

Pr3 Herramientas de Calidad del Producto Software y

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Chapter 1

Namespace Index

1.1 Packages

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

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es.ull.esit.utilities	9
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top	9

Chapter 2

Hierarchical Index

2.1 Class Hierarchy

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

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TestCase	
\$Pr3ExposiTOPMavenGroupID.Pr3ExposiTOPMaven.AppTest	11

Chapter 3

Class Index

3.1 Class List

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

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es.ull.esit.utilities.BellmanFord	13
es.ull.esit.utilities.ExpositoUtilities	15
top.mainTOPTW	20
es.ull.esit.utils.Pair< F, S >	21
es.ull.esit.utilities.PowerSet< E >	23
top.TOPTW	25
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top.TOPTWGRASP	32
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Chapter 4

File Index

4.1 File List

Here is a list of all files with brief descriptions:

src/main/java/es/ull/esit/utilities/ BellmanFord.java	45
src/main/java/es/ull/esit/utilities/ ExpositoUtilities.java	45
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src/main/java/es/ull/esit/utills/ Pair.java	46
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src/main/java/top/ TOPTW.java	46
src/main/java/top/ TOPTWEvaluator.java	46
src/main/java/top/ TOPTWGRASP.java	47
src/main/java/top/ TOPTWReader.java	47
src/main/java/top/ TOPTWRoute.java	47
src/main/java/top/ TOPTWSolution.java	47
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Chapter 5

Namespace Documentation

5.1 Package \$Pr3ExposiTOPMavenGroupID.Pr3ExposiTOPMaven

Classes

- class [AppTest](#)

5.2 Package es.ull.esit.utilities

Classes

- class [BellmanFord](#)
- class [ExpositoUtilities](#)
- class [PowerSet](#)

5.3 Package es.ull.esit.utils

Classes

- class [Pair](#)

5.4 Package top

Classes

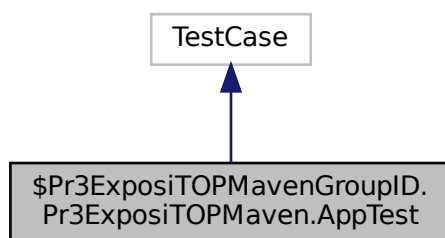
- class [mainTOPTW](#)
- class [TOPTW](#)
- class [TOPTWEvaluator](#)
- class [TOPTWGRASP](#)
- class [TOPTWReader](#)
- class [TOPTWRoute](#)
- class [TOPTWSolution](#)

Chapter 6

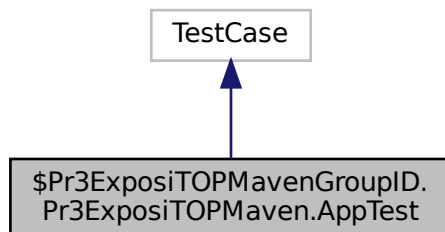
Class Documentation

6.1 \$Pr3ExposiTOPMavenGroupID.Pr3ExposiTOPMaven.AppTest Class Reference

Inheritance diagram for \$Pr3ExposiTOPMavenGroupID.Pr3ExposiTOPMaven.AppTest:



Collaboration diagram for \$Pr3ExposiTOPMavenGroupID.Pr3ExposiTOPMaven.AppTest:



Public Member Functions

- [AppTest](#) (String testName)
- void [testApp](#) ()

Static Public Member Functions

- static Test [suite](#) ()

6.1.1 Detailed Description

Unit test for simple App.

Definition at line 10 of file AppTest.java.

6.1.2 Constructor & Destructor Documentation

6.1.2.1 AppTest()

```
$Pr3ExpositOPMavenGroupID.Pr3ExpositOPMaven.AppTest.AppTest (
    String testName )
```

Create the test case

Parameters

<i>testName</i>	name of the test case
-----------------	-----------------------

Definition at line 18 of file AppTest.java.

6.1.3 Member Function Documentation

6.1.3.1 suite()

```
static Test $Pr3ExpositOPMavenGroupID.Pr3ExpositOPMaven.AppTest.suite ( ) [static]
```

Returns

the suite of tests being tested

Definition at line 26 of file AppTest.java.

6.1.3.2 testApp()

```
void $Pr3ExpositOPMavenGroupID.Pr3ExpositOPMaven.AppTest.testApp ( )
```

Rigorous Test :-)

Definition at line 34 of file AppTest.java.

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

- src/main/resources/archetype-resources/src/test/java/[AppTest.java](#)

6.2 es.ull.esit.utilities.BellmanFord Class Reference

Public Member Functions

- [BellmanFord](#) (int[][] distanceMatrix, int nodes, ArrayList< Integer > path)
- int[] [getDistances](#) ()
Es un getter para obtener distances.
- int [getValue](#) ()
- void [solve](#) ()

6.2.1 Detailed Description

Definition at line 5 of file BellmanFord.java.

6.2.2 Constructor & Destructor Documentation

6.2.2.1 BellmanFord()

```
es.ull.esit.utilities.BellmanFord.BellmanFord (
    int distanceMatrix[ ][ ],
    int nodes,
    ArrayList< Integer > path )
```

Parameters

<i>distanceMatrix</i>	
<i>nodes</i>	
<i>path</i>	

Definition at line 46 of file BellmanFord.java.

