Animation & Interaction

CF1

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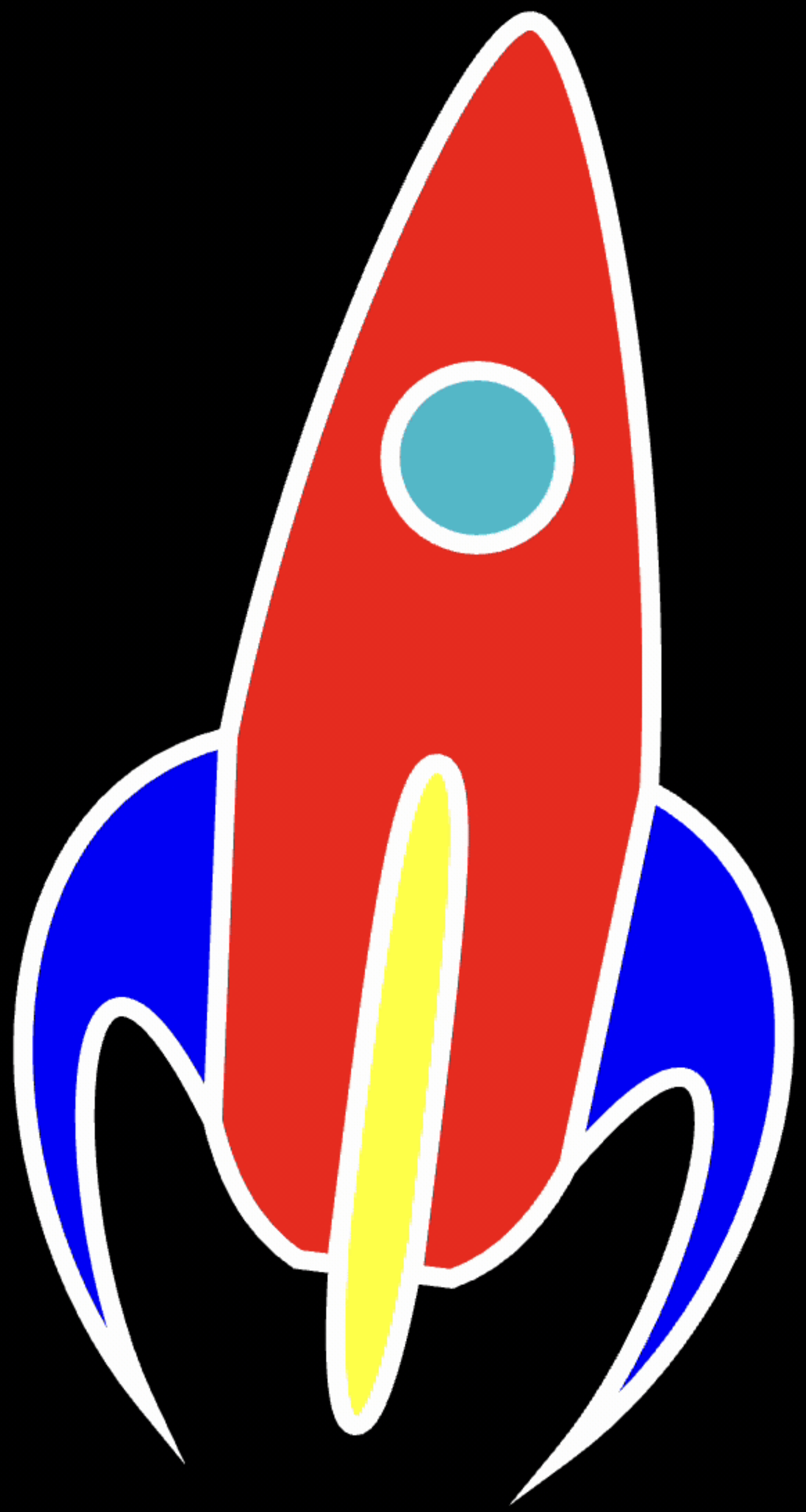
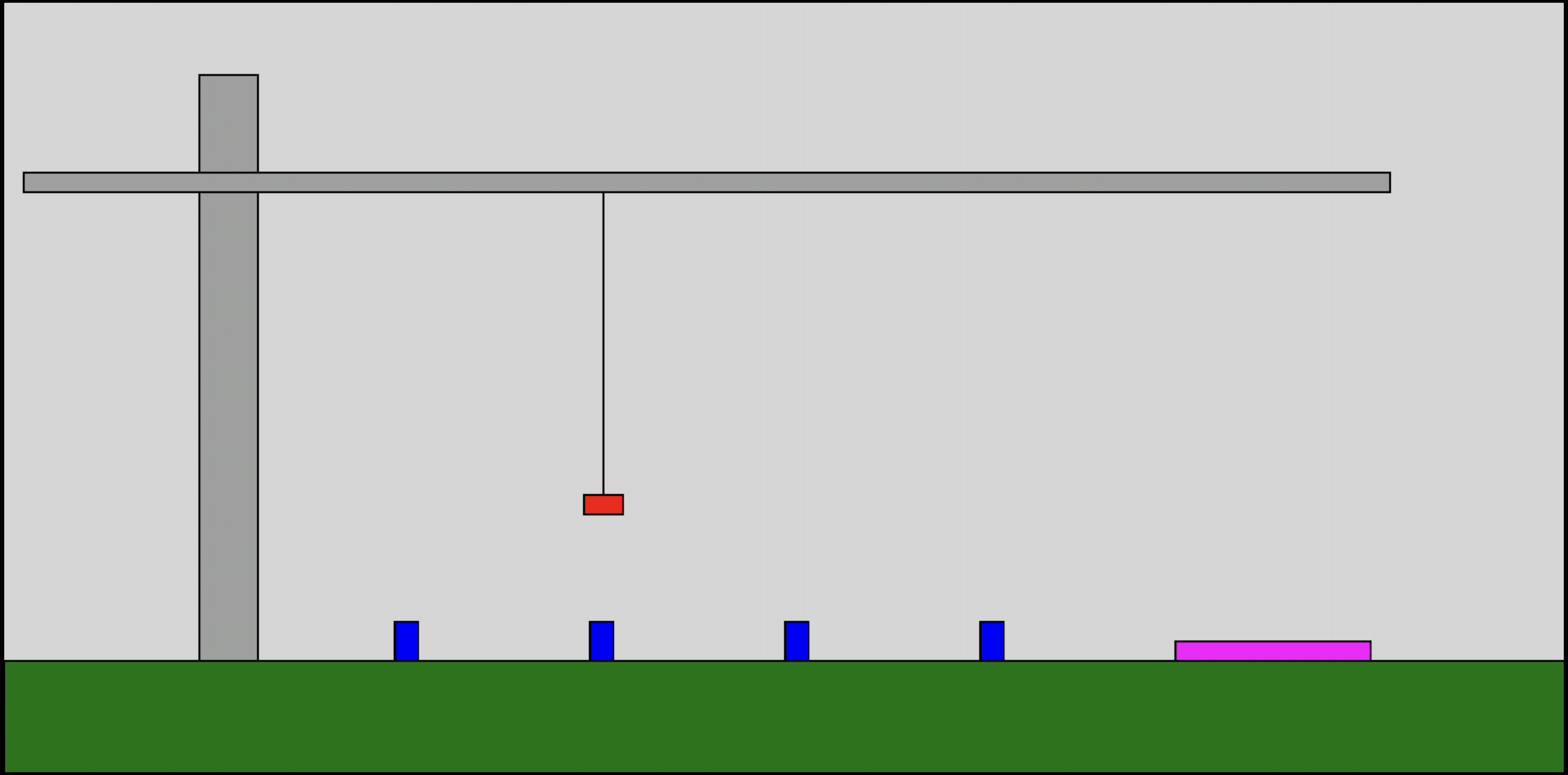


