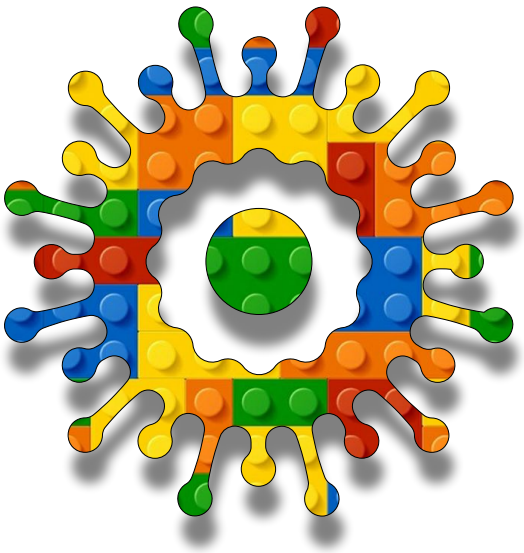
Artificial Intelligence Module B Unit #1 p5.js code snippets 3



Module B Unit #1 p5.js code snippets 3

Introduction to code snippets part 3
The index.html file

Introduction to code snippets part 3

We are going to cover some essential coding snippets relevant to the next section on pre-trained models.

Sketch B1.1 drawing a rectangle

We have covered most of the shapes you will use or need except for this one, the `rectangle`. A rectangle has four arguments. The first two are similar to those of the square, and they are the co-ordinates of the rectangle; the third is the width of the rectangle, and the fourth is the height of the rectangle.

```
function setup()
{
  createCanvas(400, 400)
}

function draw()
{
  background(220)
  rect(100, 100, 200, 50)
  rect(100, 200, 20, 100)
  rect(200, 200, 100, 150)
}
```

Notes

Drawing three rectangles, the arguments are:

- x position
- y position
- horizontal dimension
- vertical dimension

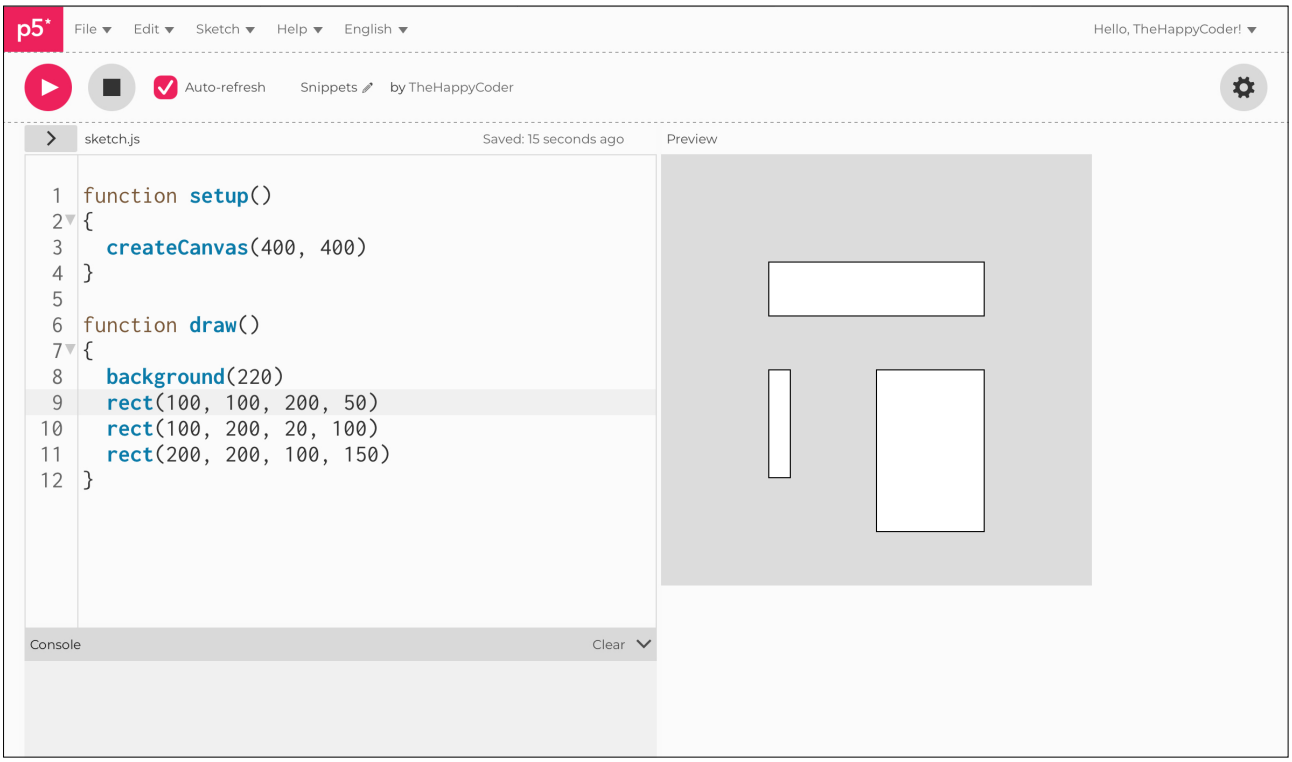
🌻 Challenge

Add the `rectMode()` to put the co-ordinates in the centre of the rectangle.

🛠️ Code Explanation

`rect(100, 100, 200, 50)`	Draws a rectangle at top left hand corner 100 from the left, 100 down and with a width of 200 and height of 50

Figure B1.1 drawing rectangles



Sketch B1.2 drawing an ellipse

Another shape that we can draw is an `ellipse`, which is similar to a circle with an extra argument.

```
function setup()
{
  createCanvas(400, 400)
}

function draw()
{
  background(220)
  ellipse(200, 100, 150, 50)
  ellipse(100, 200, 20, 100)
  ellipse(200, 250, 100, 200)
  ellipse(300, 200, 20, 100)
}
```

🗒️ Notes

We draw four ellipses, the arguments are:

- 🀄 x position
- 🀄 y position
- 🀄 horizontal dimension
- 🀄 vertical dimension

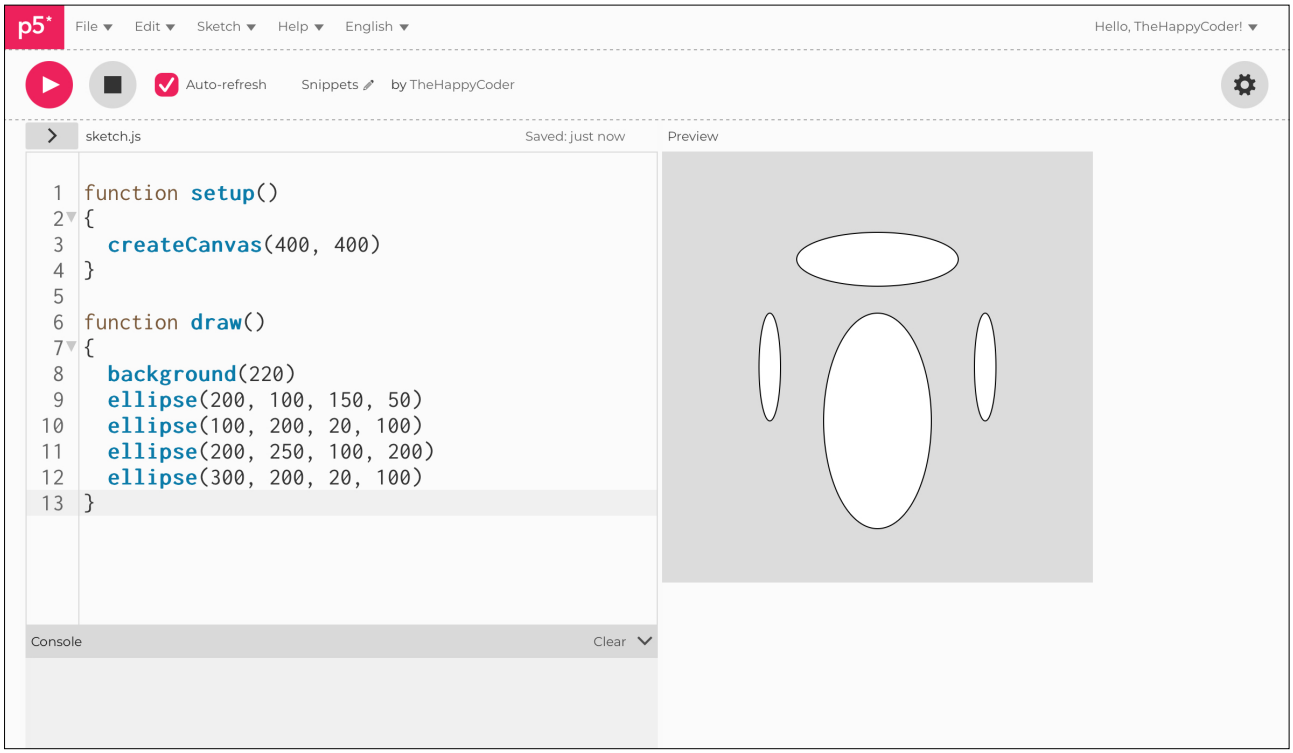
🌻 Challenge

Make a pattern with them

🛠️ Code Explanation

`ellipse(200, 100, 150, 50)`	First two arguments are the x and y co-ordinates, third is the width of ellipse and the fourth is the height of the ellipse

Figure B1.2


p5*
File
Edit
Sketch
Help
English
Hello, TheHappyCoder!
Auto-refresh
Snippets
by TheHappyCoder
sketch.js
Saved: just now
Preview
1 function setup()
2 {
3 createCanvas(400, 400)
4 }
5
6 function draw()
7 {
8 background(220)
9 ellipse(200, 100, 150, 50)
10 ellipse(100, 200, 20, 100)
11 ellipse(200, 250, 100, 200)
12 ellipse(300, 200, 20, 100)
13 }
Console
Clear

Sketch B1.3 drawing triangles

The triangle has six arguments for the three co-ordinates at each corner.

```
function setup()
{
  createCanvas(400, 400)
}

function draw()
{
  background(220)
  triangle(200, 100, 100, 190, 300, 190)
  triangle(200, 300, 100, 210, 300, 210)
}
```

🗒️ Notes

The triangle requires a bit more thought organising the co-ordinates. I often sketch them out first on a piece of paper to help plan them out. The arguments are:

- 🀄 x1 position
- 🀄 y1 position
- 🀄 x2 position
- 🀄 y2 position
- 🀄 x3 position
- 🀄 y3 position

