Package

graph

graph
Class Geo

```
java.lang.Object
   |
   +-java.awt.Component
      |
      +-java.awt.Container
         |
         +-javax.swing.JComponent
            |
            +-javax.swing.JPanel
               |
               +-graph.Geo
```

All Implemented Interfaces:
java.io.Serializable, java.awt.MenuContainer, java.awt.image.ImageObserver, javax.swing.TransferHandler.HasGetTransferHandler, java.io.Serializable, javax.accessibility.Accessible

---

public class **Geo**
extends javax.swing.JPanel

This class contains the main method and the drawing component. It set up the points, the graph and calculates the minimum spanning tree, after that it draws it on the screen.

Fields inherited from class `javax.swing.JComponent`
`accessibleContext`, `listenerList`, `TOOL_TIP_TEXT_KEY`, `ui`, `UNDEFINED_CONDITION`, `WHEN_ANCESTOR_OF_FOCUSED_COMPONENT`, `WHEN_FOCUSED`, `WHEN_IN_FOCUSED_WINDOW`

Fields inherited from class `java.awt.Component`
`BOTTOM_ALIGNMENT`, `CENTER_ALIGNMENT`, `LEFT_ALIGNMENT`, `RIGHT_ALIGNMENT`, `TOP_ALIGNMENT`

Fields inherited from interface `java.awt.image.ImageObserver`
`ABORT`, `ALLBITS`, `ERROR`, `FRAMEBITS`, `HEIGHT`, `PROPERTIES`, `SOMEBITS`, `WIDTH`

Constructor Summary

`public`	`Geo()` The constructor

Method Summary

`static void`	`main(java.lang.String[] args)`
`void`	`paintComponent(java.awt.Graphics g)` This methods override the method from JPanel to draw own things on the screen

Methods inherited from class `javax.swing.JPanel`
`getAccessibleContext, getUI, getUIClassID, paramString, setUI, updateUI`

Methods inherited from class `javax.swing.JComponent`

addAncestorListener, addNotify, addVetoableChangeListener, computeVisibleRect, contains, createToolTip, disable, enable, firePropertyChange, firePropertyChange, firePropertyChange, fireVetoableChange, getAccessibleContext, getActionForKeyStroke, getActionMap, getAlignmentX, getAlignmentY, getAncestorListeners, getAutoscrolls, getBaseline, getBaselineResizeBehavior, getBorder, getBounds, getClientProperty, getComponentGraphics, getComponentPopupMenu, getConditionForKeyStroke, getDebugGraphicsOptions, getDefaultLocale, getFontMetrics, getGraphics, getHeight, getInheritsPopupMenu, getInputMap, getInputMap, getInputVerifier, getInsets, getInsets, getListeners, getLocation, getMaximumSize, getMinimumSize, getNextFocusableComponent, getPopupLocation, getPreferredSize, getRegisteredKeyStrokes, getRootPane, getSize, getToolTipLocation, getToolTipText, getToolTipText, getTopLevelAncestor, getTransferHandler, getUIClassID, getVerifyInputWhenFocusTarget, getVetoableChangeListeners, getVisibleRect, getWidth, getX, getY, grabFocus, isDoubleBuffered, isLightweightComponent, isManagingFocus, isOpaque, isOptimizedDrawingEnabled, isPaintingForPrint, isPaintingTile, isRequestFocusEnabled, isValidateRoot, paint, paintBorder, paintChildren, paintComponent, paintImmediately, paintImmediately, paramString, print, printAll, printBorder, printChildren, printComponent, processComponentKeyEvent, processKeyBinding, processKeyEvent, processMouseEvent, processMouseMotionEvent, putClientProperty, registerKeyboardAction, registerKeyboardAction, removeAncestorListener, removeNotify, removeVetoableChangeListener, repaint, repaint, requestDefaultFocus, requestFocus, requestFocus, requestFocusInWindow, requestFocusInWindow, resetKeyboardActions, reshape, revalidate, scrollRectToVisible, setActionMap, setAlignmentX, setAlignmentY, setAutoscrolls, setBackground, setBorder, setComponentPopupMenu, setDebugGraphicsOptions, setDefaultLocale, setDoubleBuffered, setEnabled, setFocusTraversalKeys, setFont, setForeground, setInheritsPopupMenu, setInputMap, setInputVerifier, setMaximumSize, setMinimumSize, setNextFocusableComponent, setOpaque, setPreferredSize, setRequestFocusEnabled, setToolTipText, setTransferHandler, setUI, setVerifyInputWhenFocusTarget, setVisible, unregisterKeyboardAction, update, updateUI

