Canvas

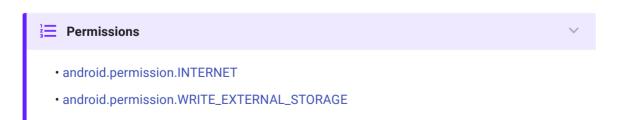| Category	Requires	Version
Drawing and Animation	API 19, Android 4.4 - 4.4.4 KitKat	13

Overview

A two-dimensional touch-sensitive rectangular panel on which drawing can be done and sprites can be moved.

The `BackgroundColor` , `PaintColor` , `BackgroundImage` , `Width` , and `Height` of the Canvas can be set in either the Designer or in the Blocks Editor. The `Width` and `Height` are measured in pixels and must be positive.

Any location on the Canvas can be specified as a pair of (X, Y) values, where

- X is the number of pixels away from the left edge of the Canvas
- Y is the number of pixels away from the top edge of the Canvas

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There are events to tell when and where a Canvas has been touched or a `Sprite` (`ImageSprite` or `Ball`) has been dragged. There are also methods for drawing points, lines, and circles.

> ≔ **Permissions**   ⌄
>
> - android.permission.INTERNET
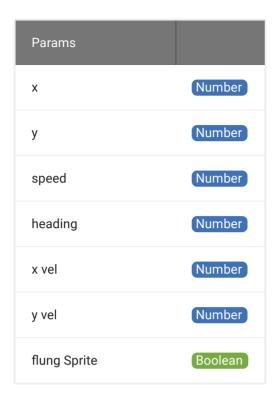> - android.permission.WRITE_EXTERNAL_STORAGE

Events

Dragged

When the user does a drag from one point (prevX, prevY) toanother (x, y). The pair (startX, startY) indicates where theuser first touched the screen, and "draggedAnySprite" indicates whether asprite is being dragged.

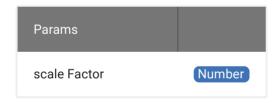| Params	
start X	Number
start Y	Number
prev X	Number
prev Y	Number
current X	Number
current Y	Number
dragged Any Sprite	Boolean

Flung

When a fling gesture (quick swipe) is made on the canvas: providesthe (x,y) position of the start of the fling, relative to the upperleft of the canvas. Also provides the speed (pixels per millisecond) and heading(0-360 degrees) of the fling, as well as the x velocity and y velocitycomponents of the fling's vector. The value "flungSprite" is true if a spritewas located near the the starting point of the fling gesture.

Params	
x	Number
y	Number
speed	Number
heading	Number
x vel	Number
y vel	Number
flung Sprite	Boolean

Scaled

This event is invoked when two-finger pinches. ScaleFactor is the ratio of the average distance between two-fingers from current and previous scale event.

Params	
scale Factor	Number

Touch Down

When the user begins touching the canvas (places finger on canvas andleaves it there): provides the (x,y) position of the touch, relativeto the upper left of the canvas

Params	
x	Number
y	Number

Touch Up

When the user stops touching the canvas (lifts finger after aTouchDown event): provides the (x,y) position of the touch, relativeto the upper left of the canvas

Params	
x	Number
y	Number

Touched

When the user touches the canvas and then immediately lifts finger: providesthe (x,y) position of the touch, relative to the upper left of the canvas. TouchedAnySpriteis true if the same touch also touched a sprite, and false otherwise.

Params	
x	Number
y	Number
touched Any Sprite	Boolean

Methods

Clear

Clears anything drawn on this Canvas but not any background color or image.
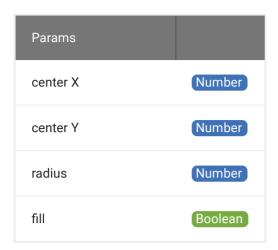
Draw Arc

Draw an arc on Canvas, by drawing an arc from a specified oval (specified by left, top, right & bottom). Start angle is 0 when heading to the right, and increase when rotate clockwise. When useCenter is true, a sector will be drawed instead of an arc. When fill is true, a filled arc (or sector) will be drawed instead of just an outline.

Params	
left	Number
top	Number
right	Number
bottom	Number
start Angle	Number
sweep Angle	Number
use Center	Boolean
fill	Boolean

Draw Circle

Draws a circle (filled in) with the given radius centered at the given coordinates on the canvas

Params	
center X	Number
center Y	Number
radius	Number
fill	Boolean

Draw Line

Draws a line between the given coordinates on the canvas.

Params	
x1	Number
y1	Number
x2	Number
y2	Number

Draw Point

Draws a point at the given coordinates on the canvas.

