Introduction to Programming

Class 33, 28 April 2017

SYNC

Sit where you like.

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Goals

Goal 1: You will know how to use a third-party javascript library.
Goal 2: You will know how to access a library's documentation (API).
Goal 3: You will become familiar with the p5.js library for drawing and animation.

Vocabulary

Library
Application Programming Interface (API)

Code

...

WARM UP

Create a program that asks (prompt) for a radius, and the displays the area of a circle with that radius.

- **Create a function `area(r)` that accepts a number as an argument for the radius and then returns the area.**
- **`area(r)` should not call prompt or alert.**
- **Place your area function in a separate javascript file from your input/output code.**

```
function area(r) {
        var a;
        // your code here
        return a;
}
```

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WARM UP

area.js

```
function area(r) {
    var a;
    a = Math.PI * Math.pow(r, 2);
    return a;
}
```

main.js

```
var rad = parseFloat(prompt("Enter a radius."));
var theArea = area(rad);
alert(theArea);
```

area.html

```
<!doctype html>
<html>
<head>
   <script src="area.js"></script>
</head>
<body>
   <script src="main.js"></script>
</body>
</html>
```

Separate functions in another file: **LIBRARY** (example of modularization)

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P5.JS

p5.js is a javascript library for animation

p5js.org

```
<!doctype html>
<html>
  <head>
    <title>My Sketch</title>
    <script src="http://cdnjs.cloudflare.com/ajax/libs/p5.js/0.5.8/p5.js"></script>
    <script src="sketch.js"></script>
  </head>
  <body>
  </body>
</html>
```

Library loaded from the internet

File loaded from local computer (your code)

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P5.JS

p5.js is a javascript library for animation

p5js.org

`cloud9 -> IntroToProgrammingRepo/unit5/p5template.html`

```
<!doctype html>
<html>
  <head>
    <title>My Sketch</title>
    <script src="http://cdnjs.cloudflare.com/ajax/libs/p5.js/0.5.8/p5.js"></script>
    <script src="sketch.js"></script>
  </head>
  <body>
  </body>
</html>
```

Library loaded from the internet

File loaded from local computer (your code)

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EXAMPLE

cloud9 -> IntroToProgrammingRepo/unit5/sketch.js

```
// P5 sketch template

function setup() {
    // Code that will be run once
}

function draw() {
    // Code that will loop indefinitely
}
```

