public final class

Summary: Nested Classes | Constants | Inherited Constants | Fields | Methods | Inherited Methods | [Expand All]

**Added in API level 9**

# InputDevice

extends Object
implements Parcelable

java.lang.Object
↳ android.view.InputDevice

## Class Overview

Describes the capabilities of a particular input device.

Each input device may support multiple classes of input. For example, a multi-function keyboard may compose the capabilities of a standard keyboard together with a track pad mouse or other pointing device.

Some input devices present multiple distinguishable sources of input. Applications can query the framework about the characteristics of each distinct source.

As a further wrinkle, different kinds of input sources uses different coordinate systems to describe motion events. Refer to the comments on the input source constants for the appropriate interpretation.

## Summary

**Nested Classes**

| | |
|---|---|
| class InputDevice.MotionRange | Provides information about the range of values for a particular `MotionEvent` axis. |

**Constants**

| | |
|---|---|
| int KEYBOARD_TYPE_ALPHABETIC | The keyboard supports a complement of alphabetic keys. |
| int KEYBOARD_TYPE_NONE | There is no keyboard. |
| int KEYBOARD_TYPE_NON_ALPHABETIC | The keyboard is not fully alphabetic. |
| int MOTION_RANGE_ORIENTATION | *This constant was deprecated in API level 12. Use `AXIS_ORIENTATION`* |

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| | |
|---|---|
| int MOTION_RANGE_PRESSURE | *This constant was deprecated in API level 12. Use AXIS_PRESSURE instead.* |
| int MOTION_RANGE_SIZE | *This constant was deprecated in API level 12. Use AXIS_SIZE instead.* |
| int MOTION_RANGE_TOOL_MAJOR | *This constant was deprecated in API level 12. Use AXIS_TOOL_MAJOR instead.* |
| int MOTION_RANGE_TOOL_MINOR | *This constant was deprecated in API level 12. Use AXIS_TOOL_MINOR instead.* |
| int MOTION_RANGE_TOUCH_MAJOR | *This constant was deprecated in API level 12. Use AXIS_TOUCH_MAJOR instead.* |
| int MOTION_RANGE_TOUCH_MINOR | *This constant was deprecated in API level 12. Use AXIS_TOUCH_MINOR instead.* |
| int MOTION_RANGE_X | *This constant was deprecated in API level 12. Use AXIS_X instead.* |
| int MOTION_RANGE_Y | *This constant was deprecated in API level 12. Use AXIS_Y instead.* |
| int SOURCE_ANY | A special input source constant that is used when filtering input devices to match devices that provide any type of input source. |
| int SOURCE_CLASS_BUTTON | The input source has buttons or keys. |
| int SOURCE_CLASS_JOYSTICK | The input source is a joystick. |
| int SOURCE_CLASS_MASK | A mask for input source classes. |
| int SOURCE_CLASS_NONE | The input source has no class. |
| int SOURCE_CLASS_POINTER | The input source is a pointing device associated with a display. |

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int SOURCE_CLASS_TRACKBALL
The input source is a trackball navigation device.

int SOURCE_DPAD
The input source is a DPad.

int SOURCE_GAMEPAD
The input source is a game pad.

int SOURCE_JOYSTICK
The input source is a joystick.

int SOURCE_KEYBOARD
The input source is a keyboard.

int SOURCE_MOUSE
The input source is a mouse pointing device.

int SOURCE_STYLUS
The input source is a stylus pointing device.

int SOURCE_TOUCHPAD
The input source is a touch pad or digitizer tablet that is not associated with a display (unlike SOURCE_TOUCHSCREEN).

int SOURCE_TOUCHSCREEN
The input source is a touch screen pointing device.

int SOURCE_TOUCH_NAVIGATION
The input source is a touch device whose motions should be interpreted as navigation events.

int SOURCE_TRACKBALL
The input source is a trackball.

int SOURCE_UNKNOWN
The input source is unknown.

**Inherited Constants** [Expand]

From interface android.os.Parcelable

**Fields**

public static final Creator<InputDevice> CREATOR

**Public Methods**

int describeContents()
Describe the kinds of special objects contained in this Parcelable's marshalled representation.

