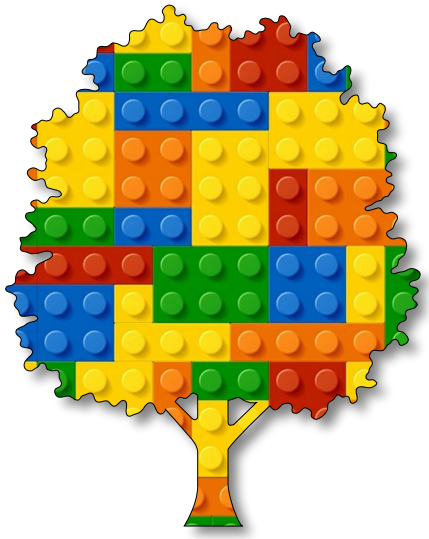
Algorithmic Art
Module B
Unit #3
text



Content

Module B Unit #3 text

Sketch B3.1	starting sketch
Sketch B3.2	text size
Sketch B3.3	aligning the text
Sketch B3.4	colour the text
Sketch B3.5	border colour
Sketch B3.6	stroke
Sketch B3.7	translate
Sketch B3.8	angle of degree
Sketch B3.9	rotating
Sketch B3.10	mouse mover
Sketch B3.11	not a string
Sketch B3.12	and mouseY
Sketch B3.13	static
Sketch B3.14	adding a string
Sketch B3.15	changing the font

Introduction to using text

As well as shapes, you can use text, either directly as a string or as a variable value. This gives you many opportunities to manipulate text (words, letters or numbers) or values (numbers) for various possibilities. Although you get one font with the basic sketch, you can use other fonts. Some of them you can download and others are generally available to your computer.

Sketch B3.1 starting sketch

We have a line of code that uses the `text()` function. The actual text is in speech marks (single or double), this is a string. The following two arguments are the distance from the left-hand side (x) and the distance from the top edge (y).

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

function draw()
{
  background(220)
  text('Hello', 200, 200)
}
```

🗒️ Notes

You get to print some text on the canvas; the default size is quite small, but we can change that.

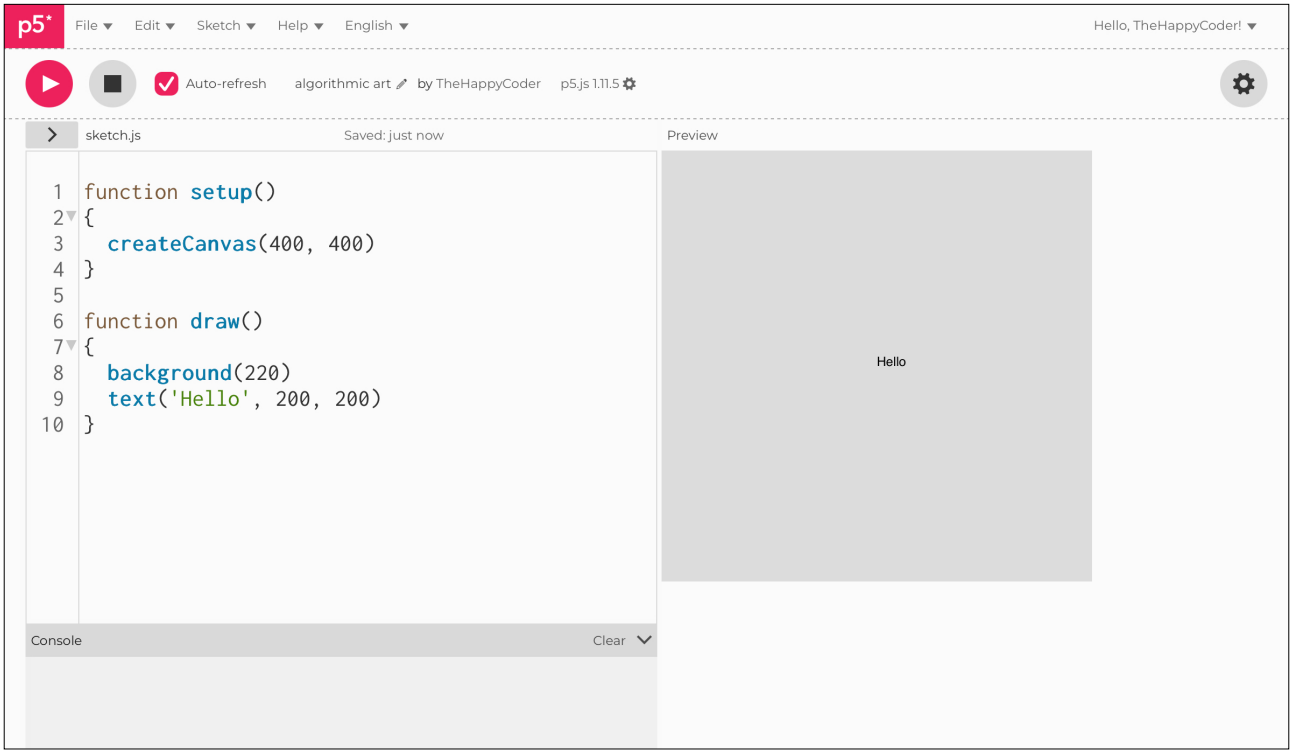
🌻 Challenge

Type some other words.

🛠️ Code Explanation

`text('Hello', 200, 200)`	Write the word 'Hello' 200 from the left and 200 from the top

Figure B3.1


p5*
File
Edit
Sketch
Help
English
Hello, TheHappyCoder!
Auto-refresh
algorithmic art
by TheHappyCoder
p5.js 1.11.5
sketch.js
Saved: just now
Preview
1 function setup()
2 {
3 createCanvas(400, 400)
4 }
5
6 function draw()
7 {
8 background(220)
9 text('Hello', 200, 200)
10 }
Hello
Console
Clear

Sketch B3.2 text size

You will notice that it is quite small; the default size is 12 pixels. We can make it bigger than that using the function `textSize()` and specifying the size of the font.

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

function draw()
{
  background(220)
  textSize(36)
  text('Hello', 200, 200)
}
```

