PointF

Added in API level 1 (/guide/topics/manifest/uses-sdk-element#ApiLevels)

Kotlin (/reference/kotlin/android/graphics/PointF) | **Java**

```
public class PointF
extends Object (/reference/java/lang/Object) implements Parcelable (/reference/android/os/Parcelable)
```

java.lang.Object (/reference/java/lang/Object)
↳ android.graphics.PointF

PointF holds two float coordinates

Summary

Inherited constants

From interface **android.os.Parcelable** (/reference/android/os/Parcelable)

`int`	**CONTENTS_FILE_DESCRIPTOR** (/reference/android/os/Parcelable#CONTENTS_FILE_DESCRIPTOR) Descriptor bit used with **describeContents()** (/reference/android/os/Parcelable#describeContents()): indicates that the Parcelable object's flattened representation includes a file descriptor.
`int`	**PARCELABLE_WRITE_RETURN_VALUE** (/reference/android/os/Parcelable#PARCELABLE_WRITE_RETURN_VALUE) Flag for use with **writeToParcel(Parcel, int)** (/reference/android/os/Parcelable#writeToParcel(android.os.Parcel,%20int)): the object being written is a return value, that is the result of a function such as "**Parcelable someFunction()**", "**void someFunction(out Parcelable)**", or "**void someFunction(inout Parcelable)**".

Fields

public static final Creator (/reference/android/os/Parcelable.Creator) **<PointF** (/reference/android/graphics/PointF) **>**	**CREATOR** (/reference/android/graphics/PointF#CREATOR)

`public float`	x (/reference/android/graphics/PointF#x)
`public float`	y (/reference/android/graphics/PointF#y)

Public constructors

PointF (/reference/android/graphics/PointF#PointF())()
PointF (/reference/android/graphics/PointF#PointF(float,%20float))(float x, float y)
PointF (/reference/android/graphics/PointF#PointF(android.graphics.Point))(Point (/reference/android/graphics/Point) p)
PointF (/reference/android/graphics/PointF#PointF(android.graphics.PointF))(PointF (/reference/android/graphics/PointF) p)

Create a new PointF initialized with the values in the specified PointF (which is left unmodified).

Public methods

`int`	describeContents (/reference/android/graphics/PointF#describeContents())() Parcelable interface methods
`final boolean`	equals (/reference/android/graphics/PointF#equals(float,%20float))(float x, float y) Returns true if the point's coordinates equal (x,y)
`boolean`	equals (/reference/android/graphics/PointF#equals(java.lang.Object))(Object (/reference/java/lang/Object) o) Indicates whether some other object is "equal to" this one.
`int`	hashCode (/reference/android/graphics/PointF#hashCode())() Returns a hash code value for the object.
`static float`	length (/reference/android/graphics/PointF#length(float,%20float))(float x, float y) Returns the euclidian distance from (0,0) to (x,y)
`final float`	length (/reference/android/graphics/PointF#length())() Return the euclidian distance from (0,0) to the point
`final void`	negate (/reference/android/graphics/PointF#negate())()
`final void`	offset (/reference/android/graphics/PointF#offset(float,%20float))(float dx,

	`float dy)`
`void`	`readFromParcel` (/reference/android/graphics/PointF#readFromParcel(android.os.Parcel))`(Parcel` (/reference/android/os/Parcel) `in)` Set the point's coordinates from the data stored in the specified parcel.
`final void`	`set` (/reference/android/graphics/PointF#set(android.graphics.PointF))`(PointF` (/reference/android/graphics/PointF) `p)` Set the point's x and y coordinates to the coordinates of p
`final void`	`set` (/reference/android/graphics/PointF#set(float,%20float))`(float x, float y)` Set the point's x and y coordinates
`String` (/reference/java/lang/String)	`toString` (/reference/android/graphics/PointF#toString())`()` Returns a string representation of the object.
`void`	`writeToParcel` (/reference/android/graphics/PointF#writeToParcel(android.os.Parcel,%20int))`(Parcel` (/reference/android/os/Parcel) `out, int flags)` Write this point to the specified parcel.

Inherited methods

From class `java.lang.Object` (/reference/java/lang/Object)

`Object` (/reference/java/lang/Object)	`clone` (/reference/java/lang/Object#clone())`()` Creates and returns a copy of this object.
`boolean`	`equals` (/reference/java/lang/Object#equals(java.lang.Object))`(Object` (/reference/java/lang/Object) `obj)` Indicates whether some other object is "equal to" this one.
`void`	`finalize` (/reference/java/lang/Object#finalize())`()` Called by the garbage collector on an object when garbage collection determines that there are no more references to the object.
`final Class` (/reference/java/lang/Class)`<?>`	`getClass` (/reference/java/lang/Object#getClass())`()` Returns the runtime class of this `Object`.
`int`	`hashCode` (/reference/java/lang/Object#hashCode())`()` Returns a hash code value for the object.