6.2.3 Member Function Documentation

6.2.3.1 getDistances()

```
int [] es.ull.esit.utilities.BellmanFord.getDistances ( )
```

Es un getter para obtener distances.

Returns

devuelve int[] del atributo distances

Definition at line 77 of file BellmanFord.java.

6.2.3.2 getValue()

```
int es.ull.esit.utilities.BellmanFord.getValue ( )
```

Returns

Definition at line 85 of file BellmanFord.java.

6.2.3.3 solve()

```
void es.ull.esit.utilities.BellmanFord.solve ( )
```

Definition at line 92 of file BellmanFord.java.

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

- [src/main/java/es/ull/esit/utilities/BellmanFord.java](#)

6.3 es.ull.esit.utilities.ExpositoUtilities Class Reference

Static Public Member Functions

- static void [printFile](#) (String file)
- static String [simplifyString](#) (String string)
- static double[][] [multiplyMatrices](#) (double a[], double b[])
- static void [writeTextToFile](#) (String file, String text)
- static String [getFormat](#) (String string)
- static String [getFormat](#) (double value)
- static String [getFormat](#) (double value, int zeros)
- static String [getFormat](#) (String string, int width)
- static String [getFormat](#) (String string, int width, int alignment)
- static String [getFormat](#) (ArrayList< String > strings, int width)
- static String [getFormat](#) (ArrayList< Integer > strings)
- static String [getFormat](#) (String[] strings, int width)
- static String [getFormat](#) (String[][] matrixStrings, int width)
- static String [getFormat](#) (String[] strings)
- static String [getFormat](#) (String[] strings, int[] width)
- static String [getFormat](#) (String[] strings, int[] width, int[] alignment)
- static boolean [isInteger](#) (String str)
- static boolean [isDouble](#) (String str)
- static boolean [isAcyclic](#) (int[][] distanceMatrix)
- static boolean [thereIsPath](#) (int[][] distanceMatrix, int node)

Static Public Attributes

- static final int [DEFAULT_COLUMN_WIDTH](#) = 10
- static final int [ALIGNMENT_LEFT](#) = 1
- static final int [ALIGNMENT_RIGHT](#) = 2

6.3.1 Detailed Description

Definition at line 17 of file ExpositoUtilities.java.

6.3.2 Member Function Documentation

6.3.2.1 [getFormat\(\)](#) [1/12]

```
static String es.ull.esit.utilities.ExpositoUtilities.getFormat (
    ArrayList< Integer > strings ) [static]
```

Definition at line 152 of file ExpositoUtilities.java.

6.3.2.2 `getFormat()` [2/12]

```
static String es.ull.esit.utilities.ExpositoUtilities.getFormat (
    ArrayList< String > strings,
    int width ) [static]
```

Definition at line 140 of file `ExpositoUtilities.java`.

6.3.2.3 `getFormat()` [3/12]

```
static String es.ull.esit.utilities.ExpositoUtilities.getFormat (
    double value ) [static]
```

Definition at line 103 of file `ExpositoUtilities.java`.

6.3.2.4 `getFormat()` [4/12]

```
static String es.ull.esit.utilities.ExpositoUtilities.getFormat (
    double value,
    int zeros ) [static]
```

Definition at line 111 of file `ExpositoUtilities.java`.

6.3.2.5 `getFormat()` [5/12]

```
static String es.ull.esit.utilities.ExpositoUtilities.getFormat (
    String string ) [static]
```

Definition at line 93 of file `ExpositoUtilities.java`.

6.3.2.6 `getFormat()` [6/12]

```
static String es.ull.esit.utilities.ExpositoUtilities.getFormat (
    String string,
    int width ) [static]
```

Definition at line 123 of file `ExpositoUtilities.java`.

6.3.2.7 getFormat() [7/12]

```
static String es.ull.esit.utilities.ExpositoUtilities.getFormat (
    String string,
    int width,
    int alignment ) [static]
```

Definition at line 127 of file ExpositoUtilities.java.

6.3.2.8 getFormat() [8/12]

```
static String es.ull.esit.utilities.ExpositoUtilities.getFormat (
    String[] strings ) [static]
```

Definition at line 188 of file ExpositoUtilities.java.

6.3.2.9 getFormat() [9/12]

```
static String es.ull.esit.utilities.ExpositoUtilities.getFormat (
    String[] strings,
    int width ) [static]
```

Definition at line 164 of file ExpositoUtilities.java.

6.3.2.10 getFormat() [10/12]

```
static String es.ull.esit.utilities.ExpositoUtilities.getFormat (
    String[] strings,
    int[] width ) [static]
```

Definition at line 196 of file ExpositoUtilities.java.

6.3.2.11 getFormat() [11/12]

```
static String es.ull.esit.utilities.ExpositoUtilities.getFormat (
    String[] strings,
    int[] width,
    int[] alignment ) [static]
```

Definition at line 202 of file ExpositoUtilities.java.

