



# CalcTron 3000: A JavaScript Calculator

**F**rom Dustin Hoffman to Russell Crowe,<sup>1</sup> calculators have played an important role in the everyday lives of humans ever since the Babylonians first put stones on some lines in the sand (or was it the Chinese, as some pundits claim—I'm no historian, so I'll leave that debate to more qualified folks). Why not bring the idea into the modern age and build one in JavaScript for ourselves?

Along with the simple add, subtract, multiply, and divide functions, our calculator (dubbed CalcTron) will include some other common functions, such as percentages, square roots, and, since we're programmers, base conversions. Of course, those won't be quite enough to make a geek happy, so we'll make this a fully extensible calculator, to which we can add functions at will. We'll also do our best to make the interface a bit fancy, using some styles and cool effects. We can then see if adding enough features later allows it to gain sentience and take over the world, but one thing at a time!

## Calculator Project Requirements and Goals

A calculator isn't fundamentally a complex project, as long as you don't try to include every bit of functionality possible. At the same time, it should be a good project to get some exposure to JavaScript concepts and make you think a bit. Let's throw some requirements out there that will help to fulfill that goal:

- CalcTron should present a relatively flexible interface that can morph as we add new features. Specifically, we'll allow CalcTron to be switched into a number of modes, each with its own defined layout (within some predefined constraints). Let's allow these layouts to be specified in JSON.
- A calculator isn't fundamentally the most visually exciting project, so to alleviate our boredom, we'll put some special effects and visual flair into it where possible. We'll do this with a library to save ourselves as much effort as possible.
- CalcTron should be extensible, allowing us to plug in new functions as required.

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1. In the movie *Rain Man*, Dustin Hoffman played Raymond Babbitt, who was an autistic man with some startling mathematical abilities. In the movie *A Beautiful Mind*, Russell Crowe played John Nash, a brilliant mathematician.

That's a fairly short list, I admit. However, once we get into the code of things, you'll see that a project that seems minimal on the outside isn't necessarily that simplistic on the inside.

## A Preview of CalcTron

We'll begin by having a look at CalcTron, and said look commences with Figure 4-1.



**Figure 4-1.** *CalcTron in Standard mode*

CalcTron provides two modes of operation out of the box: Standard mode, as shown in Figure 4-1, and BaseCalc (base calculations) mode, as shown in Figure 4-2.