = x;
160         swim(n);
161         assert isMinHeap();
162     }
```

6.31.3.5 boolean se2xb3.data.algorithms.sort.textbook.MinPQ< Key >.isEmpty ( )

Returns true if this priority queue is empty.

Returns

`true`
if this priority queue is empty;

`false`

otherwise

```
115                               {
116         return n == 0;
117     }
```

6.31.3.6 boolean se2xb3.data.algorithms.sort.textbook.MinPQ< Key >.isMinHeap ( ) [private]

```
222                                {
223         return isMinHeap(1);
224     }
```

6.31.3.7 boolean se2xb3.data.algorithms.sort.textbook.MinPQ< Key >.isMinHeap (int *k*) [private]

```
227                                     {
228         if (k > n) return true;
229         int left = 2*k;
230         int right = 2*k + 1;
231         if (left  <= n && greater(k, left))  return false;
232         if (right <= n && greater(k, right)) return false;
233         return isMinHeap(left) && isMinHeap(right);
234     }
```

6.31.3.8 Iterator<Key> se2xb3.data.algorithms.sort.textbook.MinPQ< Key >.iterator ( )

Returns an iterator that iterates over the keys on this priority queue in ascending order.

The iterator doesn't implement

```
remove()
```

since it's optional.

Returns

an iterator that iterates over the keys in ascending order

```
245 { return new HeapIterator(); }
```

6.31.3.9 Key se2xb3.data.algorithms.sort.textbook.MinPQ< Key >.min ( )

Returns a smallest key on this priority queue.

Returns

a smallest key on this priority queue

Exceptions

NoSuchElementException	if this priority queue is empty

```
134                        {
135         if (isEmpty()) throw new NoSuchElementException("Priority queue underflow");
136         return pq[1];
137     }
```

6.31.3.10 void se2xb3.data.algorithms.sort.textbook.MinPQ< Key >.resize (int *capacity*) [private]

```
140                                     {
141         assert capacity > n;
142         Key[] temp = (Key[]) new Object[capacity];
143         for (int i = 1; i <= n; i++) {
144             temp[i] = pq[i];
145         }
146         pq = temp;
147     }
```

6.31.3.11 void se2xb3.data.algorithms.sort.textbook.MinPQ< Key >.sink (int *k*) [private]

```
193                                 {
194         while (2*k <= n) {
195             int j = 2*k;
196             if (j < n && greater(j, j+1)) j++;
197             if (!greater(k, j)) break;
198             exch(k, j);
199             k = j;
200         }
201     }
```

6.31.3.12 int se2xb3.data.algorithms.sort.textbook.MinPQ< Key >.size ( )

Returns the number of keys on this priority queue.

Returns

the number of keys on this priority queue

```
124                         {
125         return n;
126     }
```

6.31.3.13 void se2xb3.data.algorithms.sort.textbook.MinPQ< Key >.swim (int *k*) [private]

```
186                                 {
187         while (k > 1 && greater(k/2, k)) {
188             exch(k, k/2);
189             k = k/2;
190         }
191     }
```

6.31.4 Member Data Documentation

6.31.4.1 Comparator<Key> se2xb3.data.algorithms.sort.textbook.MinPQ< Key >.comparator [private]

6.31.4.2 int se2xb3.data.algorithms.sort.textbook.MinPQ< Key >.n [private]

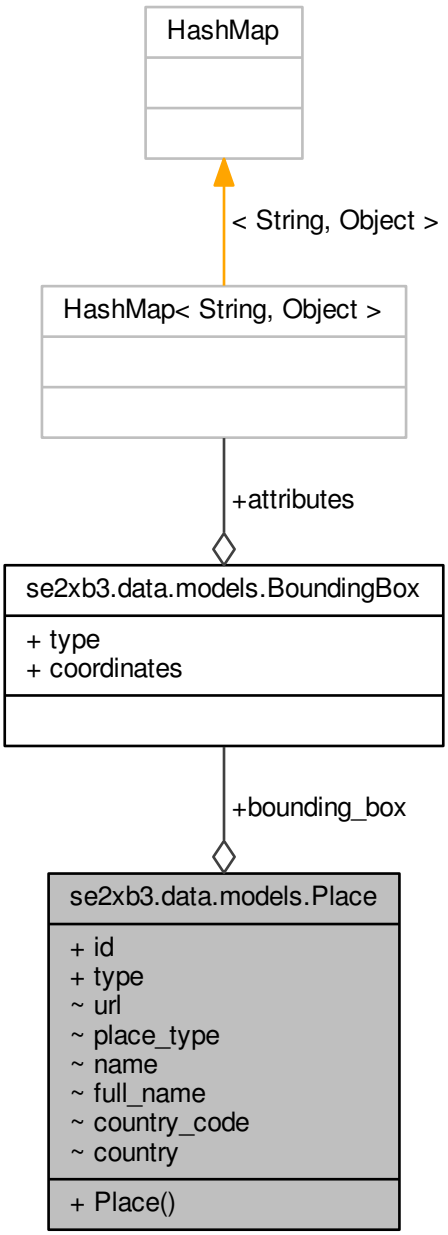
6.31.4.3 Key [ ] se2xb3.data.algorithms.sort.textbook.MinPQ< Key >.pq [private]

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

- MinPQ.java

6.32 se2xb3.data.models.Place Class Reference

Collaboration diagram for se2xb3.data.models.Place:



Public Member Functions

- Place ()

Public Attributes

- long id
- String type
- BoundingBox bounding_box

Package Attributes

- String url
- String place_type
- String name
- String full_name
- String country_code
- String country

6.32.1 Detailed Description

Author

Dawson

Version

1.0

Since

2/23/2017

6.32.2 Constructor & Destructor Documentation

6.32.2.1 se2xb3.data.models.Place.Place ( )

```
14 {}
```

6.32.3 Member Data Documentation

6.32.3.1 BoundingBox se2xb3.data.models.Place.bounding_box

6.32.3.2 String se2xb3.data.models.Place.country [package]

6.32.3.3 String se2xb3.data.models.Place.country_code [package]

6.32.3.4 String se2xb3.data.models.Place.full_name [package]

6.32.3.5 long se2xb3.data.models.Place.id

6.32.3.6 String se2xb3.data.models.Place.name [package]

6.32.3.7 String se2xb3.data.models.Place.place_type [package]

6.32.3.8 String se2xb3.data.models.Place.type

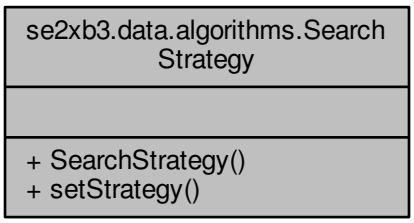
6.32.3.9 String se2xb3.data.models.Place.url [package]

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

- Place.java

6.33 se2xb3.data.algorithms.SearchStrategy Class Reference

Collaboration diagram for se2xb3.data.algorithms.SearchStrategy:



Public Member Functions

- SearchStrategy ()
- void setStrategy ()

6.33.1 Detailed Description

Author

Dawson Myers

Version

1.0

Since

3/12/2017

6.33.2 Constructor & Destructor Documentation

6.33.2.1 se2xb3.data.algorithms.SearchStrategy.SearchStrategy ( )

```
10 {}
```

6.33.3 Member Function Documentation

6.33.3.1 void se2xb3.data.algorithms.SearchStrategy.setStrategy ( )

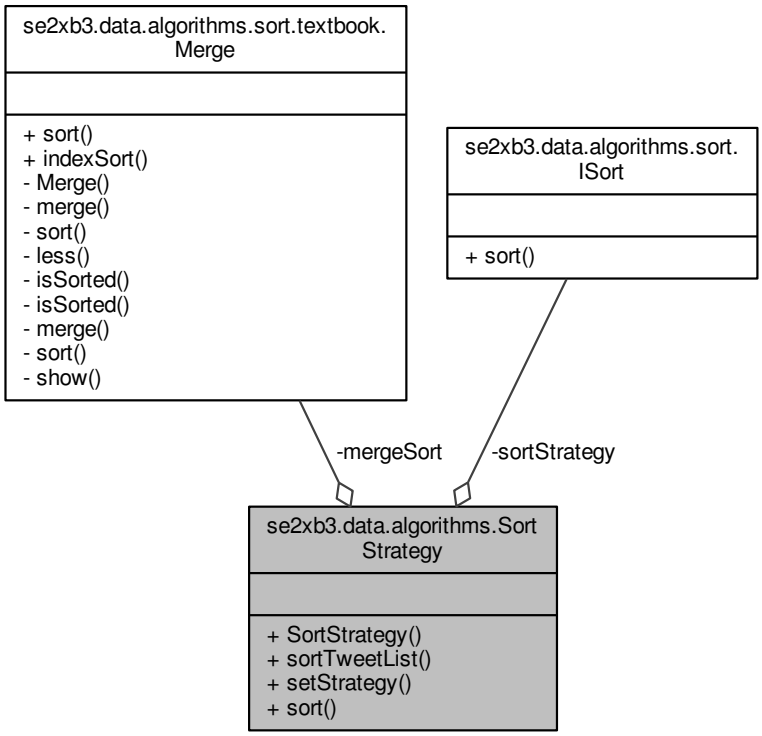
```
11                                  {
12
13     }
```

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

- SearchStrategy.java

6.34 se2xb3.data.algorithms.SortStrategy Class Reference

Collaboration diagram for se2xb3.data.algorithms.SortStrategy:



Public Member Functions

- SortStrategy ()
- List< Tweet > sortTweetList (List< Tweet > tweetList)
- void setStrategy ()
- void sort (Comparable[ ] a)

Private Attributes

- Merge mergeSort
- ISort sortStrategy

6.34.1 Detailed Description

Author

Dawson Myers

Version

1.0

Since

3/12/2017

6.34.2 Constructor & Destructor Documentation

6.34.2.1 se2xb3.data.algorithms.SortStrategy.SortStrategy ( )

```
20 {setStrategy();}
```

6.34.3 Member Function Documentation

6.34.3.1 void se2xb3.data.algorithms.SortStrategy.setStrategy ( )

```
26                              {
27         sortStrategy = new MergeSortStrategy();
28     }
```

6.34.3.2 void se2xb3.data.algorithms.SortStrategy.sort (Comparable[ ] *a*)

```
31                                      {
32         sortStrategy.sort(a);
33     }
```

6.34.3.3 List<Tweet> se2xb3.data.algorithms.SortStrategy.sortTweetList (List< Tweet > *tweetList*)