Methods inherited from class `java.awt.Container`

add, add, add, add, add, addContainerListener, addImpl, addNotify, addPropertyChangeListener, addPropertyChangeListener, applyComponentOrientation, areFocusTraversalKeysSet, countComponents, deliverEvent, doLayout, findComponentAt, findComponentAt, getAlignmentX, getAlignmentY, getComponent, getComponentAt, getComponentAt, getComponentCount, getComponents, getComponentZOrder, getContainerListeners, getFocusTraversalKeys, getFocusTraversalPolicy, getInsets, getLayout, getListeners, getMaximumSize, getMinimumSize, getMousePosition, getPreferredSize, insets, invalidate, isAncestorOf, isFocusCycleRoot, isFocusCycleRoot, isFocusTraversalPolicyProvider, isFocusTraversalPolicySet, layout, list, list, locate, minimumSize, paint, paintComponents, paramString, preferredSize, print, printComponents, processContainerEvent, processEvent, remove, remove, removeAll, removeContainerListener, removeNotify, setComponentZOrder, setFocusCycleRoot, setFocusTraversalKeys, setFocusTraversalPolicy, setFocusTraversalPolicyProvider, setFont, setLayout, transferFocusBackward, transferFocusDownCycle, update, validate, validateTree

Methods inherited from class `java.awt.Component` `action, add, addComponentListener, addFocusListener, addHierarchyBoundsListener, addHierarchyListener, addInputMethodListener, addKeyListener, addMouseListener, addMouseMotionListener, addMouseWheelListener, addNotify, addPropertyChangeListener, addPropertyChangeListener, applyComponentOrientation, areFocusTraversalKeysSet, bounds, checkImage, checkImage, coalesceEvents, contains, contains, createImage, createImage, createVolatileImage, createVolatileImage, deliverEvent, disable, disableEvents, dispatchEvent, doLayout, enable, enable, enableEvents, enableInputMethods, firePropertyChange, firePropertyChange, firePropertyChange, firePropertyChange, firePropertyChange, firePropertyChange, firePropertyChange, firePropertyChange, firePropertyChange, getAccessibleContext, getAlignmentX, getAlignmentY, getBackground, getBaseline, getBaselineResizeBehavior, getBounds, getBounds, getColorModel, getComponentAt, getComponentAt, getComponentListeners, getComponentOrientation, getCursor, getDropTarget, getFocusCycleRootAncestor, getFocusListeners, getFocusTraversalKeys, getFocusTraversalKeysEnabled, getFont, getFontMetrics, getForeground, getGraphics, getGraphicsConfiguration, getHeight, getHierarchyBoundsListeners, getHierarchyListeners, getIgnoreRepaint, getInputContext, getInputMethodListeners, getInputMethodRequests, getKeyListeners, getListeners, getLocale, getLocation, getLocation, getLocationOnScreen, getMaximumSize, getMinimumSize, getMouseListeners, getMouseMotionListeners, getMousePosition, getMouseWheelListeners, getName, getParent, getPeer, getPreferredSize, getPropertyChangeListeners, getPropertyChangeListeners, getSize, getSize, getToolkit, getTreeLock, getWidth, getX, getY, gotFocus, handleEvent, hasFocus, hide, imageUpdate, inside, invalidate, isBackgroundSet, isCursorSet, isDisplayable, isDoubleBuffered, isEnabled, isFocusable, isFocusCycleRoot, isFocusOwner, isFocusTraversable, isFontSet, isForegroundSet, isLightweight, isMaximumSizeSet, isMinimumSizeSet, isOpaque, isPreferredSizeSet, isShowing, isValid, isVisible, keyDown, keyUp, layout, list, list, list, list, list, locate, location, lostFocus, minimumSize, mouseDown, mouseDrag, mouseEnter, mouseExit, mouseMove, mouseUp, move, nextFocus, paint, paintAll, paramString, postEvent, preferredSize, prepareImage, prepareImage, print, printAll, processComponentEvent, processEvent, processFocusEvent, processHierarchyBoundsEvent, processHierarchyEvent, processInputMethodEvent, processKeyEvent, processMouseEvent, processMouseMotionEvent, processMouseWheelEvent, remove, removeComponentListener, removeFocusListener, removeHierarchyBoundsListener, removeHierarchyListener, removeInputMethodListener, removeKeyListener, removeMouseListener, removeMouseMotionListener, removeMouseWheelListener, removeNotify, removePropertyChangeListener, removePropertyChangeListener, repaint, repaint, repaint, repaint, requestFocus, requestFocus, requestFocusInWindow, requestFocusInWindow, reshape, resize, resize, setBackground, setBounds, setBounds, setComponentOrientation, setCursor, setDropTarget, setEnabled, setFocusable, setFocusTraversalKeys, setFocusTraversalKeysEnabled, setFont, setForeground, setIgnoreRepaint, setLocale, setLocation, setLocation, setMaximumSize, setMinimumSize, setName, setPreferredSize, setSize, setSize, setVisible, show, show, size, toString, transferFocus, transferFocusBackward, transferFocusUpCycle, update, validate`