6.3.2.12 `getFormat()` [12/12]

```
static String es.ull.esit.utilities.ExpositoUtilities.getFormat (
    String matrixStrings [],
    int width ) [static]
```

Definition at line 172 of file `ExpositoUtilities.java`.

6.3.2.13 `isAcyclic()`

```
static boolean es.ull.esit.utilities.ExpositoUtilities.isAcyclic (
    int distanceMatrix [] ) [static]
```

Definition at line 236 of file `ExpositoUtilities.java`.

6.3.2.14 `isDouble()`

```
static boolean es.ull.esit.utilities.ExpositoUtilities.isDouble (
    String str ) [static]
```

Definition at line 227 of file `ExpositoUtilities.java`.

6.3.2.15 `isInteger()`

```
static boolean es.ull.esit.utilities.ExpositoUtilities.isInteger (
    String str ) [static]
```

Definition at line 218 of file `ExpositoUtilities.java`.

6.3.2.16 `multiplyMatrices()`

```
static double [][] es.ull.esit.utilities.ExpositoUtilities.multiplyMatrices (
    double a [],
    double b [] ) [static]
```

Definition at line 61 of file `ExpositoUtilities.java`.

6.3.2.17 printFile()

```
static void es.ull.esit.utilities.ExpositoUtilities.printFile (
    String file ) [static]
```

Definition at line 32 of file ExpositoUtilities.java.

6.3.2.18 simplifyString()

```
static String es.ull.esit.utilities.ExpositoUtilities.simplifyString (
    String string ) [static]
```

Definition at line 52 of file ExpositoUtilities.java.

6.3.2.19 thereIsPath()

```
static boolean es.ull.esit.utilities.ExpositoUtilities.thereIsPath (
    int distanceMatrix[],
    int node ) [static]
```

Definition at line 249 of file ExpositoUtilities.java.

6.3.2.20 writeTextToFile()

```
static void es.ull.esit.utilities.ExpositoUtilities.writeTextToFile (
    String file,
    String text ) [static]
```

Definition at line 82 of file ExpositoUtilities.java.

6.3.3 Member Data Documentation

6.3.3.1 ALIGNMENT_LEFT

```
final int es.ull.esit.utilities.ExpositoUtilities.ALIGNMENT_LEFT = 1 [static]
```

Definition at line 20 of file ExpositoUtilities.java.

6.3.3.2 ALIGNMENT_RIGHT

```
final int es.ull.esit.utilities.ExpositoUtilities.ALIGNMENT_RIGHT = 2 [static]
```

Definition at line 21 of file ExpositoUtilities.java.

6.3.3.3 DEFAULT_COLUMN_WIDTH

```
final int es.ull.esit.utilities.ExpositoUtilities.DEFAULT_COLUMN_WIDTH = 10 [static]
```

Definition at line 19 of file ExpositoUtilities.java.

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

- src/main/java/es/ull/esit/utilities/[ExpositoUtilities.java](#)

6.4 top.mainTOPTW Class Reference

Static Public Member Functions

- static void [main](#) (String[] args)

6.4.1 Detailed Description

Definition at line 9 of file mainTOPTW.java.

6.4.2 Member Function Documentation

6.4.2.1 main()

```
static void top.mainTOPTW.main (  
    String[] args ) [static]
```

Definition at line 11 of file mainTOPTW.java.

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

- src/main/java/top/[mainTOPTW.java](#)

6.5 es.ull.esit.utils.Pair< F, S > Class Template Reference

Public Member Functions

- [Pair](#) (F [first](#), S [second](#))
- boolean [equals](#) (Object o)
- int [hashCode](#) ()

Static Public Member Functions

- static< A, B > [Pair](#)< A, B > [create](#) (A a, B b)

Public Attributes

- final F [first](#)
- final S [second](#)

6.5.1 Detailed Description

Definition at line 4 of file Pair.java.

6.5.2 Constructor & Destructor Documentation

6.5.2.1 Pair()

```
es.ull.esit.utils.Pair< F, S >.Pair (  
    F first,  
    S second )
```

Definition at line 8 of file Pair.java.

6.5.3 Member Function Documentation

6.5.3.1 create()

```
static <A, B> Pair<A, B> es.ull.esit.utils.Pair< F, S >.create (  
    A a,  
    B b ) [static]
```

Definition at line 27 of file Pair.java.

6.5.3.2 equals()

```
boolean es.ull.esit.utils.Pair< F, S >.equals (
    Object o )
```

Definition at line 14 of file Pair.java.

6.5.3.3 hashCode()

```
int es.ull.esit.utils.Pair< F, S >.hashCode ( )
```

Definition at line 23 of file Pair.java.

6.5.4 Member Data Documentation

6.5.4.1 first

```
final F es.ull.esit.utils.Pair< F, S >.first
```

Definition at line 5 of file Pair.java.

