

ExpositoTOP

1.0

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|                                                 |           |
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# Chapter 1

## Namespace Index

### 1.1 Package List

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

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|---------------------------|-------|---|
| <a href="#">top</a>       | ..... | 9 |
| <a href="#">utilities</a> | ..... | 9 |
| <a href="#">utils</a>     | ..... | 9 |



## Chapter 2

# Hierarchical Index

### 2.1 Class Hierarchy

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

|                                       |    |
|---------------------------------------|----|
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| utilities.ExpositoUtilities . . . . . | 12 |
| Iterable                              |    |
| utilities.PowerSet< E > . . . . .     | 24 |
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| utils.Pair< F, S > . . . . .          | 21 |
| top.TOPTW . . . . .                   | 26 |
| top.TOPTWEvaluator . . . . .          | 38 |
| top.TOPTWGRASP . . . . .              | 38 |
| top.TOPTWReader . . . . .             | 45 |
| top.TOPTWRoute . . . . .              | 46 |
| top.TOPTWSolution . . . . .           | 47 |
| Iterator                              |    |
| utilities.PowerSet< E > . . . . .     | 24 |



## Chapter 3

# Class Index

### 3.1 Class List

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

|                                               |    |
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| <a href="#">utilities.ExpositoUtilities</a>   | 12 |
| <a href="#">top.mainTOPTW</a>                 | 20 |
| <a href="#">utils.Pair&lt; F, S &gt;</a>      | 21 |
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## Chapter 4

# File Index

### 4.1 File List

Here is a list of all files with brief descriptions:

|                                                                           |    |
|---------------------------------------------------------------------------|----|
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| src/main/java/top/ <a href="#">TOPTWEvaluator.java</a> . . . . .          | 57 |
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| src/main/java/top/ <a href="#">TOPTWSolution.java</a> . . . . .           | 58 |
| src/main/java/utilities/ <a href="#">BellmanFord.java</a> . . . . .       | 59 |
| src/main/java/utilities/ <a href="#">ExpositoUtilities.java</a> . . . . . | 59 |
| src/main/java/utilities/ <a href="#">PowerSet.java</a> . . . . .          | 59 |
| src/main/java/utls/ <a href="#">Pair.java</a> . . . . .                   | 59 |





## Chapter 5

# Namespace Documentation

### 5.1 Package top

#### Classes

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

### 5.2 Package utilities

#### Classes

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

### 5.3 Package utils

#### Classes

- class [Pair](#)



## Chapter 6

# Class Documentation

### 6.1 utilities.BellmanFord Class Reference

#### Public Member Functions

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

#### 6.1.1 Detailed Description

The Bellman-Ford algorithm generates the shortest path in a weighted directed network

#### 6.1.2 Constructor & Destructor Documentation

##### 6.1.2.1 BellmanFord()

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

#### Parameters

|                       |                                                               |
|-----------------------|---------------------------------------------------------------|
| <i>distanceMatrix</i> | Matrix of distances to be traveled to obtain the minimum path |
| <i>nodes</i>          | Number of nodes                                               |
| <i>path</i>           |                                                               |

### 6.1.3 Member Function Documentation

#### 6.1.3.1 getDistances()

```
int[] utilities.BellmanFord.getDistances ( )
```

#### 6.1.3.2 getValue()

```
int utilities.BellmanFord.getValue ( )
```

#### 6.1.3.3 solve()

```
void utilities.BellmanFord.solve ( )
```

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

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

## 6.2 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) 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 [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

### 6.2.1 Detailed Description

Represents some of the tools available to the project

### 6.2.2 Member Function Documentation

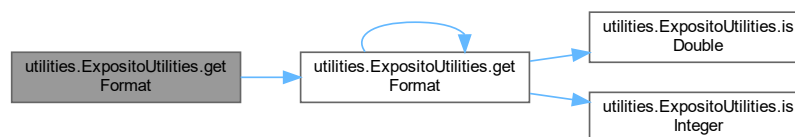
#### 6.2.2.1 getFormat() [1/12]

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

#### 6.2.2.2 getFormat() [2/12]

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

Here is the call graph for this function:



#### 6.2.2.3 getFormat() [3/12]

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

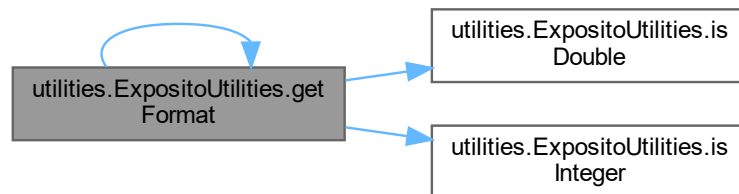
#### 6.2.2.4 getFormat() [4/12]

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

#### 6.2.2.5 getFormat() [5/12]

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

Here is the call graph for this function:



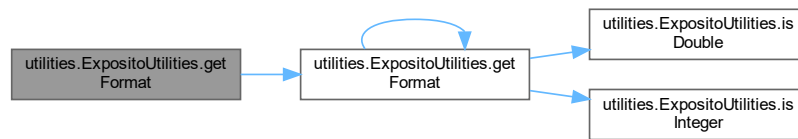
Here is the caller graph for this function:



#### 6.2.2.6 getFormat() [6/12]

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

Here is the call graph for this function:



### 6.2.2.7 getFormat() [7/12]

```

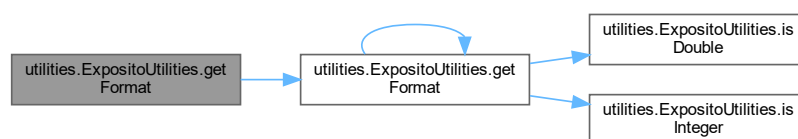
static String utilities.ExpositoUtilities.getFormat (
    String string,
    int width,
    int alignment ) [static]
  