```
22                                                              {
23
24         return null;
25     }
```

6.34.4 Member Data Documentation

6.34.4.1 Merge se2xb3.data.algorithms.SortStrategy.mergeSort [private]

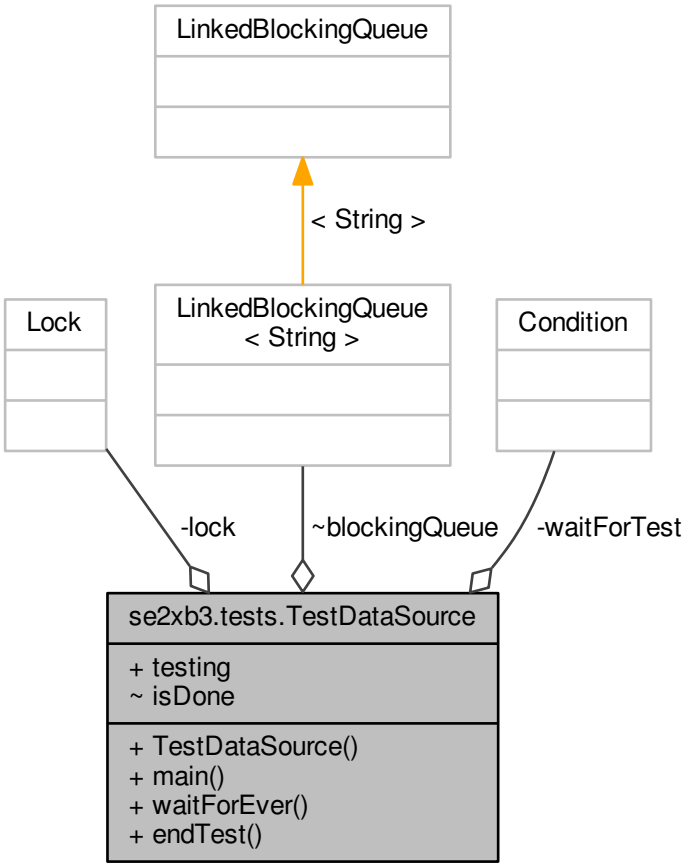
6.34.4.2 ISort se2xb3.data.algorithms.SortStrategy.sortStrategy [private]

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

- SortStrategy.java

6.35 se2xb3.tests.TestDataSource Class Reference

Collaboration diagram for se2xb3.tests.TestDataSource:



Public Member Functions

- TestDataSource ()

Static Public Member Functions

- static void main (String[ ] args)
- static void waitForEver ()
- static void endTest ()

Static Public Attributes

- static volatile boolean testing = true

Static Package Attributes

- static volatile boolean isDone = false
- static volatile LinkedBlockingQueue< String > blockingQueue

Static Private Attributes

- static final Lock lock = new ReentrantLock()
- static final Condition waitForTest = lock.newCondition()

6.35.1 Detailed Description

Author

Dawson Myers

Version

1.0

Since

3/11/2017

6.35.2 Constructor & Destructor Documentation

6.35.2.1 se2xb3.tests.TestDataSource.TestDataSource ( )

```
20 {}
```

6.35.3 Member Function Documentation

6.35.3.1 static void se2xb3.tests.TestDataSource.endTest ( ) [static]

```
44                                  {
45 //        isDone = true;
46 //        waitForTest.signal();
47
48         blockingQueue.add("Done");
49     }
```

6.35.3.2 static void se2xb3.tests.TestDataSource.main (String[ ] *args*) [static]

```
23                                          {
24         AppController app = AppController.getInstance();
25             waitForEver();
26     }
```

6.35.3.3 static void se2xb3.tests.TestDataSource.waitForEver ( ) [static]

```
32                                      {
33          try {
34              blockingQueue.take(); // wait here
35              AppController.shutdownApp();
36
37          } catch (InterruptedException e) {
38              e.printStackTrace();
39          } finally {
40
41          }
42      }
```

6.35.4 Member Data Documentation

6.35.4.1 volatile LinkedBlockingQueue<String> se2xb3.tests.TestDataSource.blockingQueue [static], [package]

Initial value:

```
= new
            LinkedBlockingQueue<>()
```

6.35.4.2 volatile boolean se2xb3.tests.TestDataSource.isDone = false [static], [package]

6.35.4.3 final Lock se2xb3.tests.TestDataSource.lock = new ReentrantLock() [static], [private]

6.35.4.4 volatile boolean se2xb3.tests.TestDataSource.testing = true [static]

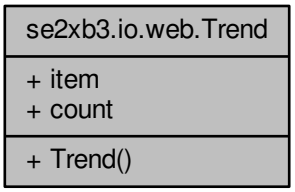
6.35.4.5 final Condition se2xb3.tests.TestDataSource.waitForTest = lock.newCondition() [static], [private]

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

- TestDataSource.java

6.36 se2xb3.io.web.Trend Class Reference

Collaboration diagram for se2xb3.io.web.Trend:



Public Member Functions

- Trend (String i, int c)

Public Attributes

- String item
- int count

6.36.1 Detailed Description

A tend pojo class.

6.36.2 Constructor & Destructor Documentation

6.36.2.1 se2xb3.io.web.Trend.Trend (String *i,* int *c*)

```
105                                 {
106         item = i;
107         count = c;
108     }
```

6.36.3 Member Data Documentation

6.36.3.1 int se2xb3.io.web.Trend.count

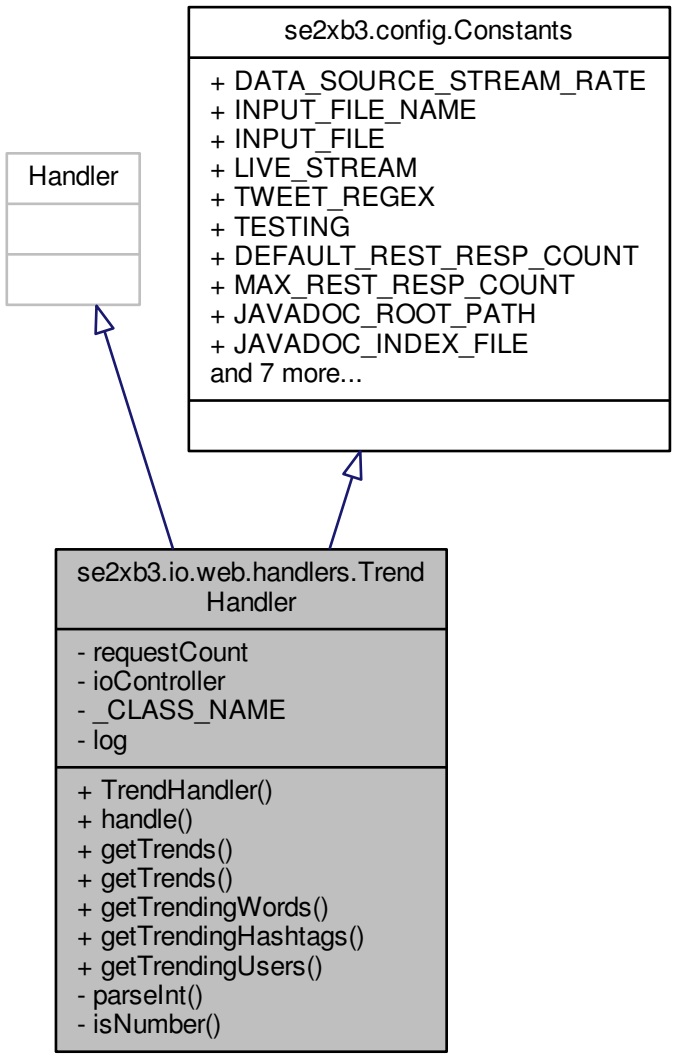
6.36.3.2 String se2xb3.io.web.Trend.item

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

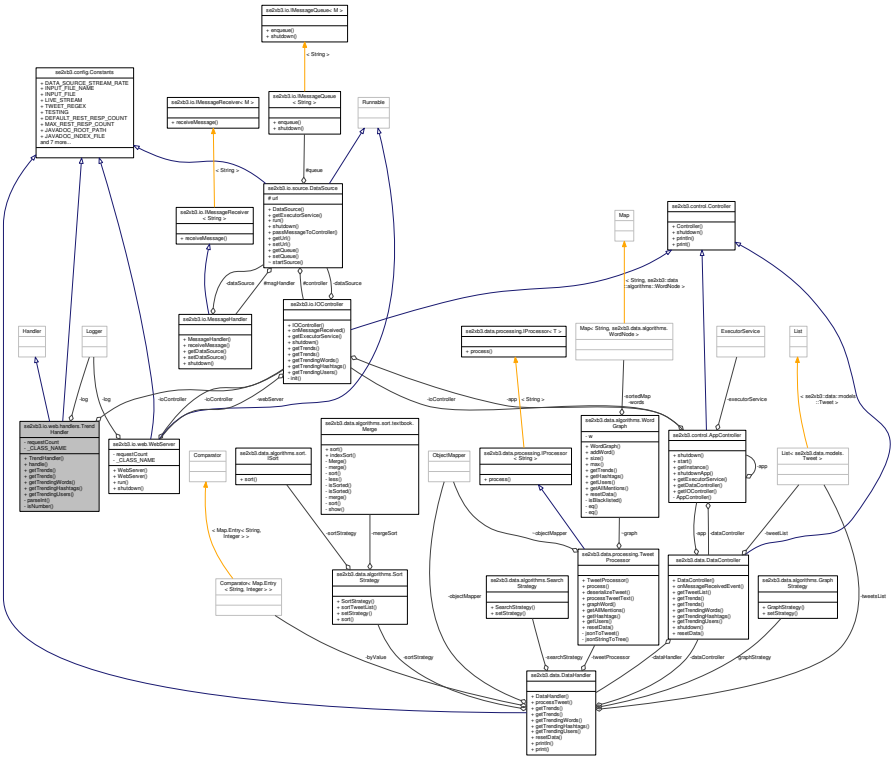
- JsonParser.java

6.37 se2xb3.io.web.handlers.TrendHandler Class Reference

Inheritance diagram for se2xb3.io.web.handlers.TrendHandler:



Collaboration diagram for se2xb3.io.web.handlers.TrendHandler:



Public Member Functions

- TrendHandler (IOController ioController)
- void handle (Context ctx) throws Exception
- String getTrends ()
- String getTrends (String count)
- String getTrendingWords (String count)
- String getTrendingHashtags (String count)
- String getTrendingUsers (String count)

Private Member Functions

- int parseInt (String s)
- boolean isNumber (String s)

Private Attributes

- long requestCount = 0
- IOController ioController

Static Private Attributes

- static final String _CLASS_NAME = TrendHandler.class.getSimpleName()
- static final Logger log = LoggerFactory.getLogger(_CLASS_NAME)

Additional Inherited Members

6.37.1 Detailed Description

Handle all REST request received by the web server with a prefix of `trends/`.

Author

Dawson Myers

Version

1.0

Since

3/27/2017

6.37.2 Constructor & Destructor Documentation

6.37.2.1 se2xb3.io.web.handlers.TrendHandler.TrendHandler (IOController *ioController*)

```
26 {this.ioController = ioController;}
```

6.37.3 Member Function Documentation

6.37.3.1 String se2xb3.io.web.handlers.TrendHandler.getTrendingHashtags (String *count*)

Get trending hashtags.

Parameters

count	number of top trending items to get.

Returns

a JSON encoded string containing the top trending items