6.5.4.2 second

```
final S es.ull.esit.utils.Pair< F, S >.second
```

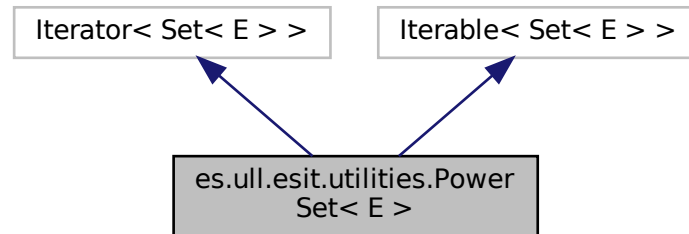
Definition at line 6 of file Pair.java.

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

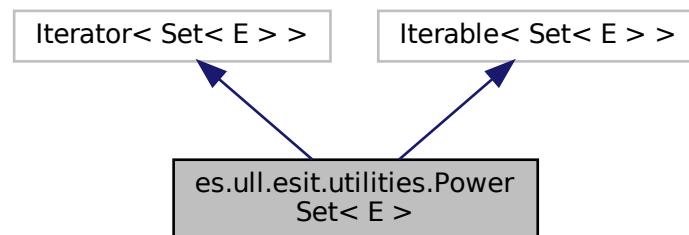
- [src/main/java/es/ull/esit/utils/Pair.java](#)

6.6 es.ull.esit.utilities.PowerSet< E > Class Template Reference

Inheritance diagram for es.ull.esit.utilities.PowerSet< E >:



Collaboration diagram for es.ull.esit.utilities.PowerSet< E >:



Public Member Functions

- [PowerSet](#) (Set< E > set)
- boolean [hasNext](#) ()
- Set< E > [next](#) ()
- void [remove](#) ()
- Iterator< Set< E > > [iterator](#) ()

6.6.1 Detailed Description

Definition at line 16 of file PowerSet.java.

6.6.2 Constructor & Destructor Documentation

6.6.2.1 PowerSet()

```
es.ull.esit.utilities.PowerSet< E >.PowerSet (
    Set< E > set )
```

Definition at line 22 of file PowerSet.java.

6.6.3 Member Function Documentation

6.6.3.1 hasNext()

```
boolean es.ull.esit.utilities.PowerSet< E >.hasNext ( )
```

Definition at line 28 of file PowerSet.java.

6.6.3.2 iterator()

```
Iterator<Set<E> > es.ull.esit.utilities.PowerSet< E >.iterator ( )
```

Definition at line 62 of file PowerSet.java.

6.6.3.3 next()

```
Set<E> es.ull.esit.utilities.PowerSet< E >.next ( )
```

Definition at line 33 of file PowerSet.java.

6.6.3.4 remove()

```
void es.ull.esit.utilities.PowerSet< E >.remove ( )
```

Definition at line 57 of file PowerSet.java.

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

- [src/main/java/es/ull/esit/utilities/PowerSet.java](#)

6.7 top.TOPTW Class Reference

Public Member Functions

- [TOPTW](#) (int nodes, int routes)
- boolean [isDepot](#) (int a)
- double [getDistance](#) (int[] route)
- double [getDistance](#) (ArrayList< Integer > route)
- double [getDistance](#) (ArrayList< Integer >[] routes)
- void [calculateDistanceMatrix](#) ()
- double [getMaxTimePerRoute](#) ()
- void [setMaxTimePerRoute](#) (double maxTimePerRoute)
- double [getMaxRoutes](#) ()
- void [setMaxRoutes](#) (double maxRoutes)
- int [getPOIs](#) ()
- double [getDistance](#) (int i, int j)
- double [getTime](#) (int i, int j)
- int [getNodes](#) ()
- void [setNodes](#) (int nodes)
- double [getX](#) (int index)
- void [setX](#) (int index, double x)
- double [getY](#) (int index)
- void [setY](#) (int index, double y)
- double [getScore](#) (int index)
- double[] [getScore](#) ()
- void [setScore](#) (int index, double score)
- double [getReadyTime](#) (int index)
- void [setReadyTime](#) (int index, double readyTime)
- double [getDueTime](#) (int index)
- void [setDueTime](#) (int index, double dueTime)
- double [getServiceTime](#) (int index)
- void [setServiceTime](#) (int index, double serviceTime)
- int [getVehicles](#) ()
- String [toString](#) ()
- int [addNode](#) ()
- int [addNodeDepot](#) ()

6.7.1 Detailed Description

Definition at line 8 of file TOPTW.java.

6.7.2 Constructor & Destructor Documentation

6.7.2.1 TOPTW()

```
top.TOPTW.TOPTW (
    int nodes,
    int routes )
```

Definition at line 22 of file TOPTW.java.

6.7.3 Member Function Documentation

6.7.3.1 addNode()

```
int top.TOPTW.addNode ( )
```

Definition at line 224 of file TOPTW.java.

6.7.3.2 addNodeDepot()

```
int top.TOPTW.addNodeDepot ( )
```

Definition at line 229 of file TOPTW.java.

6.7.3.3 calculateDistanceMatrix()

```
void top.TOPTW.calculateDistanceMatrix ( )
```

Definition at line 77 of file TOPTW.java.

6.7.3.4 getDistance() [1/4]

```
double top.TOPTW.getDistance (
    ArrayList< Integer > route )
```

Definition at line 58 of file TOPTW.java.