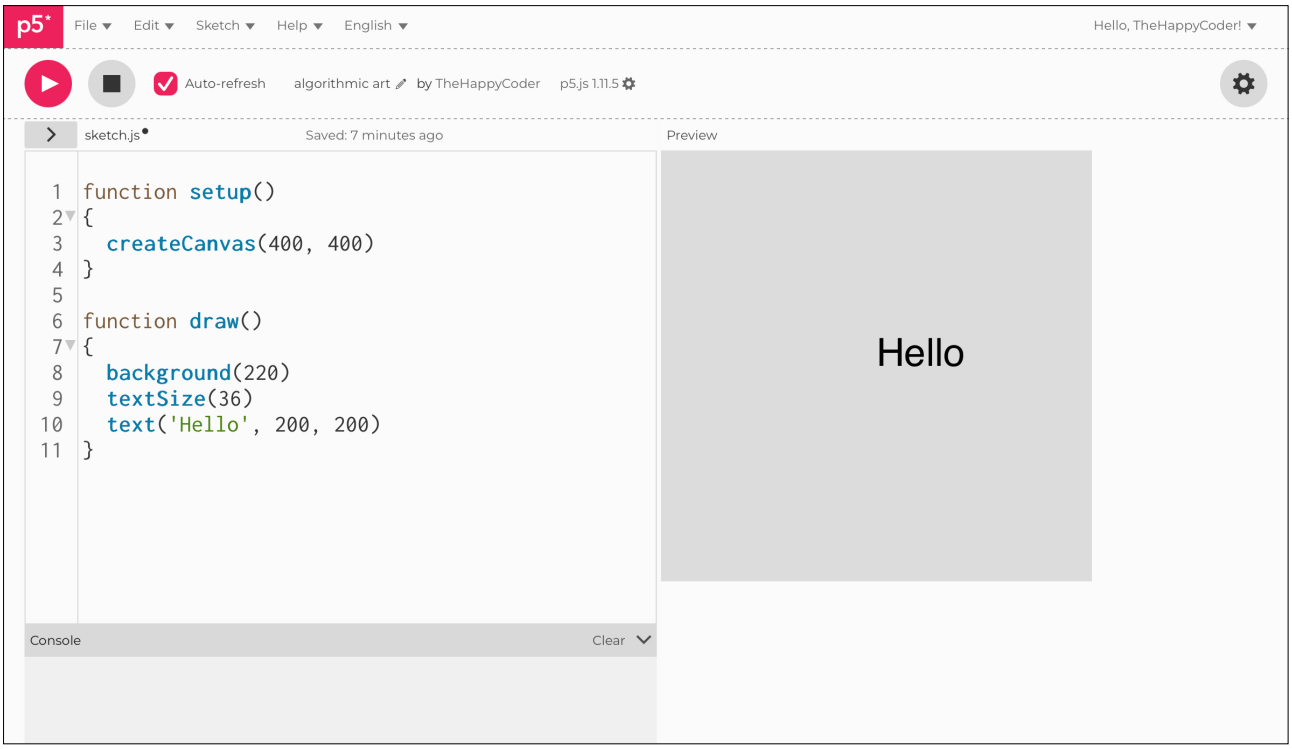
🗒️ Notes

Much better.

🛠️ Code Explanation

`textSize(36)`	Specifies the size of the text

Figure B3.2


p5*
File
Edit
Sketch
Help
English
Hello, TheHappyCoder!
Auto-refresh
algorithmic art
by TheHappyCoder
p5.js 1.11.5
sketch.js
Saved: 7 minutes ago
Preview
1 function setup()
2 {
3 createCanvas(400, 400)
4 }
5
6 function draw()
7 {
8 background(220)
9 textSize(36)
10 text('Hello', 200, 200)
11 }
Hello
Console
Clear

Sketch B3.3 aligning the text

Although we have set the text in the centre of the canvas, it clearly isn't. We can correct that so that the coordinates are specific to the centre of the text, not the top-left-hand corner. We use a function called `textAlign()`. We can tell it where we want the origin to be. In this case, at the very centre of the text, so we use two arguments for the horizontal and vertical alignment.

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

function draw()
{
  background(220)
  textSize(36)
  textAlign(CENTER, CENTER)
  text('Hello', 200, 200)
}
```

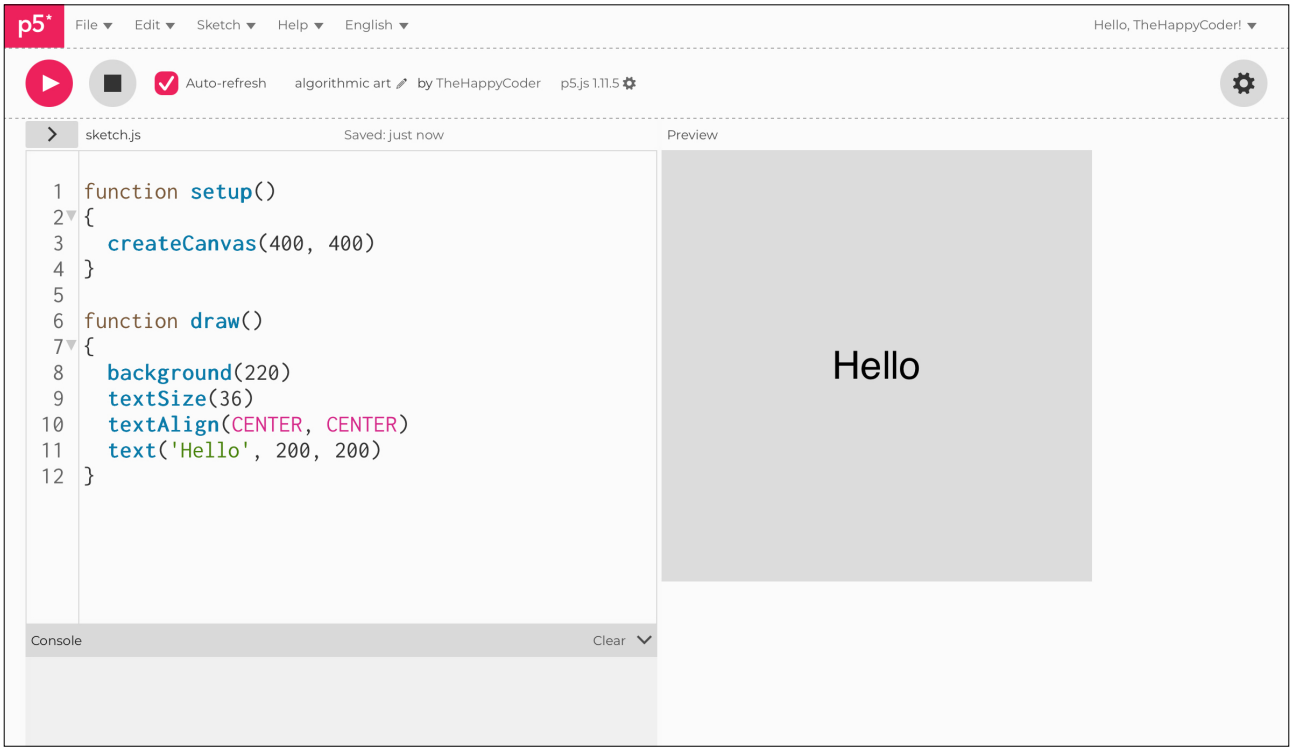
🗒️ Notes

It has shifted the text ever so slightly to the centre of the canvas.

🛠️ Code Explanation

`textAlign(CENTER, CENTER)`	Centres the text both vertically and horizontally

Figure B3.3


p5*
File
Edit
Sketch
Help
English
Hello, TheHappyCoder!
Auto-refresh
algorithmic art
by TheHappyCoder
p5.js 1.11.5
sketch.js
Saved: just now
Preview
1 function setup()
2 {
3 createCanvas(400, 400)
4 }
5
6 function draw()
7 {
8 background(220)
9 textSize(36)
10 textAlign(CENTER, CENTER)
11 text('Hello', 200, 200)
12 }
Hello
Console
Clear

Sketch B3.4 colour the text

We will make the text size even bigger to see the effect more clearly. We will also make the text red.

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

function draw()
{
  background(220)
  textSize(136)
  textAlign(CENTER, CENTER)
  fill('red')
  text('Hello', 200, 200)
}
```

