
p5.js
Chi Nguyen

p5.js

What is it?

JavaScript library for creative coding built on the basis of Processing, free and open source. Simple for even non programmers. Ex: generative art, simulations, 3D models, etc… OpenProcessing is a wonderful space to explore.

What is it useful for?

A tool to simplify the process of creating interactive visuals that turns a whole browser page into your sketchpad

When was it release?

Created in 2013 by Lauren Lee McCarthy. Adjunct Associate Professor of Media Arts at USC, Qianqian Ye, has led the project since April 2022

examples

Draw Aurora

Interactive visuals, allows you to draw auroras and fireworks in a customizable landscape

Holos - Earthquake

Data visualization of an earthquake’s depth. Has option for magnitude and other datas like land area, stock market and COVID

```
function setup() {
  createCanvas(800, 500);
  x = width;
}

function draw() {
  background('■#ED255D');
  strokeWeight(10);
  stroke('□white');
  //h
  line(x+100, 50, x+100, 200);
  line(x+100, 75, x+150, 75);
  line(x+150, 50, x+150, 175);

  //E
  line(x+175, 50, x+225, 50);
  line(x+175, 50, x+175, 175);
  line(x+175, 75, x+225, 75);
  line(x+175, 175, x+225, 175);

  //L
  line(x+250, 50, x+250, 175);
  line(x+250, 175, x+300, 175);

  //L
  line(x+325, 50, x+325, 175);
  line(x+325, 175, x+375, 175);

  //O
  circle(x+440, 110, 115);

  //W
  line(x+65, 250, x+100, 450);
  line(x+100, 450, x+125, 350);
  line(x+125, 350, x+150, 450);
  line(x+150, 450, x+165, 300);

  //O
  circle(x+235, 385, 115);

  //R
  line(x+310, 450, x+310, 325);
  line(x+310, 325, x+360, 325);
  line(x+360, 325, x+360, 350);
  line(x+360, 350, x+310, 350);
  line(x+310, 350, x+360, 450);

  //L
  line(x+385, 450, x+435, 450);
  line(x+385, 325, x+385, 450);

  //D
  line(x+460, 325, x+460, 450);
  line(x+460, 325, x+535, 350);
  line(x+535, 350, x+535, 425);
  line(x+535, 425, x+460, 450);

  move();
}

function move() {
  x += 10;
  if (x > width-100) {
    x = -600;
  }
}
```

