HTML Canvas

The HTML5 canvas API is used to draw raster graphics in the browser using JavaScript.

With the canvas, one can illustrate, make photo compositions, and create animation dynamically on the Web.

Canvas was first introduced by Apple for the Mac OS X Dashboard and later implemented in Safari and Chrome.

Today, the canvas is supported by all major web browsers.
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Setup

The HTML canvas is a rectangular area on a web page, specified by the `<canvas>` element.

Typically, an id is specified along with width and height attributes to define the size of the canvas.

By default, the `<canvas>` element is transparent, with no border and no content.

One HTML page can include multiple canvas elements.
All drawing to the canvas must be done with JavaScript.

Begin by referencing the canvas with a DOM query.

Then, use its `getContext()` method to specify a two-dimensional drawing.

The canvas is a Cartesian grid whose upper left corner has coordinate (0, 0).
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Methods

Canvas only supports two primitive shapes: rectangle and ellipse.

All other shapes must be created by combining one or more paths.

There are a variety of path methods in the canvas API which make it possible to compose shapes.

These include methods for drawing line, arc, text, color, and image.
HTML Canvas Animation

Since JavaScript is used to control the canvas, it’s straightforward to use it for animation as well.

The basic steps are as follows:
1. Clear the canvas
2. Save the canvas state
3. Draw animated shapes
4. Restore the canvas state

The `requestAnimationFrame()` method is well suited for canvas animation.
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Considerations

The canvas API opens up all sorts of possibilities for raster graphics in the web browser.

Note, however, that pixel data drawn to the canvas are not DOM elements.

That means regions of the canvas cannot be interacted with in the same way regions of an SVG image can.

Keep in mind how these technologies intersect as well as how they diverge.
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