

Frames

9 min

In p5.js, multiple frames can easily be shown in a sequence using the `draw()` loop. By default, any code in the `draw()` function will repeat over and over again, many times per second. This function's endless repetition is ideal for making an animation because we can write code in the `draw()` function that slightly alters our image each time it runs.

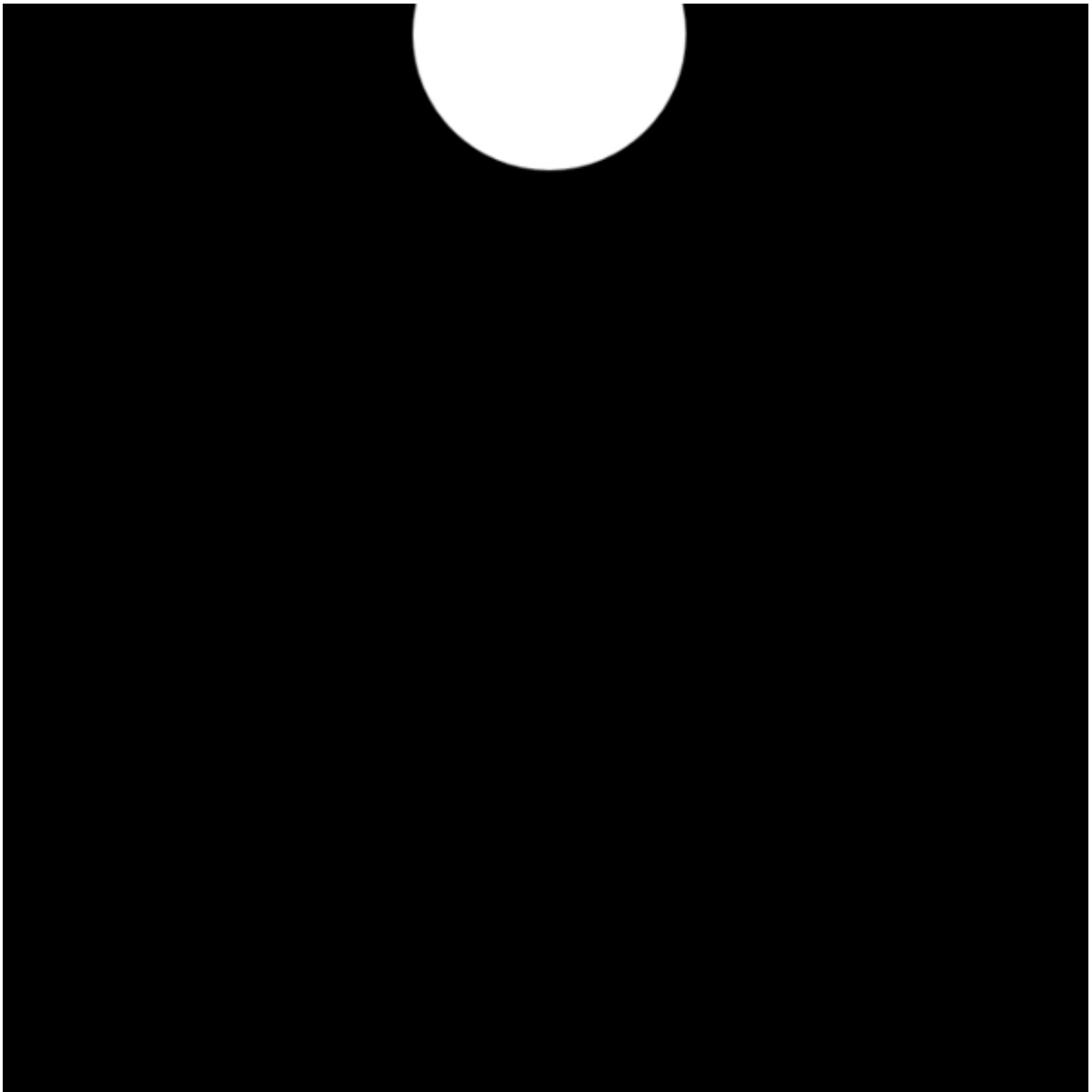
As a quick recap, the `draw()` function is similar to an endless for-loop that repeatedly runs the code block inside from top to bottom. The `draw()` function runs after the `setup()` function that runs only once at the program's start.

```
function setup(){
  // Code inside setup() function runs once when you start the
  program
}
function draw(){
  // Code inside draw() function loops infinitely after setup() is
  run
}
```

It is helpful to think of an animation as a series of frames, like a film roll. By showing the series of frames fast enough, our brain is tricked into thinking the sequential images are an animation. The example below shows a series of frames shown like a film roll.



To create a smooth animation with code, p5.js runs the draw loop at 60 frames per second. Below is an example of how each frame is overriding the previous one to create this animation.



With p5.js, one frame is the equivalent to one loop through the `draw()` function. To keep track of the number of frames rendered, p5.js provides a built-in variable called `frameCount`. This variable counts the number of frames that have been displayed since the program started. The `frameCount` variable updates with every frame. The first time the `draw()` loop runs, the value of the `frameCount` is one; the second time the `draw()` loop runs, the `frameCount` is two; and so forth.

Instructions

Below the line of code that sets fill color to white, draw an ellipse using the `frameCount` variable as the x position. Let the y position be `height / 2`. Set the

1.

width and height to be 300 pixels. See how the ellipse moves from the left to right because the `frameCount` value increases with every frame.

Hint

Remember that the syntax for drawing an ellipse is as follows:

```
ellipse(x, y, ellipseWidth, ellipseHeight);
```

Make sure to draw the ellipse below the line that sets the fill color to white like below:

```
fill(255);
```

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In the last line within the `draw()` function, draw text using the `text()` [function](#). Set the first parameter to be the `frameCount` variable. Set the second parameter, which is the x location, to be `width / 2`. Set the third parameter, which is the y location, to be `height / 2`.

Notice how p5.js keeps track of the number of frames run since the program begins.

Hint

You can draw text to the p5.js canvas using the `text()` function with the following syntax:

```
text(word, x, y);
```

where `word` represents the text to be drawn and `x` and `y` respectively refer to the x and y position of the text.

sketch.js

```
function setup() {  
  createCanvas(windowWidth, windowHeight);  
}  
  
function draw() {  
  background(0);  
  
  //Draw moving ellipse  
  fill(255);  
  // TODO: draw an ellipse with frameCount as the x position  
  ellipse(frameCount, height/2, 300, 300);  
}
```

```
//Draw text  
fill(120);  
textSize(72);  
textAlign(CENTER);  
  
// TODO: create text with frameCount displayed in sketch  
text(frameCount, width/2, height/2);  
}
```