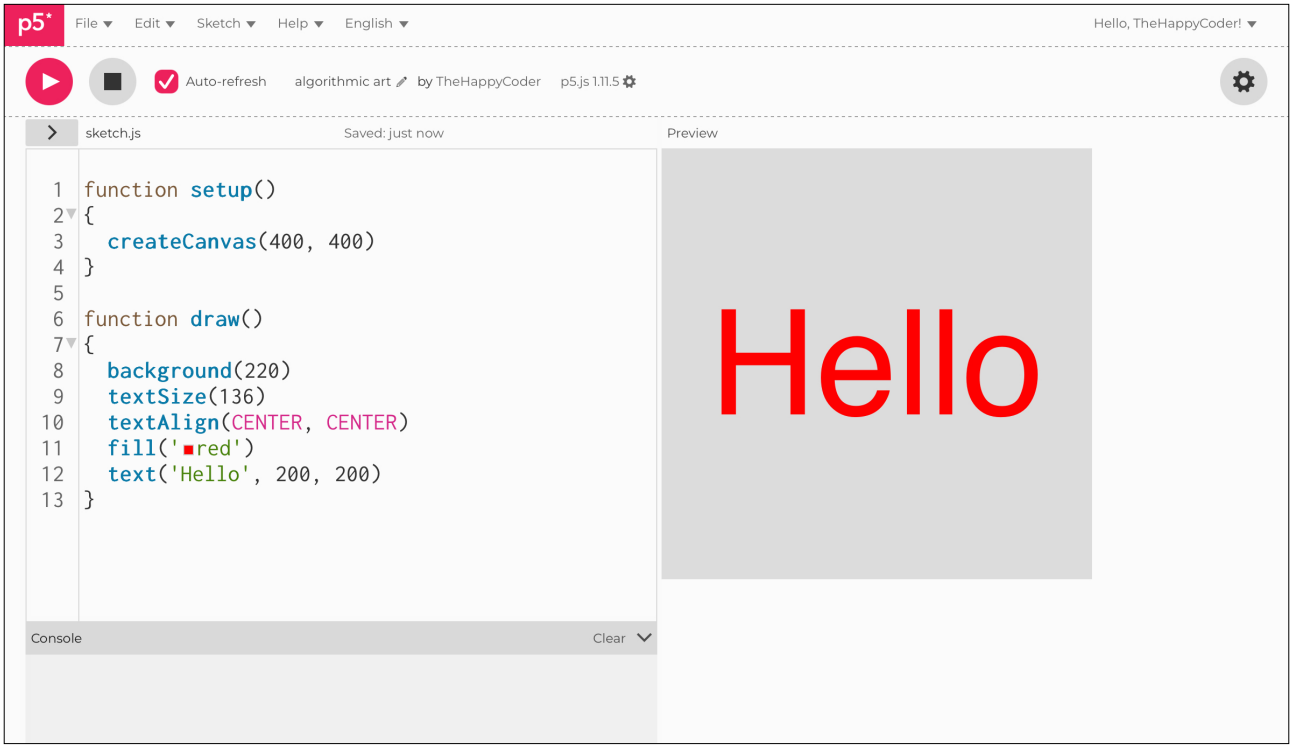
🗒️ Notes

With smallish text, we get a slight distortion with the colours.

🌻 Challenge

Try other colours and alpha.

Figure B3.4


p5*
File
Edit
Sketch
Help
English
Hello, TheHappyCoder!
Auto-refresh
algorithmic art
by TheHappyCoder
p5.js 1.11.5
sketch.js
Saved: just now
Preview
1 function setup()
2 {
3 createCanvas(400, 400)
4 }
5
6 function draw()
7 {
8 background(220)
9 textSize(136)
10 textAlign(CENTER, CENTER)
11 fill('red')
12 text('Hello', 200, 200)
13 }
Hello
Console
Clear

Sketch B3.5 border colour

We can add a border colour using the `stroke()` function.

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

function draw()
{
  background(220)
  textSize(136)
  textAlign(CENTER, CENTER)
  fill('red')
  stroke('blue')
  text('Hello', 200, 200)
}
```

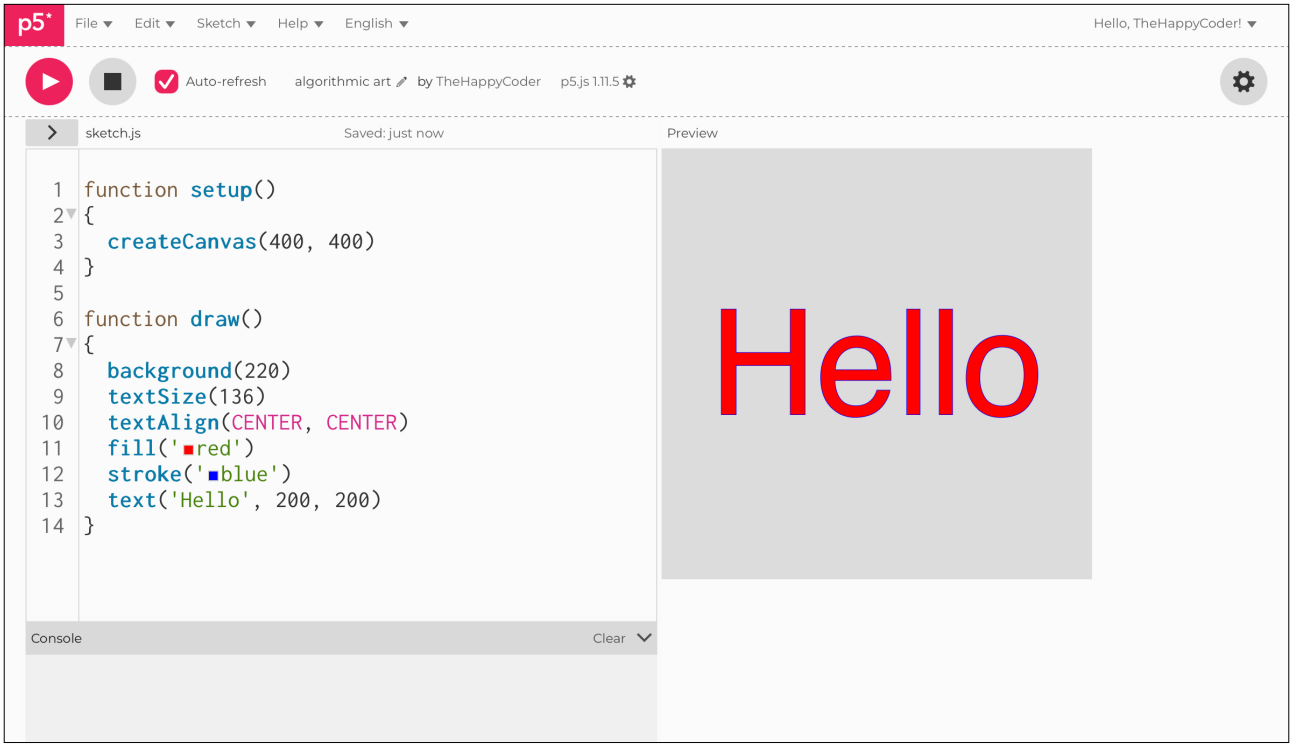
🗒️ Notes

The blue border around the text is there, it is still only one pixel thick.

🌻 Challenge

Alter the `strokeWeight()`.

Figure B3.5


p5*
File
Edit
Sketch
Help
English
Hello, TheHappyCoder!
Auto-refresh
algorithmic art
by TheHappyCoder
p5.js 1.11.5
sketch.js
Saved: just now
Preview
function setup()
{
createCanvas(400, 400)
}
function draw()
{
background(220)
textSize(136)
textAlign(CENTER, CENTER)
fill('red')
stroke('blue')
text('Hello', 200, 200)
}
Hello
Console
Clear

Sketch B3.6 stroke

❗ comment out the `fill('red')`

We can do two things: we can increase the `strokeWeight()` and we could have `noFill()`, so we will do both.

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

function draw()
{
  background(220)
  textSize(136)
  textAlign(CENTER, CENTER)
  // fill('red')
  noFill()
  strokeWeight(2)
  stroke('blue')
  text('Hello', 200, 200)
}
```

