

ExpositoTOP

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Chapter 1

Namespace Index

1.1 Packages

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

es.ull.esit.utilities	9
es.ull.esit.utils	9
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Chapter 2

Hierarchical Index

2.1 Class Hierarchy

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

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top.TOPTWEvaluator	26
top.TOPTWGRASP	27
top.TOPTWReader	30
top.TOPTWRoute	30
top.TOPTWSolution	32
Iterator	
es.ull.esit.utilities.PowerSet< E >	20

Chapter 3

Class Index

3.1 Class List

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

es.ull.esit.utilities.BellmanFord	
Clase BellmanFord El algoritmo de Bellman-Ford genera el camino más corto en un grafo dirigido ponderado (en el que el peso de alguna de las aristas puede ser negativo)	11
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File Index

4.1 File List

Here is a list of all files with brief descriptions:

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src/main/java/top/TOPTWReader.java	39
src/main/java/top/TOPTWRoute.java	39
src/main/java/top/TOPTWSolution.java	39

Chapter 5

Namespace Documentation

5.1 Package es.ull.esit.utilities

Classes

- class [BellmanFord](#)
Clase [BellmanFord](#) El algoritmo de Bellman-Ford genera el camino más corto en un grafo dirigido ponderado (en el que el peso de alguna de las aristas puede ser negativo)
- class [ExpositoUtilities](#)
Clase [ExpositoUtilities](#) Distintas herramientas que tiene el proyecto Exposito.
- class [PowerSet](#)
Sirve para calcular todos los subconjuntos de un conjunto dado.

5.2 Package es.ull.esit.utils

Classes

- class [Pair](#)
Sobreescribe a la clase [Pair](#).

5.3 Package top

Classes

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

Chapter 6

Class Documentation

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

Clase [BellmanFord](#) El algoritmo de Bellman-Ford genera el camino más corto en un grafo dirigido ponderado (en el que el peso de alguna de las aristas puede ser negativo)

Public Member Functions

- [BellmanFord](#) (int[][] distanceMatrix, int nodes, ArrayList< Integer > path)
- int[] [getDistances](#) ()
- int [getValue](#) ()
- void [solve](#) ()

6.1.1 Detailed Description

Clase [BellmanFord](#) El algoritmo de Bellman-Ford genera el camino más corto en un grafo dirigido ponderado (en el que el peso de alguna de las aristas puede ser negativo)

6.1.2 Constructor & Destructor Documentation

6.1.2.1 BellmanFord()

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

Parameters

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

6.1.3 Member Function Documentation

6.1.3.1 getDistances()

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

Returns

6.1.3.2 getValue()

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

Returns

6.1.3.3 solve()

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

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

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

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

Clase [ExpositoUtilities](#) Distintas herramientas que tiene el proyecto Exposito.

Static Public Member Functions

- static void [printFile](#) (String file)
Pinta el fichero.
- static String [simplifyString](#) (String string)
- static double[][] [multiplyMatrices](#) (double a[], double b[])
- static void [writeTextToFile](#) (String file, String text) throws IOException
- 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 [therelsPath](#) (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

6.2.1 Detailed Description

Clase [ExpositoUtilities](#) Distintas herramientas que tiene el proyecto Exposito.

6.2.2 Member Function Documentation

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

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

6.2.2.2 getFormat() [2/12]

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

6.2.2.3 getFormat() [3/12]

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

6.2.2.4 getFormat() [4/12]

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

6.2.2.5 getFormat() [5/12]

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

6.2.2.6 getFormat() [6/12]

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

6.2.2.7 getFormat() [7/12]

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

6.2.2.8 getFormat() [8/12]

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

6.2.2.9 getFormat() [9/12]

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

6.2.2.10 getFormat() [10/12]

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

6.2.2.11 getFormat() [11/12]

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

6.2.2.12 getFormat() [12/12]

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

6.2.2.13 isAcyclic()

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

6.2.2.14 isDouble()

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

6.2.2.15 isInteger()

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

6.2.2.16 multiplyMatrices()

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

6.2.2.17 printFile()

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

Pinta el fichero.

