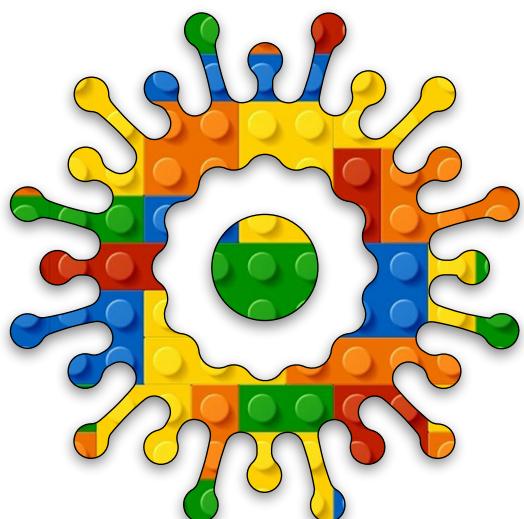


Creative
Coding
Module B
Unit #4

RGB colour
slider





Module B Unit #4 RGB colour slider

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Introducing RGB and the slider

So far, I have introduced colour as a name and as RGB values with red, green, and blue components. Before jumping into the other colour methods, I just want to expand on RGB.

Key concepts

- 中 colorMode()
- 中 sliders
- 中 RGB slider colour change



Sketch B4.1 using RGB for the colour

We have already introduced RGB. Here is a reminder: a green circle on an orange background.

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

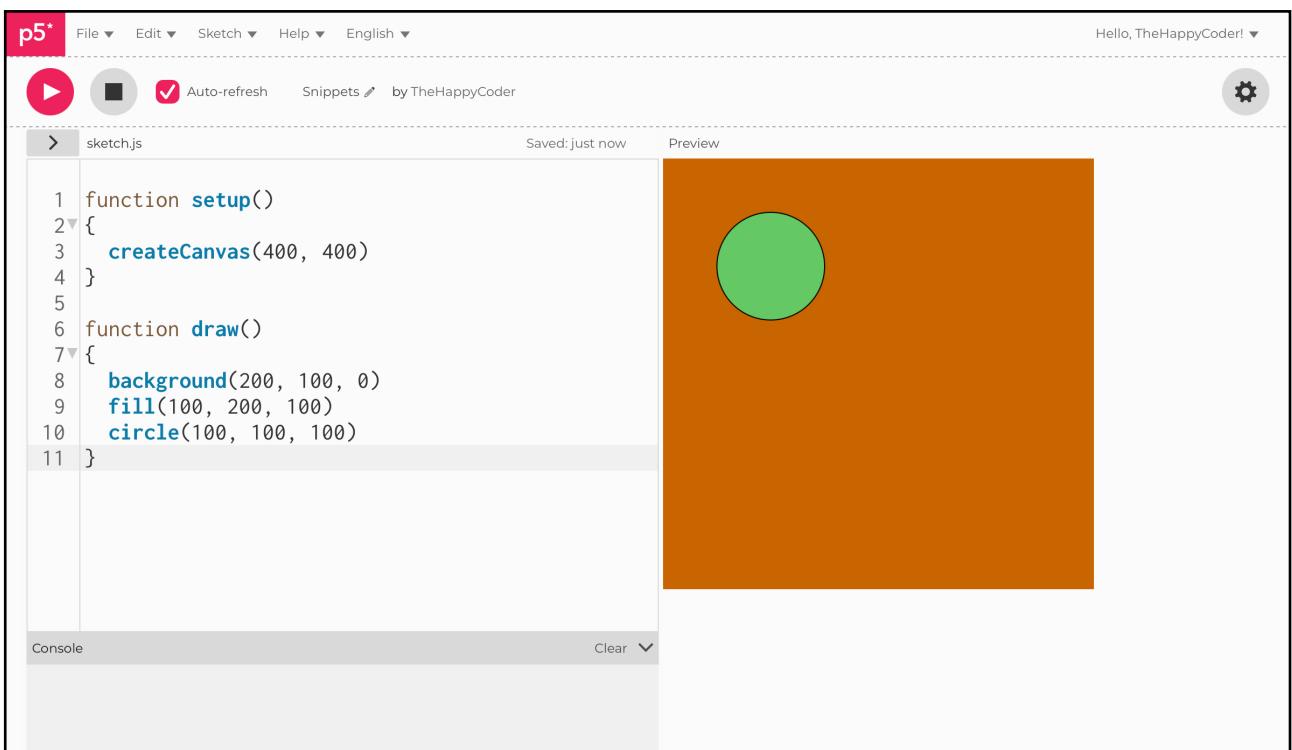
function draw()
{
    background(200, 100, 0)
    fill(100, 200, 100)
    circle(100, 100, 100)
}
```



Notes

By default, it assumes values (arguments) are for RGB, three for the red, blue, and green; the fourth is the amount of transparency.

Figure B4.1



The screenshot shows the p5.js code editor interface. At the top, there's a toolbar with icons for play/pause, stop, auto-refresh (which is checked), snippets by TheHappyCoder!, and a settings gear. The file name is "sketch.js" and it was saved "just now". Below the toolbar is the code editor area with the following JavaScript code:

```
1 function setup()
2 {
3     createCanvas(400, 400)
4 }
5
6 function draw()
7 {
8     background(200, 100, 0)
9     fill(100, 200, 100)
10    circle(100, 100, 100)
11 }
```

To the right of the code editor is a preview window showing a solid orange square with a single green circle centered in the middle.



Sketch B4.2 colorMode()

We have even introduced `colorMode()` briefly. Here we can explore it more as we look at other colour modes. If we have `colorMode(RGB, 100)`, we can scale it to `100` (think of it as a percentage).

```
function setup()
{
    createCanvas(400, 400)
    colorMode(RGB, 100)
}

function draw()
{
    background(100, 100, 0)
    fill(0, 75, 75)
    circle(100, 100, 100)
}
```



Notes

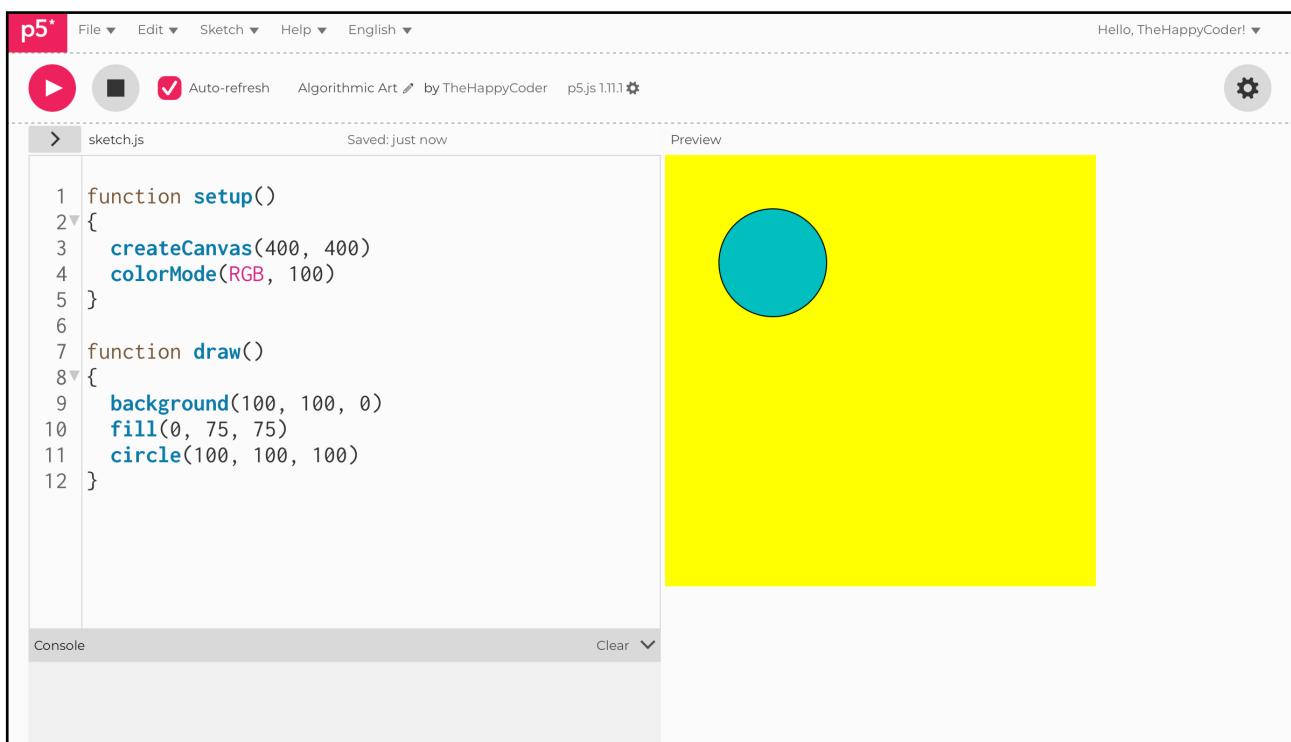
All the RGB values should be between `0` and `100`. If they exceed that value, then it will take the maximum, in this case `100`.



Challenge

You can add more arguments (any values you like), one for each element including alpha: `colorMode(RGB, 100, 100, 100, 100, 100)`. Try it.

Figure B4.2



The screenshot shows the p5.js IDE interface. At the top, there's a menu bar with 'File', 'Edit', 'Sketch', 'Help', and 'English'. To the right of the menu is a greeting 'Hello, TheHappyCoder!'. Below the menu is a toolbar with icons for play, stop, auto-refresh (which is checked), and settings. The main area has tabs for 'sketch.js' and 'Preview'. The code editor on the left contains the following JavaScript code:

```
1 function setup()
2 {
3   createCanvas(400, 400)
4   colorMode(RGB, 100)
5 }
6
7 function draw()
8 {
9   background(100, 100, 0)
10  fill(0, 75, 75)
11  circle(100, 100, 100)
12 }
```

The preview window on the right shows a yellow square with a cyan circle centered in the middle.



Sketch B4.3 starting sketch

! new sketch

Circle on a blank canvas.

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

function draw()
{
    background(220)
    circle(200, 100, 100)
}
```

Figure B4.3

The screenshot shows the p5.js web editor interface. At the top, there's a menu bar with 'File ▾', 'Edit ▾', 'Sketch ▾', 'Help ▾', and 'English ▾'. To the right of the menu is a greeting 'Hello, TheHappyCoder! ▾' and a gear icon for settings. Below the menu, there are three buttons: a play button, a square button, and an auto-refresh button with a checkmark. The title bar says 'sketch.js' and 'Saved: just now'. The preview window on the right shows a gray canvas with a single white circle centered at (200, 100) with a radius of 100. On the left, the code editor contains the following JavaScript code:

```
1 function setup()
2 {
3     createCanvas(400, 400)
4 }
5
6 function draw()
7 {
8     background(220)
9     circle(200, 100, 100)
10}
```

At the bottom left is a 'Console' tab and a 'Clear ▾' dropdown.



Sketch B4.4 create a slider

Firstly, we give the slider a name, in this case the rather unimaginative name of **slider**. Secondly, we create the slider with three arguments:

- A. Begin value (**0**)
- B. End value (**255**)
- C. Default value (**100**)

The range is between **0** and **255**. We will set the slider to **100** initially when you run the sketch. You can give it any value you want. Just use your mouse to slide it backwards and forwards.

```
let slider

function setup()
{
    createCanvas(400, 400)
    slider = createSlider(0, 255, 100)
}

function draw()
{
    background(220)
    circle(200, 100, 100)
}
```

Notes

You will notice that the slider is off the canvas; this is because we have not given it any coordinates, so by default it puts it at the bottom, below the canvas. Also, the slider doesn't do anything except slide!

Code Explanation

let slider	Slider object
slider = createSlider(0, 255, 100)	Create the slider object with the corresponding values

Figure B4.4

The screenshot shows the p5.js code editor interface. At the top, there's a menu bar with 'File', 'Edit', 'Sketch', 'Help', and 'English'. To the right of the menu is a user profile 'Hello, TheHappyCoder!'. Below the menu is a toolbar with icons for play, stop, auto-refresh (which is checked), and settings. The main area has tabs for 'sketch.js' and 'Preview'. The code editor contains the following JavaScript code:

```
1 let slider
2
3 function setup()
4{
5  createCanvas(400, 400)
6  slider = createSlider(0, 255, 100)
7 }
8
9 function draw()
10{
11  background(220)
12  circle(200, 100, 100)
13 }
```

The preview window shows a gray canvas with a white circle at (200, 100) and a radius of 100. A horizontal slider is positioned at the bottom of the preview area, with its value set to 100. The console tab at the bottom is currently inactive.



Sketch B4.5 slider value

We can take the value of the slider using `slider.value()`, the `value()` function returns the value. We can fill the circle with that value. Now when you move the slider, it changes the colour of the circle.

```
let slider

function setup()
{
    createCanvas(400, 400)
    slider = createSlider(0, 255, 100)
}

function draw()
{
    background(220)
    fill(slider.value())
    circle(200, 100, 100)
}
```

Notes

You should see it change as you move the slider. We have put it straight into the `fill()` function.

