| | [**Overview**](http://docs.google.com/overview-summary.html) | [**Package**](http://docs.google.com/package-summary.html) | **Class** | [**Use**](http://docs.google.com/class-use/Point2D.html) | [**Tree**](http://docs.google.com/package-tree.html) | [**Deprecated**](http://docs.google.com/deprecated-list.html) | [**Index**](http://docs.google.com/index-files/index-1.html) | [**Help**](http://docs.google.com/help-doc.html) | | --- | --- | --- | --- | --- | --- | --- | --- | | | ***Java™ Platform***  ***Standard Ed. 6*** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| [**PREV CLASS**](http://docs.google.com/java/awt/geom/PathIterator.html)   [**NEXT CLASS**](http://docs.google.com/java/awt/geom/Point2D.Double.html) | [**FRAMES**](http://docs.google.com/index.html?java/awt/geom/Point2D.html)    [**NO FRAMES**](http://docs.google.com/Point2D.html)     [**All Classes**](http://docs.google.com/allclasses-noframe.html) |
| SUMMARY: [NESTED](#3znysh7) | FIELD | [CONSTR](#2et92p0) | [METHOD](#tyjcwt) | DETAIL: FIELD | [CONSTR](#1t3h5sf) | [METHOD](#2s8eyo1) |

## **java.awt.geom**

Class Point2D

[java.lang.Object](http://docs.google.com/java/lang/Object.html)  
 **java.awt.geom.Point2D**

**All Implemented Interfaces:** [Cloneable](http://docs.google.com/java/lang/Cloneable.html) **Direct Known Subclasses:** [Point](http://docs.google.com/java/awt/Point.html), [Point2D.Double](http://docs.google.com/java/awt/geom/Point2D.Double.html), [Point2D.Float](http://docs.google.com/java/awt/geom/Point2D.Float.html)

public abstract class **Point2D**extends [Object](http://docs.google.com/java/lang/Object.html)implements [Cloneable](http://docs.google.com/java/lang/Cloneable.html)

The Point2D class defines a point representing a location in (x,y) coordinate space.

This class is only the abstract superclass for all objects that store a 2D coordinate. The actual storage representation of the coordinates is left to the subclass.

**Since:** 1.2

| **Nested Class Summary** | |
| --- | --- |
| static class | [**Point2D.Double**](http://docs.google.com/java/awt/geom/Point2D.Double.html)            The Double class defines a point specified in double precision. |
| static class | [**Point2D.Float**](http://docs.google.com/java/awt/geom/Point2D.Float.html)            The Float class defines a point specified in float precision. |

| **Constructor Summary** | |
| --- | --- |
| protected | [**Point2D**](http://docs.google.com/java/awt/geom/Point2D.html#Point2D())()            This is an abstract class that cannot be instantiated directly. |

| **Method Summary** | |
| --- | --- |
| [Object](http://docs.google.com/java/lang/Object.html) | [**clone**](http://docs.google.com/java/awt/geom/Point2D.html#clone())()            Creates a new object of the same class and with the same contents as this object. |
| double | [**distance**](http://docs.google.com/java/awt/geom/Point2D.html#distance(double,%20double))(double px, double py)            Returns the distance from this Point2D to a specified point. |
| static double | [**distance**](http://docs.google.com/java/awt/geom/Point2D.html#distance(double,%20double,%20double,%20double))(double x1, double y1, double x2, double y2)            Returns the distance between two points. |
| double | [**distance**](http://docs.google.com/java/awt/geom/Point2D.html#distance(java.awt.geom.Point2D))([Point2D](http://docs.google.com/java/awt/geom/Point2D.html) pt)            Returns the distance from this Point2D to a specified Point2D. |
| double | [**distanceSq**](http://docs.google.com/java/awt/geom/Point2D.html#distanceSq(double,%20double))(double px, double py)            Returns the square of the distance from this Point2D to a specified point. |
| static double | [**distanceSq**](http://docs.google.com/java/awt/geom/Point2D.html#distanceSq(double,%20double,%20double,%20double))(double x1, double y1, double x2, double y2)            Returns the square of the distance between two points. |
| double | [**distanceSq**](http://docs.google.com/java/awt/geom/Point2D.html#distanceSq(java.awt.geom.Point2D))([Point2D](http://docs.google.com/java/awt/geom/Point2D.html) pt)            Returns the square of the distance from this Point2D to a specified Point2D. |
| boolean | [**equals**](http://docs.google.com/java/awt/geom/Point2D.html#equals(java.lang.Object))([Object](http://docs.google.com/java/lang/Object.html) obj)            Determines whether or not two points are equal. |
| abstract  double | [**getX**](http://docs.google.com/java/awt/geom/Point2D.html#getX())()            Returns the X coordinate of this Point2D in double precision. |
| abstract  double | [**getY**](http://docs.google.com/java/awt/geom/Point2D.html#getY())()            Returns the Y coordinate of this Point2D in double precision. |
| int | [**hashCode**](http://docs.google.com/java/awt/geom/Point2D.html#hashCode())()            Returns the hashcode for this Point2D. |
| abstract  void | [**setLocation**](http://docs.google.com/java/awt/geom/Point2D.html#setLocation(double,%20double))(double x, double y)            Sets the location of this Point2D to the specified double coordinates. |
| void | [**setLocation**](http://docs.google.com/java/awt/geom/Point2D.html#setLocation(java.awt.geom.Point2D))([Point2D](http://docs.google.com/java/awt/geom/Point2D.html) p)            Sets the location of this Point2D to the same coordinates as the specified Point2D object. |