```
157                                                 {
158         if(count != null && count != ""){
159             return toJson(ioController.getTrendingHashtags(Integer.parseInt(
      count)));
160         }
161         return toJson(ioController.getTrendingHashtags(
      DEFAULT_REST_RESP_COUNT));
162     }
```

6.37.3.2 String se2xb3.io.web.handlers.TrendHandler.getTrendingUsers (String *count*)

Get trending users.

Parameters

count	number of top trending items to get.

Returns

a JSON encoded string containing the top trending items

```
169                                                 {
170         if(count != null && count != ""){
171             return toJson(ioController.getTrendingUsers(Integer.parseInt(count)
    ));
172         }
173         return toJson(ioController.getTrendingUsers(
    DEFAULT_REST_RESP_COUNT));
174     }
```

6.37.3.3 String se2xb3.io.web.handlers.TrendHandler.getTrendingWords (String *count*)

Get trending words.

Parameters

count	number of top trending items to get.

Returns

a JSON encoded string containing the top trending items

```
145                                                 {
146         if(count != null && count != ""){
147             return toJson(ioController.getTrendingWords(Integer.parseInt(count)
    ));
148         }
149         return toJson(ioController.getTrendingWords(
    DEFAULT_REST_RESP_COUNT));
150     }
```

6.37.3.4 String se2xb3.io.web.handlers.TrendHandler.getTrends ( )

Get trends from data controller

Returns

JSON encoded string containing the trends

```
123                                 {
124         return toJson(ioController.getTrends());
125     }
```

6.37.3.5 String se2xb3.io.web.handlers.TrendHandler.getTrends (String *count*)

Get trends from data controller.

Parameters

count	the number of items to get

Returns

JSON encoded string containing the trends

```
133                                             {
134         if(count != null && count != ""){
135             return toJson(ioController.getTrends(Integer.parseInt(count)));
136         }
137         return toJson(ioController.getTrends());
138     }
```

6.37.3.6 void se2xb3.io.web.handlers.TrendHandler.handle (Context *ctx*) throws Exception

This method handles all REST request matching the path pattern **`trends/:type?/:count?`**. The optional query parameter for the `trends` REST resource are **`:type?`** and **`:count?`** (a prefix of '**:**' indicates a parameter and a suffix of '**?**' means it's optional). Request can be made in the following ways:

- **trends/{count}**
  Type parameter is empty. The response will include the top **count** overall word, hashtag, and user mentions as a JSON array containing 3 arrays (one for each trend). If the the request is just `trends/` without the **count** parameter empty, then the a default value of 10 is used.
- **trends/{type}/{count}**
  The response will include the top **count** (an integer value) trends of the type **type**. Where **type** is either overall word, hashtag, or user mentions as a JSON array. If the the request is just *`trends/{type}/`* without the **count** parameter empty, then the a default value of 10 is used.

```
55                                                  {
56         String type  = ctx.getPathTokens().get("type");
57         String count = ctx.getPathTokens().get("count");
58 
59         // print out the request count every 100 request
60         requestCount++;
61         if (requestCount % 100 == 0) {
62             log.info("Trend request count = " + requestCount);
63         }
64 
65         if(count != null && count.length() > 3) count = count.substring(0, 2);
66         // trends/ or count is too long
67         if (type == null || type.length() == 0){
68 //             if(type.length() > MAX_REST_RESP_COUNT)
69 //                 ctx.render(toJson(ioController.getTrends(MAX_REST_RESP_COUNT)));
70 //             else
71                 ctx.render(toJson(ioController.getTrends(
    DEFAULT_REST_RESP_COUNT)));
72             return;
73             // path = trends/#
74         }  else if (isNumber(type)) {
75             ctx.render(toJson(ioController.getTrends(Integer.parseInt(type))));
76             return;
77         }else if (type.toLowerCase().equals(REST_RESOURCE_TRENDS_ALL)) {
78 //         }else if (type.toLowerCase().equals("all")) {
79             if (isNumber(count)) {
80                 ctx.render(toJson(ioController.getTrendingWords(Integer.
    parseInt(count))));
81                 return;
82             }
83             ctx.render(toJson(ioController.getTrendingWords(
    DEFAULT_REST_RESP_COUNT)));
84             return;
85             // trends/hashtags/#
86         } else if (type.toLowerCase().equals(REST_RESOURCE_TRENDS_HASHTAGS)) {
87             if (isNumber(count)) {
```

```
88                  ctx.render(toJson(ioController.getTrendingHashtags(Integer.
    parseInt(count))));
89                  return;
90              }
91              ctx.render(toJson(ioController.getTrendingHashtags(
    DEFAULT_REST_RESP_COUNT)));
92              return;
93              // trends/users/#
94          } else if (type.toLowerCase().equals(REST_RESOURCE_TRENDS_USERS)) {
95              if (isNumber(count)) {
96                  ctx.render(toJson(ioController.getTrendingUsers(Integer.
    parseInt(count))));
97                  return;
98              }
99              ctx.render(toJson(ioController.getTrendingUsers(
    DEFAULT_REST_RESP_COUNT)));
100              return;
101          }
102          ctx.render(REST_REQUEST_NO_MATCH);
103 //          ctx.render("no match");
104      }
```

6.37.3.7 boolean se2xb3.io.web.handlers.TrendHandler.isNumber (String *s*) [private]

Check if a string contains all numeric characters

Parameters

s	a string

Returns

true if string is a number

```
115                                     {
116              return s != null && s.length() != 0 && s.chars().allMatch( Character::isDigit );
117      }
```

6.37.3.8 int se2xb3.io.web.handlers.TrendHandler.parseInt (String *s*) [private]

```
106                                     {
107          return abs(Integer.parseInt(s));
108      }
```

6.37.4 Member Data Documentation

6.37.4.1 final String se2xb3.io.web.handlers.TrendHandler._CLASS_NAME = TrendHandler.class.getSimpleName() [static], [private]

6.37.4.2 IOController se2xb3.io.web.handlers.TrendHandler.ioController [private]

6.37.4.3 final Logger se2xb3.io.web.handlers.TrendHandler.log = LoggerFactory.getLogger(_CLASS_NAME) [static], [private]

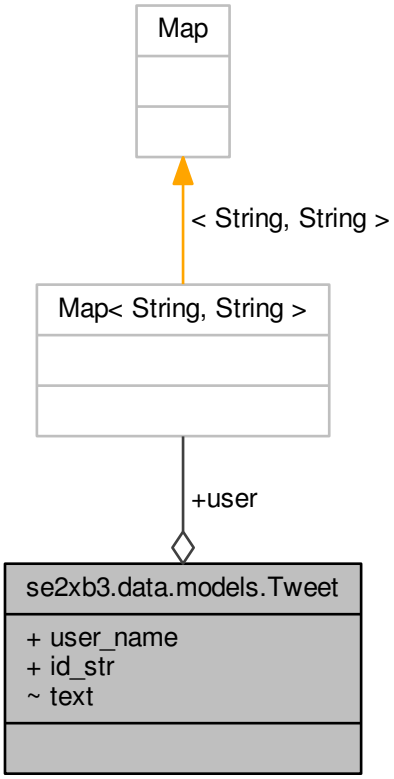
6.37.4.4 long se2xb3.io.web.handlers.TrendHandler.requestCount = 0 [private]

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

- TrendHandler.java

6.38 se2xb3.data.models.Tweet Class Reference

Collaboration diagram for se2xb3.data.models.Tweet:



Public Attributes

- Map< String, String > user
- String user_name
- String id_str

Package Attributes

- String text

6.38.1 Detailed Description

Author

Dawson

Version

1.0

Since

2/23/2017

6.38.2 Member Data Documentation

6.38.2.1 String se2xb3.data.models.Tweet.id_str

6.38.2.2 String se2xb3.data.models.Tweet.text [package]

6.38.2.3 Map<String, String> se2xb3.data.models.Tweet.user

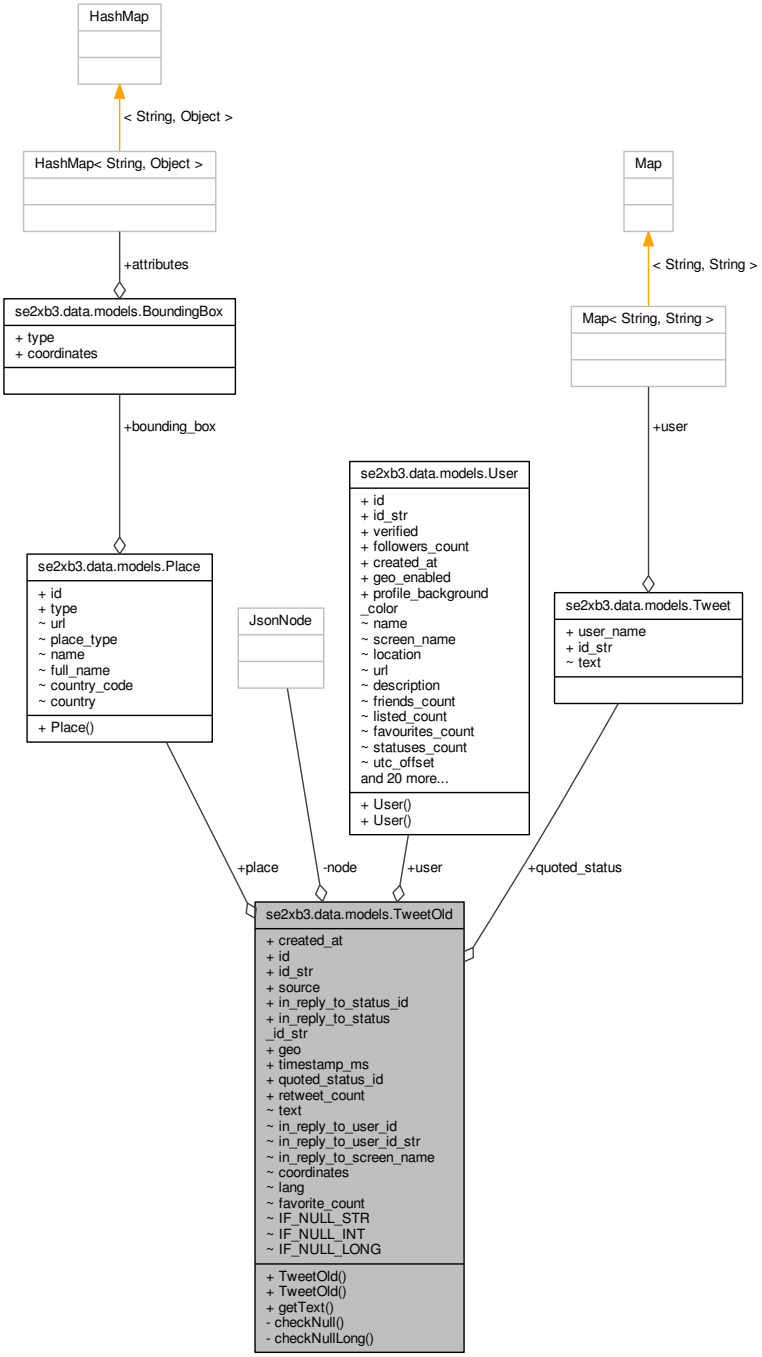
6.38.2.4 String se2xb3.data.models.Tweet.user_name

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

- Tweet.java

6.39 se2xb3.data.models.TweetOld Class Reference

Collaboration diagram for se2xb3.data.models.TweetOld:



Public Member Functions

- TweetOld ()
- TweetOld (JsonNode n)
- String getText ()

Public Attributes

- String created_at
- long id
- String id_str
- String source
- long in_reply_to_status_id
- String in_reply_to_status_id_str
- User user
- String geo
- Place place
- String timestamp_ms
- long quoted_status_id
- Tweet quoted_status
- int retweet_count

Package Attributes

- String text
- long in_reply_to_user_id
- String in_reply_to_user_id_str
- String in_reply_to_screen_name
- String coordinates
- String lang
- int favorite_count

Static Package Attributes

- static final String IF_NULL_STR = "none"
- static final int IF_NULL_INT = -1
- static final long IF_NULL_LONG = -1

Private Member Functions

- String checkNull (String key)
- Long checkNullLong (String key)

Private Attributes

- JsonNode node

6.39.1 Constructor & Destructor Documentation

6.39.1.1 se2xb3.data.models.TweetOld.TweetOld ( )