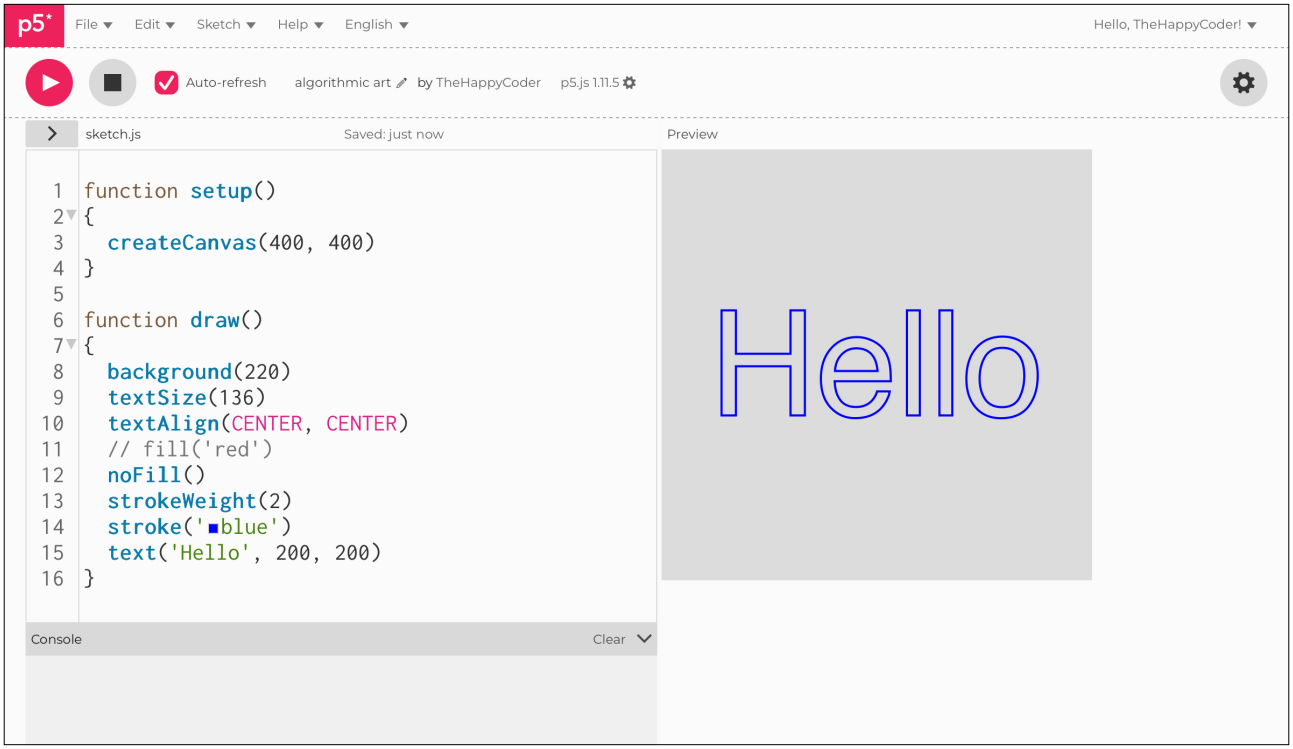
🗒️ Notes

Remember that when we comment out (`//`) a line of code, it is ignored.

🌻 Challenge

What happens if you don't comment out `fill('red')`?

Figure B3.6


p5*
File
Edit
Sketch
Help
English
Hello, TheHappyCoder!
Auto-refresh
algorithmic art
by TheHappyCoder
p5.js 1.11.5
sketch.js
Saved: just now
Preview
function setup()
{
createCanvas(400, 400)
}
function draw()
{
background(220)
textSize(136)
textAlign(CENTER, CENTER)
// fill('red')
noFill()
strokeWeight(2)
stroke('blue')
text('Hello', 200, 200)
}
Hello
Console
Clear

Sketch B3.7 translate

We have another trick up our sleeve: we can rotate the text. Before we do anything, we need to translate the canvas so that the origin is in the centre of the canvas. We will also need to set the coordinates of the text to (0, 0).

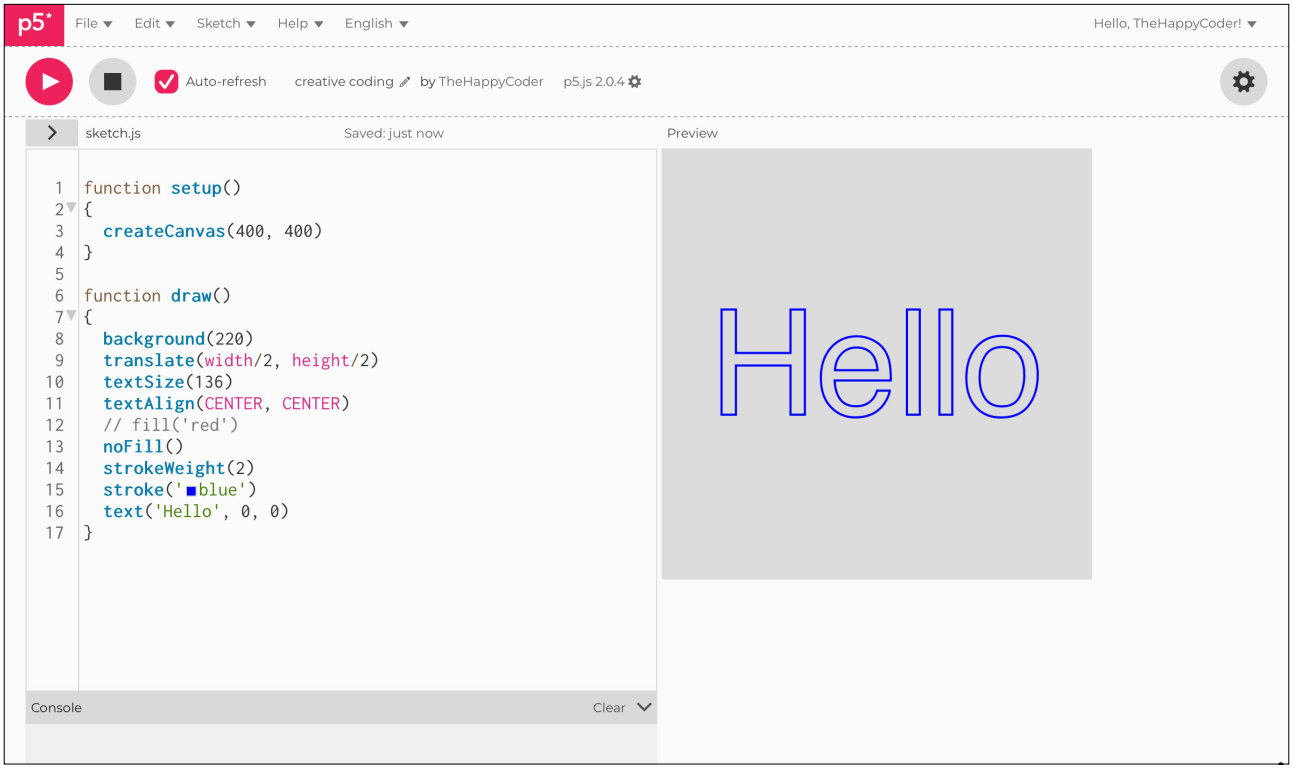
```
function setup()
{
  createCanvas(400, 400)
}

function draw()
{
  background(220)
  translate(width/2, height/2)
  textSize(136)
  textAlign(CENTER, CENTER)
  // fill('red')
  noFill()
  strokeWeight(2)
  stroke('blue')
  text('Hello', 0, 0)
}
```

Notes

Everything should be as we had before.

Figure B3.7


p5*
File
Edit
Sketch
Help
English
Hello, TheHappyCoder!
Auto-refresh
creative coding
by TheHappyCoder
p5.js 2.0.4
sketch.js
Saved: just now
Preview
function setup()
{
createCanvas(400, 400)
}
function draw()
{
background(220)
translate(width/2, height/2)
textSize(136)
textAlign(CENTER, CENTER)
// fill('red')
noFill()
strokeWeight(2)
stroke('blue')
text('Hello', 0, 0)
}
Hello
Console
Clear

Sketch B3.8 angle of degree

We want an `angle` variable and we will work in degrees, so hence `angleMode()`. We will set the angle to `90°`.

```
let angle = 90

function setup()
{
  createCanvas(400, 400)
  angleMode(DEGREES)
}

function draw()
{
  background(220)
  translate(width/2, height/2)
  rotate(angle)
  textSize(136)
  textAlign(CENTER, CENTER)
  // fill('red')
  noFill()
  strokeWeight(2)
  stroke('blue')
  text('Hello', 0, 0)
}
```