`final void`	`notify` (/reference/java/lang/Object#notify())`()` Wakes up a single thread that is waiting on this object's monitor.
`final void`	`notifyAll` (/reference/java/lang/Object#notifyAll())`()` Wakes up all threads that are waiting on this object's monitor.
`String` (/reference/java/lang/String)	`toString` (/reference/java/lang/Object#toString())`()` Returns a string representation of the object.
`final void`	`wait` (/reference/java/lang/Object#wait(long,%20int))`(long timeout, int nanos)` Causes the current thread to wait until another thread invokes the `notify()` (/reference/java/lang/Object#notify()) method or the `notifyAll()` (/reference/java/lang/Object#notifyAll()) method for this object, or some other thread interrupts the current thread, or a certain amount of real time has elapsed.
`final void`	`wait` (/reference/java/lang/Object#wait(long))`(long timeout)` Causes the current thread to wait until either another thread invokes the `notify()` (/reference/java/lang/Object#notify()) method or the `notifyAll()` (/reference/java/lang/Object#notifyAll()) method for this object, or a specified amount of time has elapsed.
`final void`	`wait` (/reference/java/lang/Object#wait())`()` Causes the current thread to wait until another thread invokes the `notify()` (/reference/java/lang/Object#notify()) method or the `notifyAll()` (/reference/java/lang/Object#notifyAll()) method for this object.

From interface `android.os.Parcelable` (/reference/android/os/Parcelable)

`abstract int`	`describeContents` (/reference/android/os/Parcelable#describeContents())`()` Describe the kinds of special objects contained in this Parcelable instance's marshaled representation.
`abstract void`	`writeToParcel` (/reference/android/os/Parcelable#writeToParcel(android.os.Parcel,%20int))`(Parcel` (/reference/android/os/Parcel) `dest, int flags)` Flatten this object in to a Parcel.

Fields

CREATOR

Added in API level 13 (/guide/topics/manifest/uses-sdk-element#ApiLevels)

```
public static final Creator (/reference/android/os/Parcelable.Creator)<PointF (/reference/android/graphics/
```

x

Added in API level 1 (/guide/topics/manifest/uses-sdk-element#ApiLevels)

```
public float x
```

y

Added in API level 1 (/guide/topics/manifest/uses-sdk-element#ApiLevels)

```
public float y
```

Public constructors

PointF

Added in API level 1 (/guide/topics/manifest/uses-sdk-element#ApiLevels)

```
public PointF ()
```

PointF

Added in API level 1 (/guide/topics/manifest/uses-sdk-element#ApiLevels)

```
public PointF (float x,
               float y)
```

Parameters

x	**float**
y	**float**

PointF

Added in API level 1 (/guide/topics/manifest/uses-sdk-element#ApiLevels)

```
public PointF (Point (/reference/android/graphics/Point) p)
```

Parameters

p	**`Point`**: This value must never be **`null`**.

PointF

Added in Android R (/preview)

```
public PointF (PointF (/reference/android/graphics/PointF) p)
```

Create a new PointF initialized with the values in the specified PointF (which is left unmodified).

Parameters

p	**`PointF`**: The point whose values are copied into the new point. This value must never be **`null`**.

Public methods

describeContents

Added in API level 13 (/guide/topics/manifest/uses-sdk-element#ApiLevels)

```
public int describeContents ()
```

Parcelable interface methods

Returns

`int`	a bitmask indicating the set of special object types marshaled by this Parcelable object instance. Value is either **`0`** or **`CONTENTS_FILE_DESCRIPTOR`** (/reference/android/os/Parcelable#CONTENTS_FILE_DESCRIPTOR)

equals

Added in API level 1 (/guide/topics/manifest/uses-sdk-element#ApiLevels)

```
public final boolean equals (float x,
                float y)
```

Returns true if the point's coordinates equal (x,y)

Parameters

`x`	`float`
`y`	`float`

Returns

`boolean`

equals

Added in API level 1 (/guide/topics/manifest/uses-sdk-element#ApiLevels)

```
public boolean equals (Object (/reference/java/lang/Object) o)
```

Indicates whether some other object is "equal to" this one.

The `equals` method implements an equivalence relation on non-null object references:

- It is *reflexive*: for any non-null reference value `x`, `x.equals(x)` should return `true`.
- It is *symmetric*: for any non-null reference values `x` and `y`, `x.equals(y)` should return `true` if and only if `y.equals(x)` returns `true`.
- It is *transitive*: for any non-null reference values `x`, `y`, and `z`, if `x.equals(y)` returns `true` and `y.equals(z)` returns `true`, then `x.equals(z)` should return `true`.
- It is *consistent*: for any non-null reference values `x` and `y`, multiple invocations of `x.equals(y)` consistently return `true` or consistently return `false`, provided no information used in `equals` comparisons on the objects is modified.
- For any non-null reference value `x`, `x.equals(null)` should return `false`.