Challenges

1. Try different start, final, and initial values for the slider.
2. You could create a variable for the slider value.

Code Explanation

<code>fill(slider.value())</code>	Returns the value of the slider
-----------------------------------	---------------------------------

Figure B4.5

The screenshot shows the p5.js IDE interface. At the top, there's a toolbar with icons for play, stop, and refresh, followed by the text "Hello, TheHappyCoder! ▾". Below the toolbar, the file name "sketch.js" is displayed along with the message "Saved: just now". On the left, the code editor contains the following JavaScript code:

```
1 let slider
2
3 function setup()
4 {
5   createCanvas(400, 400)
6   slider = createSlider(0, 255, 100)
7 }
8
9 function draw()
10 {
11   background(220)
12   fill(slider.value())
13   circle(200, 100, 100)
14 }
```

To the right of the code editor is a preview window titled "Preview" which shows a gray square canvas. Inside the canvas, there is a white circle at the coordinates (200, 100) with a radius of 100. Below the canvas, a horizontal slider bar is visible, indicating the current value of the slider. At the bottom of the interface, there's a "Console" tab and a "Clear" button.



Sketch B4.6 position slider

We will now move it to the canvas; we simply give it the coordinates we want to display it at.

```
let slider

function setup()
{
    createCanvas(400, 400)
    slider = createSlider(0, 255, 100)
}

function draw()
{
    background(220)
    slider.position(50, 200)
    fill(slider.value())
    circle(200, 100, 100)
}
```

Notes

Slider now on the canvas.

Challenge

Try different positions.

Code Explanation

<code>slider.position(50, 200)</code>	Positioned the slider at 50 from the left and 200 down from the top
---------------------------------------	---

Figure B4.6

The screenshot shows the p5.js IDE interface. At the top, there are menu options: File, Edit, Sketch, Help, and English. On the right, it says "Hello, TheHappyCoder!". Below the menu is a toolbar with icons for play, stop, and refresh, followed by the text "Auto-refresh algorithmic art by TheHappyCoder p5.js 1.11.5". The main area has tabs for "sketch.js" and "Preview". The code editor contains the following JavaScript code:

```
1 let slider
2
3 function setup()
4{
5  createCanvas(400, 400)
6  slider = createSlider(0, 255, 100)
7 }
8
9 function draw()
10{
11  background(220)
12  slider.position(50, 200)
13  fill(slider.value())
14  circle(200, 100, 100)
15 }
```

The preview window shows a gray square canvas. Inside, there is a dark gray circle at the top center and a horizontal slider with a blue track and a white knob positioned below it.



Sketch B4.7 showing the value

We can display the value of the slider.

```
let slider

function setup()
{
    createCanvas(400, 400)
    slider = createSlider(0, 255, 100)
}

function draw()
{
    background(220)
    slider.position(50, 200)
    fill(slider.value())
    circle(200, 100, 100)
    textSize(20)
    text(slider.value(), 200, 215)
}
```

Notes

One issue, as you will see when you slide the slider, is that the text changes colour as well.

Challenge

Do you know how to stop that?

Figure B4.7

The screenshot shows the p5.js code editor interface. At the top, there are navigation menus: File, Edit, Sketch, Help, and English. On the right side, it says "Hello, TheHappyCoder!" with a gear icon. Below the menu bar, there are buttons for play/pause, stop, auto-refresh (which is checked), and preview. The preview window shows a gray canvas with a large dark gray circle at the center and a horizontal slider below it. The slider has a blue track and a white knob, with the value "100" displayed next to it. The code editor window contains the following JavaScript code:

```
let slider;
function setup(){
  createCanvas(400, 400)
  slider = createSlider(0, 255, 100)
}
function draw(){
  background(220)
  slider.position(50, 200)
  fill(slider.value())
  circle(200, 100, 100)
  textSize(20)
  text(slider.value(), 200, 215)
}
```

Below the code editor is a "Console" section which is currently empty.



Sketch B4.8 text colour

Just to keep the text from changing colour.

```
let slider

function setup()
{
    createCanvas(400, 400)
    slider = createSlider(0, 255, 100)
}

function draw()
{
    background(220)
    slider.position(50, 200)
    fill(slider.value())
    circle(200, 100, 100)
    fill(0)
    textSize(20)
    text(slider.value(), 200, 215)
}
```

Notes

We have taken this bit nicely and slowly; next, we will look at red, green, and blue.

Challenge

Any ideas how to do red, green, and blue?