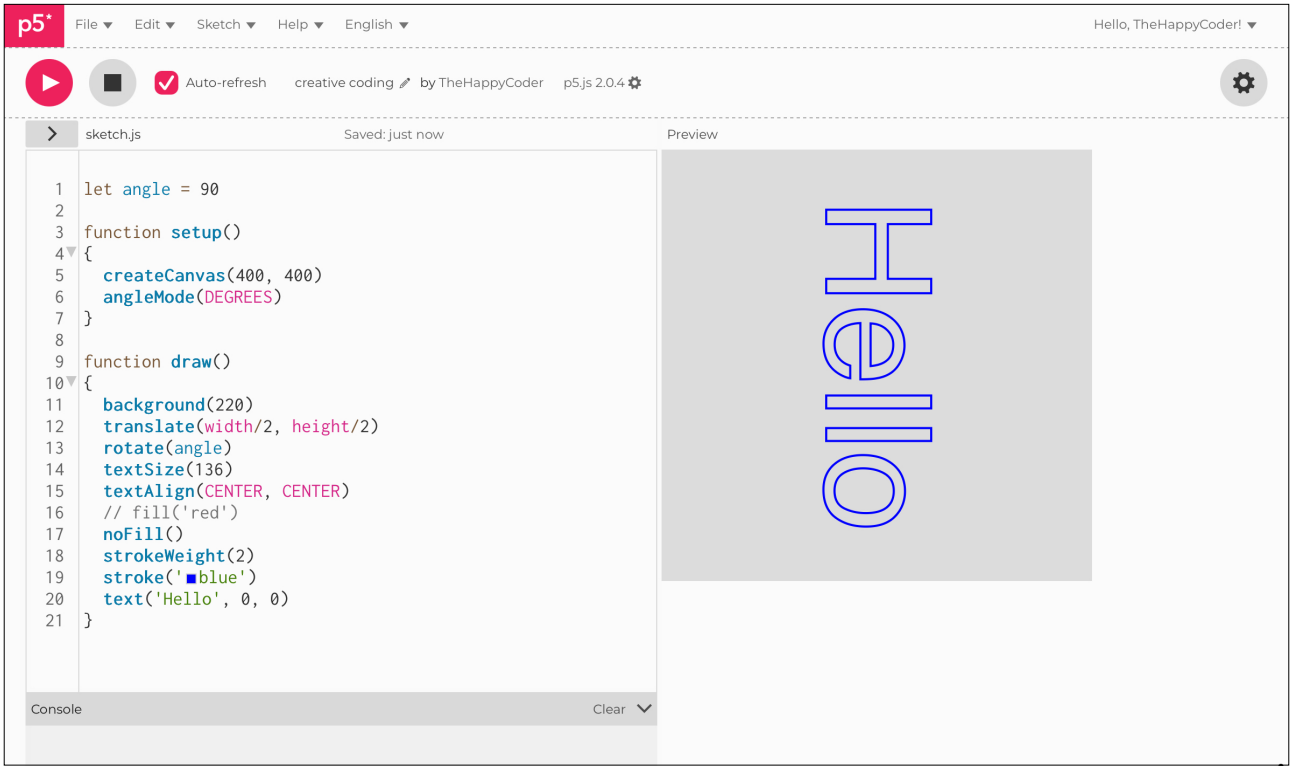
Notes

We have rotated it about the centre of the text.

Challenges

1. Try a different angle.
2. How would you rotate it?

Figure B3.8


p5*
File
Edit
Sketch
Help
English
Hello, TheHappyCoder!
Auto-refresh
creative coding
by TheHappyCoder
p5.js 2.0.4
sketch.js
Saved: just now
Preview
let angle = 90
function setup()
{
createCanvas(400, 400)
angleMode(DEGREES)
}
function draw()
{
background(220)
translate(width/2, height/2)
rotate(angle)
textSize(136)
textAlign(CENTER, CENTER)
// fill('red')
noFill()
strokeWeight(2)
stroke('blue')
text('Hello', 0, 0)
}
Console
Clear
Hello

Sketch B3.9 rotating

We can increment the angle by 1° and rotate it slowly.

```
let angle = 90

function setup()
{
  createCanvas(400, 400)
  angleMode(DEGREES)
}

function draw()
{
  background(220)
  translate(width/2, height/2)
  rotate(angle)
  textSize(136)
  textAlign(CENTER, CENTER)
  // fill('red')
  noFill()
  strokeWeight(2)
  stroke('blue')
  text('Hello', 0, 0)
  angle += 1
}
```

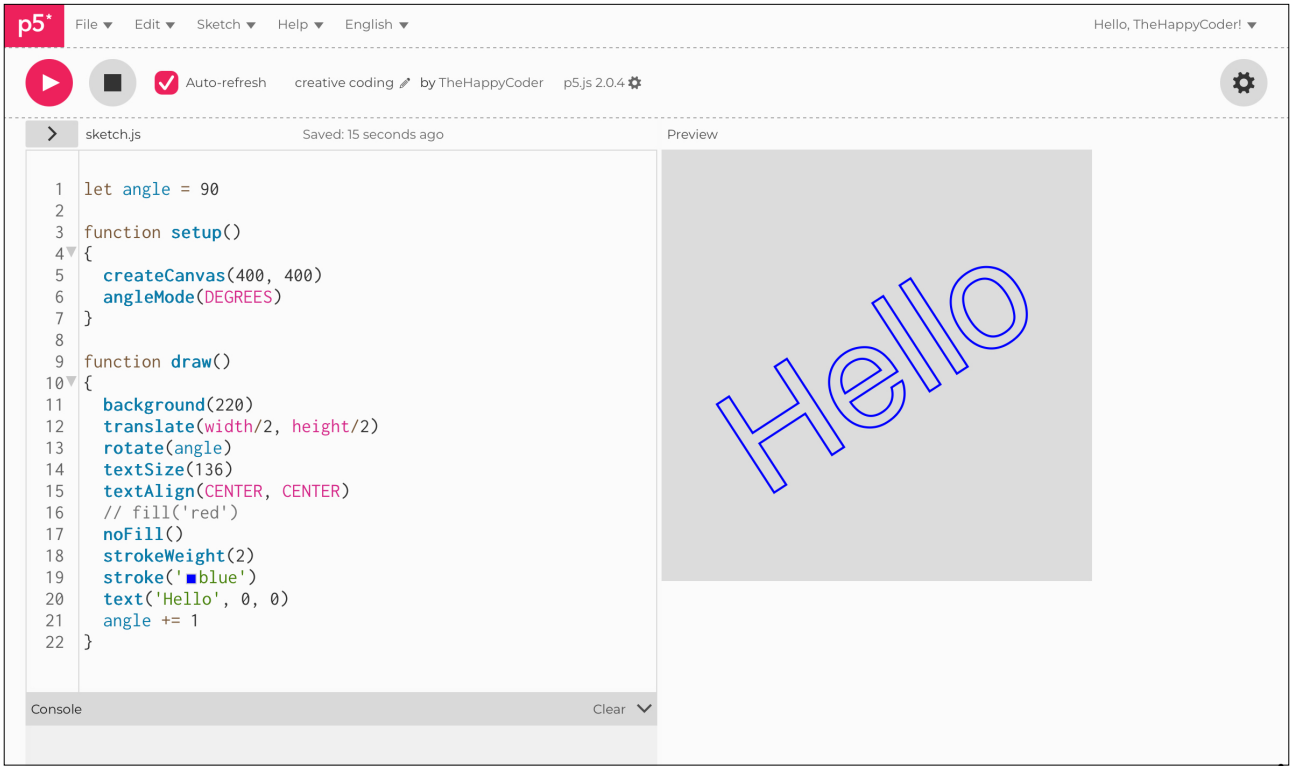
🗒️ Notes

You should have the text slowly rotating.