6.7.3.5 getDistance() [2/4]

```
double top.TOPTW.getDistance (
    ArrayList< Integer >[] routes )
```

Definition at line 68 of file TOPTW.java.

6.7.3.6 getDistance() [3/4]

```
double top.TOPTW.getDistance (
    int i,
    int j )
```

Definition at line 112 of file TOPTW.java.

6.7.3.7 getDistance() [4/4]

```
double top.TOPTW.getDistance (
    int[] route )
```

Definition at line 48 of file TOPTW.java.

6.7.3.8 getDueTime()

```
double top.TOPTW.getDueTime (
    int index )
```

Definition at line 172 of file TOPTW.java.

6.7.3.9 getMaxRoutes()

```
double top.TOPTW.getMaxRoutes ( )
```

Definition at line 100 of file TOPTW.java.

6.7.3.10 getMaxTimePerRoute()

```
double top.TOPTW.getMaxTimePerRoute ( )
```

Definition at line 92 of file TOPTW.java.

6.7.3.11 getNodes()

```
int top.TOPTW.getNodes ( )
```

Definition at line 124 of file TOPTW.java.

6.7.3.12 getPOIs()

```
int top.TOPTW.getPOIs ( )
```

Definition at line 108 of file TOPTW.java.

6.7.3.13 getReadyTime()

```
double top.TOPTW.getReadyTime (
    int index )
```

Definition at line 163 of file TOPTW.java.

6.7.3.14 getScore() [1/2]

```
double [] top.TOPTW.getScore ( )
```

Definition at line 155 of file TOPTW.java.

6.7.3.15 getScore() [2/2]

```
double top.TOPTW.getScore (
    int index )
```

Definition at line 150 of file TOPTW.java.

6.7.3.16 getServiceTime()

```
double top.TOPTW.getServiceTime (
    int index )
```

Definition at line 181 of file TOPTW.java.

6.7.3.17 getTime()

```
double top.TOPTW.getTime (
    int i,
    int j )
```

Definition at line 118 of file TOPTW.java.

6.7.3.18 getVehicles()

```
int top.TOPTW.getVehicles ( )
```

Definition at line 190 of file TOPTW.java.

6.7.3.19 getX()

```
double top.TOPTW.getX (
    int index )
```

Definition at line 132 of file TOPTW.java.

6.7.3.20 getY()

```
double top.TOPTW.getY (
    int index )
```

Definition at line 141 of file TOPTW.java.

6.7.3.21 isDepot()

```
boolean top.TOPTW.isDepot (
    int a )
```

Definition at line 41 of file TOPTW.java.

6.7.3.22 setDueTime()

```
void top.TOPTW.setDueTime (
    int index,
    double dueTime )
```

Definition at line 177 of file TOPTW.java.

6.7.3.23 setMaxRoutes()

```
void top.TOPTW.setMaxRoutes (
    double maxRoutes )
```

Definition at line 104 of file TOPTW.java.

6.7.3.24 **setMaxTimePerRoute()**

```
void top.TOPTW.setMaxTimePerRoute (
    double maxTimePerRoute )
```

Definition at line 96 of file TOPTW.java.

6.7.3.25 **setNodes()**

```
void top.TOPTW.setNodes (
    int nodes )
```

Definition at line 128 of file TOPTW.java.

6.7.3.26 **setReadyTime()**

```
void top.TOPTW.setReadyTime (
    int index,
    double readyTime )
```

Definition at line 168 of file TOPTW.java.

6.7.3.27 **setScore()**

```
void top.TOPTW.setScore (
    int index,
    double score )
```

Definition at line 159 of file TOPTW.java.

6.7.3.28 **setServiceTime()**

```
void top.TOPTW.setServiceTime (
    int index,
    double serviceTime )
```

Definition at line 186 of file TOPTW.java.

6.7.3.29 setX()

```
void top.TOPTW.setX (
    int index,
    double x )
```

Definition at line 137 of file TOPTW.java.

6.7.3.30 setY()

```
void top.TOPTW.setY (
    int index,
    double y )
```

Definition at line 146 of file TOPTW.java.

6.7.3.31 toString()

```
String top.TOPTW.toString ( )
```

Definition at line 195 of file TOPTW.java.

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

- src/main/java/top/[TOPTW.java](#)

6.8 top.TOPTWEvaluator Class Reference

Public Member Functions

- void [evaluate](#) ([TOPTWSolution](#) solution)

Static Public Attributes

- static double [NO_EVALUATED](#) = -1.0

6.8.1 Detailed Description

Definition at line 3 of file TOPTWEvaluator.java.

6.8.2 Member Function Documentation

6.8.2.1 evaluate()

```
void top.TOPTWEvaluator.evaluate (
    TOPTWSolution solution )
```

Definition at line 6 of file TOPTWEvaluator.java.

6.8.3 Member Data Documentation

6.8.3.1 NO_EVALUATED

```
double top.TOPTWEvaluator.NO_EVALUATED = -1.0 [static]
```

Definition at line 4 of file TOPTWEvaluator.java.