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EXAMPLE

cloud9 -> IntroToProgrammingRepo/unit5/sketch.js

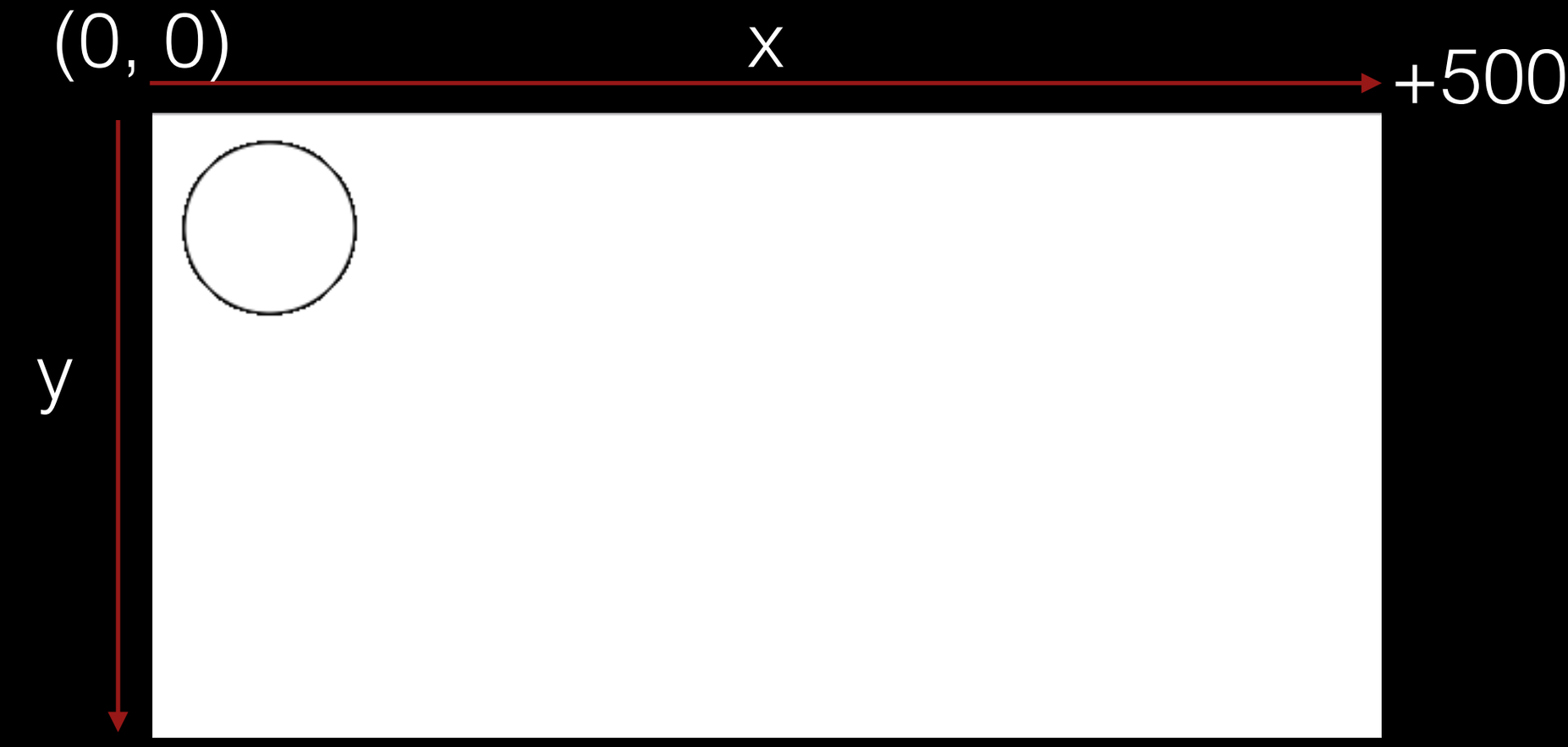
```
// P5 sketch template

function setup() {
    // Code that will be run once
    createCanvas(500, 300);
}

function draw() {
    // Code that will loop indefinitely
    ellipse(50, 50, 80, 80);
}
```