```

### 6.2.2.8 getFormat() [8/12]

```

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

Here is the call graph for this function:

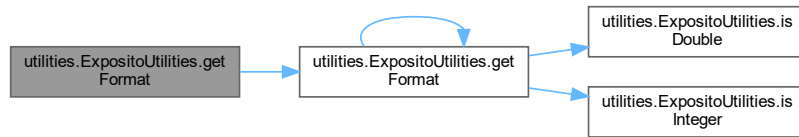


### 6.2.2.9 getFormat() [9/12]

```

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

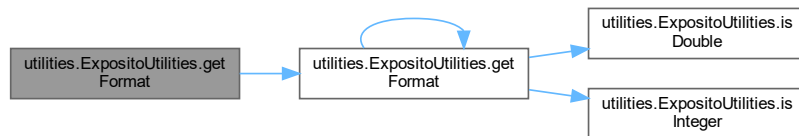
Here is the call graph for this function:



#### 6.2.2.10 `getFormat()` [10/12]

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

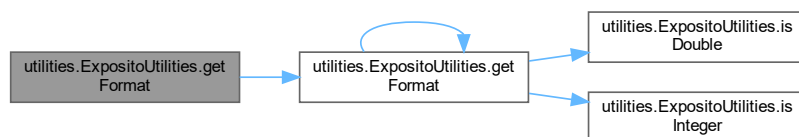
Here is the call graph for this function:



#### 6.2.2.11 `getFormat()` [11/12]

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

Here is the call graph for this function:

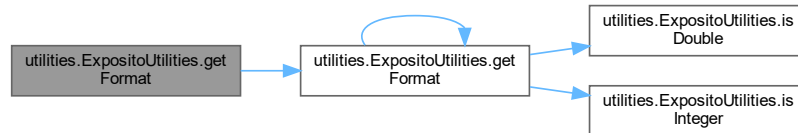




**6.2.2.12 getFormat()** [12/12]

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

Here is the call graph for this function:

**6.2.2.13 isAcyclic()**

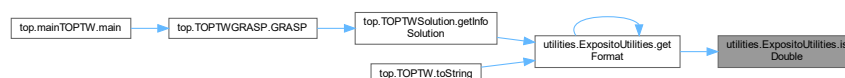
```
static boolean utilities.ExpositoUtilities.isAcyclic (
    int distanceMatrix[][] ) [static]
```

Here is the call graph for this function:

**6.2.2.14 isDouble()**

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

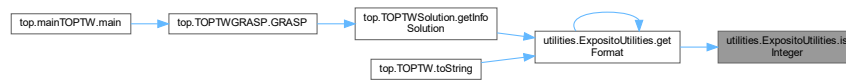
Here is the caller graph for this function:



### 6.2.2.15 isInteger()

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

Here is the caller graph for this function:



### 6.2.2.16 multiplyMatrices()

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

### 6.2.2.17 printFile()

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

Displays the file on the screen

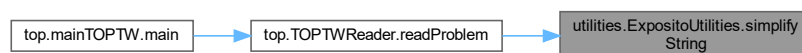
#### Parameters

|             |               |
|-------------|---------------|
| <i>file</i> | File to print |
|-------------|---------------|

### 6.2.2.18 simplifyString()

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

Here is the caller graph for this function:



### 6.2.2.19 thereIsPath()

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

Here is the caller graph for this function:



### 6.2.2.20 writeTextToFile()

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

## 6.2.3 Member Data Documentation

### 6.2.3.1 ALIGNMENT\_LEFT

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

### 6.2.3.2 ALIGNMENT\_RIGHT

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

### 6.2.3.3 DEFAULT\_COLUMN\_WIDTH

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

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

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

## 6.3 top.mainTOPTW Class Reference

### Static Public Member Functions

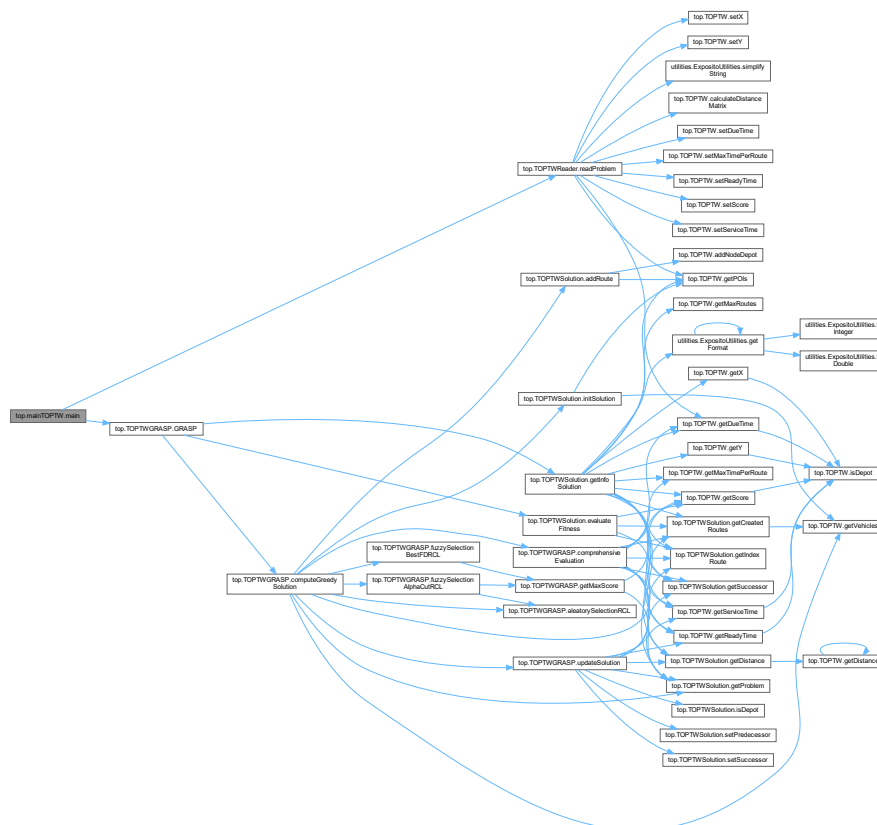
- static void [main](#) (String[] args)

### 6.3.1 Member Function Documentation

#### 6.3.1.1 main()

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

Here is the call graph for this function:



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

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

## 6.4 `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*

#### 6.4.1 Detailed Description

This class allows the generation of pairs of template type objects.