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

- [src/main/java/top/TOPTWEvaluator.java](#)

6.9 top.TOPTWGRASP Class Reference

Public Member Functions

- [TOPTWGRASP](#) ([TOPTWSolution](#) sol)
- void [GRASP](#) (int maxIterations, int maxSizeRCL)
- int [aleatorySelectionRCL](#) (int maxTRCL)
- int [fuzzySelectionBestFDRCL](#) ([ArrayList](#)< double[] > rcl)
- int [fuzzySelectionAlphaCutRCL](#) ([ArrayList](#)< double[] > rcl, double alpha)
- void [computeGreedySolution](#) (int maxSizeRCL)
- void [updateSolution](#) (double[] candidateSelected, [ArrayList](#)< [ArrayList](#)< Double > > departureTimes)
- [ArrayList](#)< double[] > [comprehensiveEvaluation](#) ([ArrayList](#)< Integer > customers, [ArrayList](#)< [ArrayList](#)< Double > > departureTimes)
- [TOPTWSolution](#) [getSolution](#) ()
- void [setSolution](#) ([TOPTWSolution](#) solution)
- int [getSolutionTime](#) ()
- void [setSolutionTime](#) (int solutionTime)
- double [getMaxScore](#) ()

Static Public Attributes

- static double [NO_EVALUATED](#) = -1.0

6.9.1 Detailed Description

Definition at line 9 of file TOPTWGRASP.java.

6.9.2 Constructor & Destructor Documentation

6.9.2.1 TOPTWGRASP()

```
top.TOPTWGRASP.TOPTWGRASP (
    TOPTWSolution sol )
```

Definition at line 15 of file TOPTWGRASP.java.

6.9.3 Member Function Documentation

6.9.3.1 aleatorySelectionRCL()

```
int top.TOPTWGRASP.aleatorySelectionRCL (
    int maxTRCL )
```

Definition at line 71 of file TOPTWGRASP.java.

6.9.3.2 comprehensiveEvaluation()

```
ArrayList< double[] > top.TOPTWGRASP.comprehensiveEvaluation (
    ArrayList< Integer > customers,
    ArrayList< ArrayList< Double > > departureTimes )
```

Definition at line 230 of file TOPTWGRASP.java.

6.9.3.3 computeGreedySolution()

```
void top.TOPTWGRASP.computeGreedySolution (
    int maxSizeRCL )
```

Definition at line 118 of file TOPTWGRASP.java.

6.9.3.4 fuzzySelectionAlphaCutRCL()

```
int top.TOPTWGRASP.fuzzySelectionAlphaCutRCL (
    ArrayList< double[] > rcl,
    double alpha )
```

Definition at line 97 of file TOPTWGRASP.java.

6.9.3.5 fuzzySelectionBestFDRCL()

```
int top.TOPTWGRASP.fuzzySelectionBestFDRCL (
    ArrayList< double[] > rcl )
```

Definition at line 80 of file TOPTWGRASP.java.

6.9.3.6 getMaxScore()

```
double top.TOPTWGRASP.getMaxScore ( )
```

Definition at line 331 of file TOPTWGRASP.java.

6.9.3.7 getSolution()

```
TOPTWSolution top.TOPTWGRASP.getSolution ( )
```

Definition at line 315 of file TOPTWGRASP.java.

6.9.3.8 getSolutionTime()

```
int top.TOPTWGRASP.getSolutionTime ( )
```

Definition at line 323 of file TOPTWGRASP.java.

6.9.3.9 GRASP()

```
void top.TOPTWGRASP.GRASP (
    int maxIterations,
    int maxSizeRCL )
```

Definition at line 42 of file TOPTWGRASP.java.

6.9.3.10 setSolution()

```
void top.TOPTWGRASP.setSolution (
    TOPTWSolution solution )
```

Definition at line 319 of file TOPTWGRASP.java.

6.9.3.11 setSolutionTime()

```
void top.TOPTWGRASP.setSolutionTime (
    int solutionTime )
```

Definition at line 327 of file TOPTWGRASP.java.

6.9.3.12 updateSolution()

```
void top.TOPTWGRASP.updateSolution (
    double[] candidateSelected,
    ArrayList< ArrayList< Double > > departureTimes )
```

Definition at line 199 of file TOPTWGRASP.java.

6.9.4 Member Data Documentation

6.9.4.1 NO_EVALUATED

```
double top.TOPTWGRASP.NO_EVALUATED = -1.0 [static]
```

Definition at line 10 of file TOPTWGRASP.java.

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

- src/main/java/top/[TOPTWGRASP.java](#)

6.10 top.TOPTWReader Class Reference

Static Public Member Functions

- static [TOPTW readProblem](#) (String filePath)

6.10.1 Detailed Description

Definition at line 10 of file TOPTWReader.java.

6.10.2 Member Function Documentation

6.10.2.1 readProblem()

```
static TOPTW top.TOPTWReader.readProblem (
    String filePath ) [static]
```

Definition at line 12 of file TOPTWReader.java.