The `equals` method for class `Object` implements the most discriminating possible equivalence relation on objects; that is, for any non-null reference values `x` and `y`, this method returns `true` if and only if `x` and

y refer to the same object (`x == y` has the value `true`).

Note that it is generally necessary to override the `hashCode` method whenever this method is overridden, so as to maintain the general contract for the `hashCode` method, which states that equal objects must have equal hash codes.

Parameters

`o`	`Object`: the reference object with which to compare.

Returns

`boolean`	`true` if this object is the same as the obj argument; `false` otherwise.

hashCode

Added in API level 1 (/guide/topics/manifest/uses-sdk-element#ApiLevels)

```
public int hashCode ()
```

Returns a hash code value for the object. This method is supported for the benefit of hash tables such as those provided by `HashMap` (/reference/java/util/HashMap).

The general contract of `hashCode` is:

- Whenever it is invoked on the same object more than once during an execution of a Java application, the `hashCode` method must consistently return the same integer, provided no information used in `equals` comparisons on the object is modified. This integer need not remain consistent from one execution of an application to another execution of the same application.
- If two objects are equal according to the `equals(Object)` method, then calling the `hashCode` method on each of the two objects must produce the same integer result.
- It is *not* required that if two objects are unequal according to the `equals(java.lang.Object)` (/reference/java/lang/Object#equals(java.lang.Object)) method, then calling the `hashCode` method on each of the two objects must produce distinct integer results. However, the programmer should be aware that producing distinct integer results for unequal objects may improve the performance of hash tables.

As much as is reasonably practical, the hashCode method defined by class `Object` does return distinct integers for distinct objects. (This is typically implemented by converting the internal address of the

object into an integer, but this implementation technique is not required by the Java™ programming language.)

Returns

`int`	a hash code value for this object.

length

Added in API level 1 (/guide/topics/manifest/uses-sdk-element#ApiLevels)

```
public static float length (float x,
                float y)
```

Returns the euclidian distance from (0,0) to (x,y)

Parameters

`x`	`float`
`y`	`float`

Returns

`float`

length

Added in API level 1 (/guide/topics/manifest/uses-sdk-element#ApiLevels)

```
public final float length ()
```

Return the euclidian distance from (0,0) to the point

Returns

`float`

negate

Added in API level 1 (/guide/topics/manifest/uses-sdk-element#ApiLevels)

```
public final void negate ()
```

offset

Added in API level 1 (/guide/topics/manifest/uses-sdk-element#ApiLevels)

```
public final void offset (float dx,
                float dy)
```

Parameters

dx	**float**
dy	**float**

readFromParcel

Added in API level 13 (/guide/topics/manifest/uses-sdk-element#ApiLevels)

```
public void readFromParcel (Parcel (/reference/android/os/Parcel) in)
```

Set the point's coordinates from the data stored in the specified parcel. To write a point to a parcel, call writeToParcel().

Parameters

in	**Parcel**: The parcel to read the point's coordinates from This value must never be **null**.

set

Added in API level 1 (/guide/topics/manifest/uses-sdk-element#ApiLevels)

```
public final void set (PointF (/reference/android/graphics/PointF) p)
```

Set the point's x and y coordinates to the coordinates of p

Parameters

p	**PointF**: This value must never be **null**.

set

Added in API level 1 (/guide/topics/manifest/uses-sdk-element#ApiLevels)

```
public final void set (float x,
                float y)
```

Set the point's x and y coordinates

Parameters

x	**float**
y	**float**

toString

Added in API level 1 (/guide/topics/manifest/uses-sdk-element#ApiLevels)

public String (/reference/java/lang/String) toString ()

Returns a string representation of the object. In general, the **toString** method returns a string that "textually represents" this object. The result should be a concise but informative representation that is easy for a person to read. It is recommended that all subclasses override this method.

The **toString** method for class **Object** returns a string consisting of the name of the class of which the object is an instance, the at-sign character `@', and the unsigned hexadecimal representation of the hash code of the object. In other words, this method returns a string equal to the value of:

```
getClass().getName() + '@' + Integer.toHexString(hashCode())
```

Returns

`String` (/reference/java/lang/String)	a string representation of the object.

writeToParcel

Added in API level 13 (/guide/topics/manifest/uses-sdk-element#ApiLevels)

```
public void writeToParcel (Parcel (/reference/android/os/Parcel) out,
                int flags)
```

Write this point to the specified parcel. To restore a point from a parcel, use readFromParcel()

Parameters

`out`	`Parcel`: The parcel to write the point's coordinates into
`flags`	`int`: Additional flags about how the object should be written. May be 0 or `Parcelable.PARCELABLE_WRITE_RETURN_VALUE` (/reference/android/os/Parcelable#PARCELABLE_WRITE_RETURN_VALUE). Value is either `0` or a combination of `Parcelable.PARCELABLE_WRITE_RETURN_VALUE` (/reference/android/os/Parcelable#PARCELABLE_WRITE_RETURN_VALUE), and android.os.Parcelable.PARCELABLE_ELIDE_DUPLICATES