##### Parameters

|                        |                         |
|------------------------|-------------------------|
| <code>&lt;F&gt;</code> | Template first element  |
| <code>&lt;S&gt;</code> | Template second element |

#### 6.4.2 Constructor & Destructor Documentation

##### 6.4.2.1 `Pair()`

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

Class constructor overloading

##### Parameters

|               |                            |
|---------------|----------------------------|
| <i>first</i>  | First element of the pair  |
| <i>second</i> | Second element of the pair |

## 6.4.3 Member Function Documentation

### 6.4.3.1 create()

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

Static method for pair creation

#### Parameters

|          |                     |
|----------|---------------------|
| <i>a</i> | Pair first element  |
| <i>b</i> | Pair second element |

#### Returns

new Pair

#### Parameters

|     |                        |
|-----|------------------------|
| <A> | Template first element |
| <B> | Template first element |

### 6.4.3.2 equals()

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

Compares whether two pairs of values are equal

#### Parameters

|          |                                                      |
|----------|------------------------------------------------------|
| <i>o</i> | Element to be compared with the invoking pair object |
|----------|------------------------------------------------------|

**Returns**

Result of the comparison between 2 pairs

Here is the call graph for this function:



Here is the caller graph for this function:

**6.4.3.3 hashCode()**

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

Returns an integer representing the current instance of the class.

**Returns**

the current instance of the class

**6.4.4 Member Data Documentation****6.4.4.1 first**

```
final F utils.Pair< F, S >.first
```

#### 6.4.4.2 second

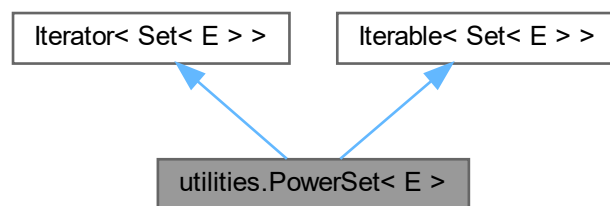
```
final S utils.Pair< F, S >.second
```

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

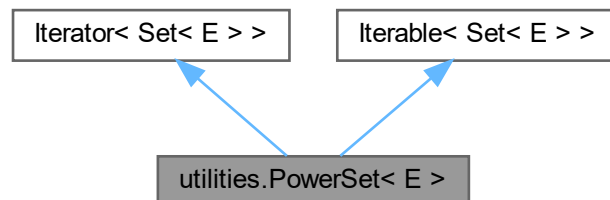
- src/main/java/utils/[Pair.java](#)

## 6.5 utilities.PowerSet< E > Class Template Reference

Inheritance diagram for utilities.PowerSet< E >:



Collaboration diagram for 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

Calculate all the subsets of a given set.



## Parameters

|     |                                                             |
|-----|-------------------------------------------------------------|
| <E> | Template element for defining the data type of the assembly |
|-----|-------------------------------------------------------------|

## 6.5.2 Constructor & Destructor Documentation

### 6.5.2.1 PowerSet()

```
utilities.PowerSet< E >.PowerSet (
    Set< E > set )
```

## 6.5.3 Member Function Documentation

### 6.5.3.1 hasNext()

```
boolean utilities.PowerSet< E >.hasNext ( )
```

### 6.5.3.2 iterator()

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

### 6.5.3.3 next()

```
Set< E > utilities.PowerSet< E >.next ( )
```

### 6.5.3.4 remove()

```
void utilities.PowerSet< E >.remove ( )
```

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

- src/main/java/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()**

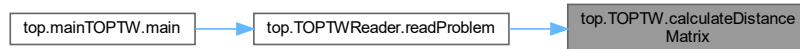
```
int top.TOPTW.addNodeDepot ( )
```

Here is the caller graph for this function:

**6.6.2.3 calculateDistanceMatrix()**

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

Here is the caller graph for this function:

**6.6.2.4 getDistance() [1/4]**

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

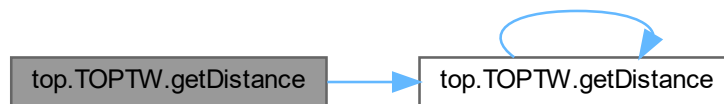
Here is the call graph for this function:



#### 6.6.2.5 `getDistance()` [2/4]

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

Here is the call graph for this function:



#### 6.6.2.6 `getDistance()` [3/4]

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

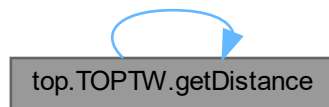
Here is the call graph for this function:



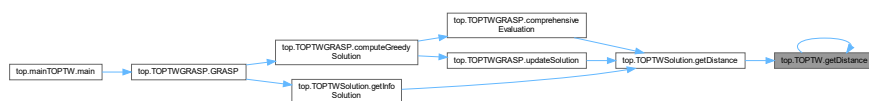
#### 6.6.2.7 `getDistance()` [4/4]

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

Here is the call graph for this function:



Here is the caller graph for this function:



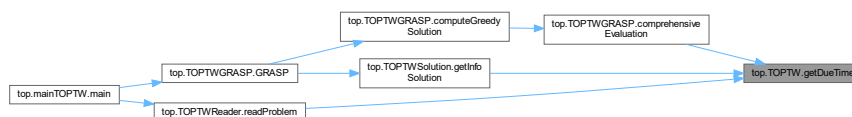
### 6.6.2.8 getDueTime()