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

- src/main/java/top/[TOPTWReader.java](#)

6.11 top.TOPTWRoute Class Reference

Public Member Functions

- int [getPredeccesor](#) ()
- int [getSuccesor](#) ()
- int [getId](#) ()
- void [setPredeccesor](#) (int pre)
- void [setSuccesor](#) (int suc)
- void [setId](#) (int id)

6.11.1 Detailed Description

Definition at line 3 of file TOPTWRoute.java.

6.11.2 Member Function Documentation

6.11.2.1 getId()

```
int top.TOPTWRoute.getId ( )
```

Definition at line 26 of file TOPTWRoute.java.

6.11.2.2 getPredeccesor()

```
int top.TOPTWRoute.getPredeccesor ( )
```

Definition at line 18 of file TOPTWRoute.java.

6.11.2.3 getSuccesor()

```
int top.TOPTWRoute.getSuccesor ( )
```

Definition at line 22 of file TOPTWRoute.java.

6.11.2.4 setId()

```
void top.TOPTWRoute.setId (
    int id )
```

Definition at line 38 of file TOPTWRoute.java.

6.11.2.5 setPredeccesor()

```
void top.TOPTWRoute.setPredeccesor (
    int pre )
```

Definition at line 30 of file TOPTWRoute.java.

6.11.2.6 setSuccesor()

```
void top.TOPTWRoute.setSuccesor (
    int suc )
```

Definition at line 34 of file TOPTWRoute.java.

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

- [src/main/java/top/TOPTWRoute.java](#)

6.12 top.TOPTWSolution Class Reference

Public Member Functions

- [TOPTWSolution](#) ([TOPTW](#) problem)
- void [initSolution](#) ()
- boolean [isDepot](#) (int c)
- boolean [equivalents](#) ([TOPTWSolution](#) otherSolution)
- int [getAvailableVehicles](#) ()
- int [getCreatedRoutes](#) ()
- double [getDistance](#) (int x, int y)
- void [setAvailableVehicles](#) (int availableVehicles)
- int [getPredecessor](#) (int customer)
- int[] [getPredecessors](#) ()
- [TOPTW](#) [getProblem](#) ()
- double [getObjectiveFunctionValue](#) ()
- int [getPositionInRoute](#) (int customer)
- int [getSuccessor](#) (int customer)
- int[] [getSuccessors](#) ()
- int [getIndexRoute](#) (int index)
- double [getWaitingTime](#) (int customer)
- void [setObjectiveFunctionValue](#) (double objectiveFunctionValue)
- void [setPositionInRoute](#) (int customer, int position)
- void [setPredecessor](#) (int customer, int predecessor)
- void [setSuccessor](#) (int customer, int sucesor)
- void [setWaitingTime](#) (int customer, int waitingTime)
- String [getInfoSolution](#) ()
- double [evaluateFitness](#) ()
- int [addRoute](#) ()
- double [printSolution](#) ()

Static Public Attributes

- static final int [NO_INITIALIZED](#) = -1

6.12.1 Detailed Description

Definition at line 7 of file TOPTWSolution.java.

6.12.2 Constructor & Destructor Documentation

6.12.2.1 TOPTWSolution()

```
top.TOPTWSolution.TOPTWSolution (
    TOPTW problem )
```

Definition at line 19 of file TOPTWSolution.java.

6.12.3 Member Function Documentation

6.12.3.1 addRoute()

```
int top.TOPTWSolution.addRoute ( )
```

Definition at line 218 of file TOPTWSolution.java.

6.12.3.2 equivalents()

```
boolean top.TOPTWSolution.equivalents (
    TOPTWSolution otherSolution )
```

Definition at line 56 of file TOPTWSolution.java.

6.12.3.3 evaluateFitness()

```
double top.TOPTWSolution.evaluateFitness ( )
```

Definition at line 201 of file TOPTWSolution.java.

6.12.3.4 getAvailableVehicles()

```
int top.TOPTWSolution.getAvailableVehicles ( )
```

Definition at line 65 of file TOPTWSolution.java.

6.12.3.5 getCreatedRoutes()

```
int top.TOPTWSolution.getCreatedRoutes ( )
```

Definition at line 69 of file TOPTWSolution.java.

6.12.3.6 `getDistance()`

```
double top.TOPTWSolution.getDistance (
    int x,
    int y )
```

Definition at line 73 of file TOPTWSolution.java.

6.12.3.7 `getIndexRoute()`

```
int top.TOPTWSolution.getIndexRoute (
    int index )
```

Definition at line 109 of file TOPTWSolution.java.

6.12.3.8 `getInfoSolution()`

```
String top.TOPTWSolution.getInfoSolution ( )
```

Definition at line 137 of file TOPTWSolution.java.

6.12.3.9 `getObjectiveFunctionValue()`

```
double top.TOPTWSolution.getObjectiveFunctionValue ( )
```

Definition at line 93 of file TOPTWSolution.java.

6.12.3.10 `getPositionInRoute()`

```
int top.TOPTWSolution.getPositionInRoute (
    int customer )
```

Definition at line 97 of file TOPTWSolution.java.

6.12.3.11 `getPredecessor()`

```
int top.TOPTWSolution.getPredecessor (
    int customer )
```

Definition at line 81 of file TOPTWSolution.java.