This is a complicated interactive & animated rocket. We haven’t covered all the things needed to code this yet, but over the course of the front half of the course we will get there.

https://editor.p5js.org/johnsogg/sketches/O-hdnAMNJ

We’re going to code this weird little game live in class



https://editor.p5js.org/johnsogg/sketches/J9VHe2u_a

Setup & Draw Functions

Once and Forever

- The Processing environment will call setup() one time at the beginning of (its conception of) time
- … and it will call draw() 60 times per second, forEVER
  - You can change the frame rate with the frameRate() function

Variables

Give names to your favorite things

- A variable is a symbol that has a value, like:
    - mouseX: the horizontal coordinate of the mouse
- Functions are also symbols, but generally we use them by invoking them:
    - const x = someFunction(someArgument);
- Here we invoke someFunction using someArgument as input, and capture the result into the variable that we call x
- ‘const’ means “it should never change”. If you want to put different values into the variable, declare it with ‘let’

Variables

Give names to your favorite things

- ‘const’ means “it should never change”.
- If you want to put different values into the variable, declare it with ‘let’:
    - let x = someFunction(someArgument)
- In some older sources on the web might use ‘var’. Don’t use var. It is a holdover from 1995, and we don’t want any further reminders of the 90s.

Declare -> Initialize -> Use

And when do we do these things?

- Declare a variable with let (or const), followed by the name:

```
let x; // I do declare, there is a variable named x
```

Declare -> Initialize -> Use

And when do we do these things?

- Initialize a variable by putting a value into it for the first time.
- Typically this is done on the same line that you declare it.

```
let x = 2 * 4; // There is a variable named x and its value is 8
```

Declare -> Initialize -> Use

And when do we do these things?

- Use the variable *after* you've declared and initialized it
- If you use it before it is declared, you'll get errors
- If you use it before it is initialized, it will have a default value that is probably not what you want.

```
circle(x, 10, 20); // draws a circle at coordinate (x, 10)
```

- In this case, x is 8, so we put the circle at (8, 10) with a radius of 20.

Assignment and Equality

= and == and === oh myyyy

- = is the assignment variable. It is used to put a value into a variable.
- Example:

```
myRadius = mouseX + mouseY;
```

- It evaluates the stuff on the right (the ‘r-val’) first, and *then* stuffs it into a variable called myRadius. (Note that it must have already been declared!)

Assignment and Equality

= and == and === oh myyyy

- == (double equals) is used to determine if two things are kinda equivalent
  - For now: don't use double equals. We'll get back to this subject.
- === (triple equals) is used to test if two things are the same. Use this.
- Example: if (mouseX === 0) { /* do something */ }
- Testing a condition like this is called a boolean test
  - 'Boolean' means 'binary' - true or false, named after George Boole

Extra Canvas!