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

Here is the call graph for this function:



Here is the caller graph for this function:



### 6.6.2.9 getMaxRoutes()

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

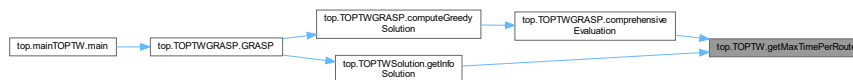
Here is the caller graph for this function:



### 6.6.2.10 getMaxTimePerRoute()

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

Here is the caller graph for this function:



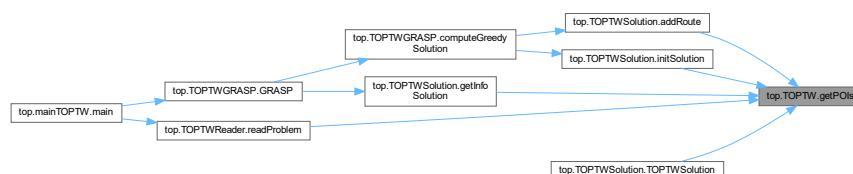
### 6.6.2.11 getNodes()

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

### 6.6.2.12 getPOIs()

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

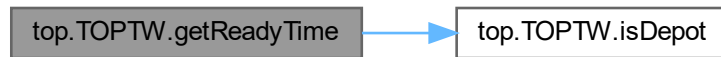
Here is the caller graph for this function:



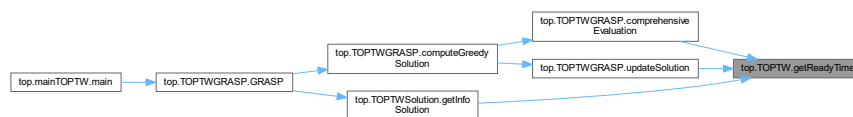
**6.6.2.13 getReadyTime()**

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

Here is the call graph for this function:



Here is the caller graph for this function:

**6.6.2.14 getScore() [1/2]**

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

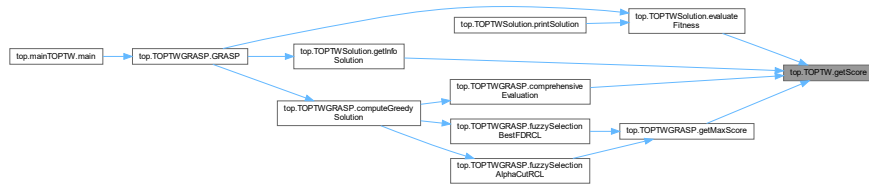
**6.6.2.15 getScore() [2/2]**

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

Here is the call graph for this function:



Here is the caller graph for this function:



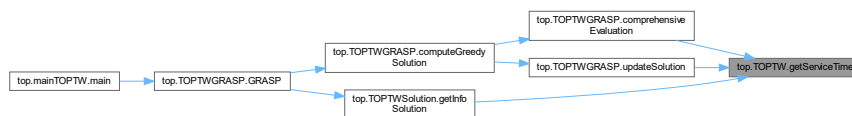
### 6.6.2.16 getServiceTime()

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

Here is the call graph for this function:



Here is the caller graph for this function:



### 6.6.2.17 getTime()

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



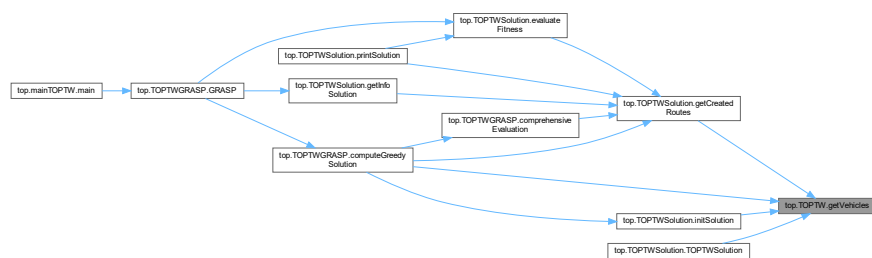
Here is the call graph for this function:



### 6.6.2.18 getVehicles()

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

Here is the caller graph for this function:



### 6.6.2.19 getX()

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

Here is the call graph for this function:



Here is the caller graph for this function:



### 6.6.2.20 getY()

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

Here is the call graph for this function:



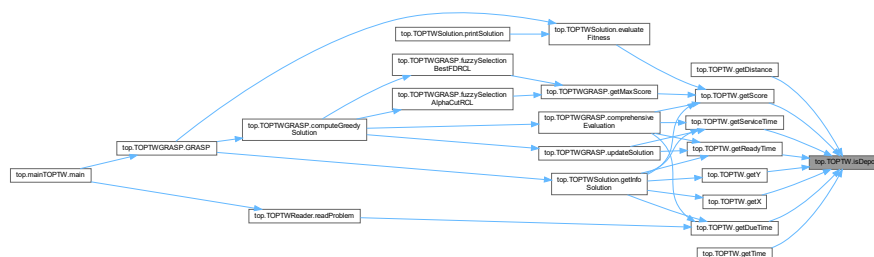
Here is the caller graph for this function:



### 6.6.2.21 isDepot()

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

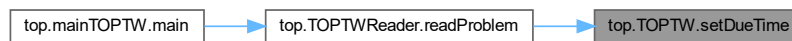
Here is the caller graph for this function:



#### 6.6.2.22 setDueTime()

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

Here is the caller graph for this function:



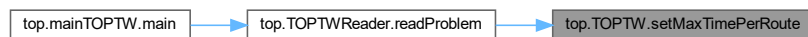
#### 6.6.2.23 setMaxRoutes()

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

#### 6.6.2.24 setMaxTimePerRoute()

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

Here is the caller graph for this function:



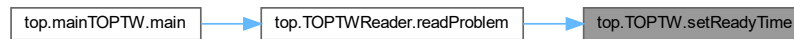
#### 6.6.2.25 setNodes()