Parameters

<i>file</i>	
-------------	--

6.2.2.18 simplifyString()

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

6.2.2.19 thereIsPath()

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


6.2.2.20 writeTextToFile()

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

6.2.3 Member Data Documentation

6.2.3.1 ALIGNMENT_LEFT

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

6.2.3.2 ALIGNMENT_RIGHT

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

6.2.3.3 DEFAULT_COLUMN_WIDTH

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

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

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

6.3 top.mainTOPTW Class Reference

Static Public Member Functions

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

6.3.1 Member Function Documentation

6.3.1.1 main()

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

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

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

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

Sobreescribe a la clase [Pair](#).

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](#)

6.4.1 Detailed Description

Sobreescribe a la clase [Pair](#).

Parameters

<F>	
<S>	

6.4.2 Constructor & Destructor Documentation

6.4.2.1 Pair()

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

6.4.3 Member Function Documentation

6.4.3.1 create()

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

6.4.3.2 equals()

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

6.4.3.3 hashCode()

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

6.4.4 Member Data Documentation

6.4.4.1 first

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

6.4.4.2 second

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

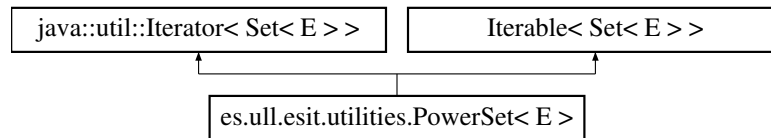
The documentation for this class was generated from the following file:

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

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

Sirve para calcular todos los subconjuntos de un conjunto dado.

Inheritance 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](#) ()

6.5.1 Detailed Description

Sirve para calcular todos los subconjuntos de un conjunto dado.

6.5.2 Constructor & Destructor Documentation

6.5.2.1 PowerSet()

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

6.5.3 Member Function Documentation

6.5.3.1 hasNext()

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

6.5.3.2 iterator()

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

6.5.3.3 next()

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

6.5.3.4 remove()

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

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

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

6.6 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](#) ()

6.6.1 Constructor & Destructor Documentation

6.6.1.1 TOPTW()

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

6.6.2 Member Function Documentation

6.6.2.1 addNode()

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

6.6.2.2 addNodeDepot()

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

6.6.2.3 calculateDistanceMatrix()

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

6.6.2.4 getDistance() [1/4]

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

6.6.2.5 getDistance() [2/4]

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

6.6.2.6 getDistance() [3/4]

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

6.6.2.7 getDistance() [4/4]

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

6.6.2.8 getDueTime()

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

6.6.2.9 getMaxRoutes()

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

6.6.2.10 getMaxTimePerRoute()

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

6.6.2.11 getNodes()

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

6.6.2.12 getPOIs()

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

6.6.2.13 getReadyTime()

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

6.6.2.14 getScore() [1/2]

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

6.6.2.15 getScore() [2/2]

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

6.6.2.16 getServiceTime()

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

6.6.2.17 getTime()

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

6.6.2.18 getVehicles()

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

6.6.2.19 getX()

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


6.6.2.20 getY()

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

6.6.2.21 isDepot()

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

6.6.2.22 setDueTime()

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

6.6.2.23 setMaxRoutes()

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

6.6.2.24 setMaxTimePerRoute()

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

6.6.2.25 setNodes()

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

6.6.2.26 setReadyTime()

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

6.6.2.27 `setScore()`

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

6.6.2.28 `setServiceTime()`

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

6.6.2.29 `setX()`

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

6.6.2.30 `setY()`

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

6.6.2.31 `toString()`

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

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

- `src/main/java/top/TOPTW.java`

6.7 `top.TOPTWEvaluator` Class Reference

Public Member Functions

- void `evaluate` (`TOPTWSolution` solution)

Static Public Attributes

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

6.7.1 Member Function Documentation

6.7.1.1 evaluate()