```
57 {}
```

6.39.1.2 se2xb3.data.models.TweetOld.TweetOld (JsonNode *n*)

```
59                                  {
60          node = n;
61          created_at = n.findValue("created_at").asText(IF_NULL_STR);
62          id = n.findValue("id").asLong(IF_NULL_LONG);
63
64          id_str = n.findValue("id_str").asText(IF_NULL_STR);
65          text = n.findValue("text").asText(IF_NULL_STR);
66          in_reply_to_status_id_str = n.findValue("in_reply_to_status_id_str").
      asText(IF_NULL_STR);
67          in_reply_to_user_id_str = n.findValue("in_reply_to_user_id_str").asText(
      IF_NULL_STR);
68          in_reply_to_screen_name = n.findValue("in_reply_to_screen_name").asText(
      IF_NULL_STR);
69          timestamp_ms = checkNull("timestamp_ms");
70 //          timestamp_ms = n.findValue("timestamp_ms").asText(IF_NULL_STR);
71          lang = n.findValue("lang").asText(IF_NULL_STR);
72
73          in_reply_to_status_id = checkNullLong("in_reply_to_status_id");
74 //          in_reply_to_status_id = n.findValue("in_reply_to_status_id").asLong(IF_NULL_INT);
75          in_reply_to_user_id = checkNullLong("in_reply_to_user_id");
76                  //n.findValue("in_reply_to_user_id").asLong(IF_NULL_INT);
77
78          quoted_status_id = checkNullLong("quoted_status_id");
79                                          //n.findValue("quoted_status_id").asLong(IF_NULL_LONG);
80
81          retweet_count = n.findValue("retweet_count").asInt(
      IF_NULL_INT);
82          favorite_count = n.findValue("favorite_count").asInt(
      IF_NULL_INT);
83
84          user = new User(n.findValue("user"));
85          if (n.findValue("quoted_status") != null) {
86 //          quoted_status = new Tweet(n.findValue("quoted_status"));
87          }
88
89          if (n.findValue("place") != null) {
90              //place = new Place(n.findValue("quoted_status"));
91          }
92      }
```

6.39.2 Member Function Documentation

6.39.2.1 String se2xb3.data.models.TweetOld.checkNull (String *key*) [private]

Check if the value of a field exists. Returns the value of the field if it is not null, "none" is returned otherwise.

Parameters

key	

Returns

the value of the field if not null, "none" otherwise.

```
101                                         {
102          if(node.findValue(key) != null){
103              return node.findValue(key).asText(IF_NULL_STR);
104          }
105          return IF_NULL_STR;
106      }
```

6.39.2.2 Long se2xb3.data.models.TweetOld.checkNullLong (String *key*) [private]

Check if the value of a field exists. Returns the value of the field if it is not null, -1L is returned otherwise.

Parameters

key	

Returns

the value of the field if not null, "none" otherwise.

```
113                                         {
114         if(node.findValue(key) != null){
115             return node.findValue(key).asLong(IF_NULL_LONG);
116         }
117         return IF_NULL_LONG;
118     }
```

6.39.2.3 String se2xb3.data.models.TweetOld.getText ( )

Get the value of the tweet text.

Returns

tweet text.

```
124                                 {
125         return text;
126     }
```

6.39.3 Member Data Documentation

6.39.3.1 String se2xb3.data.models.TweetOld.coordinates [package]

6.39.3.2 String se2xb3.data.models.TweetOld.created_at

6.39.3.3 int se2xb3.data.models.TweetOld.favorite_count [package]

6.39.3.4 String se2xb3.data.models.TweetOld.geo

6.39.3.5 long se2xb3.data.models.TweetOld.id

6.39.3.6 String se2xb3.data.models.TweetOld.id_str

6.39.3.7 final int se2xb3.data.models.TweetOld.IF_NULL_INT = -1 [static], [package]

6.39.3.8 final long se2xb3.data.models.TweetOld.IF_NULL_LONG = -1 [static], [package]

6.39.3.9 final String se2xb3.data.models.TweetOld.IF_NULL_STR = "none" [static], [package]

6.39.3.10 String se2xb3.data.models.TweetOld.in_reply_to_screen_name [package]

6.39.3.11 long se2xb3.data.models.TweetOld.in_reply_to_status_id

6.39.3.12 String se2xb3.data.models.TweetOld.in_reply_to_status_id_str

6.39.3.13 long se2xb3.data.models.TweetOld.in_reply_to_user_id [package]

6.39.3.14 String se2xb3.data.models.TweetOld.in_reply_to_user_id_str [package]

6.39.3.15 String se2xb3.data.models.TweetOld.lang [package]

6.39.3.16 JsonNode se2xb3.data.models.TweetOld.node [private]

6.39.3.17 Place se2xb3.data.models.TweetOld.place

6.39.3.18 Tweet se2xb3.data.models.TweetOld.quoted_status

6.39.3.19 long se2xb3.data.models.TweetOld.quoted_status_id

6.39.3.20 int se2xb3.data.models.TweetOld.retweet_count

6.39.3.21 String se2xb3.data.models.TweetOld.source

6.39.3.22 String se2xb3.data.models.TweetOld.text [package]

6.39.3.23 String se2xb3.data.models.TweetOld.timestamp_ms

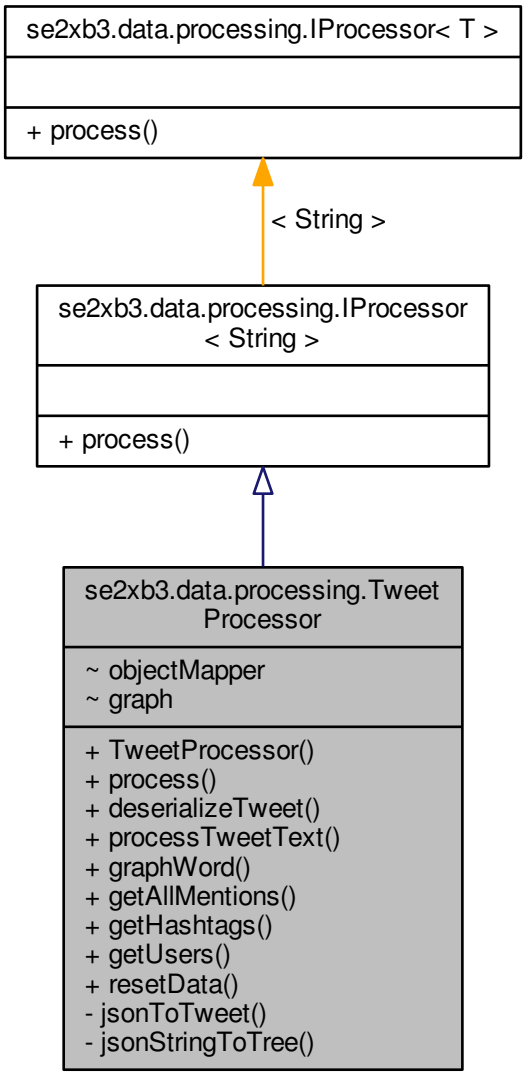
6.39.3.24 User se2xb3.data.models.TweetOld.user

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

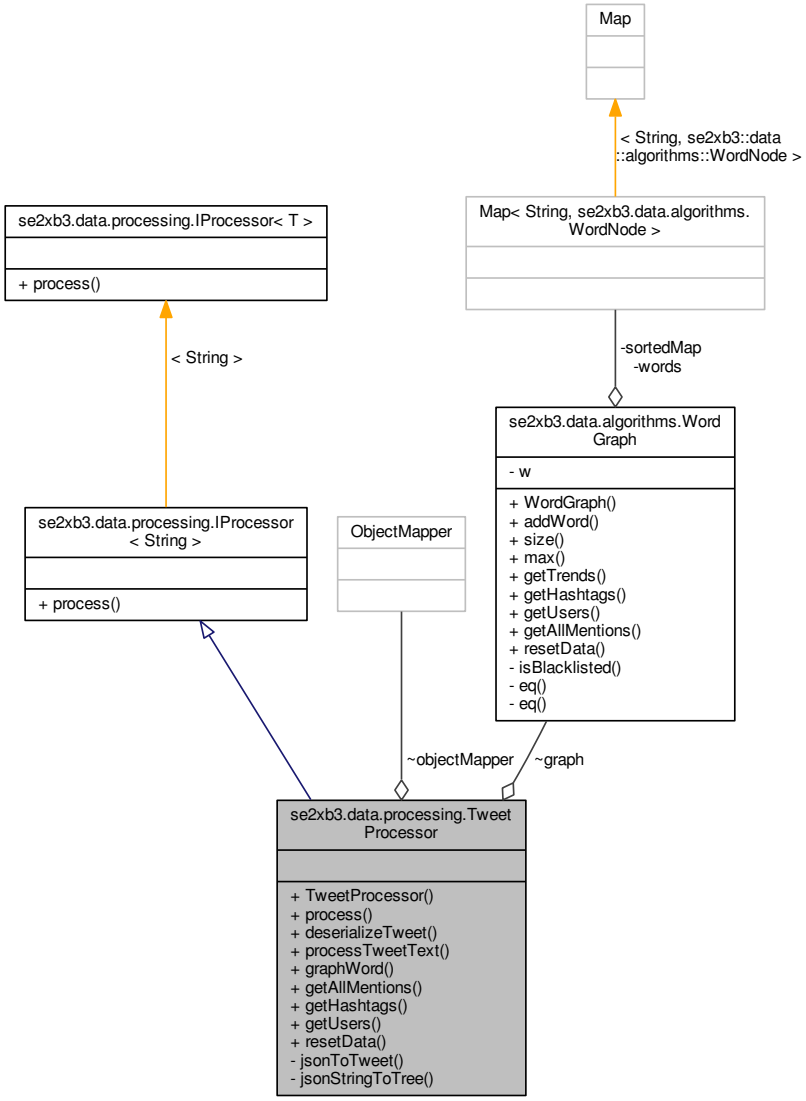
- Tweet.java

6.40 se2xb3.data.processing.TweetProcessor Class Reference

Inheritance diagram for se2xb3.data.processing.TweetProcessor:



Collaboration diagram for se2xb3.data.processing.TweetProcessor:



Public Member Functions

- TweetProcessor ()
- Object process (String tweetStr)
- Tweet deserializeTweet (String tweetStr)
- void processTweetText (Tweet tweet)
- void graphWord (String word, Tweet tweet)
- WordNode[ ] getAllMentions ()
- WordNode[ ] getHashtags ()
- WordNode[ ] getUsers ()
- void resetData ()

Package Attributes

- ObjectMapper objectMapper = new ObjectMapper()
- WordGraph graph = new WordGraph()

Private Member Functions

- Tweet jsonToTweet (String s)
- JsonNode jsonStringToTree (String jsonStr)

6.40.1 Detailed Description

A class to process JSON encoded tweets.

Author

Dawson Myers

Version

1.0

Since

3/11/2017

6.40.2 Constructor & Destructor Documentation

6.40.2.1 se2xb3.data.processing.TweetProcessor.TweetProcessor ( )