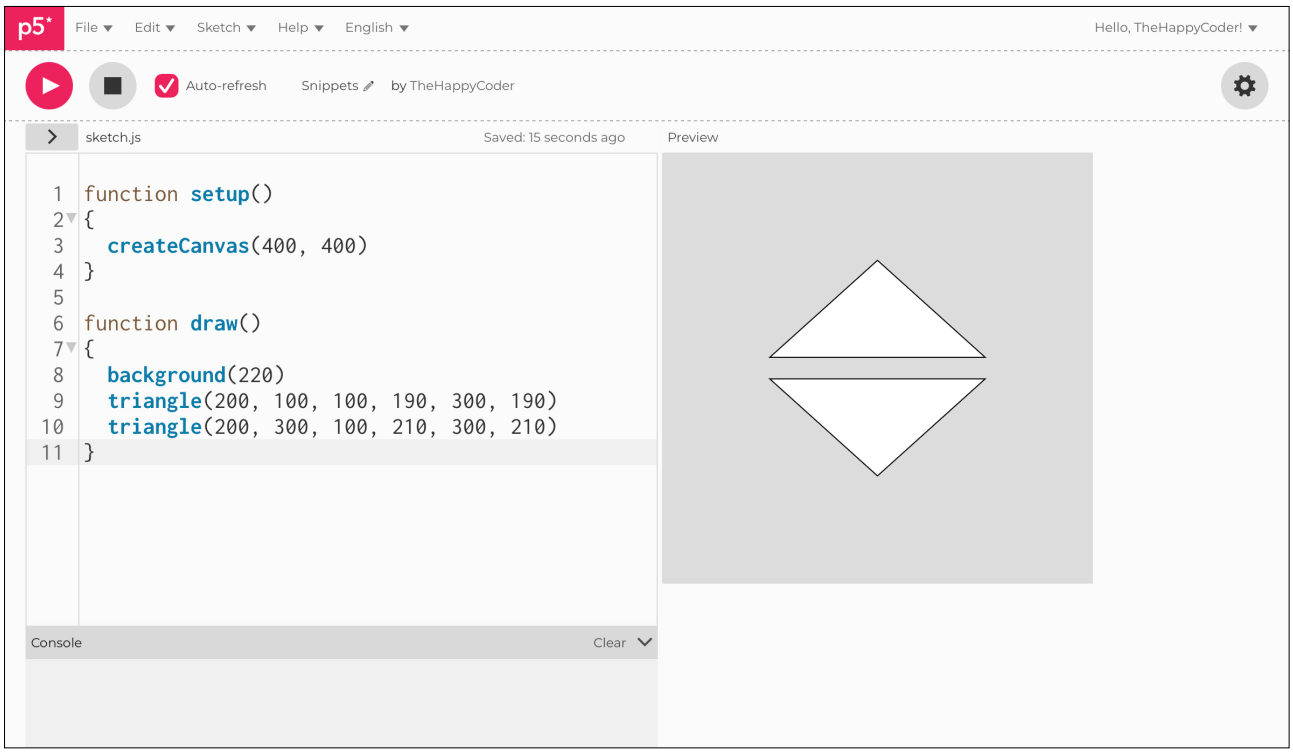
🌻 Challenge

Make some more

🛠️ Code Explanation

`triangle(200, 100, 100, 190, 300, 190)`	The three co-ordinates for the three corners of the triangle

Figure B1.3


p5*
File
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Sketch
Help
English
Hello, TheHappyCoder!
Auto-refresh
Snippets
by TheHappyCoder
sketch.js
Saved: 15 seconds ago
Preview
1 function setup()
2 {
3 createCanvas(400, 400)
4 }
5
6 function draw()
7 {
8 background(220)
9 triangle(200, 100, 100, 190, 300, 190)
10 triangle(200, 300, 100, 210, 300, 210)
11 }
Console
Clear

Sketch B1.4 measuring the distance

❗ Starting a new sketch

If we want to know the distance between two points, for instance, the centre of two circles, we can use a `dist()` function that calculates the distance between those two points. This is useful when looking at collisions or in our ml5.js example later using it to draw a circle. Here we are measuring the distance between two circles and writing the value on the canvas.

```
let x1
let y1
let x2
let y2

function setup()
{
  createCanvas(400, 400)
  textSize(32)
}

function draw()
{
  background(200)
  x1 = width/2
  y1 = height/2
  x2 = mouseX
  y2 = mouseY
  let d = dist(x1, y1, x2, y2)
  text(d, 50, 50)
  circle(x1, y1, 25)
  circle(x2, y2, 25)
}
```

🗒️ Notes

Calculates the distance between two points. The version of `dist()` with four parameters calculates distance in two dimensions. The version of `dist()` with six parameters calculates distance in three dimensions; this is handy if you are using 3D shapes.