| **Methods inherited from class java.lang.**[**Object**](http://docs.google.com/java/lang/Object.html) |
| --- |
| [finalize](http://docs.google.com/java/lang/Object.html#finalize()), [getClass](http://docs.google.com/java/lang/Object.html#getClass()), [notify](http://docs.google.com/java/lang/Object.html#notify()), [notifyAll](http://docs.google.com/java/lang/Object.html#notifyAll()), [toString](http://docs.google.com/java/lang/Object.html#toString()), [wait](http://docs.google.com/java/lang/Object.html#wait()), [wait](http://docs.google.com/java/lang/Object.html#wait(long)), [wait](http://docs.google.com/java/lang/Object.html#wait(long,%20int)) |

| **Constructor Detail** |
| --- |

### Point2D

protected **Point2D**()

This is an abstract class that cannot be instantiated directly. Type-specific implementation subclasses are available for instantiation and provide a number of formats for storing the information necessary to satisfy the various accessor methods below.

**Since:** 1.2 **See Also:**[Point2D.Float](http://docs.google.com/java/awt/geom/Point2D.Float.html), [Point2D.Double](http://docs.google.com/java/awt/geom/Point2D.Double.html), [Point](http://docs.google.com/java/awt/Point.html)

| **Method Detail** |
| --- |

### getX

public abstract double **getX**()

Returns the X coordinate of this Point2D in double precision.

**Returns:**the X coordinate of this Point2D.**Since:** 1.2

### getY

public abstract double **getY**()

Returns the Y coordinate of this Point2D in double precision.

**Returns:**the Y coordinate of this Point2D.**Since:** 1.2

### setLocation

public abstract void **setLocation**(double x,  
 double y)

Sets the location of this Point2D to the specified double coordinates.

**Parameters:**x - the new X coordinate of this Point2Dy - the new Y coordinate of this Point2D**Since:** 1.2

### setLocation

public void **setLocation**([Point2D](http://docs.google.com/java/awt/geom/Point2D.html) p)

Sets the location of this Point2D to the same coordinates as the specified Point2D object.

**Parameters:**p - the specified Point2D to which to set this Point2D**Since:** 1.2

### distanceSq

public static double **distanceSq**(double x1,  
 double y1,  
 double x2,  
 double y2)

Returns the square of the distance between two points.

**Parameters:**x1 - the X coordinate of the first specified pointy1 - the Y coordinate of the first specified pointx2 - the X coordinate of the second specified pointy2 - the Y coordinate of the second specified point **Returns:**the square of the distance between the two sets of specified coordinates.**Since:** 1.2

### distance

public static double **distance**(double x1,  
 double y1,  
 double x2,  
 double y2)

Returns the distance between two points.