```
26 {}
```

6.40.3 Member Function Documentation

6.40.3.1 Tweet se2xb3.data.processing.TweetProcessor.deserializeTweet (String *tweetStr*)

Deserialize tweet stored in a JSON encoded string. Then, return a new instance of a Tweet containing the twee data.

Parameters

tweetStr	a JSON encoded string containing a tweet

Returns

a Tweet object containing the data from the JSON string

```
52                                                  {
53 //         JsonNode n = jsonStringToTree(tweetStr);
54         return jsonToTweet(tweetStr);
55 //         return new Tweet(n);
56     }
```

6.40.3.2 WordNode [ ] se2xb3.data.processing.TweetProcessor.getAllMentions ( )

Get array of all mentions as an array of word nodes

Returns

an array of all of the word nodes

```
121                                         {
122         return graph.getAllMentions();
123     }
```

6.40.3.3 WordNode [ ] se2xb3.data.processing.TweetProcessor.getHashtags ( )

Get array of hashtag mentions as an array of word nodes

Returns

an array of all words that start with a #

```
130                                       {
131         return graph.getHashtags();
132     }
```

6.40.3.4 WordNode [ ] se2xb3.data.processing.TweetProcessor.getUsers ( )

Get array of user mentions as an array of word nodes

Returns

all words that start with a @

```
139                                     {
140         return graph.getUsers();
141     }
```

6.40.3.5 void se2xb3.data.processing.TweetProcessor.graphWord (String *word,* Tweet *tweet*)

This is building a graph of words and tweets. One tweet is connected to many word nodes.

Parameters

word	a word to add to the graph
tweet	the tweet that uses the word

```
112                                                 {
113         graph.addWord(word, tweet);
114     }
```

6.40.3.6 JsonNode se2xb3.data.processing.TweetProcessor.jsonStringToTree (String *jsonStr*) [private]

Convert JSON string into a tree containging the parsed data. The tree structure provides a means to easily search through the tree and extract the data we want.

Parameters

jsonStr	a JSON encoded string containing a tweet

Returns

a tree of JsonNode objects

```
74                                                  {
75         JsonNode node = null;
76         try {
77             node = objectMapper.readValue(jsonStr, JsonNode.class);
78         } catch (IOException e) {
79             e.printStackTrace();
80         }
81         return node;
82     }
```

6.40.3.7 Tweet se2xb3.data.processing.TweetProcessor.jsonToTweet (String *s*) [private]

```
58                                          {
59         Tweet tweet = null;
60         try {
61              tweet = objectMapper.readValue(s, Tweet.class);
62         } catch (IOException e) {
63             e.printStackTrace();
64         }
65         return tweet;
66     }
```

6.40.3.8 Object se2xb3.data.processing.TweetProcessor.process (String *tweetStr*)

Process a string containing a JSON encoded string. The string is deserialized and the data is stored in a new instance of a Tweet.

Parameters

tweetStr	a JSON encoded string containing a tweet

Returns

a Tweet object containing the data from the JSON string

```
36                                          {
```

```
37          JsonNode n      = jsonStringToTree(tweetStr);
38 //         Tweet    tweet = new Tweet(n);
39 //         return tweet;
40          return jsonToTweet(tweetStr);
41      }
```

6.40.3.9 void se2xb3.data.processing.TweetProcessor.processTweetText (Tweet *tweet*)

Process the text of each tweet as they are received. The words are extracted from the string using regular expressions and then inserted into the word graph.

Parameters

tweet	a tweet

```
90                                              {
91          // extract all words from the tweet's text using a regular expression
92          Matcher matcher = Pattern.compile(TWEET_REGEX).matcher(tweet.text);
93
94          String word = "";
95
96          while (matcher.find()) {
97              word = matcher.group(0);
98              // ignore words shorter than 3 characters
99              if (word.length() < 3) continue;
100
101              graphWord(word, tweet);
102
103          }
104      }
```

6.40.3.10 void se2xb3.data.processing.TweetProcessor.resetData ( )

Reset all data.

```
146                             {
147          graph.resetData();         //= new WordGraph();
148      }
```

6.40.4 Member Data Documentation

6.40.4.1 WordGraph se2xb3.data.processing.TweetProcessor.graph = new WordGraph() [package]

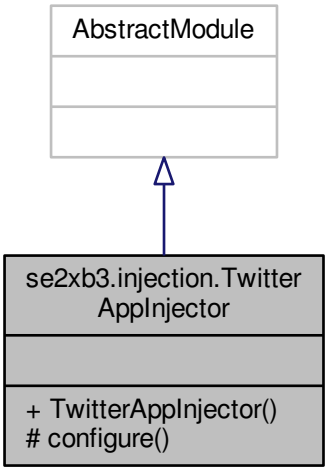
6.40.4.2 ObjectMapper se2xb3.data.processing.TweetProcessor.objectMapper = new ObjectMapper() [package]

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

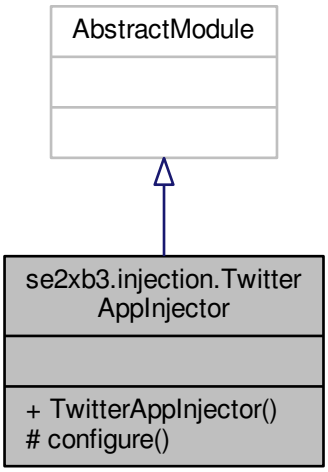
- TweetProcessor.java

6.41 se2xb3.injection.TwitterAppInjector Class Reference

Inheritance diagram for se2xb3.injection.TwitterAppInjector:



Collaboration diagram for se2xb3.injection.TwitterAppInjector:



Public Member Functions

- TwitterAppInjector ()

Protected Member Functions

- void configure ()

6.41.1 Detailed Description

App injector module.

Author

Dawson Myers

Version

1.0

Since

3/26/2017

6.41.2 Constructor & Destructor Documentation

6.41.2.1 se2xb3.injection.TwitterAppInjector.TwitterAppInjector ( )

```
14 {}
```

6.41.3 Member Function Documentation

6.41.3.1 void se2xb3.injection.TwitterAppInjector.configure ( ) [protected]

Configures a Binder via the exposed methods.

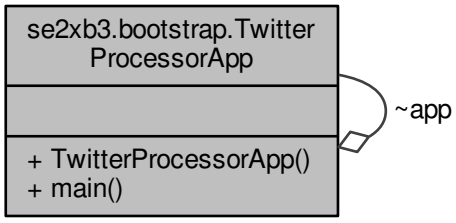
```
20                                  {
21
22     }
```

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

- TwitterAppInjector.java

6.42 se2xb3.bootstrap.TwitterProcessorApp Class Reference

Collaboration diagram for se2xb3.bootstrap.TwitterProcessorApp:



Public Member Functions

- TwitterProcessorApp ()

Static Public Member Functions

- static void main (String[ ] args)

Static Package Attributes

- static TwitterProcessorApp app

6.42.1 Detailed Description

Bootstrap the app

Author

Dawson Myers

Version

1.0

Since

3/26/2017

6.42.2 Constructor & Destructor Documentation

6.42.2.1 se2xb3.bootstrap.TwitterProcessorApp.TwitterProcessorApp ( )

```
15 {}
```

6.42.3 Member Function Documentation

6.42.3.1 static void se2xb3.bootstrap.TwitterProcessorApp.main (String[ ] *args*) [static]

Bootrap the app

Parameters

args	input args

```
23                                          {
24          AppController app = AppController.getInstance();
25          TestDataSource.waitForEver();
26          //TestDataSource.main(new String[]{"a"});
27
28      }
```

6.42.4 Member Data Documentation

6.42.4.1 TwitterProcessorApp se2xb3.bootstrap.TwitterProcessorApp.app [static], [package]

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

- TwitterProcessorApp.java

6.43 se2xb3.data.models.User Class Reference

Collaboration diagram for se2xb3.data.models.User:

Public Member Functions

- User ()
- User (JsonNode n)

Public Attributes

- long id
- String id_str
- boolean verified
- int followers_count
- String created_at
- boolean geo_enabled
- String profile_background_color

Package Attributes

- String name
- String screen_name
- String location
- String url
- String description
- int friends_count
- int listed_count
- int favourites_count
- int statuses_count
- int utc_offset
- String time_zone
- String lang
- boolean contributors_enabled
- boolean is_translator
- boolean profile_background_tile
- boolean profile_use_background_image
- boolean default_profile
- boolean default_profile_image
- String profile_background_image_url
- String profile_background_image_url_https
- String profile_link_color
- String profile_sidebar_border_color
- String profile_sidebar_fill_color
- String profile_text_color
- String profile_image_url
- String profile_image_url_https
- String profile_banner_url
- String following
- String follow_request_sent
- String notifications

6.43.1 Detailed Description

Author

Dawson

Version

1.0

Since

2/23/2017

6.43.2 Constructor & Destructor Documentation

6.43.2.1 se2xb3.data.models.User.User ( )

```
25 {}
```

6.43.2.2 se2xb3.data.models.User.User (JsonNode *n*)