As seen on Coding Train

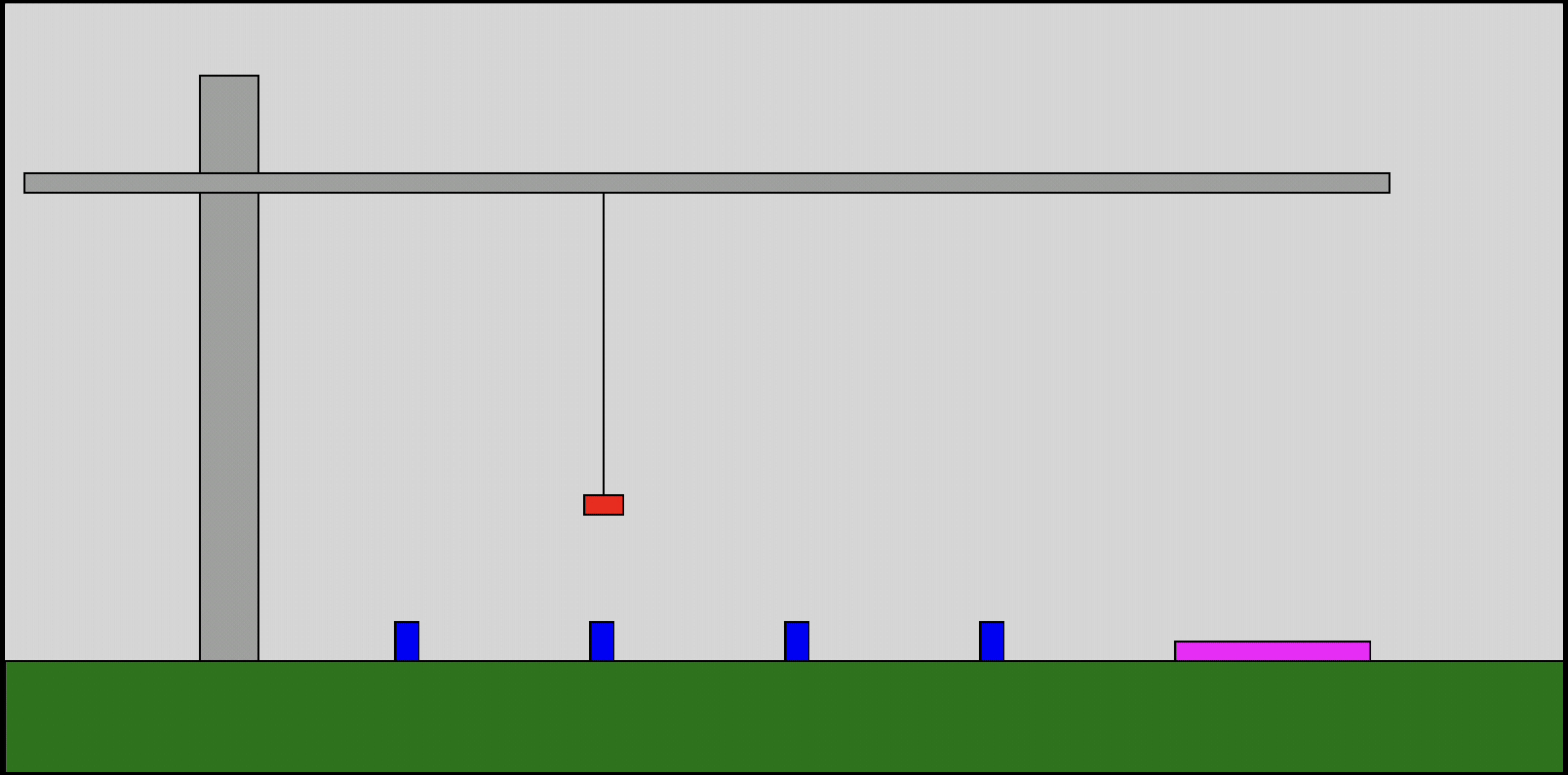
- You can create a second (and third, fourth, etc) graphics context that you can draw on:
  - let nightSky = createGraphics(w, h);
  - nightSky.circle(10, 10, 4); // draw tiny star on the nightSky buffer
- Then render that image onto your regular canvas at a point of your choosing:
  - image(nightSky, 0, 0;

What’s the dot about

nightSky.circle (??)

- This example uses something that is common in many languages:
- Dot notation like *nightSky.circle* - this means “reach into the *nightSky* symbol, and pull out something named *circle*.”
- In this case, *circle* is a function, so we can invoke it like any other function!
- The neat thing is that “members” of an object can have their own internal state that is separate from everything else.
- We’ll cover objects late in the course

Now let’s make as much of this game as we can for the rest of class



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Misc Things To Mention

WHAMMY
bass Whammy
HARMONY
WHAMMY
CLASSIC
CHORDS
DIVE BOMB
SHALLOW
DETUNE
DEEP
Digital Delay
DD-3
BOSS
Flanger
BF-2
BOSS
OUTPUT
INPUT
DIRECT OUT
GUITARX
MICROTUBES B7K
Analog Bass PreAmp
BLEND
LEVEL
DRIVE
LOW
HIMIDS
OUTPUT
INPUT
GROUND LIFT
DIRECT OUTPUT
PARALLEL OUTPUT

Canvas Size

- You can use windowWidth, windowHeight to get the size of the web page

```
// do this is setup()

createCanvas(windowWidth, windowHeight);
```

- You can override the windowResized function to respond to size changes

```
function windowResized() {
  resizeCanvas(windowWidth, windowHeight);
}
```

Set Frame Rate

Might help with debugging

- If you use console.log to output text to the console it will fly by super fast
- You can always press the Stop button
- Alternately, you can slow it way down by turning the frame rate down:
  - Do this in the setup() function
  - frameRate(1)
  - That will only draw one time per second.