hello

world

demo

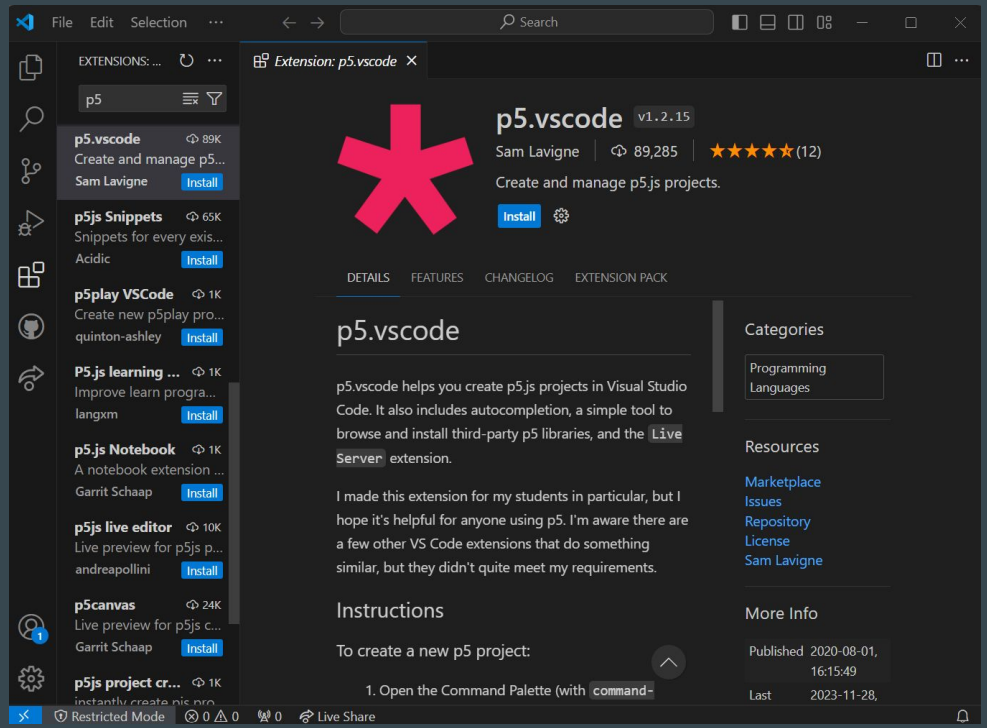
installation

Use p5.js directly in the online editor at https://editor.p5js.org/

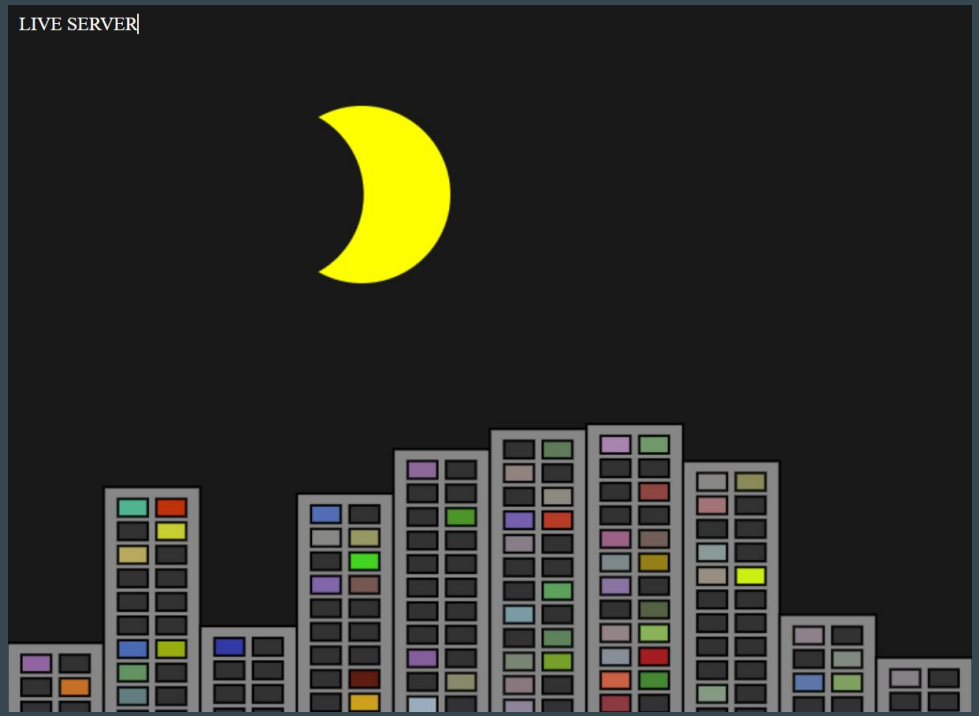
Or head to the download page at https://p5js.org/download/ to find a collection of the p5.js library file and the p5.sound add on

To use in Visual Studio Code, head to Extensions and download the p5.vscode extension