Methods inherited from class `java.lang.Object`

`clone, equals, finalize, getClass, hashCode, notify, notifyAll, toString, wait, wait, wait`

Methods inherited from interface `java.awt.image.ImageObserver`

`imageUpdate`

Methods inherited from interface `java.awt.MenuContainer`

`getFont, postEvent, remove`

Methods inherited from interface `javax.swing.TransferHandler.HasGetTransferHandler`
`getTransferHandler`

Methods inherited from interface `javax.accessibility.Accessible`
`getAccessibleContext`

Constructors

Geo

```
public Geo()
```

The constructor

Methods

paintComponent

```
protected void paintComponent(java.awt.Graphics g)
```

This methods override the method from JPanel to draw own things on the screen

Parameters:

`g` - A Graphics object

main

```
public static void main(java.lang.String[] args)
```

graph
Class GeoGraph

```
java.lang.Object
  |
  +-java.awt.Component
      |
      +-java.awt.Container
          |
          +-javax.swing.JComponent
              |
              +-javax.swing.JPanel
                  |
                  +-graph.GeoGraph
```

All Implemented Interfaces:

WeightedGraph, java.io.Serializable, java.awt.MenuContainer, java.awt.image.ImageObserver, javax.swing.TransferHandler.HasGetTransferHandler, java.io.Serializable, javax.accessibility.Accessible

---

public class **GeoGraph**
extends javax.swing.JPanel
implements javax.accessibility.Accessible, java.io.Serializable, javax.swing.TransferHandler.HasGetTransferHandler, java.awt.image.ImageObserver, java.awt.MenuContainer, java.io.Serializable, WeightedGraph

This class implements a geo graph from given points

Fields inherited from class `javax.swing.JComponent`
`accessibleContext`, `listenerList`, `TOOL_TIP_TEXT_KEY`, `ui`, `UNDEFINED_CONDITION`, `WHEN_ANCESTOR_OF_FOCUSED_COMPONENT`, `WHEN_FOCUSED`, `WHEN_IN_FOCUSED_WINDOW`

Fields inherited from class `java.awt.Component`
`BOTTOM_ALIGNMENT`, `CENTER_ALIGNMENT`, `LEFT_ALIGNMENT`, `RIGHT_ALIGNMENT`, `TOP_ALIGNMENT`