Params	
x	Number
y	Number

Draw Polygon

Creates a polygon with with specified number of sides from a radius.

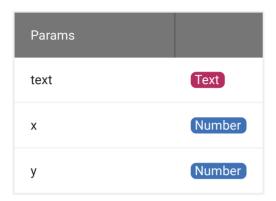| Params	
center X	Number
center Y	Number
num Sides	Number
poly Radius	Number
corner Radius	Number
rotation	Number
fill	Boolean

Draw Shape

Draws a shape on the canvas. pointList should be a list contains sub-lists with two number which represents a coordinate. The first point and last point does not need to be the same. e.g. ((x1 y1) (x2 y2) (x3 y3)) When fill is true, the shape will be filled.
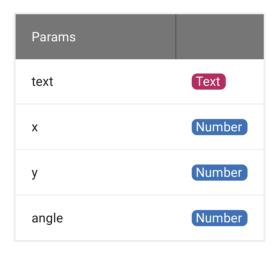
Params	
point List	List
fill	Boolean

Draw Text

Draws the specified text relative to the specified coordinates using the values of the FontSize and TextAlignment properties.

Params	
text	Text
x	Number
y	Number

Draw Text At Angle

Draws the specified text starting at the specified coordinates at the specified angle using the values of the FontSize and TextAlignment properties.

Params	
text	Text
x	Number
y	Number
angle	Number

Get Background Pixel Color

Returns: *Number*

Gets the color of the specified point. This includes the background and any drawn points, lines, or circles but not sprites.

Params	
x	Number
y	Number

Get Pixel Color

Returns: *Number*

Gets the color of the specified point.

Params	
x	Number
y	Number

Save

Returns: *Text*

Saves a picture of this Canvas to the device's external storage. If an error occurs, the Screen's ErrorOccurred event will be called.

Save As

Returns: *Text*

Saves a picture of this Canvas to the device's external storage in the file named fileName. fileName must end with one of .jpg, .jpeg, or .png, which determines the file type.

Params	
file Name	Text

Set Background Pixel Color

Sets the color of the specified point. This differs from DrawPoint by having an argument for color.

Params	
x	Number
y	Number
color	Number

Properties

Background Color

Color Default: #FFFFFFFF — Read Write - Designer Blocks

The color of the canvas background.

Background Image

Text — Read Write - Designer Blocks

The name of a file containing the background image for the canvas

Extend Moves Outside Canvas

Boolean Default: False — Read Write - Designer Blocks

Determines whether moves can extend beyond the canvas borders. Default is false. This should normally be false, and the property is provided for backwards compatibility.

Font Bold

`Boolean` `Default: False` — `Write` - `Designer`

Font Italic

`Boolean` `Default: False` — `Write` - `Designer`

Font Size

`Number` `Default: 14.0` — `Read` `Write` - `Designer` `Blocks`

The font size of text drawn on the canvas.

Font Typeface

`Number` `Default: 0` — `Write` - `Designer`

Font Typeface Import

Available as Advanced Property

`Text` — `Write` - `Designer` `Blocks`

Set a custom font.

Height

`Number` — `Read` `Write` - `Blocks`

Set the canvas heightThe height can only be set to >0 or -1 (automatic) or -2 (fill parent) orto a value less then or equal to LENGTH_PERCENT_TAG (which is laterconverted to pixels.

Height Percent

`Number` — `Write` - `Blocks`

Specifies the component's vertical height as a percentageof the height of its parent Component.

Line Width

`Number` `Default: 2.0` — `Read` `Write` - `Designer` `Blocks`

The width of lines drawn on the canvas.

Paint Color

`Color` `Default: #000000FF` ▪ — `Read` `Write` - `Designer` `Blocks`

The color in which lines are drawn

Text Alignment

`Number` `Default: 1` — `Read` `Write` - `Designer` `Blocks`

Determines the alignment of the text drawn by DrawText() or DrawAngle() with respect to the point specified by that command: point at the left of the text, point at the center of the text, or point at the right of the text.

Visible

`Boolean` `Default: True` — `Read` `Write` - `Designer` `Blocks`

Returns true iff the component is visible.

Width

`Number` — `Read` `Write` - `Blocks`

Set the canvas widthThe width can only be set to >0 or -1 (automatic) or -2 (fill parent)or to a value less then or equal to LENGTH_PERCENT_TAG (which is laterconverted to pixels.

Width Percent

Number — Write - Blocks

Specifies the component's horizontal width as a percentageof the Width of its parent Component.