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# 3d Earth with Rotating Animation with CSS

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## 3d Earth with rotating animation built with pure CSS – covered tutorial, demonstration, and code.

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A friend of mine suggested me to do some animated planet stuff with CSS. I gave it a go and ended up with a kinda-cool animated planet Earth. I had this one in my local playground as yet, but today I’m going to share it online right here.

Before going any further, I want to tell you that I have made it look like 3d-earth and used CSS3 keyframes for the rotating animation. You must see [the demo](https://w3bits.com/labs/css-earth/) before we jump into the code mess.

## The Concept of CSS Earth

This idea demands a realtime rotating sphere, which is not possible in CSS. But a lookalike is doable, all you need is to throw some CSS ingredients into a div and there you go.

For animation, I’ve used a small CSS keyframes trick that makes it appear lively and rotating.

### HTML

It’s just a single div, trust me.

<div id="earth"></div>

Will play with :before and :after of #earth in the next section to add some detailing.

### CSS

Now comes the important part, the styling.

I added some width and height to #earth, and then gave it a background-image similar to flat earth map. Here’s the [small preview](https://lh5.googleusercontent.com/-kkxEx-SkRaY/VBLF4BV2lZI/AAAAAAAAKao/FnKsv7402_c/s500/earthmap.jpg) of our flat earth map I found on the internet.

Our #earth is relatively positioned. To make it appear spherical, I added a 50% of border-radius.

### Explanation

Detailing of our earth as a 3d object has been done in 3 layers which is covered below step-by-step with some CSS code snippets.

1. Setting up the baseline and some box-shadow play with the #earth itself (mainly for the shadow on the right)
2. #earth {
3. /\* [1] Allow it to contain the absolutely positions pseudo-elements (later-on) \*/
4. position: relative;
5. /\* [2] Set-up the dimensions and spacing \*/
6. width: 300px;
7. height: 300px;
8. margin: 3em auto;
9. /\* [3] Prepare the animation effects \*/
10. transition: transform 200ms linear;
11. animation: rotate 4s linear infinite; /\* This is going to be defined in the next step \*/
12. /\* [4] Tweak the appearance, and give it a nice background i.e. the world map \*/
13. color: #000;
14. border-radius: 50%;
15. background: url(path/to/world-map-image) 0 0 repeat / 630px;
16. box-shadow: inset 20px 0 80px 6px rgba(0, 0, 0, 1);
17. /\* [5] Position things in a 3d space \*/
18. transform-style: preserve-3d;

}

1. Again applying box-shadow in #earth:before for the shadow on left
2. #earth:after {
3. /\* [1] Break the flow to show this as an overlay \*/
4. position: absolute;
5. top: 0;
6. left: 0;
7. /\* [2] Make it take all the space available in the box (ahem... globe!) \*/
8. width: 100%;
9. height: 100%;
10. /\* [3] Make sure this has no generated content, as we want this just for fancy purposes \*/
11. content: '';
12. /\* [4] Give it some shape and shadow \*/
13. border-radius: 50%;
14. box-shadow: -80px 15px 80px 10px rgba(0,0,0,.9) inset;

}

1. Finally applying some CSS3 radial-gradient to the background of #earth:after to give our earth a spherical finish
2. #earth:before {
3. /\* [1] Again, break the flow to show this as an overlay \*/
4. position: absolute;
5. top: 0;
6. left: 0;
7. /\* [2] Again, give it all the available space \*/
8. width: 100%;
9. height: 100%;
10. /\* [3] Duh. \*/
11. content: '';
12. /\* [4] Add some shape and overlay effect to it \*/
13. opacity: .2;
14. border-radius: 50%;
15. background: radial-gradient(circle at 100px 100px, #fff, #000);

}

The :before and :after of #earth are absolute positioned, and carry same height, width and border-radius as the main element.

I’ve fixed the background-size of our earth to 630 pixels to fit the image perfectly inside our #earth. I come up with this number after a number of adjustments.

#### The Animation

Now comes the animation part. Our earth map image is very wide. Our #earth element is of 300x300px, hence it shows earth map under 300x300px only.

Now if we linearly move our background from 0 to 630px of horizontal position, we can give #earth a rotating animation effect. I’ve implemented this with the help of CSS keyframes.

@keyframes rotate {

0% {background-position: 0 0;}

100% {background-position: 630px 0;}

}

If you put everything together, preview below the results you’ll be getting.

[Demo the CSS-only Earth](https://w3bits.com/labs/css-earth/)

On the demo page, I’m using a background image for the body to make the environment look like space, just a few stars repeating over-and-over-again as you can see in the background.

I wanted to add curved and blurred edges to our earth but that’s not doable with the technique I followed – as far as I know.

Hope you enjoyed this article. Let me know your thoughts on this. Cheers!

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In background-position: 500px 0px; replace 500px with 610px, which is the background-size

body {

background-color: #111;

}

#earth {

width: 300px;

height: 300px;

background: url(http://www.noirextreme.com/digital/Earth-Color4096.jpg);

border-radius: 50%;

background-size: 610px;

box-shadow: inset 8px 36px 80px 36px rgb(0, 0, 0), inset -6px 0 12px 4px rgba(255, 255, 255, 0.3);

animation-name: rotate;

animation-duration: 12s;

animation-iteration-count: infinite;

animation-timing-function: linear;

-webkit-animation-name: rotate;

-webkit-animation-duration: 12s;

-webkit-animation-iteration-count: infinite;

-webkit-animation-timing-function: linear;

}

@keyframes rotate {

from {

background-position: 0px 0px;

}

to {

background-position: 610px 0px;

}

}

@-webkit-keyframes rotate {

from {

background-position: 0px 0px;

}

to {

background-position: 610px 0px;

}

}

<div id="earth"></div>

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upvoted, it was a simple issue of having missed one of the position items, if you downvoted please say why so the answerer can improve the answer. – [Mauro](https://stackoverflow.com/users/2208/mauro) [Jan 5 '15 at 14:41](https://stackoverflow.com/questions/27781634/rotating-globe-in-css#comment43973411_27781670)

* it works as expected – [InferOn](https://stackoverflow.com/users/248703/inferon) [Jan 5 '15 at 14:41](https://stackoverflow.com/questions/27781634/rotating-globe-in-css#comment43973419_27781670)
* 1

Yep, now really works. Sorry. – [nicael](https://stackoverflow.com/users/2963652/nicael) [Jan 5 '15 at 14:42](https://stackoverflow.com/questions/27781634/rotating-globe-in-css#comment43973441_27781670)

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Ok and now expect the flood of upvotes :) – [nicael](https://stackoverflow.com/users/2963652/nicael) [Jan 5 '15 at](https://stackoverflow.com/questions/27781634/rotating-globe-in-css#comment43973490_27781670)