Fields inherited from interface `java.awt.image.ImageObserver`
`ABORT`, `ALLBITS`, `ERROR`, `FRAMEBITS`, `HEIGHT`, `PROPERTIES`, `SOMEBITS`, `WIDTH`

Constructor Summary

`public`	`GeoGraph(Point[] point)`

Method Summary

`void`	`deleteEdge(int i, int j)` Deletes the edge i and j (Will not implemented)
`void`	`drawEdge(java.awt.Graphics gr, int i, int j)` Draws the edge of the between the given points on the screen
`void`	`drawPoints(java.awt.Graphics gr)` Draws the points of a graph on the screen

double	getWeight(int i, int j) Returns the weight of edge i and j
boolean	isDirected() Returns true if the graph is directed, false otherwise
boolean	isEdge(int i, int j) Returns true if i and j is an edge
double	noEdge() Returns the weight not existant edges
void	setWeight(int i, int j, double x) Set the weight x of the edge i and j (Will not implemented)
int	Size() Returns the amount of knots of the graph

Methods inherited from class `javax.swing.JPanel`

`getAccessibleContext, getUI, getUIClassID, paramString, setUI, updateUI`

Methods inherited from class `javax.swing.JComponent`

```
addAncestorListener, addNotify, addVetoableChangeListener, computeVisibleRect,
contains, createToolTip, disable, enable, firePropertyChange, firePropertyChange,
firePropertyChange, fireVetoableChange, getAccessibleContext, getActionForKeyStroke,
getActionMap, getAlignmentX, getAlignmentY, getAncestorListeners, getAutoscrolls,
getBaseline, getBaselineResizeBehavior, getBorder, getBounds, getClientProperty,
getComponentGraphics, getComponentPopupMenu, getConditionForKeyStroke,
getDebugGraphicsOptions, getDefaultLocale, getFontMetrics, getGraphics, getHeight,
getInheritsPopupMenu, getInputMap, getInputMap, getInputVerifier, getInsets,
getInsets, getListeners, getLocation, getMaximumSize, getMinimumSize,
getNextFocusableComponent, getPopupLocation, getPreferredSize,
getRegisteredKeyStrokes, getRootPane, getSize, getToolTipLocation, getToolTipText,
getToolTipText, getTopLevelAncestor, getTransferHandler, getUIClassID,
getVerifyInputWhenFocusTarget, getVetoableChangeListeners, getVisibleRect, getWidth,
getX, getY, grabFocus, isDoubleBuffered, isLightweightComponent, isManagingFocus,
isOpaque, isOptimizedDrawingEnabled, isPaintingForPrint, isPaintingTile,
isRequestFocusEnabled, isValidateRoot, paint, paintBorder, paintChildren,
paintComponent, paintImmediately, paintImmediately, paramString, print, printAll,
printBorder, printChildren, printComponent, processComponentKeyEvent,
processKeyBinding, processKeyEvent, processMouseEvent, processMouseMotionEvent,
putClientProperty, registerKeyboardAction, registerKeyboardAction,
removeAncestorListener, removeNotify, removeVetoableChangeListener, repaint, repaint,
requestDefaultFocus, requestFocus, requestFocus, requestFocusInWindow,
requestFocusInWindow, resetKeyboardActions, reshape, revalidate, scrollRectToVisible,
setActionMap, setAlignmentX, setAlignmentY, setAutoscrolls, setBackground, setBorder,
setComponentPopupMenu, setDebugGraphicsOptions, setDefaultLocale, setDoubleBuffered,
setEnabled, setFocusTraversalKeys, setFont, setForeground, setInheritsPopupMenu,
setInputMap, setInputVerifier, setMaximumSize, setMinimumSize,
setNextFocusableComponent, setOpaque, setPreferredSize, setRequestFocusEnabled,
setToolTipText, setTransferHandler, setUI, setVerifyInputWhenFocusTarget, setVisible,
unregisterKeyboardAction, update, updateUI
```

