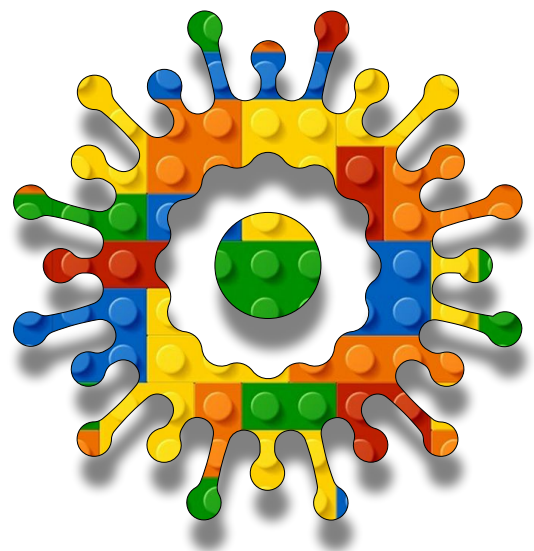


Algorithmic Intelligence

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

- Sketch B1.1 drawing a rectangle
- Sketch B1.2 drawing an ellipse
- Sketch B1.3 drawing triangles
- Sketch B1.4 measuring the distance
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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.

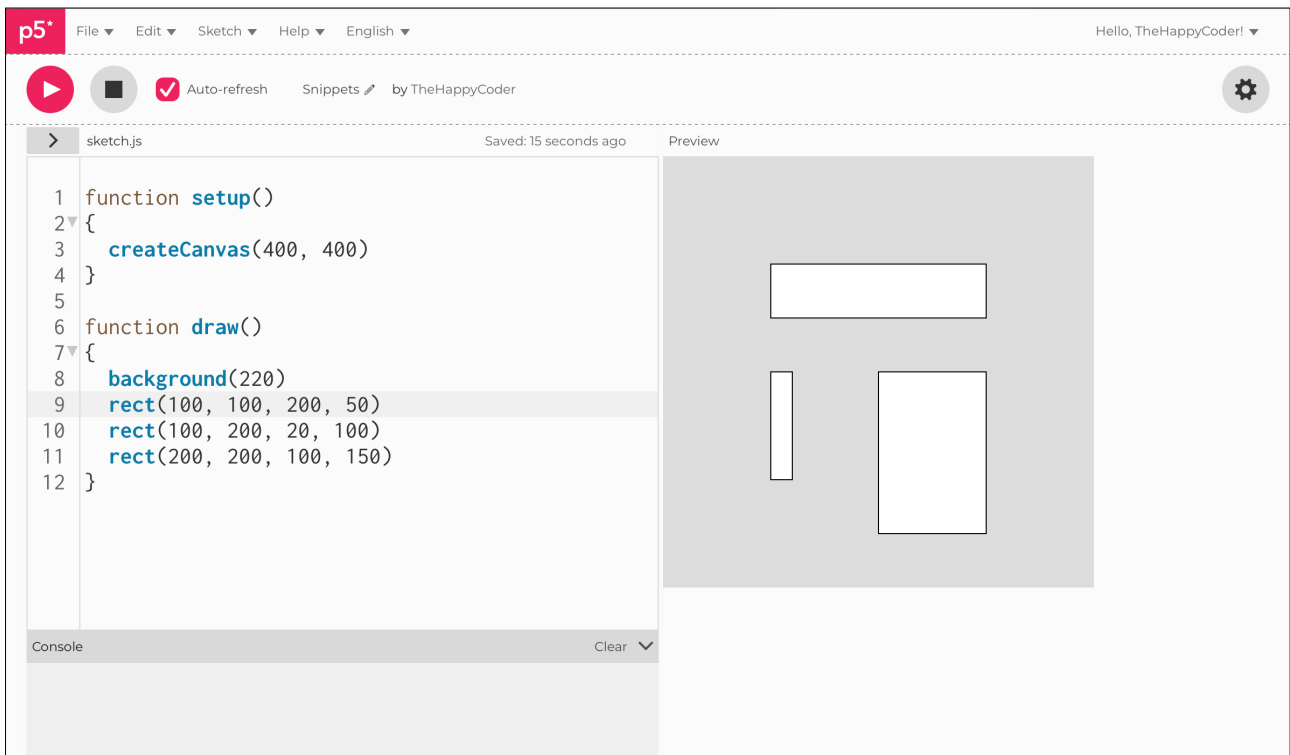


Code Explanation

```
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

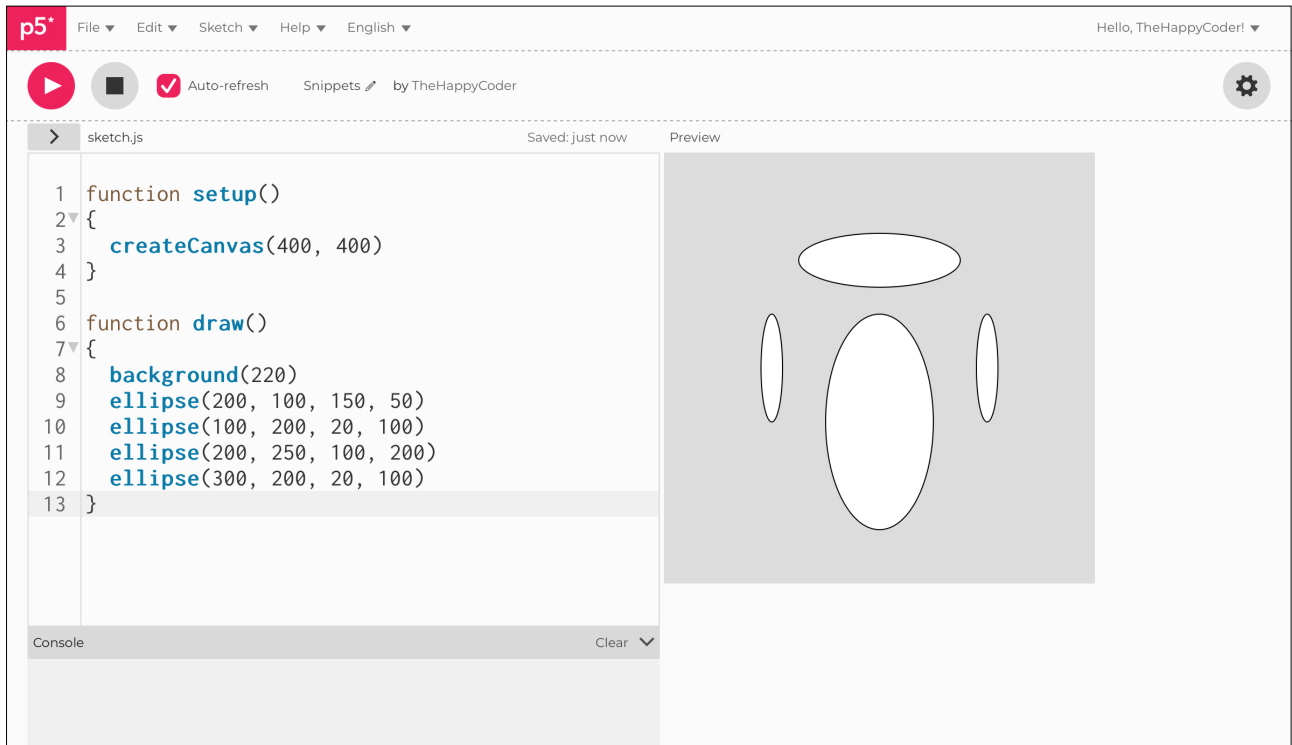


Code Explanation