Figure B4.8

The screenshot shows the p5.js code editor interface. At the top, there are menu options: File, Edit, Sketch, Help, and English. On the right, it says "Hello, TheHappyCoder!" with a gear icon. The main area has a play button, a square button, and an auto-refresh checkbox checked. Below that, it says "sketch.js" and "Saved: just now". The code editor contains the following JavaScript code:

```
let slider
function setup()
{
  createCanvas(400, 400)
  slider = createSlider(0, 255, 100)
}
function draw()
{
  background(220)
  slider.position(50, 200)
  fill(slider.value())
  circle(200, 100, 100)
  fill(0)
  textSize(20)
  text(slider.value(), 200, 215)
}
```

To the right of the code editor is a preview window titled "Preview". It displays a gray canvas with a large dark gray circle at the center. A horizontal slider below the circle is set to the value 100. At the bottom of the preview window, there is a "Clear" dropdown menu.



Sketch B4.9 red value

We need to change the name of the slider to `sliderRed()` everywhere, and also change the `fill()` to include the values of the green and blue (`0`).

```
let sliderRed

function setup()
{
    createCanvas(400, 400)
    sliderRed = createSlider(0, 255, 100)
}

function draw()
{
    background(220)
    sliderRed.position(50, 200)
    fill(sliderRed.value(), 0, 0)
    circle(200, 100, 100)
    fill(0)
    textSize(20)
    text(sliderRed.value(), 200, 215)
}
```

Notes

The circle will change from black to bright red.

Challenge

How about adding the green and the blue?

Figure B4.9

The screenshot shows the p5.js IDE interface. At the top, there are menu options: File, Edit, Sketch, Help, and English. On the right, it says "Hello, TheHappyCoder!" with a gear icon. The main area has a title bar "sketch.js" and a status bar "Saved: just now". Below this is the code editor with the following script:

```
let sliderRed
function setup()
{
    createCanvas(400, 400)
    sliderRed = createSlider(0, 255, 100)
}
function draw()
{
    background(220)
    sliderRed.position(50, 200)
    fill(sliderRed.value(), 0, 0)
    circle(200, 100, 100)
    fill(0)
    textSize(20)
    text(sliderRed.value(), 200, 215)
}
```

To the right of the code editor is a preview window titled "Preview". It displays a gray square canvas with a large red circle centered at (200, 100) and a radius of 100. Below the circle is a horizontal slider with a value of 100. At the bottom left of the preview window, there is a "Console" button and a "Clear" dropdown.



Sketch B4.10 full RGB

Adding the other colours.

```
let sliderRed
let sliderGreen
let sliderBlue

function setup()
{
    createCanvas(400, 400)
    sliderRed = createSlider(0, 255, 100)
    sliderGreen = createSlider(0, 255, 100)
    sliderBlue = createSlider(0, 255, 100)

}

function draw()
{
    background(220)
    sliderRed.position(50, 200)
    sliderGreen.position(50, 250)
    sliderBlue.position(50, 300)
    fill(sliderRed.value(), sliderGreen.value(),
    sliderBlue.value())
    circle(200, 100, 100)
    fill(0)
    textSize(20)
    text(sliderRed.value(), 200, 215)
    text(sliderGreen.value(), 200, 265)
    text(sliderBlue.value(), 200, 315)
}
```



Notes

A lot of copying and pasting.



Challenge

Have it change the background instead.

Figure B4.10

The screenshot shows the p5.js code editor interface. At the top, there are buttons for play/pause, refresh, and settings, along with the text "Hello, TheHappyCoder! ▾". The file menu includes "File ▾", "Edit ▾", "Sketch ▾", "Help ▾", and "English ▾". The title bar says "sketch.js" and "Saved: 25 seconds ago". The code area contains the following JavaScript code:

```
10  sliderBlue = createSlider(0, 255, 100)
11 }
12
13 function draw()
14 {
15   background(220)
16   sliderRed.position(50, 200)
17   sliderGreen.position(50, 250)
18   sliderBlue.position(50, 300)
19   fill(sliderRed.value(), sliderGreen.value(),
19       sliderBlue.value())
20   circle(200, 100, 100)
21   fill(0)
22   textSize(20)
23   text(sliderRed.value(), 200, 215)
24   text(sliderGreen.value(), 200, 265)
25   text(sliderBlue.value(), 200, 315)
26 }
```

The preview window shows a gray canvas with a large magenta circle at the center. Below the circle are three horizontal sliders. The first slider is blue and has a value of 226. The second slider is white and has a value of 27. The third slider is blue and has a value of 250.