Methods inherited from class `java.awt.Container` add, add, add, add, add, addContainerListener, addImpl, addNotify, addPropertyChangeListener, addPropertyChangeListener, applyComponentOrientation, areFocusTraversalKeysSet, countComponents, deliverEvent, doLayout, findComponentAt, findComponentAt, getAlignmentX, getAlignmentY, getComponent, getComponentAt, getComponentAt, getComponentCount, getComponents, getComponentZOrder, getContainerListeners, getFocusTraversalKeys, getFocusTraversalPolicy, getInsets, getLayout, getListeners, getMaximumSize, getMinimumSize, getMousePosition, getPreferredSize, insets, invalidate, isAncestorOf, isFocusCycleRoot, isFocusCycleRoot, isFocusTraversalPolicyProvider, isFocusTraversalPolicySet, layout, list, list, locate, minimumSize, paint, paintComponents, paramString, preferredSize, print, printComponents, processContainerEvent, processEvent, remove, remove, removeAll, removeContainerListener, removeNotify, setComponentZOrder, setFocusCycleRoot, setFocusTraversalKeys, setFocusTraversalPolicy, setFocusTraversalPolicyProvider, setFont, setLayout, transferFocusBackward, transferFocusDownCycle, update, validate, validateTree

Methods inherited from class `java.awt.Component` action, add, addComponentListener, addFocusListener, addHierarchyBoundsListener, addHierarchyListener, addInputMethodListener, addKeyListener, addMouseListener, addMouseMotionListener, addMouseWheelListener, addNotify, addPropertyChangeListener, addPropertyChangeListener, applyComponentOrientation, areFocusTraversalKeysSet, bounds, checkImage, checkImage, coalesceEvents, contains, contains, createImage, createImage, createVolatileImage, createVolatileImage, deliverEvent, disable, disableEvents, dispatchEvent, doLayout, enable, enable, enableEvents, enableInputMethods, firePropertyChange, firePropertyChange, firePropertyChange, firePropertyChange, firePropertyChange, firePropertyChange, firePropertyChange, firePropertyChange, firePropertyChange, getAccessibleContext, getAlignmentX, getAlignmentY, getBackground, getBaseline, getBaselineResizeBehavior, getBounds, getBounds, getColorModel, getComponentAt, getComponentAt, getComponentListeners, getComponentOrientation, getCursor, getDropTarget, getFocusCycleRootAncestor, getFocusListeners, getFocusTraversalKeys, getFocusTraversalKeysEnabled, getFont, getFontMetrics, getForeground, getGraphics, getGraphicsConfiguration, getHeight, getHierarchyBoundsListeners, getHierarchyListeners, getIgnoreRepaint, getInputContext, getInputMethodListeners, getInputMethodRequests, getKeyListeners, getListeners, getLocale, getLocation, getLocation, getLocationOnScreen, getMaximumSize, getMinimumSize, getMouseListeners, getMouseMotionListeners, getMousePosition, getMouseWheelListeners, getName, getParent, getPeer, getPreferredSize, getPropertyChangeListeners, getPropertyChangeListeners, getSize, getSize, getToolkit, getTreeLock, getWidth, getX, getY, gotFocus, handleEvent, hasFocus, hide, imageUpdate, inside, invalidate, isBackgroundSet, isCursorSet, isDisplayable, isDoubleBuffered, isEnabled, isFocusable, isFocusCycleRoot, isFocusOwner, isFocusTraversable, isFontSet, isForegroundSet, isLightweight, isMaximumSizeSet, isMinimumSizeSet, isOpaque, isPreferredSizeSet, isShowing, isValid, isVisible, keyDown, keyUp, layout, list, list, list, list, list, locate, location, lostFocus, minimumSize, mouseDown, mouseDrag, mouseEnter, mouseExit, mouseMove, mouseUp, move, nextFocus, paint, paintAll, paramString, postEvent, preferredSize, prepareImage, prepareImage, print, printAll, processComponentEvent, processEvent, processFocusEvent, processHierarchyBoundsEvent, processHierarchyEvent, processInputMethodEvent, processKeyEvent, processMouseEvent, processMouseMotionEvent, processMouseWheelEvent, remove, removeComponentListener, removeFocusListener, removeHierarchyBoundsListener, removeHierarchyListener, removeInputMethodListener, removeKeyListener, removeMouseListener, removeMouseMotionListener, removeMouseWheelListener, removeNotify, removePropertyChangeListener, removePropertyChangeListener, repaint, repaint, repaint, repaint, requestFocus, requestFocus, requestFocusInWindow, requestFocusInWindow, reshape, resize, resize, setBackground, setBounds, setBounds, setComponentOrientation, setCursor, setDropTarget, setEnabled, setFocusable, setFocusTraversalKeys, setFocusTraversalKeysEnabled, setFont, setForeground, setIgnoreRepaint, setLocale, setLocation, setLocation, setMaximumSize, setMinimumSize, setName, setPreferredSize, setSize, setSize, setVisible, show, show, size, toString, transferFocus, transferFocusBackward, transferFocusUpCycle, update, validate