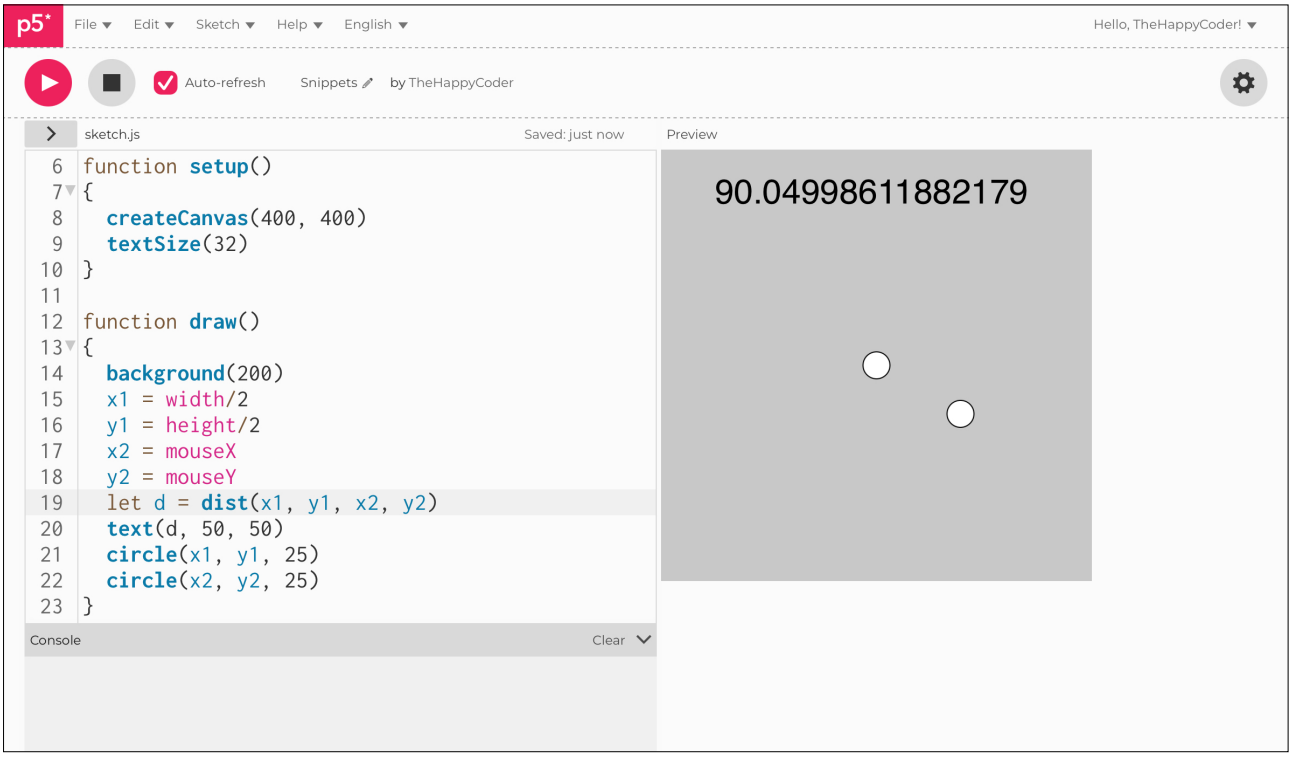
- 🀄 x1 position of point 1
- 🀄 y1 position of point 1
- 🀄 x2 position of point 2
- 🀄 y2 position of point 2

To make it just an integer replace with: `text(int(d), 50, 50)`

🛠️ Code Explanation

`let d = dist(x1, y1, x2, y2)`	Calculating the distance (d) between two pairs of co-ordinates (x1, y1) and (x2, y2)

Figure B1.4


p5*
File
Edit
Sketch
Help
English
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sketch.js
Saved: just now
Preview
6 function setup()
7 {
8 createCanvas(400, 400)
9 textSize(32)
10 }
11
12 function draw()
13 {
14 background(200)
15 x1 = width/2
16 y1 = height/2
17 x2 = mouseX
18 y2 = mouseY
19 let d = dist(x1, y1, x2, y2)
20 text(d, 50, 50)
21 circle(x1, y1, 25)
22 circle(x2, y2, 25)
23 }
Console
Clear
90.04998611882179

Sketch B1.5 in the name of the colour

❗ Starting another new sketch

We can, if we wish, just use the name of the colours. There is a wide range of colours, too numerous to mention them here. The name must be in speech marks.

```
function setup()
{
  createCanvas(400, 400)
}

function draw()
{
  background('orange')
  fill('green')
  circle(100, 100, 100)
}
```

🗒️ Notes

When you put the name of the colour in speech marks, it gives you a square indicator to the colour. There are quite a few colour names. If you use 'lightgreen' with no gap, you get light green. Some colours will take the word dark, for instance, `darkred`. There are other names such as `teal`, `magenta`, and so on. You can use single or double quotes. It is useful if you just want a simple colour rather than trying to remember the RGB values.