You can refer to this YouTube link for more in depth instructions on how to begin



fireworks



fireworks.html > ...

```
<!--
Name:  Chi Nguyen
Date:  25 April 2024
Class: 215 Website Programming
Professor: Kebin Xu
-->
<!DOCTYPE html>
<html lang="en">
  <head>
    <meta charset="utf-8" />
    <meta name="viewport" content="width=device-width,
    initial-scale=1.0">

    <title>Fireworks Demo</title>

    <link rel="stylesheet" type="text/css" href="style.css">

    <script src="libraries/p5.min.js"></script>
    <script src="libraries/p5.sound.min.js"></script>
  </head>

  <body>
    <a href="http://127.0.0.1:5500/fireworks.html">LIVE SERVER</a>
    <script src="fireworks.js"></script>
  </body>
</html>
```

demo

createGraphics adds an image to the display based on the screen width and height

There are 10 houses, so width is the screen width divided by 10

Window parameters are generated with random values using random(min, max)

Each house and window are using rectangles with syntax rect(x, y, width, height)

fill colors a random windows in each house either gray or another random color

```
24  function makeHouses() {
25      houses = createGraphics(width, height);
26      houses.strokeWeight(2);
27      const houseCount = 10;
28      const houseWidth = width / houseCount;
29      const houseWindowWidth = width/random(25, 40);
30      const houseWindowHeight = height/random(25, 60);
31      for (let i = 0; i < houseCount; i++) {
32          const houseHeight = random(50, 300);
33          houses.fill(135);
34          houses.rect(houseWidth * i, height - houseHeight,
            houseWidth, houseHeight * 2);
35
36          for (let windowY = height - houseHeight + 10;
            windowY < height - houseWindowHeight - 5; windowY
            += houseWindowHeight + 5) {
37              houses.fill(random() < 0.50 ? color(random
                (255), random(255), random(255), random(175)) :
                50);
38              houses.rect(houseWidth * i + 12, windowY,
                houseWindowWidth, houseWindowHeight);
39
40              houses.fill(random() < 0.50 ? color(random
                (255), random(255), random(10), random(255)) :
                50);
41              houses.rect(houseWidth * (i + 1) - 12 -
                houseWindowWidth, windowY, houseWindowWidth,
                houseWindowHeight);
42
43          }
```

demo

```
122  class Firework extends Particle {
123      constructor(x, y) {
124          super(x, y, random(-2, 2), random(-10, -15),
125              random(colors), 10);
126          this.countdown = random(30, 60);
127      }
128
129      step() {
130          super.step();
131
132          this.countdown--;
133          if (this.countdown <= 0) {
134              const explosionSize = random(20, 50);
135              for (let i = 0; i < explosionSize; i++) {
136
137                  const speed = random(5, 10);
138                  const angle = random(TWO_PI);
139                  const xSpeed = cos(angle) * speed;
140                  const ySpeed = sin(angle) * speed;
141
142                  particles.push(new Particle(this.x, this.y,
143                      xSpeed, ySpeed,
144                      this.color, 5
145                  ));
146              }
147              this.isAlive = false;
148          }
149      }
150  }
```

extends Particle creates the Firework class from superclass Particle, but with variable countdown

The step function sets Firework to !isAlive and creates an explosion that falls at a random speed and angle

```
7   function setup() {
8     pixelDensity(1);
9       createCanvas(windowWidth, windowHeight-40);
10      // windowHeight - 40 is just for my display since it
        extends past my screen
11      endColor = color(25);
12      makeHouses();
13      makeMoon();
14  }
```

createCanvas based on screen width and height, then calls makeHouses and makeMoon, endColor sets color of the fireworks' tail

pop quiz

Who is the current lead of p5.js?

A. Lauren Lee McCarthy

B. Qianqian Ye

What is the correct syntax for rect()?

A. rect(x1, y1, x2, y2)

B. rect(x, y, width, height)

pop quiz

In the helloWorld demo, which function moves the drawing?

```
62  function move() {
63    x += 10;
64    if (x > width - 100) {
65      x = -600;
66    }
67  }
```

A

```
1   function setup() {
2     createCanvas(800, 500);
3     x = width;
4   }
5
```

B

```
6   function draw() {
7     background('#ED255D');
8     strokeWeight(10);
9     stroke('white');
10
```

C