Methods inherited from class java.lang.Object

clone, equals, finalize, getClass, hashCode, notify, notifyAll, toString, wait, wait, wait

Methods inherited from interface java.awt.image.ImageObserver

imageUpdate

Methods inherited from interface java.awt.MenuContainer

getFont, postEvent, remove

Methods inherited from interface `javax.swing.TransferHandler.HasGetTransferHandler`
`getTransferHandler`

Methods inherited from interface `javax.accessibility.Accessible`
`getAccessibleContext`

Methods inherited from interface `graph.WeightedGraph`
`deleteEdge, getWeight, isDirected, isEdge, noEdge, setWeight, Size`

Constructors

GeoGraph

```
public GeoGraph(Point[] point)
```

Methods

Size

```
public int Size()
```

Returns the amount of knots of the graph

Returns:
Amount of the knots

isDirected

```
public boolean isDirected()
```

Returns true if the graph is directed, false otherwise

Returns:
True if the graph is directed, false otherwise

noEdge

```
public double noEdge()
```

Returns the weight not existant edges

Returns:
The weight not existant edges

setWeight

```
public void setWeight(int i,
         int j,
         double x)
```

Set the weight x of the edge i and j (Will not implemented)

(continued from last page)

Parameters:

`i` - First point
`j` - Second point
`x` - The weight of edge

getWeight

```
public double getWeight(int i,
         int j)
```

Returns the weight of edge i and j

Parameters:

`i` - First point
`j` - Second point

Returns:

The weight of the edge

deleteEdge

```
public void deleteEdge(int i,
         int j)
```

Deletes the edge i and j (Will not implemented)

Parameters:

`i` - First point
`j` - Fecond point

isEdge

```
public boolean isEdge(int i,
         int j)
```

Returns true if i and j is an edge

Parameters:

`i` - First point
`j` - Second point

Returns:

True if i and j is an edge

drawPoints

```
public void drawPoints(java.awt.Graphics gr)
```

Draws the points of a graph on the screen

Parameters:

`gr` - The graphics object

drawEdge

```
public void drawEdge(java.awt.Graphics gr,
         int i,
         int j)
```

(continued from last page)

Draws the edge of the between the given points on the screen

Parameters:

`gr` - The graphics object
`i` - First point
`j` - Second point

graph
Class Graph

```
java.lang.Object
  |
  +-graph.Graph
```

All Implemented Interfaces:

WeightedGraph

public final class **Graph**
extends java.lang.Object
implements WeightedGraph

This class implements a graph

Method Summary

`void`	`deleteEdge(int i, int j)` Deletes the edge i and j
`double`	`getWeight(int i, int j)` Returns the weight of edge i and j
`boolean`	`isDirected()` Returns true if the graph is directed, false otherwise
`boolean`	`isEdge(int i, int j)` Returns true if i and j is an edge
`double`	`noEdge()` Returns the weight not existant edges
`void`	`setWeight(int i, int j, double x)` Set the weight x of the edge i and j
`int`	`Size()` Returns the amount of knots of the graph