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| | |
|---|---|
| String | getControllerNumber () Gets the controller number for a given input device. |
| | getDescriptor () Gets the input device descriptor, which is a stable identifier for an input device. |
| static InputDevice | getDevice (int id) Gets information about the input device with the specified id. |
| static int[] | getDeviceIds () Gets the ids of all input devices in the system. |
| int | getId () Gets the input device id. |
| KeyCharacterMap | getKeyCharacterMap () Gets the key character map associated with this input device. |
| int | getKeyboardType () Gets the keyboard type. |
| InputDevice.MotionRange | getMotionRange (int axis, int source) Gets information about the range of values for a particular `MotionEvent` axis used by a particular source on the device. |
| | getMotionRange (int axis) Gets information about the range of values for a particular `MotionEvent` axis. |
| List<InputDevice.MotionRange> | getMotionRanges () Gets the ranges for all axes supported by the device. |
| String | getName () Gets the name of this input device. |
| int | getProductId () Gets the product id for the given device, if available. |
| int | getSources () Gets the input sources supported by this input device as a combined bitfield. |

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getVendorId ()
r the given
device, if available.

getVibrator ()
Vibrator
Gets the vibrator service associated with the device, if there is one.

hasKeys (int... keys)
boolean[]
Gets whether the device is capable of producing the list of keycodes.

isVirtual ()
boolean
Returns true if the device is a virtual one, rather than a real one, such as the virtual keyboard (see VIRTUAL_KEYBOARD).

toString ()
String
Returns a string containing a concise, human-readable description of this object.

writeToParcel (Parcel out, int flags)
void
Flatten this object in to a Parcel.

**Inherited Methods** [Expand]

- From class java.lang.Object
- From interface android.os.Parcelable

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## Constants

public static final int
**KEYBOARD_TYPE_ALPHABETIC** Added in API level 9

The keyboard supports a complement of alphabetic keys.

Constant Value: 2 (0x00000002)

public static final int **KEYBOARD_TYPE_NONE** Added in API level 9

Constant Value: 0 (0x00000000)

public static final int

### KEYBOARD_TYPE_NON_ALPHABETIC

Added in API level 9

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eric keypad or an assortment of buttons that are not mapped as alphabetic keys suitable for text input.

Constant Value: 1 (0x00000001)

public static final int **MOTION_RANGE_ORIENTATION**

Added in API level 9

**This constant was deprecated in API level 12.**
Use `AXIS_ORIENTATION` (/reference/android/view/MotionEvent.html#AXIS_ORIENTATION) instead.

Constant for retrieving the range of values for `AXIS_ORIENTATION` (/reference/android/view/MotionEvent.html#AXIS_ORIENTATION).

**See Also**
- `getMotionRange(int)`

Constant Value: 8 (0x00000008)

public static final int **MOTION_RANGE_PRESSURE**

Added in API level 9

**This constant was deprecated in API level 12.**
Use `AXIS_PRESSURE` (/reference/android/view/MotionEvent.html#AXIS_PRESSURE) instead.

Constant for retrieving the range of values for `AXIS_PRESSURE` (/reference/android/view/MotionEvent.html#AXIS_PRESSURE).

**See Also**
- `getMotionRange(int)`

Constant Value: 2 (0x00000002)

public static final int **MOTION_RANGE_SIZE**

Added in API level 9

**This constant was deprecated in API level 12.**
Use `AXIS_SIZE` (/reference/android/view/MotionEvent.html#AXIS_SIZE) instead.

Constant for retrieving the range of values for `AXIS_SIZE` (/reference/android/view/MotionEvent.html#AXIS_SIZE).

**See Also**
- `getMotionRange(int)`

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Constant Value: 3 (0x00000003)

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**MOTION_RANGE_TOOL_MAJOR** Added in API level 9

This constant was deprecated in API level 12.
Use `AXIS_TOOL_MAJOR` (/reference/android/view/MotionEvent.html#AXIS_TOOL_MAJOR) instead.

Constant for retrieving the range of values for `AXIS_TOOL_MAJOR` (/reference/android/view/MotionEvent.html#AXIS_TOOL_MAJOR).