```
27                              {
28
29          id = n.findValue("id").asLong();
30          followers_count = n.findValue("followers_count").asInt();
31          favourites_count = n.findValue("favourites_count").asInt();
32          statuses_count = n.findValue("statuses_count").asInt();
33          utc_offset = n.findValue("utc_offset").asInt();
34          friends_count = n.findValue("friends_count").asInt();
35          listed_count = n.findValue("listed_count").asInt();
36
37          id_str = n.findValue("id_str").asText();
38          name = n.findValue("name").asText();
39          screen_name = n.findValue("screen_name").asText();
40          location = n.findValue("location").asText();
41          description = n.findValue("description").asText();
42          created_at = n.findValue("created_at").asText();
43          time_zone = n.findValue("time_zone").asText();
44          lang = n.findValue("lang").asText();
45
46      }
```

6.43.3 Member Data Documentation

6.43.3.1 boolean se2xb3.data.models.User.contributors_enabled [package]

6.43.3.2 String se2xb3.data.models.User.created_at

6.43.3.3 boolean se2xb3.data.models.User.default_profile [package]

6.43.3.4 boolean se2xb3.data.models.User.default_profile_image [package]

6.43.3.5 String se2xb3.data.models.User.description [package]

6.43.3.6 int se2xb3.data.models.User.favourites_count [package]

6.43.3.7 String se2xb3.data.models.User.follow_request_sent [package]

6.43.3.8 int se2xb3.data.models.User.followers_count

6.43.3.9 String se2xb3.data.models.User.following [package]

6.43.3.10 int se2xb3.data.models.User.friends_count [package]

6.43.3.11 boolean se2xb3.data.models.User.geo_enabled

6.43.3.12 long se2xb3.data.models.User.id

6.43.3.13 String se2xb3.data.models.User.id_str

6.43.3.14 boolean se2xb3.data.models.User.is_translator [package]

6.43.3.15 String se2xb3.data.models.User.lang [package]

6.43.3.16 int se2xb3.data.models.User.listed_count [package]

6.43.3.17 String se2xb3.data.models.User.location [package]

6.43.3.18 String se2xb3.data.models.User.name [package]

6.43.3.19 String se2xb3.data.models.User.notifications [package]

6.43.3.20 String se2xb3.data.models.User.profile_background_color

6.43.3.21 String se2xb3.data.models.User.profile_background_image_url [package]

6.43.3.22 String se2xb3.data.models.User.profile_background_image_url_https [package]

6.43.3.23 boolean se2xb3.data.models.User.profile_background_tile [package]

6.43.3.24 String se2xb3.data.models.User.profile_banner_url [package]

6.43.3.25 String se2xb3.data.models.User.profile_image_url [package]

6.43.3.26 String se2xb3.data.models.User.profile_image_url_https [package]

6.43.3.27 String se2xb3.data.models.User.profile_link_color [package]

6.43.3.28 String se2xb3.data.models.User.profile_sidebar_border_color [package]

6.43.3.29 String se2xb3.data.models.User.profile_sidebar_fill_color [package]

6.43.3.30 String se2xb3.data.models.User.profile_text_color [package]

6.43.3.31 boolean se2xb3.data.models.User.profile_use_background_image [package]

6.43.3.32 String se2xb3.data.models.User.screen_name [package]

6.43.3.33 int se2xb3.data.models.User.statuses_count [package]

6.43.3.34 String se2xb3.data.models.User.time_zone [package]

6.43.3.35 String se2xb3.data.models.User.url [package]

6.43.3.36 int se2xb3.data.models.User.utc_offset [package]

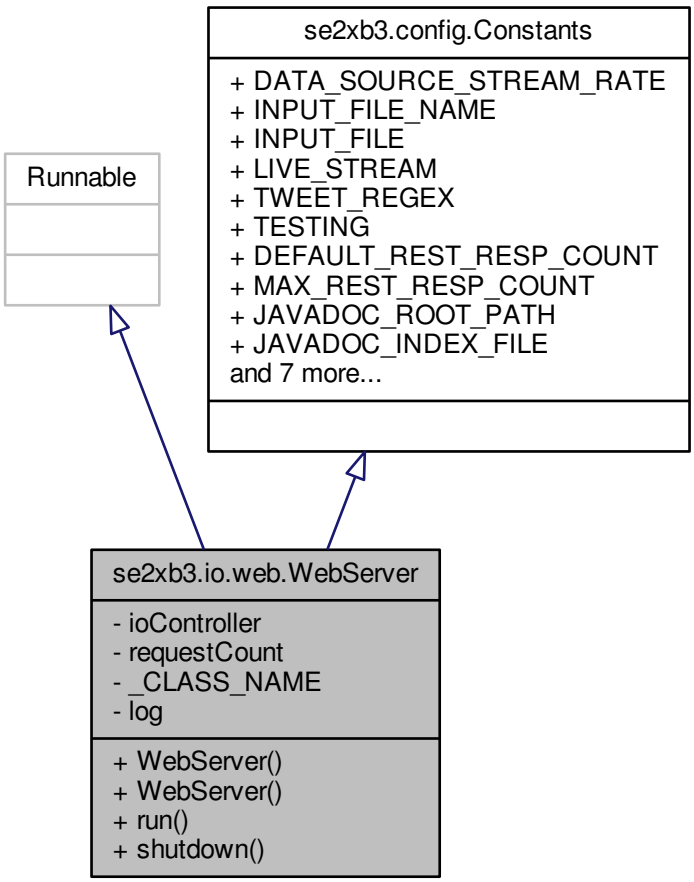
6.43.3.37 boolean se2xb3.data.models.User.verified

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

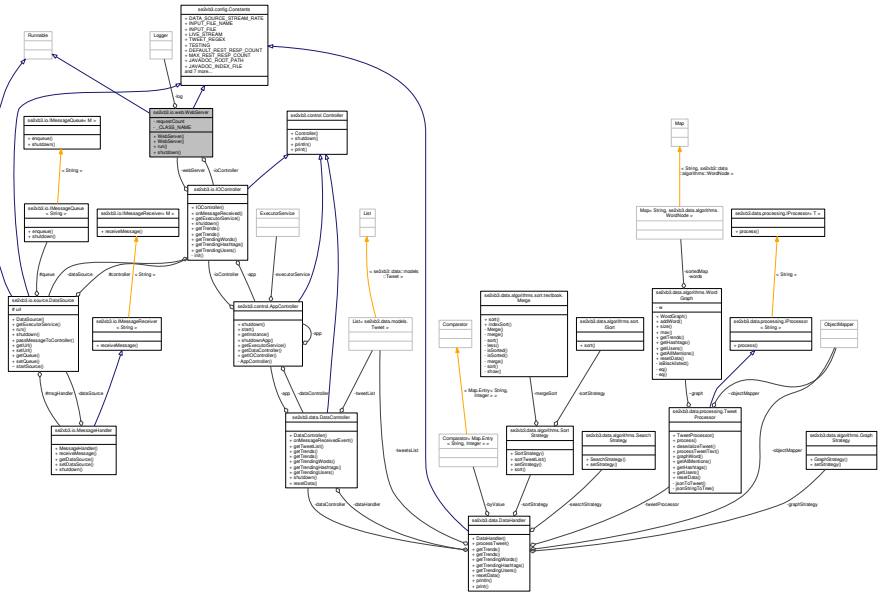
- User.java

6.44 se2xb3.io.web.WebServer Class Reference

Inheritance diagram for se2xb3.io.web.WebServer:



Collaboration diagram for se2xb3.io.web.WebServer:



Public Member Functions

- WebServer ()
- WebServer (IOController io)
- void run ()
- void shutdown ()

Private Attributes

- IOController ioController
- long requestCount = 0

Static Private Attributes

- static final String _CLASS_NAME = WebServer.class.getSimpleName()
- static final Logger log = LoggerFactory.getLogger(_CLASS_NAME)

Additional Inherited Members

6.44.1 Detailed Description

The a class that contains a web server that both serves static files for a AngularJs web app and provides REST endpoints to get trends data as JSON encoded strings.

Author

Dawson Myers

Version

1.0

Since

3/26/2017

6.44.2 Constructor & Destructor Documentation

6.44.2.1 se2xb3.io.web.WebServer.WebServer ( )

```
26 {}
```

6.44.2.2 se2xb3.io.web.WebServer.WebServer (IOController *io*)

```
27 {ioController = io;}
```

6.44.3 Member Function Documentation

6.44.3.1 void se2xb3.io.web.WebServer.run ( )

This method is called in another thread via executer service. It starts the server, configures the base directory by finding the folder containing the marker file (.ratpack) and sets it to the root for the web server. It then configures the handler chain with the following:

1. `.files(f -> f.dir(""))`

   Set the root directory to be served statically

2. **`.all(new CORSHandler())`**
   Configuring all requests to first go through the CORSHandler which adds the following headers to all requests:

   - headers.set("Access-Control-Allow-Origin", "∗");
   - headers.set("Access-Control-Allow-Headers", "x-requested-with, origin, content-type, accept");
   - headers.set("Access-Control-Allow-Methods", "GET,PUT,POST,DELETE");

   This is required so that cross-origin REST requests can be made. Otherwise the client browser would block the request for security reasons.

3. `.prefix("", nested -> nested.fileSystem("", Chain::files))`

   Configure all files and folders (recursively) to be served at the web server root.

4. `.path("", ctx -> ctx.render(ctx.file("index.html")))`

   This path handler handles requests with an empty path (i.e. example.com) and serves the `index.html` file which bootstraps the AngularJs web app.

5. **`.path("trends/:type?/:count?", new TrendHandler(ioController))`**
   All REST request matching the path patter **`trends/:type?/:count?`** are delegated to the Trend↩ Handler. The optional query parameter for the `trends` REST resource are **`:type?`** and **`:count?`** (a prefix of '**:**' indicates a parameter and a suffix of '**?**' means it's optional). Request can be made in the following ways:

   - **trends/{count}**
     Type parameter is empty. The response will include the top **count** overall word, hashtag, and user mentions as a JSON array containing 3 arrays (one for each trend). If the the request is just `trends/` without the **count** parameter empty, then the a default value of 10 is used.

- **trends/{type}/{count}**
  The response will include the top **count** (an integer value) trends of the type **type**. Where **type** is either overall word, hashtag, or user mentions as a JSON array. If the the request is just *trends/{type}/* without the **count** parameter empty, then the a default value of 10 is used.