Methods inherited from class `java.lang.Object`

`clone, equals, finalize, getClass, hashCode, notify, notifyAll, toString, wait, wait, wait`

Methods inherited from interface `graph.WeightedGraph`

`deleteEdge, getWeight, isDirected, isEdge, noEdge, setWeight, Size`

Methods

Size

`public int Size()`

(continued from last page)

Returns the amount of knots of the graph

Returns:
Amount of the knots

isDirected

```
public boolean isDirected()
```

Returns true if the graph is directed, false otherwise

Returns:
True if the graph is directed, false otherwise

noEdge

```
public double noEdge()
```

Returns the weight not existant edges

Returns:
The weight not existant edges

setWeight

```
public void setWeight(int i,
         int j,
         double x)
```

Set the weight x of the edge i and j

Parameters:
`i` - First point
`j` - Second point
`x` - The weight of edge

getWeight

```
public double getWeight(int i,
         int j)
```

Returns the weight of edge i and j

Parameters:
`i` - First point
`j` - Second point

Returns:
The weight of the edge

deleteEdge

```
public void deleteEdge(int i,
         int j)
```

Deletes the edge i and j

Parameters:
`i` - First point

(continued from last page)

`j` - Fecond point

isEdge

```
public boolean isEdge(int i,
        int j)
```

Returns true if i and j is an edge

Parameters:

`i` - First point
`j` - Second point

Returns:

True if i and j is an edge

graph
Class MinimumSpanningTree

```
java.lang.Object
  |
  +-graph.MinimumSpanningTree
```

All Implemented Interfaces:
WeightedGraph

public final class **MinimumSpanningTree**
extends java.lang.Object
implements WeightedGraph

This class implements the calculation of a minimum spanning tree from given graph

Constructor Summary

`public`	`MinimumSpanningTree(WeightedGraph wg)` The constructor

Method Summary

`void`	`computeMinimumSpanningTree()` Computes the minimum spanning tree First the method calculates the distances between all nodes and stores the nodes with minimim distance in array prevNode.
`void`	`deleteEdge(int i, int j)` Deletes the edge i and j (Will not implemented)
`double`	`getDistanceToPrevNode(int currentNode)` Returns the distance (weight) from the passed current node to the the previous node
`int`	`getPrevNode(int currentNode)` Returns the previous node of the passed current node
`double`	`getWeight(int i, int j)` Returns the weight of edge i and j
`boolean`	`isDirected()` Returns true if the graph is directed, false otherwise
`boolean`	`isEdge(int i, int j)` Returns true if i and j is an edge
`double`	`noEdge()` Returns the weight not existant edges
`void`	`setWeight(int i, int j, double x)` Set the weight x of the edge i and j (Will not implemented)
`int`	`Size()` Returns the amount of knots of the graph

Methods inherited from class `java.lang.Object` `clone, equals, finalize, getClass, hashCode, notify, notifyAll, toString, wait, wait, wait`

Methods inherited from interface `graph.WeightedGraph`

`deleteEdge, getWeight, isDirected, isEdge, noEdge, setWeight, Size`

Constructors

MinimumSpanningTree

```
public MinimumSpanningTree(WeightedGraph wg)
```

The constructor

Parameters:
`wg` - A graph

Methods

Size

```
public int Size()
```

Returns the amount of knots of the graph

Returns:
Amount of the knots

isDirected

```
public boolean isDirected()
```

Returns true if the graph is directed, false otherwise

Returns:
True if the graph is directed, false otherwise

noEdge

```
public double noEdge()
```

Returns the weight not existant edges

Returns:
The weight not existant edges

setWeight

```
public void setWeight(int i,
         int j,
         double x)
```

Set the weight x of the edge i and j (Will not implemented)

(continued from last page)

Parameters:

`i` - First point
`j` - Second point
`x` - The weight of edge

getWeight

```
public double getWeight(int i,
         int j)
```

Returns the weight of edge i and j

Parameters:

`i` - First point
`j` - Second point

Returns:

The weight of the edge

deleteEdge

```
public void deleteEdge(int i,
         int j)
```

Deletes the edge i and j (Will not implemented)

Parameters:

`i` - First point
`j` - Fecond point

isEdge

```
public boolean isEdge(int i,
         int j)
```

Returns true if i and j is an edge

Parameters:

`i` - First point
`j` - Second point

Returns:

True if i and j is an edge

getPrevNode

```
public int getPrevNode(int currentNode)
```

Returns the previous node of the passed current node

Parameters:

`currentNode` - The current node

Returns:

The previous node of the passed current node

(continued from last page)

getDistanceToPrevNode

```
public double getDistanceToPrevNode(int currentNode)
```

Returns the distance (weight) from the passed current node to the the previous node

Parameters:

`currentNode` - The current node

Returns:

The distance from passed node to prev node

computeMinimumSpanningTree

```
public void computeMinimumSpanningTree()
```

Computes the minimum spanning tree First the method calculates the distances between all nodes and stores the nodes with minimim distance in array prevNode.

graph
Class Point

```
java.lang.Object
  |
  +-graph.Point
```

public class **Point**
extends java.lang.Object

This class implements an point with two coordinates in a 2D coordination system

Constructor Summary

public	`Point(int x, int y)` The constructor

Method Summary

double	`distanceTo(Point q)` Calculates the distance (weight) from the instance to the given point
int	`getX()` Returns the value of the X coordinate
int	`getY()` Returns the value of the Y coordinate

Methods inherited from class `java.lang.Object`

`clone, equals, finalize, getClass, hashCode, notify, notifyAll, toString, wait, wait, wait`

Constructors

Point

```
public Point(int x,
             int y)
```

The constructor

Parameters:
`x` - Value of the x coordinate
`y` - Value of the y coordinate

Methods

distanceTo

```
public double distanceTo(Point q)
```

Calculates the distance (weight) from the instance to the given point

(continued from last page)

Parameters:
`q` - The second point

Returns:
The distance between the two points

getX

`public int getX()`

Returns the value of the X coordinate

Returns:
The value of the X coordinate

getY

`public int getY()`

Returns the value of the Y coordinate

Returns:
The value of the Y coordinate

graph
Interface WeightedGraph

All Known Implementing Classes:
GeoGraph, Graph, MinimumSpanningTree

public interface **WeightedGraph**
extends

This is an interface of a WeightedGraph

Method Summary

`void`	`deleteEdge(int i, int j)` Deletes the edge i and j
`double`	`getWeight(int i, int j)` Returns the weight of edge i and j
`boolean`	`isDirected()` Returns true if the graph is directed, false otherwise
`boolean`	`isEdge(int i, int j)` Returns true if i and j is an edge
`double`	`noEdge()` Returns the weight not existant edges
`void`	`setWeight(int i, int j, double x)` Set the weight x of the edge i and j
`int`	`Size()` Returns the amount of knots of the graph

Methods

Size

```
public int Size()
```

Returns the amount of knots of the graph

Returns:
Amount of the knots

isDirected

```
public boolean isDirected()
```

Returns true if the graph is directed, false otherwise

Returns:
True if the graph is directed, false otherwise

noEdge

```
public double noEdge()
```

Returns the weight not existant edges

Returns:
The weight not existant edges

setWeight

```
public void setWeight(int i,
         int j,
         double x)
```

Set the weight x of the edge i and j

Parameters:
i - First point
j - Second point
x - The weight of edge

getWeight

```
public double getWeight(int i,
         int j)
```

Returns the weight of edge i and j

Parameters:
i - First point
j - Second point

Returns:
The weight of the edge

deleteEdge

```
public void deleteEdge(int i,
         int j)
```

Deletes the edge i and j

Parameters:
i - First point
j - Fecond point

isEdge

```
public boolean isEdge(int i,
         int j)
```

Returns true if i and j is an edge

Parameters:
i - First point
j - Second point

(continued from last page)

Returns:

True if i and j is an edge