🌻 Challenges

1. How would you make it go faster or slower?
2. Change colour as it spins.
3. Change size as it spins.

Figure B3.9


p5*
File
Edit
Sketch
Help
English
Hello, TheHappyCoder!
Auto-refresh
creative coding
by TheHappyCoder
p5.js 2.0.4
sketch.js
Saved: 15 seconds ago
Preview
let angle = 90
function setup()
{
createCanvas(400, 400)
angleMode(DEGREES)
}
function draw()
{
background(220)
translate(width/2, height/2)
rotate(angle)
textSize(136)
textAlign(CENTER, CENTER)
// fill('red')
noFill()
strokeWeight(2)
stroke('blue')
text('Hello', 0, 0)
angle += 1
}
Hello
Console
Clear

Sketch B3.10 mouse mover

❗ Start a new sketch.
We can move text around with the mouse.

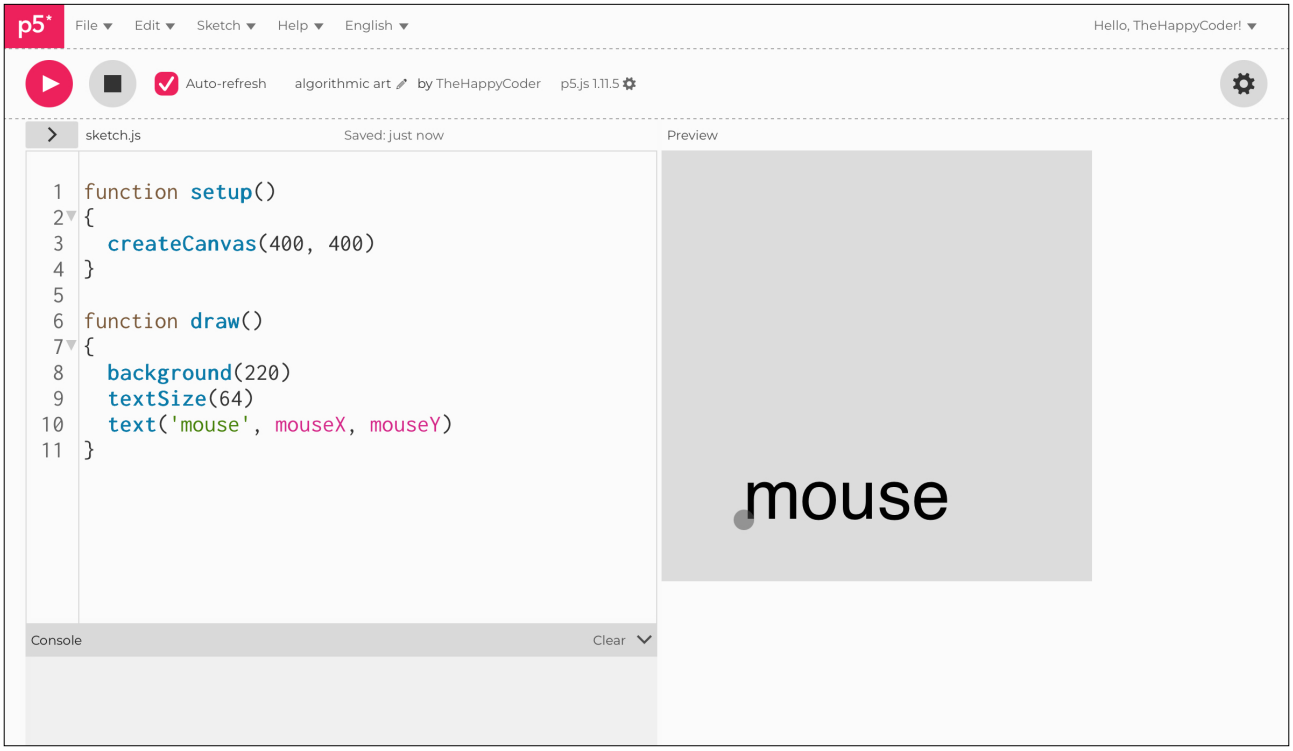
```
function setup()
{
  createCanvas(400, 400)
}

function draw()
{
  background(220)
  textSize(64)
  text('mouse', mouseX, mouseY)
}
```

🗒️ Notes
The text should follow the mouse pointer on the canvas.

🌻 Challenge
Could you make the text move in the opposite direction to the mouse?

Figure B3.10


p5*
File
Edit
Sketch
Help
English
Hello, TheHappyCoder!
Auto-refresh
algorithmic art
by TheHappyCoder
p5.js 1.11.5
sketch.js
Saved: just now
Preview
function setup()
{
createCanvas(400, 400)
}
function draw()
{
background(220)
textSize(64)
text('mouse', mouseX, mouseY)
}
mouse
Console
Clear

Sketch B3.11 not a string

We can incorporate values not just strings; here, we will get the `x` coordinate of the mouse on the canvas. The `int` means integer (no decimal places).