**See Also**

`getMotionRange(int)`

Constant Value: 6 (0x00000006)

**MOTION_RANGE_TOOL_MINOR** Added in API level 9

This constant was deprecated in API level 12.
Use `AXIS_TOOL_MINOR` (/reference/android/view/MotionEvent.html#AXIS_TOOL_MINOR) instead.

Constant for retrieving the range of values for `AXIS_TOOL_MINOR` (/reference/android/view/MotionEvent.html#AXIS_TOOL_MINOR).

**See Also**

`getMotionRange(int)`

Constant Value: 7 (0x00000007)

**MOTION_RANGE_TOUCH_MAJOR** Added in API level 9

This constant was deprecated in API level 12.
Use `AXIS_TOUCH_MAJOR` (/reference/android/view/MotionEvent.html#AXIS_TOUCH_MAJOR) instead.

Constant for retrieving the range of values for `AXIS_TOUCH_MAJOR` (/reference/android/view/MotionEvent.html#AXIS_TOUCH_MAJOR).

**See Also**

`getMotionRange(int)`

Constant Value: 4 (0x00000004)

## Classes

public static final int

Android APIs API level 19 Added in API level 9

**This constant was deprecated in API level 12.**
Use `AXIS_TOUCH_MINOR (/reference/android/view/MotionEvent.html#AXIS_TOUCH_MINOR)` instead.

Constant for retrieving the range of values for `AXIS_TOUCH_MINOR (/reference/android/view/MotionEvent.html#AXIS_TOUCH_MINOR)`.

**See Also**
- `getMotionRange(int)`

Constant Value: 5 (0x00000005)

public static final int **MOTION_RANGE_X** Added in API level 9

**This constant was deprecated in API level 12.**
Use `AXIS_X (/reference/android/view/MotionEvent.html#AXIS_X)` instead.

Constant for retrieving the range of values for `AXIS_X (/reference/android/view/MotionEvent.html#AXIS_X)`.

**See Also**
- `getMotionRange(int)`

Constant Value: 0 (0x00000000)

public static final int **MOTION_RANGE_Y** Added in API level 9

**This constant was deprecated in API level 12.**
Use `AXIS_Y (/reference/android/view/MotionEvent.html#AXIS_Y)` instead.

Constant for retrieving the range of values for `AXIS_Y (/reference/android/view/MotionEvent.html#AXIS_Y)`.

**See Also**
- `getMotionRange(int)`

Constant Value: 1 (0x00000001)

public static final int **SOURCE_ANY** Added in API level 9

A special input source constant that is used when filtering input devices to match devices that provide any type of input source.

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- AbsSavedState
- ActionMode
- ActionProvider
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Constant Value: -256 (0xffffff00)

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public static final int **SOURCE_CLASS_BUTTON** Added in API level 9

The input source has buttons or keys. Examples: `SOURCE_KEYBOARD` (/reference/android/view/InputDevice.html#SOURCE_KEYBOARD), `SOURCE_DPAD` (/reference/android/view/InputDevice.html#SOURCE_DPAD). A `KeyEvent` (/reference/android/view/KeyEvent.html) should be interpreted as a button or key press. Use `getKeyCharacterMap()` (/reference/android/view/InputDevice.html#getKeyCharacterMap()) to query the device's button and key mappings.

Constant Value: 1 (0x00000001)

public static final int **SOURCE_CLASS_JOYSTICK** Added in API level 12

The input source is a joystick. A `MotionEvent` (/reference/android/view/MotionEvent.html) should be interpreted as absolute joystick movements. Use `getMotionRange(int)` (/reference/android/view/InputDevice.html#getMotionRange(int)) to query the range of positions.

Constant Value: 16 (0x00000010)

public static final int **SOURCE_CLASS_MASK** Added in API level 9

A mask for input source classes. Each distinct input source constant has one or more input source class bits set to specify the desired interpretation for its input events.

Constant Value: 255 (0x000000ff)

public static final int **SOURCE_CLASS_NONE** Added in API level 18

The input source has no class. It is up to the application to determine how to handle the device based on the device type.