```
100                     {
101         try {
102             RatpackServer
103                     .start(server -> {
104                 server.serverConfig(serverConfigBuilder -> serverConfigBuilder
105                         .baseDir(BaseDir.find())
106                         .env()
107                         .sysProps())
108                         .handlers(chain -> chain
109                                 // statically serves all files in the dir containing the .ratpack file
110                                 .files(f -> f.dir(""))
111                                 // apply the CORS handler to all request to allo cross-site REST requests
112                                 .all(new CORSHandler())
113 //                                .all(RequestLogger.ncsa())
114 //                                .all(req -> {
115 //                                    requestCount++;
116 //                                    if (requestCount % 100 == 0) {
117 //                                        log.info("Request count = " + requestCount);
118 //                                    }
119 //                                })
120                                 // statically serves all files in the dir containing the .ratpack file
121                                 .prefix("", nested -> nested.fileSystem("", Chain::files))
122                                 .path("", ctx -> ctx.render(ctx.file(
    WEB_APP_ROOT_FILE)))
123 //                                .path("", ctx -> ctx.render(ctx.file("index.html")))
124 //                                .path("", ctx -> ctx.render(ctx.file("index.html")))
125                                 .path(JAVADOC_ROOT_PATH, ctx -> ctx.render(ctx.file(
    JAVADOC_INDEX_FILE)))
126 //                                .path("docs", ctx -> ctx.render(ctx.file("docs/index.html")))
127 //                                          .files(f -> f.dir("dist").indexFiles("index.html"))
128                                 // delegate all trend/* REST requests to the trend handler
129                                 // the :type?/:count? path tokens are optional
130                                 // default path /trends will get a response with the top ten of the
131                                 // all, hashtag, and user mention trends
132                         .path(REST_TREND_RESOURCE_PATH_REGEX, new
    TrendHandler(ioController)));
133 //                        .path("trends/:type?/:count?", new TrendHandler(ioController)));
134             });
135 
136         } catch (Exception e) {
137             e.printStackTrace();
138         }
139     }
```

6.44.3.2 void se2xb3.io.web.WebServer.shutdown ( )

Shutdown the web server.

```
145                         {
146 
147     }
```

6.44.4 Member Data Documentation

6.44.4.1 final String se2xb3.io.web.WebServer._CLASS_NAME = WebServer.class.getSimpleName() [static], [private]

6.44.4.2 IOController se2xb3.io.web.WebServer.ioController [private]

6.44.4.3 final Logger se2xb3.io.web.WebServer.log = LoggerFactory.getLogger(_CLASS_NAME) [static], [private]

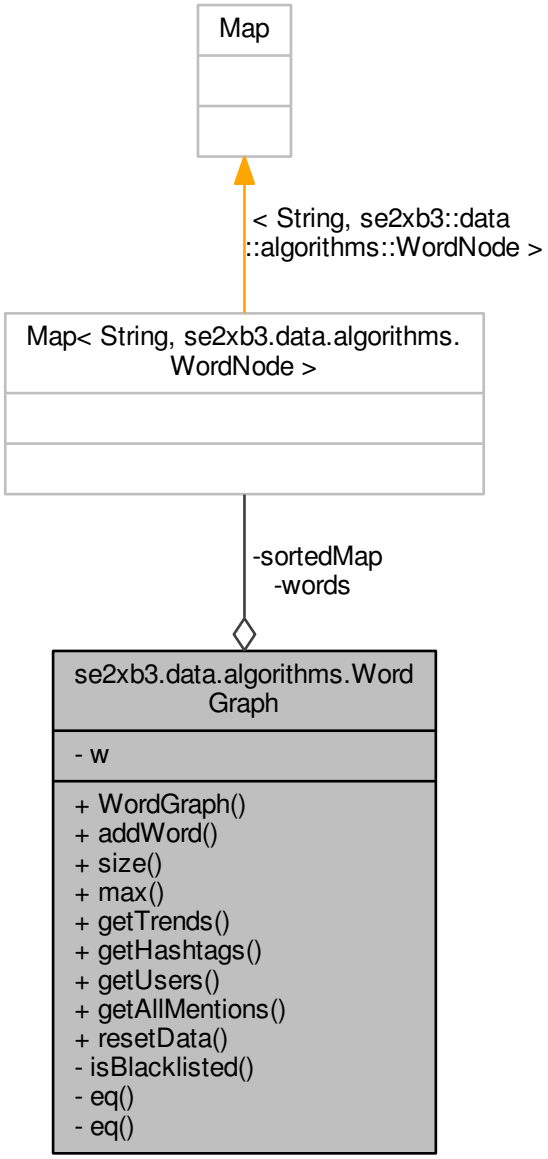
6.44.4.4 long se2xb3.io.web.WebServer.requestCount = 0 [private]

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

- WebServer.java

6.45 se2xb3.data.algorithms.WordGraph Class Reference

Collaboration diagram for se2xb3.data.algorithms.WordGraph:



Public Member Functions

- WordGraph ()
- void addWord (String word, Tweet tweet)
- int size ()
- WordNode max ()
- void getTrends ()

- WordNode[ ] getHashtags ()
- WordNode[ ] getUsers ()
- WordNode[ ] getAllMentions ()
- void resetData ()

Private Member Functions

- boolean isBlacklisted (String s)
- boolean eq (String a)
- boolean eq (String a, String b)

Private Attributes

- Map< String, WordNode > words = new ConcurrentHashMap<>()
- Map< String, WordNode > sortedMap
- String w = ""

6.45.1 Detailed Description

A class that generates a graph of words and tweets. Each tweet is connected to all of the words that is contained in the tweet text.

Author

Dawson

Version

1.0

Since

3/10/2017

6.45.2 Constructor & Destructor Documentation

6.45.2.1 se2xb3.data.algorithms.WordGraph.WordGraph ( )

```
22 {}
```

6.45.3 Member Function Documentation

6.45.3.1 void se2xb3.data.algorithms.WordGraph.addWord (String *word,* Tweet *tweet*)

```
24                                                {
25         String lowercase = word.toLowerCase();
26         if(!words.containsKey(lowercase)) words.put(lowercase, new WordNode(word,tweet));
27         else words.get(lowercase).add(tweet);
28 //        if(!words.containsKey(word)) words.put(word, new WordNode(word,tweet));
29 //        else words.get(word).add(tweet);
30     }
```

6.45.3.2 boolean se2xb3.data.algorithms.WordGraph.eq (String *a*) [private]

```
139 {return eq(w, a);}
```

6.45.3.3 boolean se2xb3.data.algorithms.WordGraph.eq (String *a*, String *b*) [private]

```
140                                             {
141         return a.toLowerCase().equals(b.toLowerCase());
142     }
```

6.45.3.4 WordNode [ ] se2xb3.data.algorithms.WordGraph.getAllMentions ( )

```
107                                         {
108 //        return words
109 //                .entrySet()
110 //                .stream()
111 //                .toArray(WordNode[]::new);
112 
113         // convert to list and filter out irrelevant words
114         List<WordNode> list = words.values()
115                                    .stream()
116                                    .filter(w -> {
117                                        String s = w.id;
118                                        if(s.startsWith("#") || s.startsWith("@")) return true;
119                                        if(s.length() < 5) return false;
120                                        if(isBlacklisted(s)) return false;
121                                        return true;
122                                    })
123                                    .collect(Collectors.toList());
124 
125         WordNode[] a =new WordNode[list.size()];
126         for (int i = 0; i < list.size(); i++) {
127             a[i] = list.get(i);
128         }
129         return a;
130     }
```

6.45.3.5 WordNode [ ] se2xb3.data.algorithms.WordGraph.getHashtags ( )

Get array of hashtag word nodes

Returns

all words that start with a #

```
63                                      {
64 
65 //        return words
66 //                .entrySet()
67 //                .stream()
68 //                .filter((a) -> !a.getKey().startsWith("#"))
69 //                .toArray(WordNode[]::new);
70         List<WordNode> list = words.values()
71                                    .stream()
72                                    .filter((a) -> a.id.startsWith("#"))
73                                    .collect(Collectors.toList());
74 
75         WordNode[] a = new WordNode[list.size()];
76         for (int i = 0; i < list.size(); i++) {
77             a[i] = list.get(i);
78         }
79         return a;
80 
81     }
```

6.45.3.6 void se2xb3.data.algorithms.WordGraph.getTrends ( )

```
53                              {
54
55      }
```

6.45.3.7 WordNode [ ] se2xb3.data.algorithms.WordGraph.getUsers ( )

Get array of user mentions as an array of word nodes

Returns

all words that start with a #

```
87                                  {
88
89  //         return words
90  //                 .entrySet()
91  //                 .stream()
92  //                 .filter((a) -> !a.getKey().startsWith("@"))
93  //                 .toArray(WordNode[]::new);
94
95          List<WordNode> list = words.values()
96                                     .stream()
97                                     .filter((a) -> a.id.startsWith("@"))
98                                     .collect(Collectors.toList());
99
100         WordNode[] a = new WordNode[list.size()];
101         for (int i = 0; i < list.size(); i++) {
102             a[i] = list.get(i);
103         }
104         return a;
105     }
```

6.45.3.8 boolean se2xb3.data.algorithms.WordGraph.isBlacklisted (String *s*) [private]

```
133                                             {
134         w = s;
135         return eq("their") || eq("every") || eq("first") || eq("there") ||
      eq("those") || eq("them")
136                 || eq("they") || eq("These");// || eq("")
137     }
```

6.45.3.9 WordNode se2xb3.data.algorithms.WordGraph.max ( )

```
36                              {
37
38          sortedMap =
39                 words.entrySet().stream()
40                              .sorted((a,b)-> a.getValue().compareTo(b.getValue()))
41                               .collect(Collectors.toMap(Map.Entry::getKey,Map.Entry::getValue));
42
43          WordNode[] wn = words.values().stream()
44                                .sorted((a,b)-> b.compareTo(a)).toArray(WordNode[]::new);
45
46          WordNode[] wn1 = words.values().stream().toArray(WordNode[]::new);
47
48          //WordNode[] wn = (WordNode[]) words.values().toArray();// Merge.sort();
49
50          return sortedMap.get(1);
51      }
```

6.45.3.10 void se2xb3.data.algorithms.WordGraph.resetData ( )

```
144                             {
145         words.clear();
146     }
```

6.45.3.11 int se2xb3.data.algorithms.WordGraph.size ( )