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

function draw()
{
  background(220)
  textSize(64)
  text(int(mouseX), mouseX, mouseY)
}
```

🗒️ Notes

We can see the `x` value on the canvas moving with the mouse.

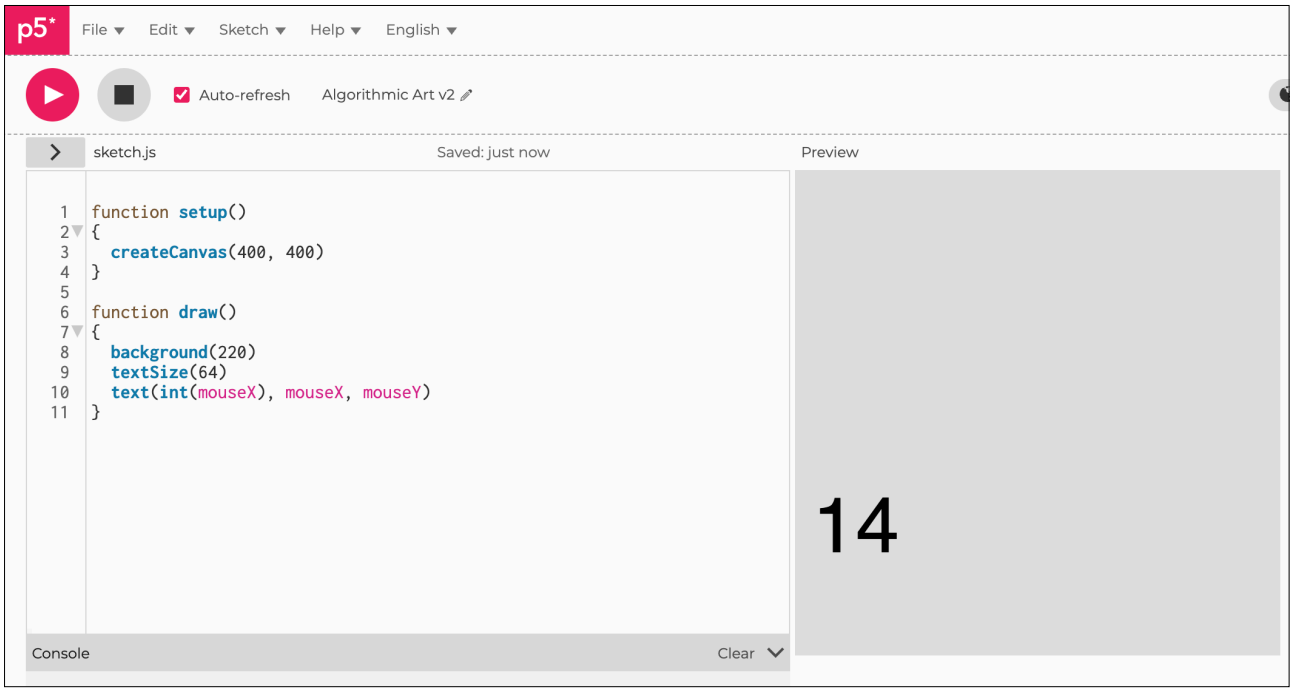
🌻 Challenges

1. Remove the `int()`
2. Add the `y` value.

🛠️ Code Explanation

`text(int(mouseX), mouseX, mouseY)`	Instead of a string it returns the value of mouseX (first parameter), the int makes it an integer otherwise you would get a long float.

Figure B3.11


p5*
File
Edit
Sketch
Help
English
Auto-refresh
Algorithmic Art v2
sketch.js
Saved: just now
Preview
function setup()
{
createCanvas(400, 400)
}
function draw()
{
background(220)
textSize(64)
text(int(mouseX), mouseX, mouseY)
}
14
Console
Clear

Sketch B3.12 and mouseY

We can add the mouseY coordinate as well.

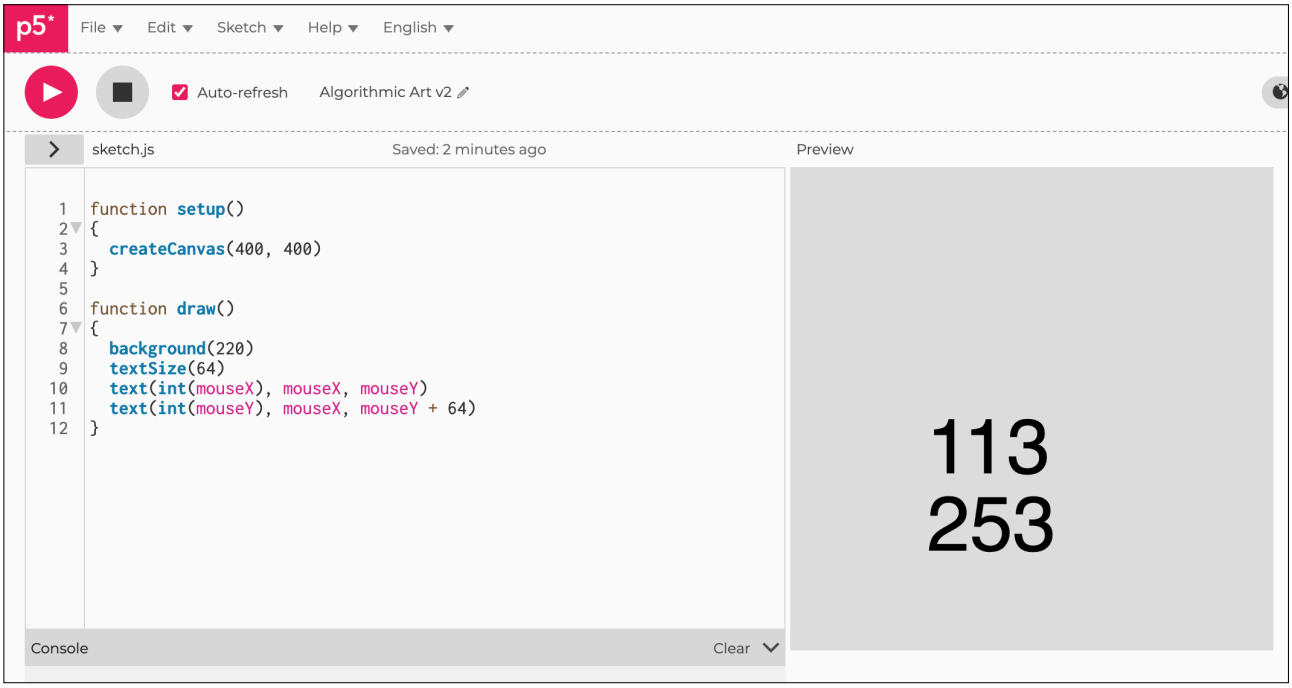
```
function setup()
{
  createCanvas(400, 400)
}

function draw()
{
  background(220)
  textSize(64)
  text(int(mouseX), mouseX, mouseY)
  text(int(mouseY), mouseX, mouseY + 64)
}
```

🗒️ Notes

We have to separate them, otherwise they will give the numbers on top of each other.

Figure B3.12


p5*
File
Edit
Sketch
Help
English
Auto-refresh
Algorithmic Art v2
sketch.js
Saved: 2 minutes ago
Preview
function setup()
{
createCanvas(400, 400)
}
function draw()
{
background(220)
textSize(64)
text(int(mouseX), mouseX, mouseY)
text(int(mouseY), mouseX, mouseY + 64)
}
113
253
Console
Clear

Sketch B3.13 static

Instead of following the mouse around, we can have the static values. Removing the integer to show the difference

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

function draw()
{
  background(220)
  textSize(64)
  text(mouseX, 50, 50)
  text(mouseY, 50, 100)
}
```

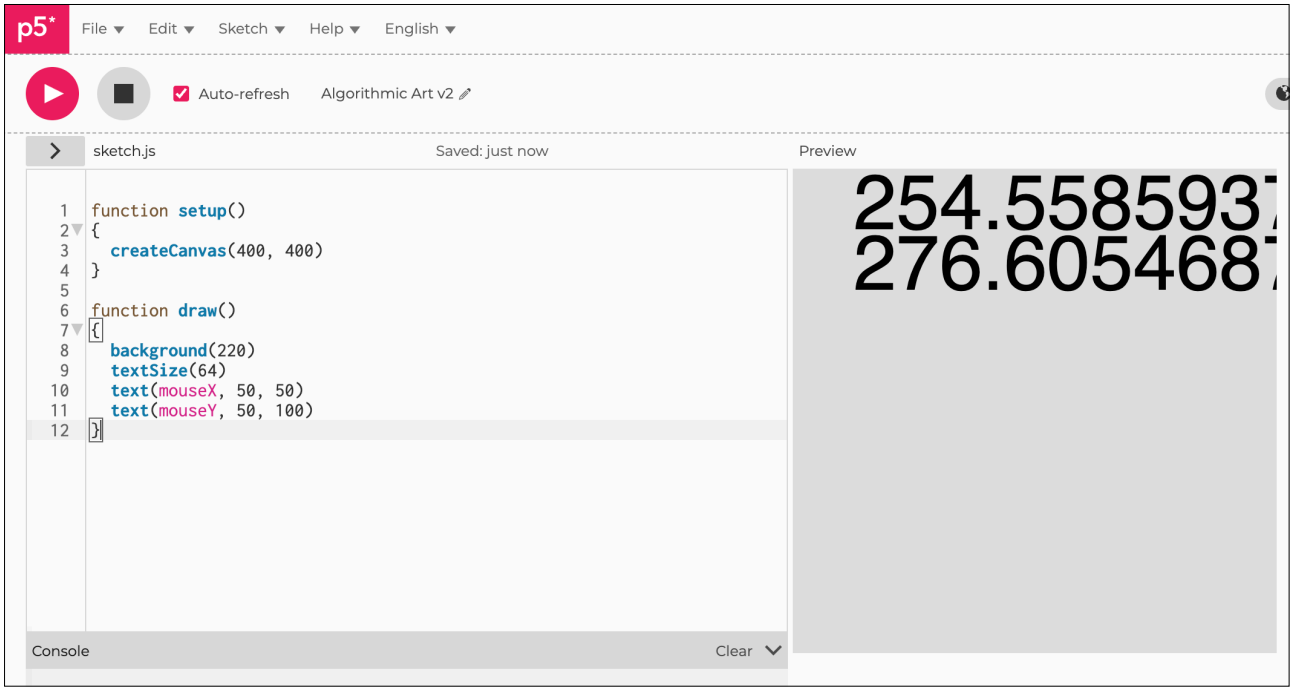
🗒️ Notes

The number changes, but do not move.

🌻 Challenge

What happens if you put the `background()` in the `setup()` function?

Figure B3.13


p5*
File
Edit
Sketch
Help
English
Auto-refresh
Algorithmic Art v2
sketch.js
Saved: just now
Preview
function setup()
{
createCanvas(400, 400)
}
function draw()
{
background(220)
textSize(64)
text(mouseX, 50, 50)
text(mouseY, 50, 100)
}
254.558593
276.605468
Console
Clear

Sketch B3.14 adding a string

The values were integers, changing values, we can combine strings (words and letters) and integers.

