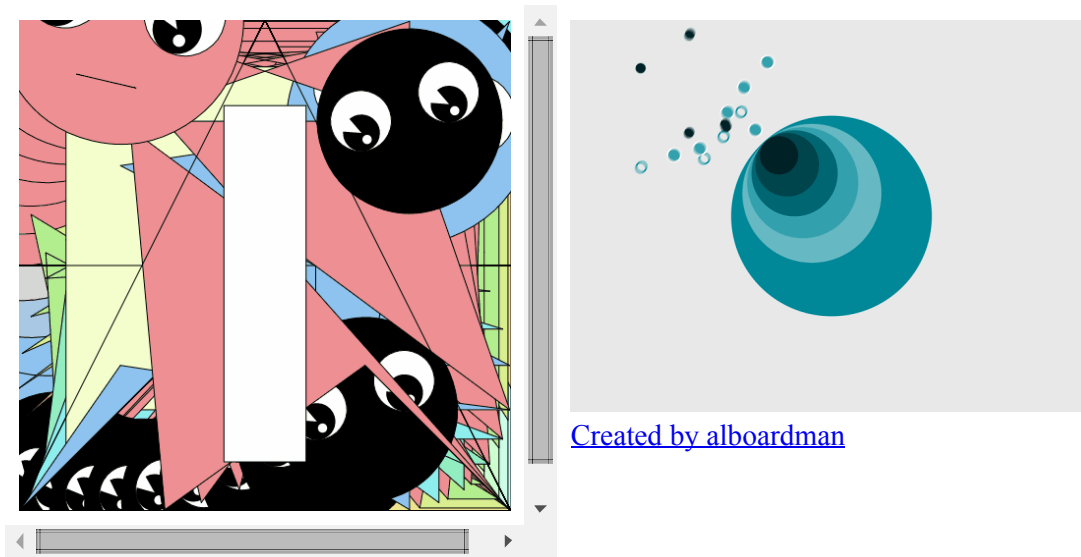# History of HTML / JavaScript animation

## PRINCIPLES OF ANIMATION

In order to perform an animation, we need to:

1. Clear the content of the canvas: this can be done using the `ctx.clearRect(0, 0, canvasWidth, canvasHeight)` method;

2. Draw some shapes: use any of the drawing methods we have seen so far;

3. Move the shapes: modify the position and/or orientation, size, color, of the shapes;

4. Repeat (go to step 1).

These are the basics steps for animating objects in a canvas. The order of the steps can be changed (i.e. you can move the shapes before drawing them), but, the principle is the same: clear-draw-move-repeat. Step 1 could be avoided if you redraw the whole canvas content during step 2.

## BEFORE HTML5

Even before HTML5 and the introduction of the canvas element, people have always been creating HTML games. They used CSS backgrounds inside `<div>` elements, and used to change the CSS `top,` `left,` `width` and `height` properties of the divs to animate graphic images on the screen.

During the late 1990s and early 2000s, JavaScript became more and more popular. The community created a first 'umbrella term' describing a collection of technologies used together to create interactive and animated Web sites - DHTML (Dynamic HTML). For example, check the games developed at this time by Brent Silby (they all use DHTML).

For animation, the `setInterval(function,` `ms)` and `setTimeOut(function, ms)` methods were the only solutions. Both methods take a function as the first parameter, and a number of milliseconds as the second parameter.

The only difference is that the code provided to`setInterval` will run every n milliseconds whereas the code in `setTimeout` will run only once after n milliseconds (meaning that we will have to repeat a call to `setTimeOut` at step 4 above).

## AFTER HTML5

The methods  described above are now completed by a new one that comes with multiple advantages: the `requestAnimationFrame` API.

We will compare the old methods with the new one, and implement the same  example with each of them to highlight the differences.

Before HTML5, how did people write games?

○ They used Flash, as it was not possible to draw graphics or perform an animation using Web standards such as HTML, CSS and JavaScript.

○ They used JavaScript for animating + the top, left, etc. CSS properties of HTML elements in the page. This set of tricks was called 'DHTML'.

○ It was not possible.