EXAMPLE

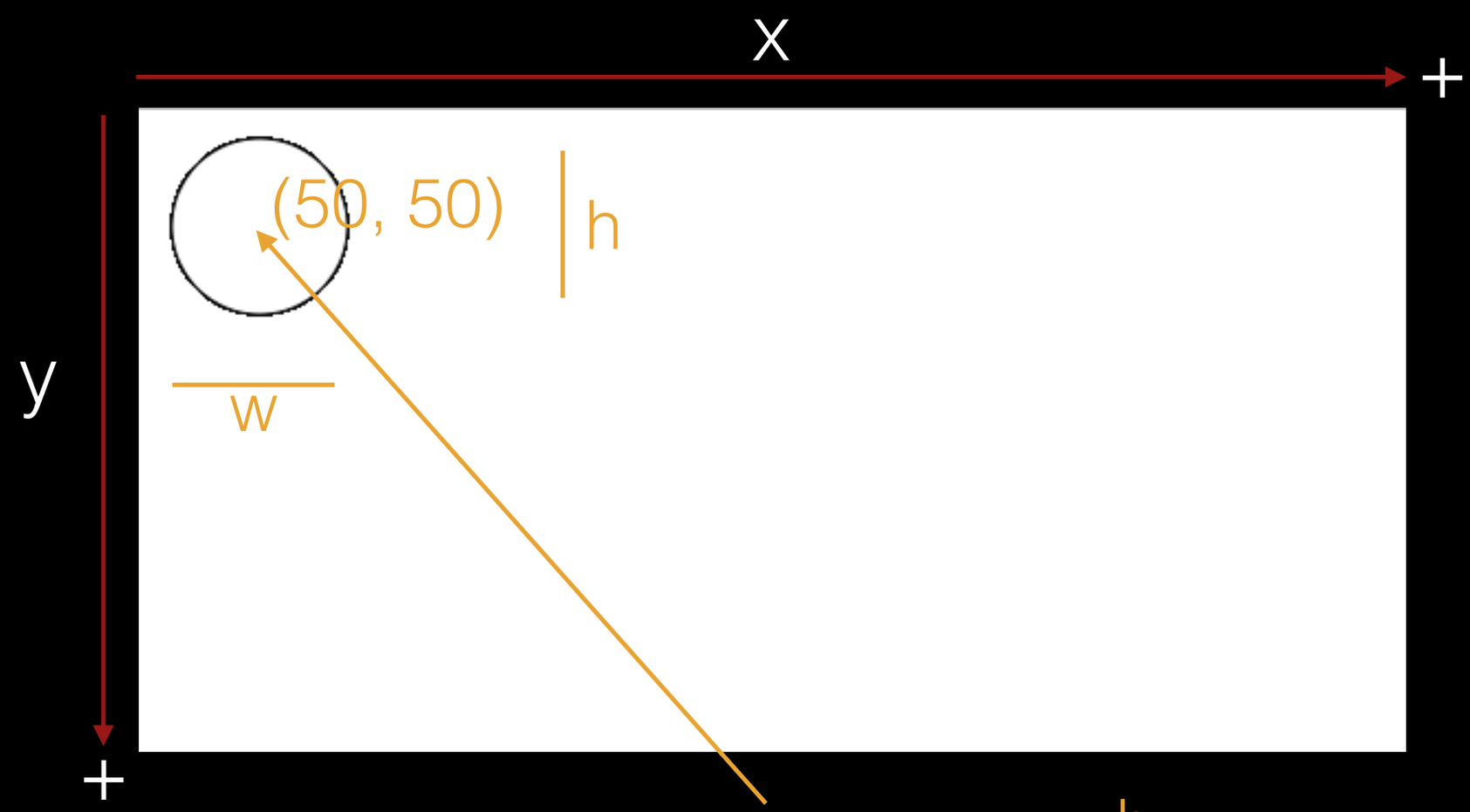
cloud9 -> IntroToProgrammingRepo/unit5/sketch.js




```
createCanvas(500, 300);
```

EXAMPLE

`cloud9 -> IntroToProgrammingRepo/unit5/sketch.js`




```
ellipse(50,50,80,80);
```

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EXPLORE

https://p5js.org/reference/

```
// P5 sketch template

function setup() {
    // Code that will be run once
    createCanvas(500, 300);
}

function draw() {
    // Code that will loop indefinitely
    ellipse(50, 50, 80, 80);
}
```

ellipse()
rect()
quad()
arc()
point()
triangle()

EXAMPLE

```
// P5 sketch template

function setup() {
    // Code that will be run once
    createCanvas(640, 480);
}

function draw() {
    // Code that will loop indefinitely
    if (mouseIsPressed) {
        fill(0);
    } else {
        fill(255);
    }
    ellipse(mouseX, mouseY, 80, 80);
}
```

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EXPLORE

https://p5js.org/reference/

```
// P5 sketch template

function setup() {
    // Code that will be run once
    createCanvas(640, 480);
}

function draw() {
    // Code that will loop indefinitely
    if (mouseIsPressed) {
        fill(0);
    } else {
        fill(255);
    }
    ellipse(mouseX, mouseY, 80, 80);
}
```

keyboard
mouse

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EXAMPLE

```
// P5 sketch template
var img;

function setup() {
    // Code that will be run once
    createCanvas(640, 480);
    img = loadImage("Papasmurf1.jpg");

}

function draw() {
    // Code that will loop indefinitely
    image(img, 0, 0, 50, 50);
    image(img, 200, 100, 100, 100);
}
```

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EXPLORE

Khan Academy
Coloring

https://www.khanacademy.org/computing/computer-programming/programming#coloring

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HW

Khan Academy - Interactive Programs
Due next class