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

function draw()
{
  background(220)
  textSize(64)
  text('x: ' + int(mouseX), 50, 50)
  text('y: ' + int(mouseY), 50, 100)
}
```

🗒️ Notes

We have both the text and numbers.

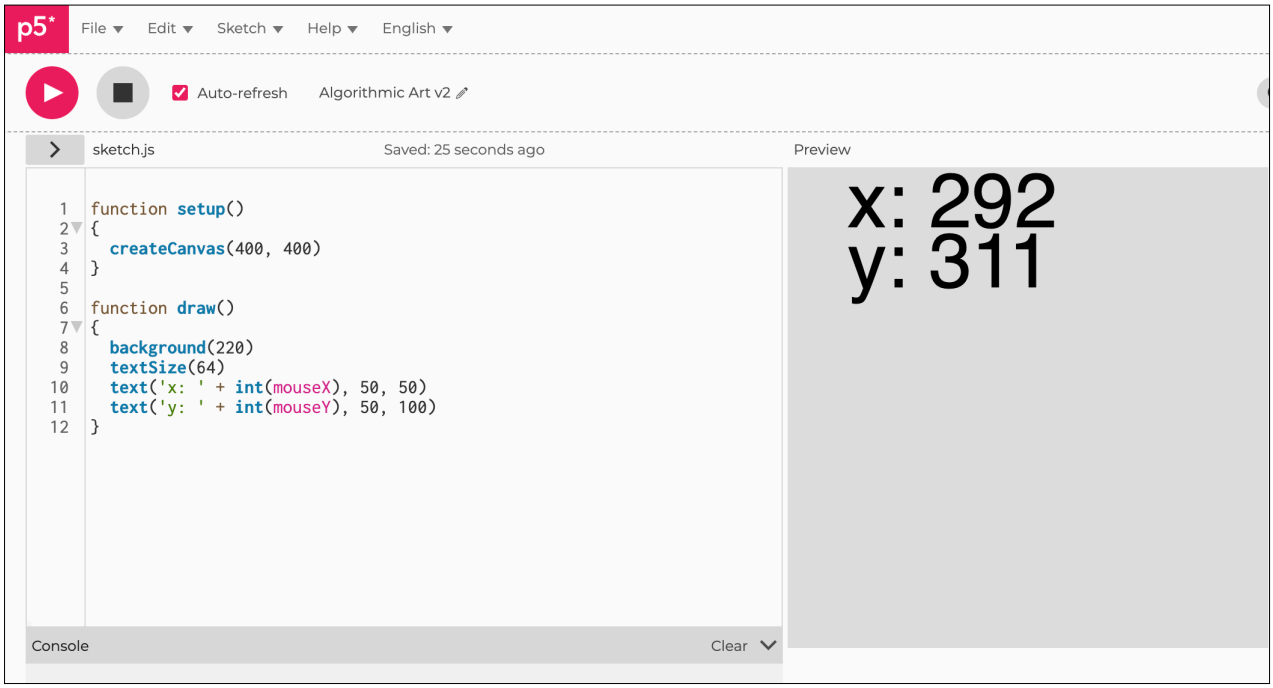
🌻 Challenge

Put speech marks around `mouseX` and `mouseY`.

🛠️ Code Explanation

`text('x: ' + mouseX, 50, 50)`	We can combine text, more text and values together on the same line

Figure B3.14


p5*
File
Edit
Sketch
Help
English
Auto-refresh
Algorithmic Art v2
sketch.js
Saved: 25 seconds ago
Preview
function setup()
{
createCanvas(400, 400)
}
function draw()
{
background(220)
textSize(64)
text('x: ' + int(mouseX), 50, 50)
text('y: ' + int(mouseY), 50, 100)
}
x: 292
y: 311
Console
Clear

Sketch B3.15 changing the font

We can call on many fonts that may be available to you through your computer. I suggest trial and error but I suspect that the main ones will be available.

```
function setup()
{
  createCanvas(400, 400)
  background('darkred')
}

function draw()
{
  textFont('papyrus')
  fill('white')
  textSize(50)
  text('Algorithmic Art', 35, 200)
}
```

🗒️ Notes

I have used the font papyrus.

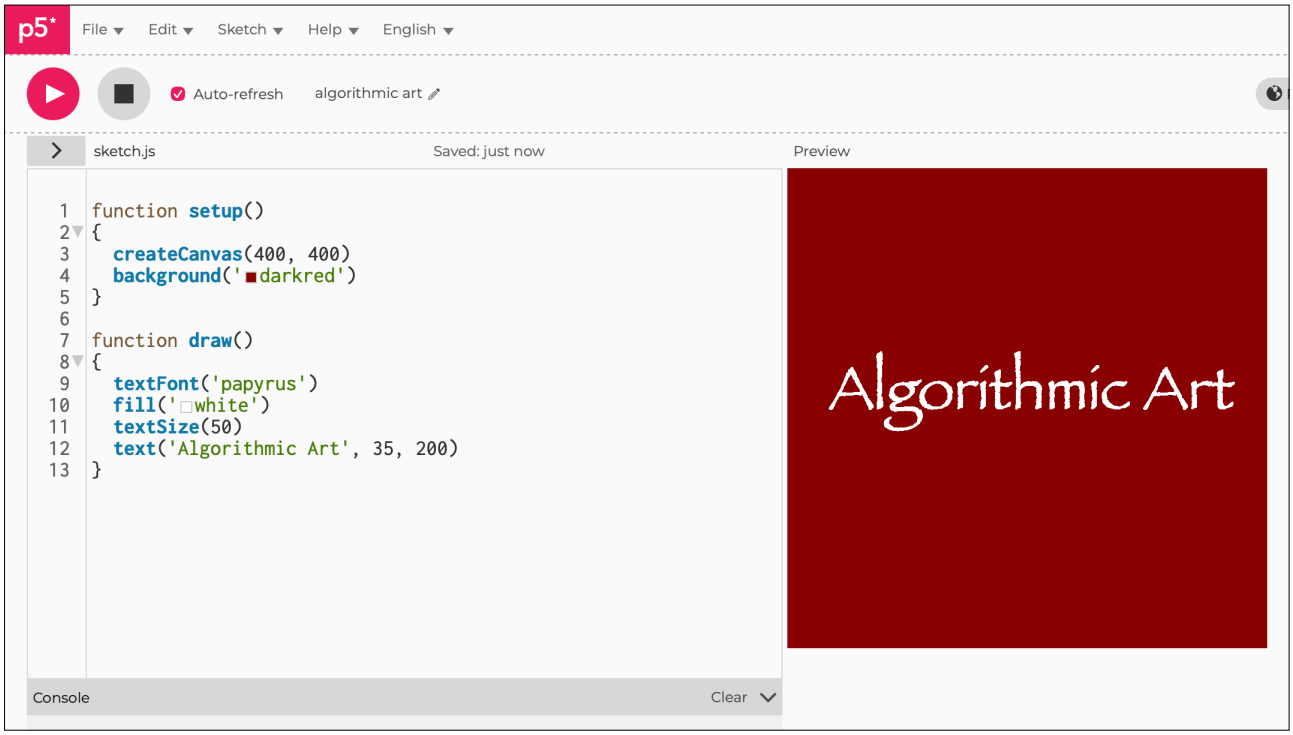
🌻 Challenge

Try other fonts.

🛠️ Code Explanation

`textFont('papyrus')`	The name of the font in speech marks.

Figure B3.15


p5*
File
Edit
Sketch
Help
English
Auto-refresh
algorithmic art
sketch.js
Saved: just now
Preview
function setup()
{
createCanvas(400, 400)
background('darkred')
}
function draw()
{
textFont('papyrus')
fill('white')
textSize(50)
text('Algorithmic Art', 35, 200)
}
Algorithmic Art
Console
Clear