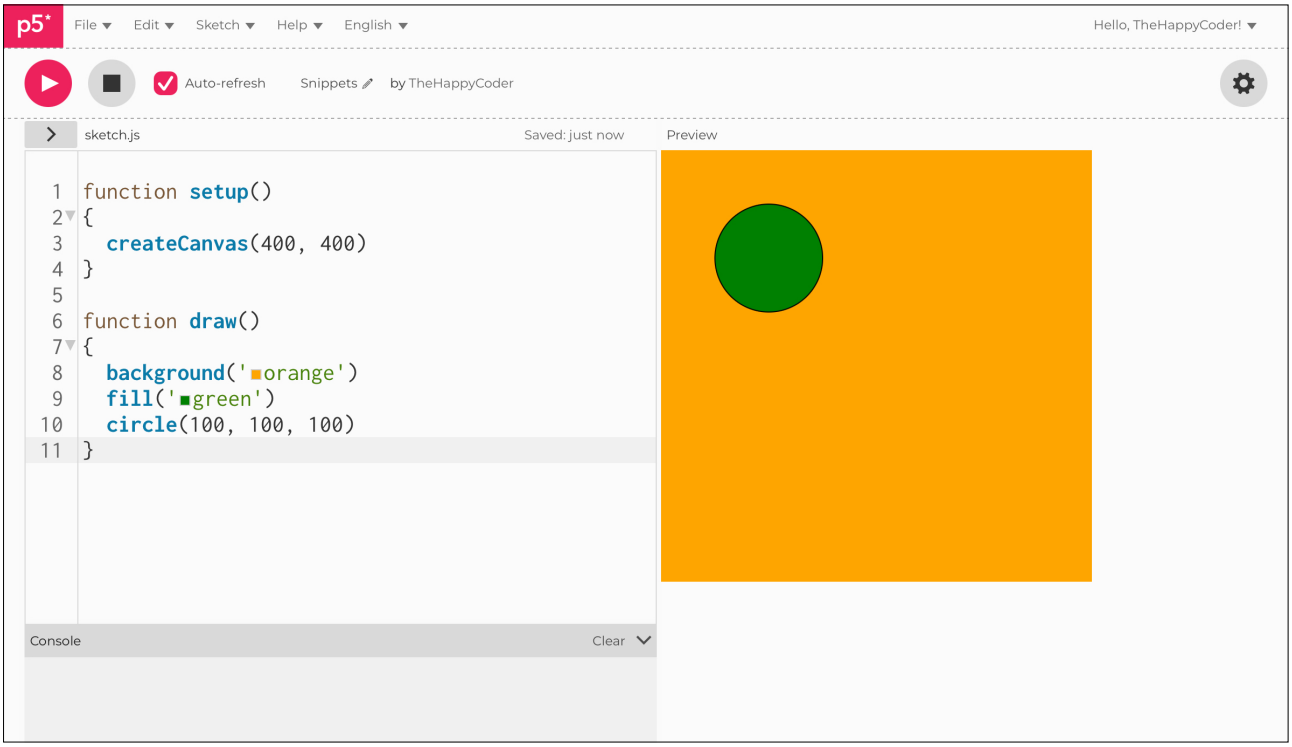
🌻 Challenges

1. Just experiment.
2. Look at the `Creative Coding module B unit #6 colour charts and pickers` in the resources section of www.elegantAI.org.

🛠️ Code Explanation

`background('orange')`	Gives you an orange background
`fill('green')`	Fills the circle green

Figure B1.6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by TheHappyCoder
sketch.js
Saved: just now
Preview
1 function setup()
2 {
3 createCanvas(400, 400)
4 }
5
6 function draw()
7 {
8 background('orange')
9 fill('green')
10 circle(100, 100, 100)
11 }
Console
Clear