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

#### 6.6.2.26 setReadyTime()

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

Here is the caller graph for this function:



#### 6.6.2.27 setScore()

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

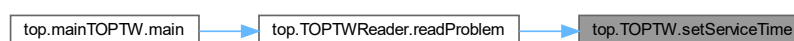
Here is the caller graph for this function:



#### 6.6.2.28 setServiceTime()

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

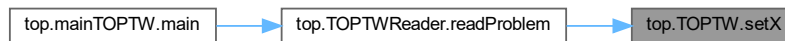
Here is the caller graph for this function:



### 6.6.2.29 setX()

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

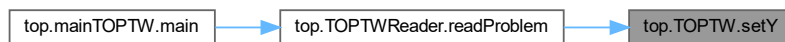
Here is the caller graph for this function:



### 6.6.2.30 setY()

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

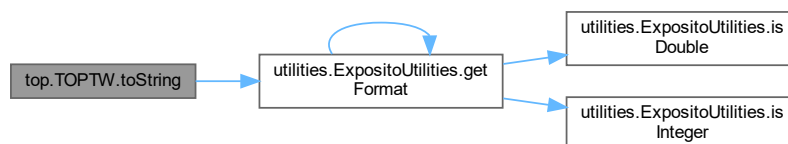
Here is the caller graph for this function:



### 6.6.2.31 toString()

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

Here is the call graph for this function:



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 )
```

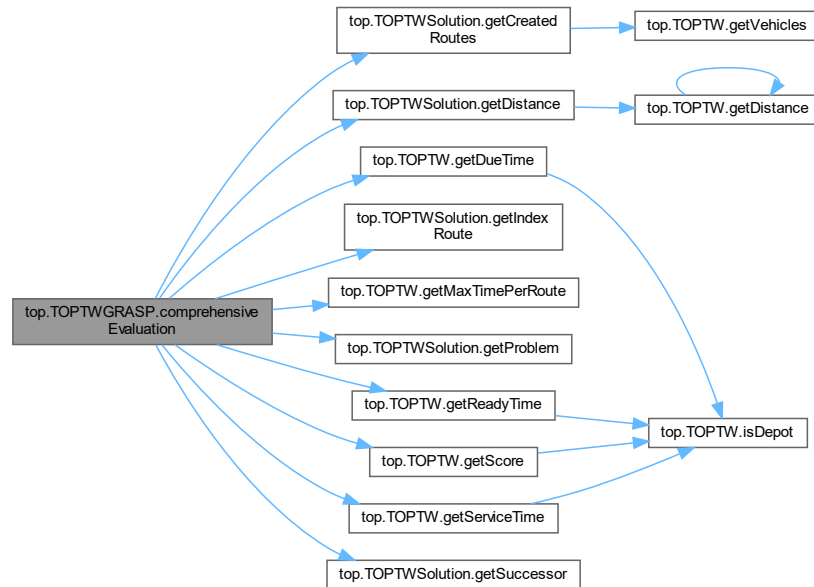
Here is the caller graph for this function:



### 6.8.2.2 comprehensiveEvaluation()

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

Here is the call graph for this function:



Here is the caller graph for this function:



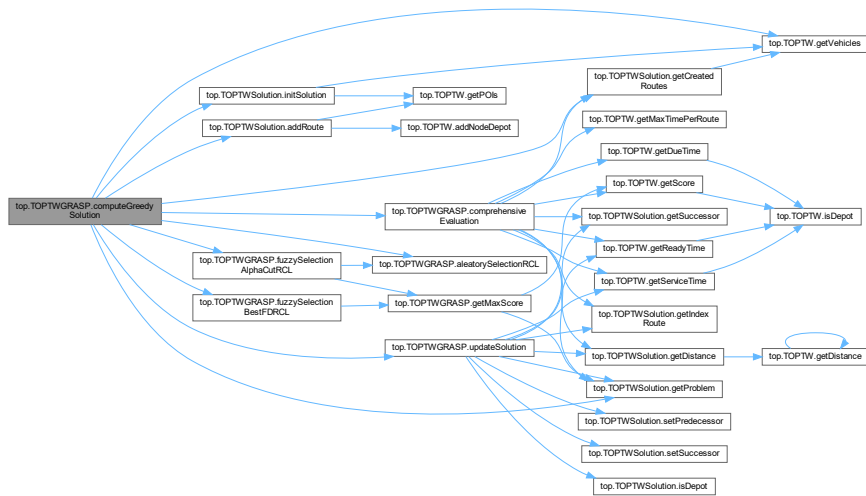
### 6.8.2.3 computeGreedySolution()

```

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



Here is the call graph for this function:



Here is the caller graph for this function:

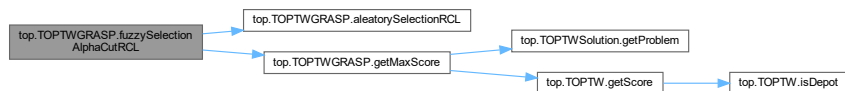


#### 6.8.2.4 fuzzySelectionAlphaCutRCL()

```

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

Here is the call graph for this function:



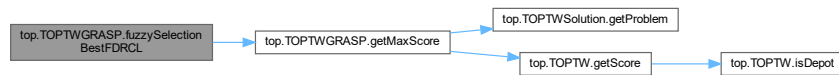
Here is the caller graph for this function:



### 6.8.2.5 fuzzySelectionBestFDRCL()

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

Here is the call graph for this function:



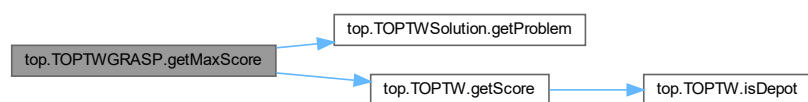
Here is the caller graph for this function:



### 6.8.2.6 getMaxScore()

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

Here is the call graph for this function:



Here is the caller graph for this function:



### 6.8.2.7 getSolution()

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

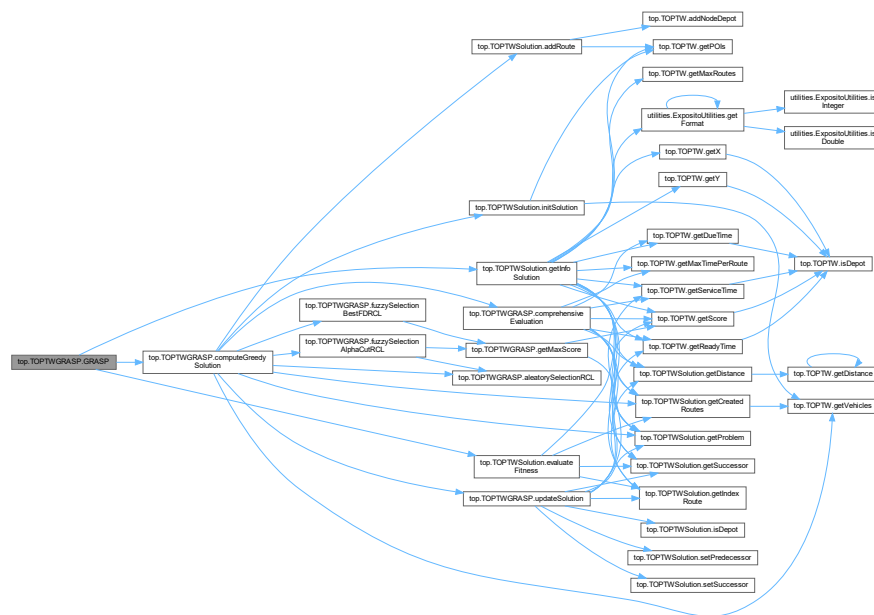
### 6.8.2.8 getSolutionTime()

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

### 6.8.2.9 GRASP()

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

Here is the call graph for this function:



Here is the caller graph for this function:



### 6.8.2.10 setSolution()

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

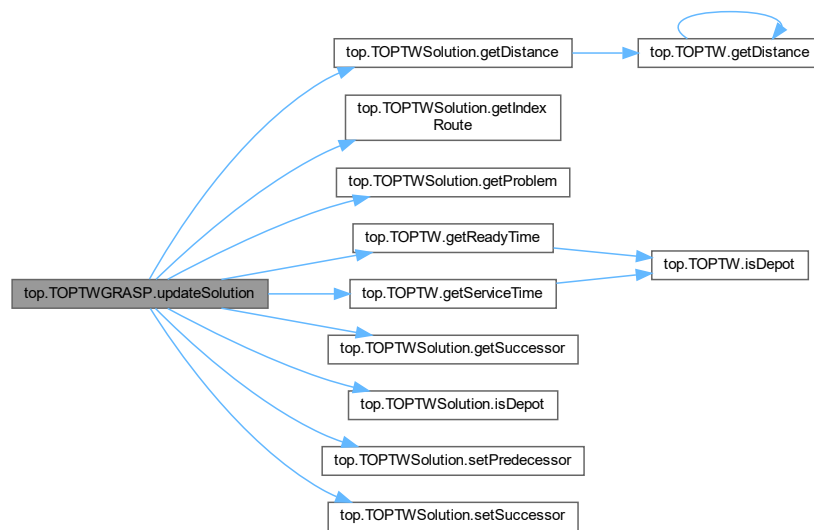
### 6.8.2.11 setSolutionTime()

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

### 6.8.2.12 updateSolution()

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

Here is the call graph for this function:



Here is the caller graph for this function:



## 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

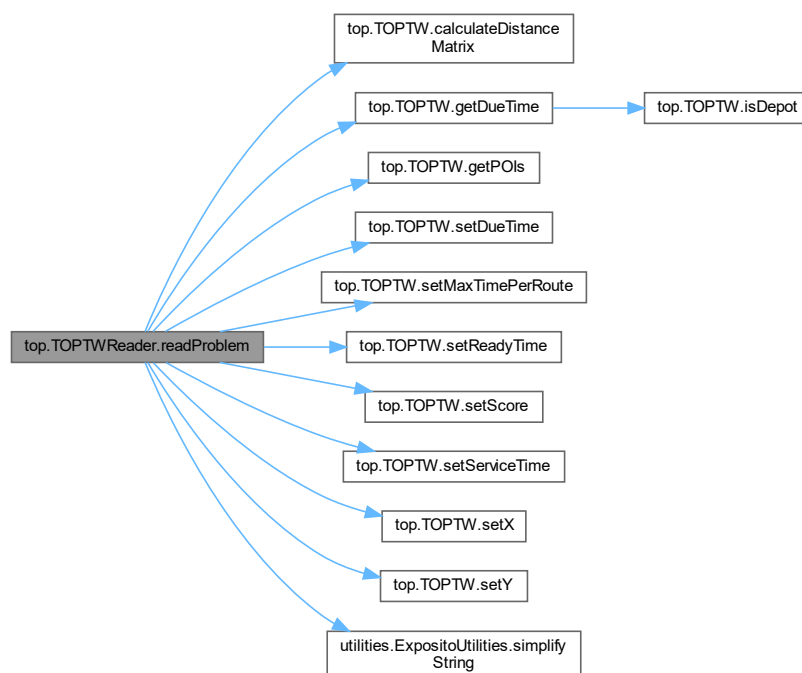
- static [TOPTW readProblem](#) (String filePath)

### 6.9.1 Member Function Documentation

#### 6.9.1.1 readProblem()

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

Here is the call graph for this function:



Here is the caller graph for this function:



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

### 6.10.1 Member Function Documentation

#### 6.10.1.1 getId()

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

#### 6.10.1.2 getPredeccesor()

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

#### 6.10.1.3 getSuccesor()

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