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

6.7.2 Member Data Documentation

6.7.2.1 NO_EVALUATED

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

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

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

6.8 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

6.8.1 Constructor & Destructor Documentation

6.8.1.1 TOPTWGRASP()

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

6.8.2 Member Function Documentation

6.8.2.1 aleatorySelectionRCL()

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

6.8.2.2 comprehensiveEvaluation()

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

6.8.2.3 computeGreedySolution()

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

6.8.2.4 fuzzySelectionAlphaCutRCL()

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

6.8.2.5 fuzzySelectionBestFDRCL()

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

6.8.2.6 getMaxScore()

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

6.8.2.7 getSolution()

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

6.8.2.8 getSolutionTime()

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

6.8.2.9 GRASP()

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

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6.8.2.10 setSolution()

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

6.8.2.11 setSolutionTime()

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

6.8.2.12 updateSolution()

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

6.8.3 Member Data Documentation

6.8.3.1 NO_EVALUATED

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

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

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

6.9 top.TOPTWReader Class Reference

Static Public Member Functions

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

6.9.1 Member Function Documentation

6.9.1.1 readProblem()

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

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

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

6.10 top.TOPTWRoute Class Reference

Public Member Functions

- int [getPredecessor](#) ()
- int [getSuccessor](#) ()
- int [getId](#) ()
- void [setPredecessor](#) (int pre)
- void [setSuccessor](#) (int suc)
- void [setId](#) (int id)

6.10.1 Member Function Documentation

6.10.1.1 getId()

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

6.10.1.2 getPredecessor()

```
int top.TOPTWRoute.getPredecessor ( )
```

6.10.1.3 getSuccessor()

```
int top.TOPTWRoute.getSuccessor ( )
```

6.10.1.4 setId()

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

6.10.1.5 setPredecessor()

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

6.10.1.6 setSuccessor()

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

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

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

6.11 top.TOPTWSolution Class Reference

Public Member Functions

- [TOPTWSolution](#) ([TOPTW](#) problem)
- void [initSolution](#) ()
- boolean [isDepot](#) (int c)
- boolean [equals](#) ([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

6.11.1 Constructor & Destructor Documentation

6.11.1.1 TOPTWSolution()

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

6.11.2 Member Function Documentation

6.11.2.1 addRoute()

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

6.11.2.2 equals()

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

6.11.2.3 evaluateFitness()

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

6.11.2.4 getAvailableVehicles()

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

6.11.2.5 getCreatedRoutes()

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

6.11.2.6 getDistance()

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

6.11.2.7 getIndexRoute()

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

6.11.2.8 getInfoSolution()

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

6.11.2.9 getObjectiveFunctionValue()

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

6.11.2.10 getPositionInRoute()

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

6.11.2.11 getPredecessor()

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

6.11.2.12 getPredecessors()

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

6.11.2.13 getProblem()

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

6.11.2.14 getSuccessor()

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

6.11.2.15 getSuccessors()

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

6.11.2.16 getWaitingTime()

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

6.11.2.17 initSolution()

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

6.11.2.18 isDepot()

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

6.11.2.19 printSolution()

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

6.11.2.20 setAvailableVehicles()

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

6.11.2.21 setObjectiveFunctionValue()

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

6.11.2.22 setPositionInRoute()

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

6.11.2.23 setPredecessor()

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

6.11.2.24 setSuccessor()

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

6.11.2.25 setWaitingTime()

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

6.11.3 Member Data Documentation

6.11.3.1 NO_INITIALIZED

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

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](#)

Clase [BellmanFord](#) El algoritmo de Bellman-Ford genera el camino más corto en un grafo dirigido ponderado (en el que el peso de alguna de las aristas puede ser negativo)

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](#)

Clase [ExpositoUtilities](#) Distintas herramientas que tiene el proyecto Exposito.

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 >](#)

Sirve para calcular todos los subconjuntos de un conjunto dado.

Packages

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

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

Classes

- class [es.ull.esit.utis.Pair< F, S >](#)
Sobreescribe a la clase [Pair](#).

Packages

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

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](#)

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