Constant Value: 0 (0x00000000)

public static final int **SOURCE_CLASS_POINTER** Added in API level 9

a display. Examples: `SOURCE_TOUCHSCREEN` (/reference/android/view/InputDevice.html#SOURCE_TOUCHSCREEN), `SOURCE_MOUSE` (/reference/android/view/InputDevice.html#SOURCE_MOUSE). A

MotionEvent (/reference/android/view/MotionEvent.html) should be

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ccording to the
ointer down/up
n the selection

getMotionRange(int)
(/reference/android/view/InputDevice.html#getMotionRange(int)) to
permit
e may be

android.telephony.cdma
android.telephony.gsm
android.test
android.test.mock
android.test.suitebuilder
android.text
android.text.format
android.text.method
android.text.style
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ViewTreeObserver.OnWindowAttachListener
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Constant Value: 2 (0x00000002)

public static final int **SOURCE_CLASS_POSITION** Added in API level 9

t associated
SOURCE_CLASS_POINTER (/reference/android
onEvent
(/reference/android/view/MotionEvent.html) should be interpreted as
absolute coordinates in device specific surface units. Use
getMotionRange(int) (/reference/android
/view/InputDevice.html#getMotionRange(int)) to query the range of
positions.

Constant Value: 8 (0x00000008)

public static final int **SOURCE_CLASS_TRACKBALL** Added in API level 9

The input source is a trackball navigation device. Examples:
SOURCE_TRACKBALL (/reference/android
/view/InputDevice.html#SOURCE_TRACKBALL). A MotionEvent
(/reference/android/view/MotionEvent.html) should be interpreted as
relative movements in device-specific units used for navigation
purposes. Pointer down/up indicates when the selection button is
pressed/released. Use getMotionRange(int) (/reference/android
/view/InputDevice.html#getMotionRange(int)) to query the range of
motion.

Constant Value: 4 (0x00000004)

public static final int **SOURCE_DPAD** Added in API level 9

The input source is a DPAD.

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**See Also**

SOURCE_CLASS_BUTTON

Constant Value: 513 (0x00000201)

public static final int **SOURCE_GAMEPAD** Added in API level 12

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SOURCE_JOYSTICK (/reference/android/view/InputDevice.html#SOURCE_JOYSTICK).

**See Also**

SOURCE_CLASS_BUTTON

Constant Value: 1025 (0x00000401)

public static final int **SOURCE_JOYSTICK** Added in API level 12

The input source is a joystick. (It may also be a SOURCE_GAMEPAD (/reference/android/view/InputDevice.html#SOURCE_GAMEPAD)).

**See Also**

SOURCE_CLASS_JOYSTICK

Constant Value: 16777232 (0x01000010)

public static final int **SOURCE_KEYBOARD** Added in API level 9

The input source is a keyboard. This source indicates pretty much anything that has buttons. Use getKeyboardType() (/reference/android/view/InputDevice.html#getKeyboardType()) to determine whether the keyboard has alphabetic keys and can be used to enter text.

**See Also**

SOURCE_CLASS_BUTTON

Constant Value: 257 (0x00000101)

public static final int **SOURCE_MOUSE** Added in API level 9

The input source is a mouse pointing device. This code is also used for other mouse-like pointing devices such as trackpads and trackballs.

**See Also**

SOURCE_CLASS_POINTER

Constant Value: 8194 (0x00002002)

public static final int **SOURCE_STYLUS** Added in API level 14

The input source is a stylus pointing device.

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Note that this bit merely indicates that an input device is capable of

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a given touch

e returned by

getToolType(int) (/reference/android

/view/MotionEvent.html#getToolType(int)) for each individual pointer.

A single touch event may multiple pointers with different tool types, such as an event that has one pointer with tool type

TOOL_TYPE_FINGER (/reference/android

/view/MotionEvent.html#TOOL_TYPE_FINGER) and another pointer with

tool type TOOL_TYPE_STYLUS (/reference/android

/view/MotionEvent.html#TOOL_TYPE_STYLUS). So it is important to examine the tool type of each pointer, regardless of the source

reported by getSource() (/reference/android

/view/MotionEvent.html#getSource()).