#### 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 successor)
- void [setWaitingTime](#) (int customer, int waitingTime)
- String [getInfoSolution](#) ()
- double [evaluateFitness](#) ()
- int [addRoute](#) ()
- double [printSolution](#) ()

## Static Public Attributes

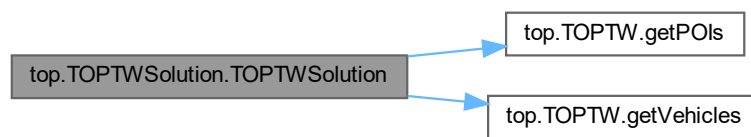
- static final int `NO_INITIALIZED` = -1

### 6.11.1 Constructor & Destructor Documentation

#### 6.11.1.1 TOPTWSolution()

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

Here is the call graph for this function:

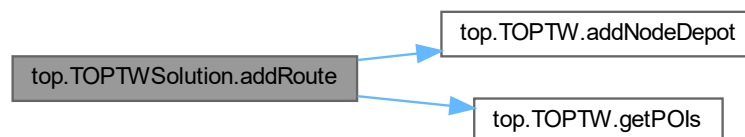


### 6.11.2 Member Function Documentation

#### 6.11.2.1 addRoute()

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

Here is the call graph for this function:



Here is the caller graph for this function:





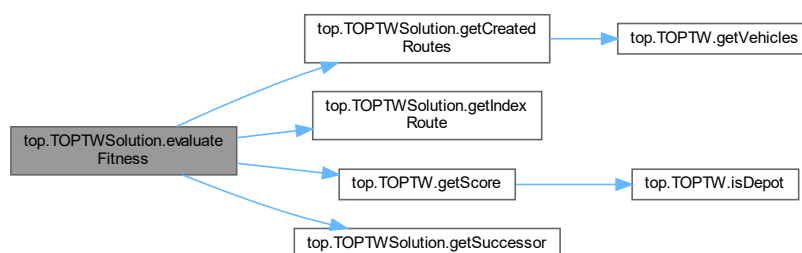
### 6.11.2.2 equals()

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

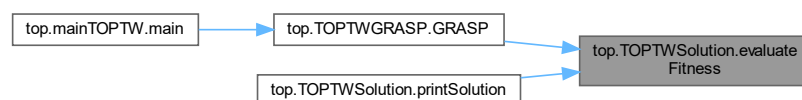
### 6.11.2.3 evaluateFitness()

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

Here is the call graph for this function:



Here is the caller graph for this function:



### 6.11.2.4 getAvailableVehicles()

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

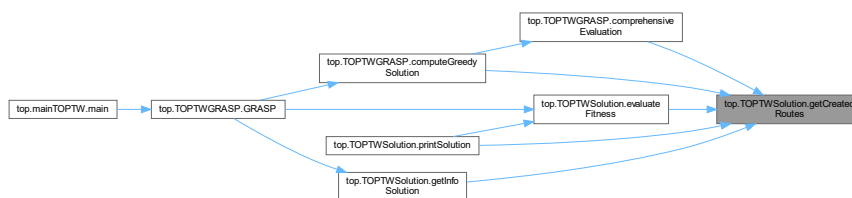
### 6.11.2.5 getCreatedRoutes()

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

Here is the call graph for this function:



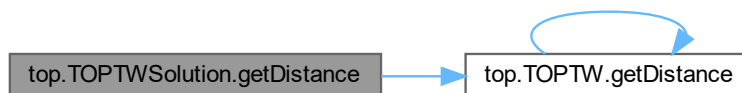
Here is the caller graph for this function:



### 6.11.2.6 getDistance()

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

Here is the call graph for this function:



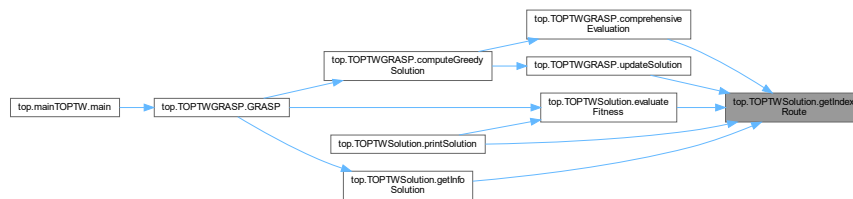
Here is the caller graph for this function:



### 6.11.2.7 getIndexRoute()

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

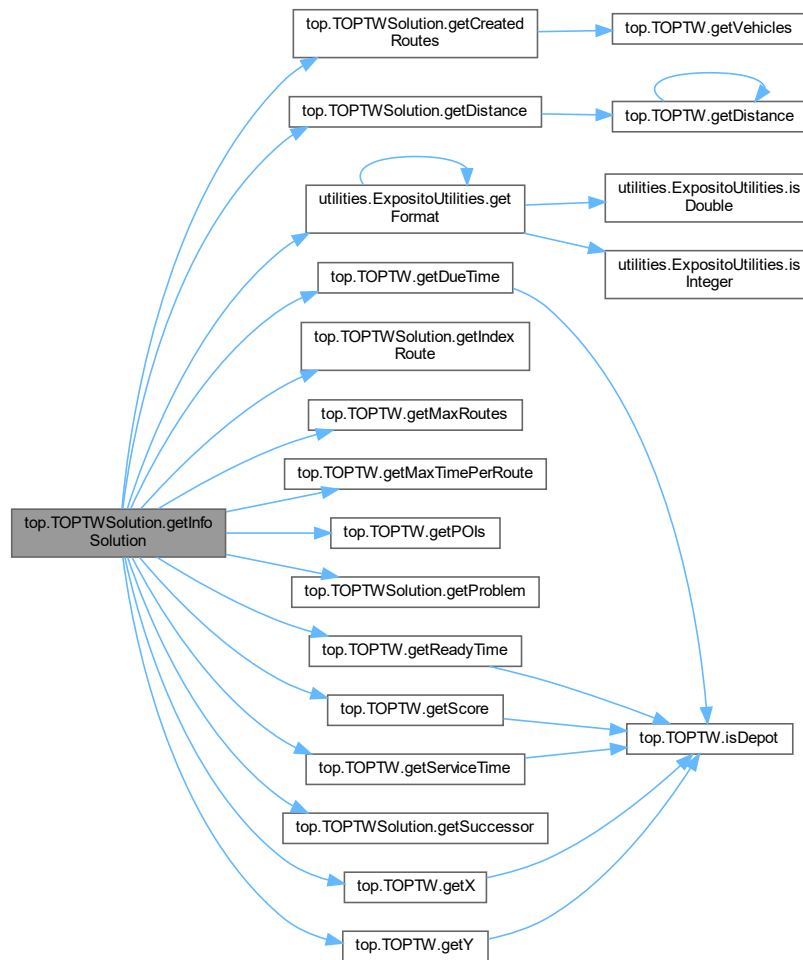
Here is the caller graph for this function:



### 6.11.2.8 getInfoSolution()

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

Here is the call graph for this function:



Here is the caller graph for this function:



### 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 )
```