**Parameters:**x1 - the X coordinate of the first specified pointy1 - the Y coordinate of the first specified pointx2 - the X coordinate of the second specified pointy2 - the Y coordinate of the second specified point **Returns:**the distance between the two sets of specified coordinates.**Since:** 1.2

### distanceSq

public double **distanceSq**(double px,  
 double py)

Returns the square of the distance from this Point2D to a specified point.

**Parameters:**px - the X coordinate of the specified point to be measured against this Point2Dpy - the Y coordinate of the specified point to be measured against this Point2D **Returns:**the square of the distance between this Point2D and the specified point.**Since:** 1.2

### distanceSq

public double **distanceSq**([Point2D](http://docs.google.com/java/awt/geom/Point2D.html) pt)

Returns the square of the distance from this Point2D to a specified Point2D.

**Parameters:**pt - the specified point to be measured against this Point2D **Returns:**the square of the distance between this Point2D to a specified Point2D.**Since:** 1.2

### distance

public double **distance**(double px,  
 double py)

Returns the distance from this Point2D to a specified point.

**Parameters:**px - the X coordinate of the specified point to be measured against this Point2Dpy - the Y coordinate of the specified point to be measured against this Point2D **Returns:**the distance between this Point2D and a specified point.**Since:** 1.2

### distance

public double **distance**([Point2D](http://docs.google.com/java/awt/geom/Point2D.html) pt)

Returns the distance from this Point2D to a specified Point2D.

**Parameters:**pt - the specified point to be measured against this Point2D **Returns:**the distance between this Point2D and the specified Point2D.**Since:** 1.2

### clone

public [Object](http://docs.google.com/java/lang/Object.html) **clone**()

Creates a new object of the same class and with the same contents as this object.

**Overrides:**[clone](http://docs.google.com/java/lang/Object.html#clone()) in class [Object](http://docs.google.com/java/lang/Object.html) **Returns:**a clone of this instance. **Throws:** [OutOfMemoryError](http://docs.google.com/java/lang/OutOfMemoryError.html) - if there is not enough memory.**Since:** 1.2 **See Also:**[Cloneable](http://docs.google.com/java/lang/Cloneable.html)

### hashCode

public int **hashCode**()

Returns the hashcode for this Point2D.

**Overrides:**[hashCode](http://docs.google.com/java/lang/Object.html#hashCode()) in class [Object](http://docs.google.com/java/lang/Object.html) **Returns:**a hash code for this Point2D.**See Also:**[Object.equals(java.lang.Object)](http://docs.google.com/java/lang/Object.html#equals(java.lang.Object)), [Hashtable](http://docs.google.com/java/util/Hashtable.html)

### equals

public boolean **equals**([Object](http://docs.google.com/java/lang/Object.html) obj)

Determines whether or not two points are equal. Two instances of Point2D are equal if the values of their x and y member fields, representing their position in the coordinate space, are the same.

**Overrides:**[equals](http://docs.google.com/java/lang/Object.html#equals(java.lang.Object)) in class [Object](http://docs.google.com/java/lang/Object.html) **Parameters:**obj - an object to be compared with this Point2D **Returns:**true if the object to be compared is an instance of Point2D and has the same values; false otherwise.**Since:** 1.2 **See Also:**[Object.hashCode()](http://docs.google.com/java/lang/Object.html#hashCode()), [Hashtable](http://docs.google.com/java/util/Hashtable.html)

| | [**Overview**](http://docs.google.com/overview-summary.html) | [**Package**](http://docs.google.com/package-summary.html) | **Class** | [**Use**](http://docs.google.com/class-use/Point2D.html) | [**Tree**](http://docs.google.com/package-tree.html) | [**Deprecated**](http://docs.google.com/deprecated-list.html) | [**Index**](http://docs.google.com/index-files/index-1.html) | [**Help**](http://docs.google.com/help-doc.html) | | --- | --- | --- | --- | --- | --- | --- | --- | | | ***Java™ Platform***  ***Standard Ed. 6*** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
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[Submit a bug or feature](http://bugs.sun.com/services/bugreport/index.jsp)

For further API reference and developer documentation, see [Java SE Developer Documentation](http://docs.google.com/webnotes/devdocs-vs-specs.html). That documentation contains more detailed, developer-targeted descriptions, with conceptual overviews, definitions of terms, workarounds, and working code examples.

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