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android.util
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SOURCE_CLASS_POINTER

Constant Value: 16386 (0x00004002)

public static final int **SOURCE_TOUCHPAD** Added in API level 9

The input source is a touch pad or digitizer tablet that is not associated with a display (unlike SOURCE_TOUCHSCREEN (/reference/android/view/InputDevice.html#SOURCE_TOUCHSCREEN)).

**See Also**

SOURCE_CLASS_POSITION

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Constant Value: 1048584 (0x00100008)

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public static final int **SOURCE_TOUCHSCREEN** Added in API level 9

The input source is a touch screen pointing device.

**See Also**

SOURCE_CLASS_POINTER

Constant Value: 4098 (0x00001002)

public static final int **SOURCE_TOUCH_NAVIGATION** Added in API level 18

The input source is a touch device whose motions should be interpreted as navigation events. For example, an upward swipe should be as an upward focus traversal in the same manner as pressing up on a D-Pad would be. Swipes to the left, right and down should be treated in a similar manner.

**See Also**

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Constant Value: 2097152 (0x00200000)

public static final int **SOURCE_TRACKBALL** Added in API level 9

The input source is a trackball.

**See Also**

SOURCE_CLASS_TRACKBALL

Constant Value: 65540 (0x00010004)

public static final int **SOURCE_UNKNOWN** Added in API level 9

The input source is unknown.

## Fields

public static final Creator<InputDevice> **CREATOR** Added in API level 9

## Public Methods

public int **describeContents** () Added in API level 9

Describe the kinds of special objects contained in this Parcelable's marshalled representation.

**Returns**

a bitmask indicating the set of special object types marshalled by the Parcelable.

public int **getControllerNumber** () Added in API level 19

The controller number for a given input device.

Each gamepad or joystick is given a unique, positive controller number when initially configured by the system. This number may change due to events such as device disconnects / reconnects or user initiated reassignment. Any change in number will trigger an event that can be observed by registering an `InputManager.InputDeviceListener` (/reference/android

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/hardware/input/InputManager.InputDeviceListener.html).

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s will be assigned a controller number of 0.

**Returns**

The controller number of the device.

public String **getDescriptor** () Added in API level 16

Gets the input device descriptor, which is a stable identifier for an input device.

An input device descriptor uniquely identifies an input device. Its value is intended to be persistent across system restarts, and should not change even if the input device is disconnected, reconnected or reconfigured at any time.

It is possible for there to be multiple `InputDevice` (/reference/android/view/InputDevice.html) instances that have the same input device descriptor. This might happen in situations where a single human input device registers multiple `InputDevice` (/reference/android/view/InputDevice.html) instances (HID collections) that describe separate features of the device, such as a keyboard that also has a trackpad. Alternately, it may be that the input devices are simply indistinguishable, such as two keyboards made by the same manufacturer.

The input device descriptor returned by `getDescriptor()` (/reference/android/view/InputDevice.html#getDescriptor()) should only be used when an application needs to remember settings associated with a particular input device. For all other purposes when referring to a logical `InputDevice` (/reference/android/view/InputDevice.html) instance at runtime use the id returned by `getId()` (/reference/android/view/InputDevice.html#getId()).

**Returns**

The input device descriptor.

public static InputDevice **getDevice** (int id) Added in API level 9

Gets information about the input device with the specified id.

*id* The device id.

**Returns**

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android.telephony.gsm
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android.test.suitebuilder
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The input device or null if not found.

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public static int[] **getDeviceIds** () Added in API level 9

Gets the ids of all input devices in the system.

**Returns**

The input device ids.

public int **getId** () Added in API level 9

Gets the input device id.

Each input device receives a unique id when it is first configured by the system. The input device id may change when the system is restarted or if the input device is disconnected, reconnected or reconfigured at any time. If you require a stable identifier for a input device across system restarts, use `getDescriptor()` (/reference/android/view/InputDevice.html#getDescriptor()).

**Returns**

The input device id.

public KeyCharacterMap **getKeyCharacterMap** () Added in API level 9

Gets the key character map associated with this input device.