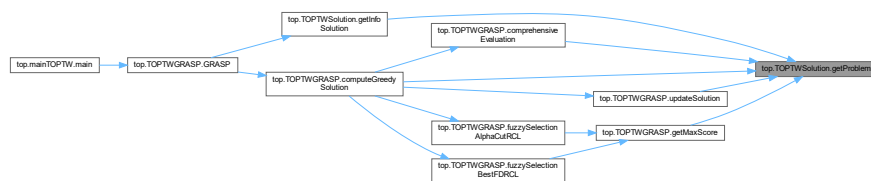
### 6.11.2.12 getPredecessors()

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

### 6.11.2.13 getProblem()

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

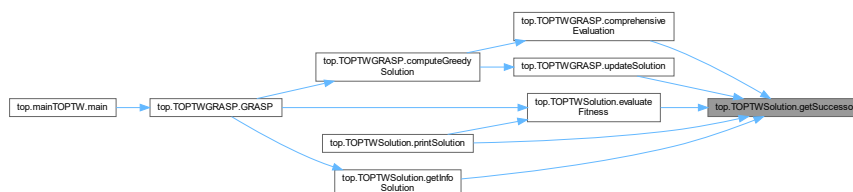
Here is the caller graph for this function:



### 6.11.2.14 getSuccessor()

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

Here is the caller graph for this function:



### 6.11.2.15 getSuccessors()

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

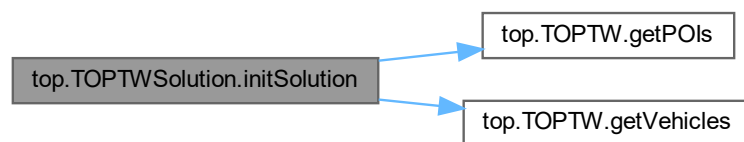
### 6.11.2.16 getWaitingTime()

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

### 6.11.2.17 initSolution()

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

Here is the call graph for this function:



Here is the caller graph for this function:



### 6.11.2.18 isDepot()

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

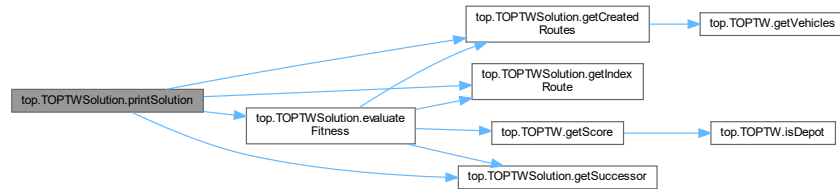
Here is the caller graph for this function:



**6.11.2.19 printSolution()**

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

Here is the call graph for this function:

**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 )
```

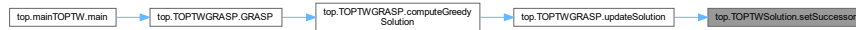
Here is the caller graph for this function:



#### 6.11.2.24 setSuccessor()

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

Here is the caller graph for this function:



#### 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/top/mainTOPTW.java File Reference

#### Classes

- class [top.mainTOPTW](#)

#### Packages

- package [top](#)

### 7.2 src/main/java/top/TOPTW.java File Reference

#### Classes

- class [top.TOPTW](#)

#### Packages

- package [top](#)

### 7.3 src/main/java/top/TOPTWEvaluator.java File Reference

#### Classes

- class [top.TOPTWEvaluator](#)

#### Packages

- package [top](#)

## 7.4 src/main/java/top/TOPTWGRASP.java File Reference

### Classes

- class [top.TOPTWGRASP](#)

### Packages

- package [top](#)

## 7.5 src/main/java/top/TOPTWReader.java File Reference

### Classes

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### Packages

- package [top](#)

## 7.6 src/main/java/top/TOPTWRoute.java File Reference

### Classes

- class [top.TOPTWRoute](#)

### Packages

- package [top](#)

## 7.7 src/main/java/top/TOPTWSolution.java File Reference

### Classes

- class [top.TOPTWSolution](#)

### Packages

- package [top](#)

## 7.8 src/main/java/utilities/BellmanFord.java File Reference

### Classes

- class [utilities.BellmanFord](#)

### Packages

- package [utilities](#)

## 7.9 src/main/java/utilities/ExpositoUtilities.java File Reference

### Classes

- class [utilities.ExpositoUtilities](#)

### Packages

- package [utilities](#)

## 7.10 src/main/java/utilities/PowerSet.java File Reference

### Classes

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

### Packages

- package [utilities](#)

## 7.11 src/main/java/utls/Pair.java File Reference

### Classes

- class [utls.Pair< F, S >](#)

### Packages

- package [utls](#)



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