```
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





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

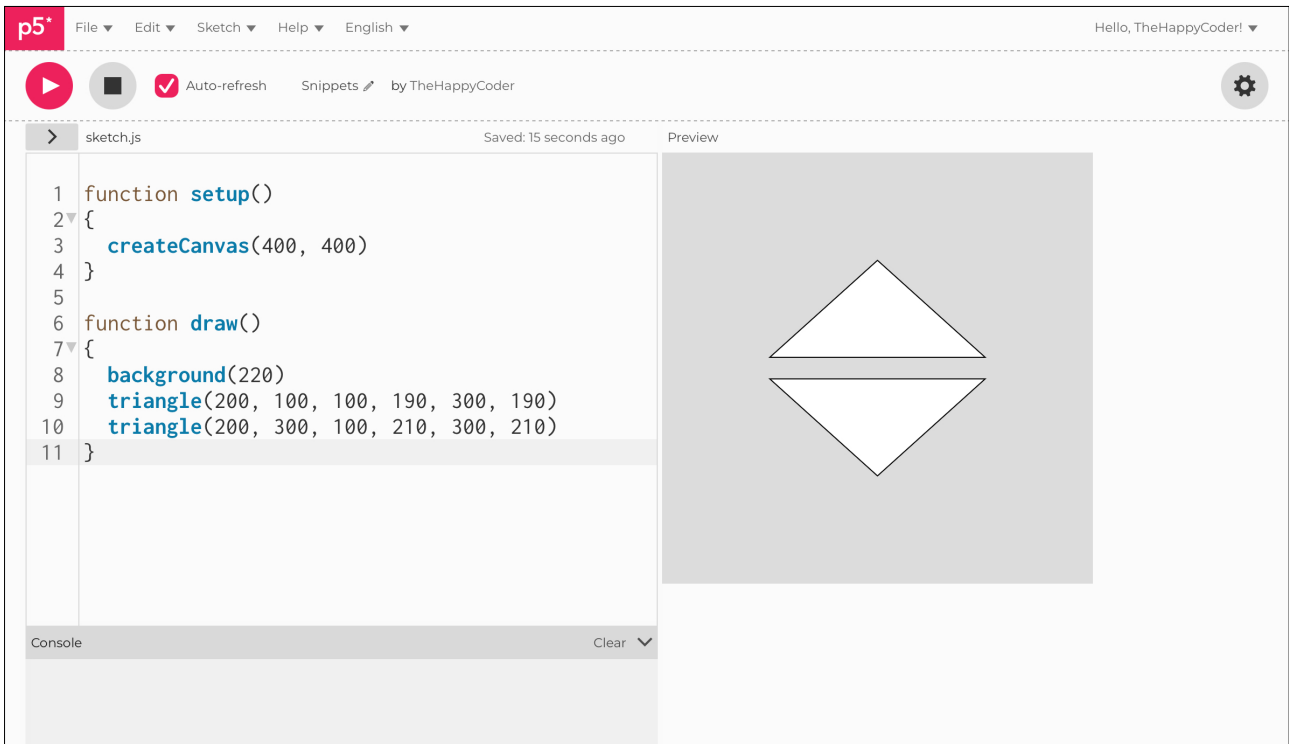


Code Explanation

```
triangle(200, 100, 100, 190, 300, 190)
```

The three co-ordinates for the three corners of the triangle

Figure B1.3





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

中 x2 position of point 2

中 y2 position of point 2

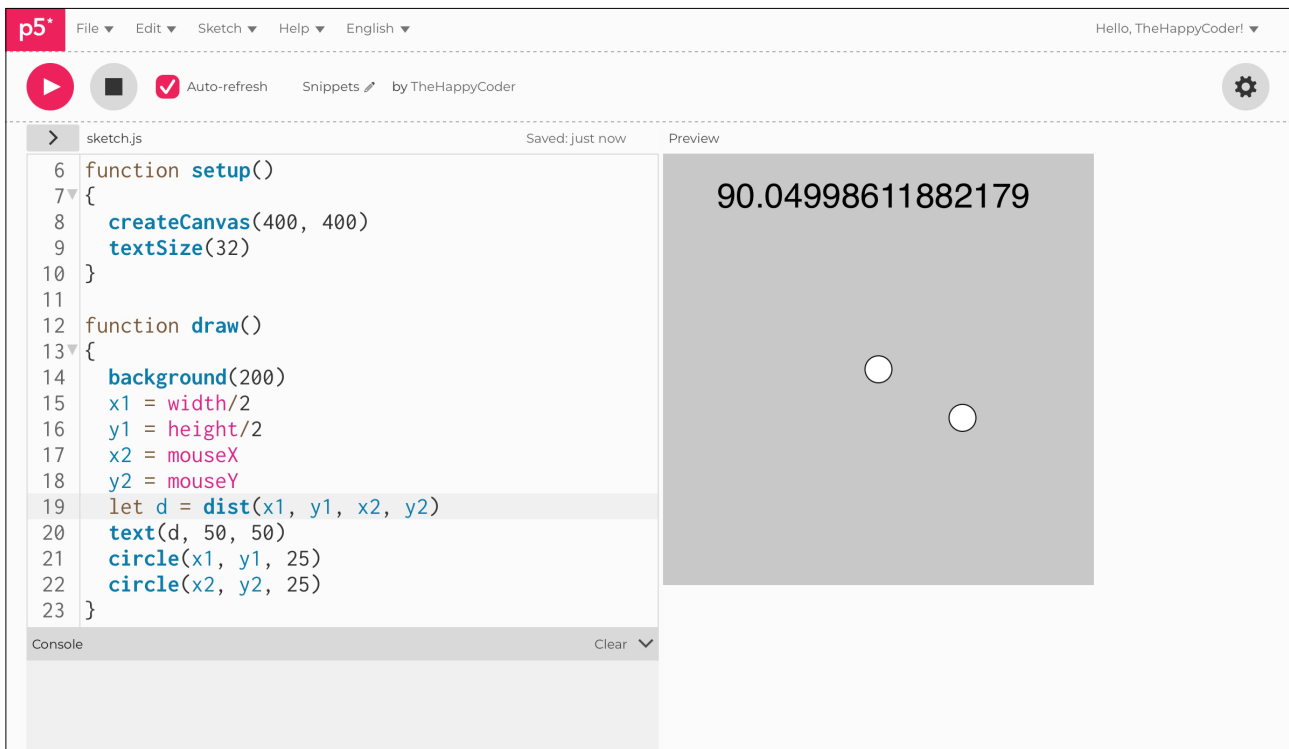
To make it just an integer replace with: `text(int(d), 50, 50)`

🔧 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





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