**Returns**

The key character map.

public int **getKeyboardType** () Added in API level 9

Gets the keyboard type.

**Returns**

The keyboard type.

public InputDevice.MotionRange **getMotionRange** (int axis, int source) Added in API level 12

Gets information about the range of values for a particular [MotionEvent](/reference/android/view/MotionEvent.html) axis used by particular sources on the device. If the device supports multiple sources, the same axis may have different meanings for each source.

**Parameters**

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*source* The source for which to return information.

**Returns**

The range of values, or null if the requested axis is not supported by the device.

**See Also**

AXIS_X
AXIS_Y

public InputDevice.MotionRange **getMotionRange** (int axis) Added in API level 9

Gets information about the range of values for a particular [MotionEvent](/reference/android/view/MotionEvent.html) axis. If the device supports multiple sources, the same axis may have different meanings for each source. Returns information about the first axis found for any source. To obtain information about the axis for a specific source, use [getMotionRange(int, int)](/reference/android/view/InputDevice.html#getMotionRange(int, int)).

**Parameters**

*axis* The axis constant.

**Returns**

The range of values, or null if the requested axis is not supported by the device.

**See Also**

AXIS_X
AXIS_Y

public List<InputDevice.MotionRange> **getMotionRanges** () Added in API level 12

Gets the ranges for all axes supported by the device.

**Returns**

The motion ranges for the device.

**See Also**

public String **getName** () Added in API level 9

Gets the name of this input device.

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The input device name.

public int **getProductId** () Added in API level 19

Gets the product id for the given device, if available.

A product id uniquely identifies which product within the address space of a given vendor, identified by the device's vendor id. A value of 0 will be assigned where a product id is not available.

**Returns**

The product id of a given device

public int **getSources** () Added in API level 9

Gets the input sources supported by this input device as a combined bitfield.

**Returns**

The supported input sources.

public int **getVendorId** () Added in API level 19

Gets the vendor id for the given device, if available.

A vendor id uniquely identifies the company who manufactured the device. A value of 0 will be assigned where a vendor id is not available.

**Returns**

The vendor id of a given device

public Vibrator **getVibrator** () Added in API level 16

Gets the vibrator service associated with the device, if there is one. Even if the device does not have a vibrator, the result is never null. Use `hasVibrator()` (/reference/android/os/Vibrator.html#hasVibrator()) to determine whether a vibrator is present. Note that the vibrator associated with the device may be different from the system vibrator. To obtain an instance of the system vibrator, call `getSystemService(String)` (/reference/android/content/Context.html#getSystemService(java.lang.String)) with `VIBRATOR_SERVICE` (/reference/android/content

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/Context.html#VIBRATOR_SERVICE) as argument.

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The vibrator service associated with the device, never null.

public boolean **hasKeys** (int... keys) Added in API level 19

Gets whether the device is capable of producing the list of keycodes.

**Parameters**

keys The list of android keycodes to check for.

**Returns**

whether the device is capable of generating the keycode given by the corresponding value at the same index in the keys array.

public boolean **isVirtual** () Added in API level 16

Returns true if the device is a virtual input device rather than a real one, such as the virtual keyboard (see VIRTUAL_KEYBOARD (/reference/android/view/KeyCharacterMap.html#VIRTUAL_KEYBOARD)).

Virtual input devices are provided to implement system-level functionality and should not be seen or configured by users.

**Returns**

True if the device is virtual.

**See Also**

VIRTUAL_KEYBOARD

## Classes



public String **toString** () Added in API level 9

Returns a string containing a concise, human-readable description of this object. Subclasses are encouraged to override this method and provide an implementation that takes into account the object's type and data. The default implementation is equivalent to the following expression:

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

See Writing a useful toString method (/reference/java/lang/Object.html#writing_toString) if you intend implementing your own toString() method.

**Returns**

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public void **writeToParcel** (Parcel out, int flags) Added in API level 9

Flatten this object in to a Parcel.

**Parameters**

*out* The Parcel in which the object should be written.

*flags* Additional flags about how the object should be written. May be 0 or `PARCELABLE_WRITE_RETURN_VALUE`.

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