6.12.3.12 getPredecessors()

```
int [] top.TOPTWSolution.getPredecessors ( )
```

Definition at line 85 of file TOPTWSolution.java.

6.12.3.13 getProblem()

```
TOPTW top.TOPTWSolution.getProblem ( )
```

Definition at line 89 of file TOPTWSolution.java.

6.12.3.14 getSuccessor()

```
int top.TOPTWSolution.getSuccessor (
    int customer )
```

Definition at line 101 of file TOPTWSolution.java.

6.12.3.15 getSuccessors()

```
int [] top.TOPTWSolution.getSuccessors ( )
```

Definition at line 105 of file TOPTWSolution.java.

6.12.3.16 getWaitingTime()

```
double top.TOPTWSolution.getWaitingTime (
    int customer )
```

Definition at line 113 of file TOPTWSolution.java.

6.12.3.17 initSolution()

```
void top.TOPTWSolution.initSolution ( )
```

Definition at line 34 of file TOPTWSolution.java.

6.12.3.18 isDepot()

```
boolean top.TOPTWSolution.isDepot (
    int c )
```

Definition at line 47 of file TOPTWSolution.java.

6.12.3.19 printSolution()

```
double top.TOPTWSolution.printSolution ( )
```

Definition at line 237 of file TOPTWSolution.java.

6.12.3.20 setAvailableVehicles()

```
void top.TOPTWSolution.setAvailableVehicles (
    int availableVehicles )
```

Definition at line 77 of file TOPTWSolution.java.

6.12.3.21 setObjectiveFunctionValue()

```
void top.TOPTWSolution.setObjectiveFunctionValue (
    double objectiveFunctionValue )
```

Definition at line 117 of file TOPTWSolution.java.

6.12.3.22 setPositionInRoute()

```
void top.TOPTWSolution.setPositionInRoute (
    int customer,
    int position )
```

Definition at line 121 of file TOPTWSolution.java.

6.12.3.23 setPredecessor()

```
void top.TOPTWSolution.setPredecessor (
    int customer,
    int predecessor )
```

Definition at line 125 of file TOPTWSolution.java.

6.12.3.24 setSuccessor()

```
void top.TOPTWSolution.setSuccessor (
    int customer,
    int sucesor )
```

Definition at line 129 of file TOPTWSolution.java.

6.12.3.25 setWaitingTime()

```
void top.TOPTWSolution.setWaitingTime (
    int customer,
    int waitingTime )
```

Definition at line 133 of file TOPTWSolution.java.

6.12.4 Member Data Documentation

6.12.4.1 NO_INITIALIZED

```
final int top.TOPTWSolution.NO_INITIALIZED = -1 [static]
```

Definition at line 8 of file TOPTWSolution.java.

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

- src/main/java/top/[TOPTWSolution.java](#)

Chapter 7

File Documentation

7.1 src/main/java/es/ull/esit/utilities/BellmanFord.java File Reference

Classes

- class [es.ull.esit.utilities.BellmanFord](#)

Packages

- package [es.ull.esit.utilities](#)

7.2 src/main/java/es/ull/esit/utilities/ExpositoUtilities.java File Reference

Classes

- class [es.ull.esit.utilities.ExpositoUtilities](#)

Packages

- package [es.ull.esit.utilities](#)

7.3 src/main/java/es/ull/esit/utilities/PowerSet.java File Reference

Classes

- class [es.ull.esit.utilities.PowerSet< E >](#)

Packages

- package [es.ull.esit.utilities](#)

7.4 src/main/java/es/ull/esit/utils/Pair.java File Reference

Classes

- class [es.ull.esit.utils.Pair< F, S >](#)

Packages

- package [es.ull.esit.utils](#)

7.5 src/main/java/top/mainTOPTW.java File Reference

Classes

- class [top.mainTOPTW](#)

Packages

- package [top](#)

7.6 src/main/java/top/TOPTW.java File Reference

Classes

- class [top.TOPTW](#)

Packages

- package [top](#)

7.7 src/main/java/top/TOPTWEvaluator.java File Reference

Classes

- class [top.TOPTWEvaluator](#)

Packages

- package [top](#)

7.8 src/main/java/top/TOPTWGRASP.java File Reference

Classes

- class [top.TOPTWGRASP](#)

Packages

- package [top](#)

7.9 src/main/java/top/TOPTWReader.java File Reference

Classes

- class [top.TOPTWReader](#)

Packages

- package [top](#)

7.10 src/main/java/top/TOPTWRoute.java File Reference

Classes

- class [top.TOPTWRoute](#)

Packages

- package [top](#)

7.11 src/main/java/top/TOPTWSolution.java File Reference

Classes

- class [top.TOPTWSolution](#)

Packages

- package [top](#)

7.12 src/main/resources/archetype-resources/src/test/java/AppTest.java File Reference

Classes

- class [\\$Pr3ExposiTOPMavenGroupID.Pr3ExposiTOPMaven.AppTest](#)

Packages

- package [\\$Pr3ExposiTOPMavenGroupID.Pr3ExposiTOPMaven](#)

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