```
32                          {
33          return words.size();
34      }
```

6.45.4 Member Data Documentation

6.45.4.1 Map<String, WordNode> se2xb3.data.algorithms.WordGraph.sortedMap [private]

6.45.4.2 String se2xb3.data.algorithms.WordGraph.w = "" [private]

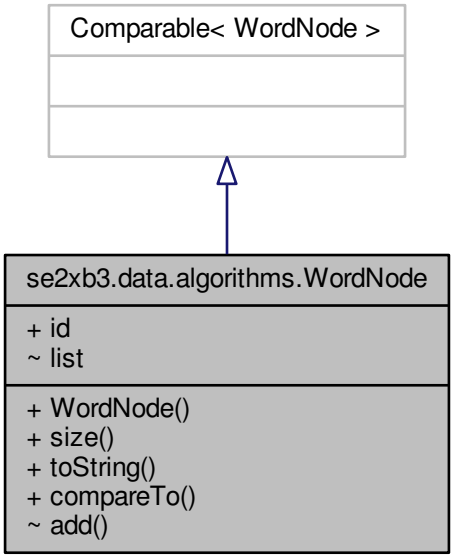
6.45.4.3 Map<String, WordNode> se2xb3.data.algorithms.WordGraph.words = new ConcurrentHashMap<>() [private]

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

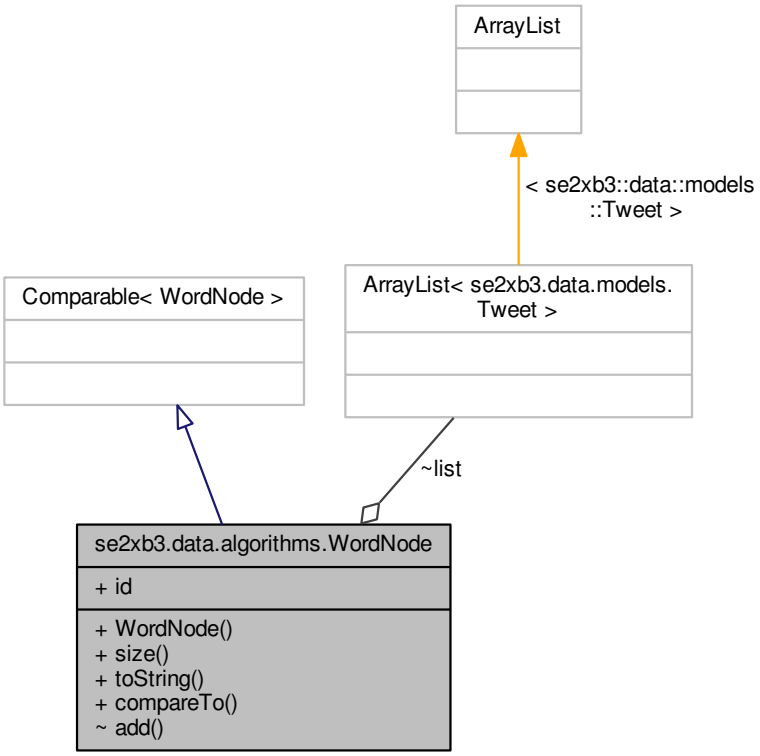
- WordGraph.java

6.46 se2xb3.data.algorithms.WordNode Class Reference

Inheritance diagram for se2xb3.data.algorithms.WordNode:



Collaboration diagram for se2xb3.data.algorithms.WordNode:



Public Member Functions

- WordNode (String wordId, Tweet tweet)
- int size ()
- String toString ()
- int compareTo (WordNode other)

Public Attributes

- String id

Package Functions

- void add (Tweet tweet)

Package Attributes

- ArrayList< Tweet > list = new ArrayList<>()

6.46.1 Detailed Description

A class for word nodes that are used to build the word graph.

Author

Dawson

Version

1.0

Since

3/10/2017

6.46.2 Constructor & Destructor Documentation

6.46.2.1 se2xb3.data.algorithms.WordNode.WordNode (String *wordId,* Tweet *tweet*)

WordNode constructor

Parameters

wordId	the word
tweet	the tweet that uses it

```
24                                                  {
25          id = wordId;
26          list.add(tweet);
27      }
```

6.46.3 Member Function Documentation

6.46.3.1 void se2xb3.data.algorithms.WordNode.add (Tweet *tweet*) [package]

Adds a reference to a tweet that uses this word.

Parameters

tweet	a tweet that uses the word

```
34                              {
35          list.add(tweet);
36      }
```

6.46.3.2 int se2xb3.data.algorithms.WordNode.compareTo (WordNode *other*)

Compare another word node to this word node. The comaprison is configured to sort nodes in decending order according to their size.

Parameters

other	a node to compare to

Returns

-1 if this node is larger, 0 if the same, and 1 if smaller

```
64                                          {
65
66          // descending order
67          return this.size() > other.size() ? -1 : this.size() == other.size() ? 0 : 1;
68          // ascending order
69 //         return this.size() > other.size() ? 1: this.size() == other.size() ? 0: -1;
70      }
```

6.46.3.3 int se2xb3.data.algorithms.WordNode.size ( )

Gets the number of tweets that uses this word.

Returns

the number of references to tweets that use this word

```
43                          {
44          return list.size();
45      }
```

6.46.3.4 String se2xb3.data.algorithms.WordNode.toString ( )

The string representation of this node.

Returns

a string containing the id and size of this node

```
52                              {
53          return id + " : " + size();
54      }
```

6.46.4 Member Data Documentation

6.46.4.1 String se2xb3.data.algorithms.WordNode.id

6.46.4.2 ArrayList<Tweet> se2xb3.data.algorithms.WordNode.list = new ArrayList<>() [package]

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

- WordNode.java

Chapter 7

File Documentation

7.1 AppConfig.java File Reference

Classes

- interface se2xb3.config.AppConfig

Packages

- package se2xb3.config

7.2 AppController.java File Reference

Classes

- class se2xb3.control.AppController

Packages

- package se2xb3.control

7.3 AsyncMessageLooper.java File Reference

Classes

- class se2xb3.io.AsyncMessageLooper< M >

Packages

- package se2xb3.io

7.4 Constants.java File Reference

Classes

- interface se2xb3.config.Constants

Packages

- package se2xb3.config

7.5 Controller.java File Reference

Classes

- class se2xb3.control.Controller

Packages

- package se2xb3.control

7.6 CORSHandler.java File Reference

Classes

- class se2xb3.io.web.handlers.CORSHandler

Packages

- package se2xb3.io.web.handlers

7.7 DataController.java File Reference

Classes

- class se2xb3.data.DataController

Packages

- package se2xb3.data

7.8 DataHandler.java File Reference

Classes

- class se2xb3.data.DataHandler

Packages

- package se2xb3.data

7.9 DataSource.java File Reference

Classes

- class se2xb3.io.source.DataSource

Packages

- package se2xb3.io.source

7.10 EventBus.java File Reference

Classes

- class se2xb3.control.EventBus

Packages

- package se2xb3.control

7.11 FileDataSource.java File Reference

Classes

- class se2xb3.io.source.FileDataSource

Packages

- package se2xb3.io.source

7.12 FileDataSourceTest.java File Reference

Classes

- class se2xb3.tests.FileDataSourceTest

Packages

- package se2xb3.tests

7.13 FileFinder.java File Reference

Classes

- class se2xb3.io.files.FileFinder

Packages

- package se2xb3.io.files

7.14 GraphStrategy.java File Reference

Classes

- class se2xb3.data.algorithms.GraphStrategy

Packages

- package se2xb3.data.algorithms

7.15 IDataSource.java File Reference

Classes

- interface se2xb3.io.source.IDataSource

Packages

- package se2xb3.io.source

7.16 IMessageQueue.java File Reference

Classes

- interface se2xb3.io.IMessageQueue< M >

Packages

- package se2xb3.io

7.17 IMessageReceiver.java File Reference

Classes

- interface se2xb3.io.IMessageReceiver< M >

Packages

- package se2xb3.io

7.18 IOController.java File Reference

Classes

- class se2xb3.io.IOController

Packages

- package se2xb3.io

7.19 IProcessor.java File Reference

Classes

- interface se2xb3.data.processing.IProcessor< T >

Packages

- package se2xb3.data.processing

7.20 ISort.java File Reference

Classes

- interface se2xb3.data.algorithms.sort.ISort

Packages

- package se2xb3.data.algorithms.sort

7.21 JsonParser.java File Reference

Classes

- class se2xb3.io.web.JsonParser
- class se2xb3.io.web.Trend

Packages

- package se2xb3.io.web

7.22 MaxPQ.java File Reference

Classes

- class se2xb3.data.algorithms.sort.textbook.MaxPQ< Key >
- class se2xb3.data.algorithms.sort.textbook.MaxPQ< Key >.HeapIterator

Packages

- package se2xb3.data.algorithms.sort.textbook

7.23 Merge.java File Reference

Classes

- class se2xb3.data.algorithms.sort.textbook.Merge

Packages

- package se2xb3.data.algorithms.sort.textbook

7.24 MergeBU.java File Reference

Classes

- class se2xb3.data.algorithms.sort.textbook.MergeBU

Packages

- package se2xb3.data.algorithms.sort.textbook

7.25 MergeSortStrategy.java File Reference

Classes

- class se2xb3.data.algorithms.sort.MergeSortStrategy

Packages

- package se2xb3.data.algorithms.sort

7.26 MergeX.java File Reference

Classes

- class se2xb3.data.algorithms.sort.textbook.MergeX

Packages

- package se2xb3.data.algorithms.sort.textbook

7.27 MessageHandler.java File Reference

Classes

- class se2xb3.io.MessageHandler

Packages

- package se2xb3.io

7.28 MinPQ.java File Reference

Classes

- class se2xb3.data.algorithms.sort.textbook.MinPQ< Key >
- class se2xb3.data.algorithms.sort.textbook.MinPQ< Key >.HeapIterator

Packages

- package se2xb3.data.algorithms.sort.textbook

7.29 Place.java File Reference

Classes

- class se2xb3.data.models.Place
- class se2xb3.data.models.BoundingBox

Packages

- package se2xb3.data.models

7.30 SearchStrategy.java File Reference

Classes

- class se2xb3.data.algorithms.SearchStrategy

Packages

- package se2xb3.data.algorithms

7.31 SortStrategy.java File Reference

Classes

- class se2xb3.data.algorithms.SortStrategy

Packages

- package se2xb3.data.algorithms

7.32 TestDataSource.java File Reference

Classes

- class se2xb3.tests.TestDataSource

Packages

- package se2xb3.tests

7.33 TrendHandler.java File Reference

Classes

- class se2xb3.io.web.handlers.TrendHandler

Packages

- package se2xb3.io.web.handlers

7.34 Tweet.java File Reference

Classes

- class se2xb3.data.models.Tweet
- class se2xb3.data.models.TweetOld

Packages

- package se2xb3.data.models

7.35 TweetProcessor.java File Reference

Classes

- class se2xb3.data.processing.TweetProcessor

Packages

- package se2xb3.data.processing

7.36 TwitterAppInjector.java File Reference

Classes

- class se2xb3.injection.TwitterAppInjector

Packages

- package se2xb3.injection

7.37 TwitterProcessorApp.java File Reference

Classes

- class se2xb3.bootstrap.TwitterProcessorApp

Packages

- package se2xb3.bootstrap

7.38 User.java File Reference

Classes

- class se2xb3.data.models.User

Packages

- package se2xb3.data.models

7.39 WebServer.java File Reference

Classes

- class se2xb3.io.web.WebServer

Packages

- package se2xb3.io.web

7.40 WordGraph.java File Reference

Classes

- class se2xb3.data.algorithms.WordGraph

Packages

- package se2xb3.data.algorithms

7.41 WordNode.java File Reference

Classes

- class se2xb3.data.algorithms.WordNode

Packages

- package se2xb3.data.algorithms

Index