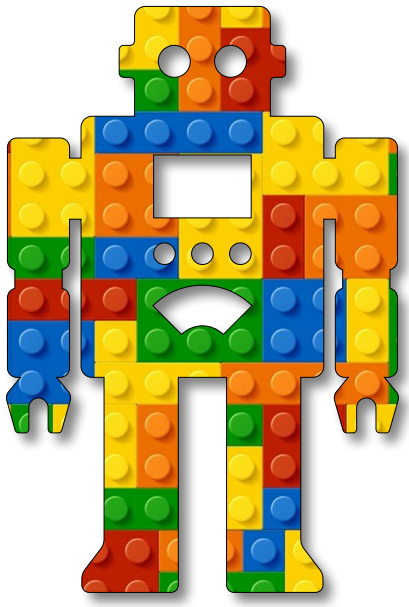
Intelligent Machines Module B Unit #3 LED slider



Content

Module B Unit #3 LED slider

Introduction to LED slider

In this example, we are going to alter the brightness of the LED using a slider in p5.js.

The `index.html` file remains unaltered.
The `port.js` file remains unaltered.

Sketch B3.1 receiving a value

❗ Our Arduino sketch

Remove everything in the `Serial.available()` loop and replace it with the code highlighted below. We are going to be sending an integer value from `p5.js` to the Arduino, and it will alter the brightness of the LED. To receive the value, we create an integer called `val`.

Arduino

```
const int ledPin = 13;
int val = 0;

void setup()
{
  pinMode(ledPin, OUTPUT);
  Serial.begin(9600);
}

void loop()
{
  if (Serial.available() > 0)
  {
    val = Serial.read();
    analogWrite(ledPin, val);
  }
}
```

🗒️ Notes

Now upload the sketch.

🛠️ Code Explanation

`int val = 0;`	Creating the integer variable
`val = Serial.read();`	Reading the integer value form the p5.js sketch
`analogWrite(ledPin, val);`	Write that value to the LED

Sketch B3.2 starting sketch

❗ The main sketch.js

We include the `navigation()` function in our basic sketch.

sketch.js

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

function draw()
{
  background(220)
}
```

🗒️ Notes

We need to include the `navigation()` function each time.

Sketch B3.3 slider

Adding the slider.

sketch.js

```
let slider

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

function draw()
{
  background(220)
}
```

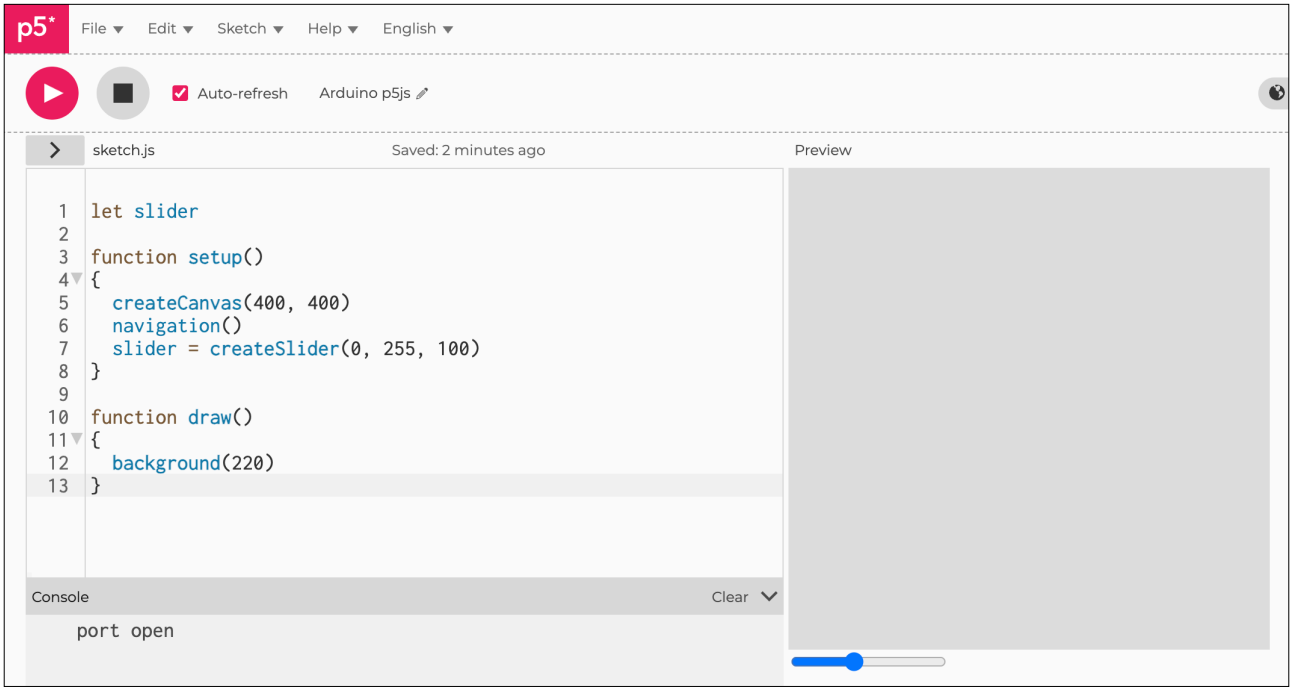
🗒️ Notes

This just pops the slider on the bottom of the canvas.

🛠️ Code Explanation

`let slider`	Naming the slider object
`slider = createSlider(0, 255, 100)`	Creating a slider with values from 0-255 with a default setting of 100

Figure B3.3


p5*
File
Edit
Sketch
Help
English
Auto-refresh
Arduino p5js
sketch.js
Saved: 2 minutes ago
Preview
let slider
function setup()
{
createCanvas(400, 400)
navigation()
slider = createSlider(0, 255, 100)
}
function draw()
{
background(220)
}
Console
Clear
port open

Sketch B3.4 slider value

We take the value of the slider and send it (via serial) to the Arduino.

sketch.js

```
let slider
let val

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

function draw()
{
  background(220)
  val = slider.value()
  serial.write(val)
}
```

🗒️ Notes

If you try this now, assuming you have connected successfully to the Arduino through a port, the LED on the board should correspond in brightness with the slider.

🛠️ Code Explanation

`let val`	The val variable
`val = slider.value()`	Read the value of the slider
`serial.write(val)`	Send the value of val to the serial port

Sketch B3.5 visual

Just to add a bit of visualisation, we fill a circle according to the value and write the value on the canvas for good measure.

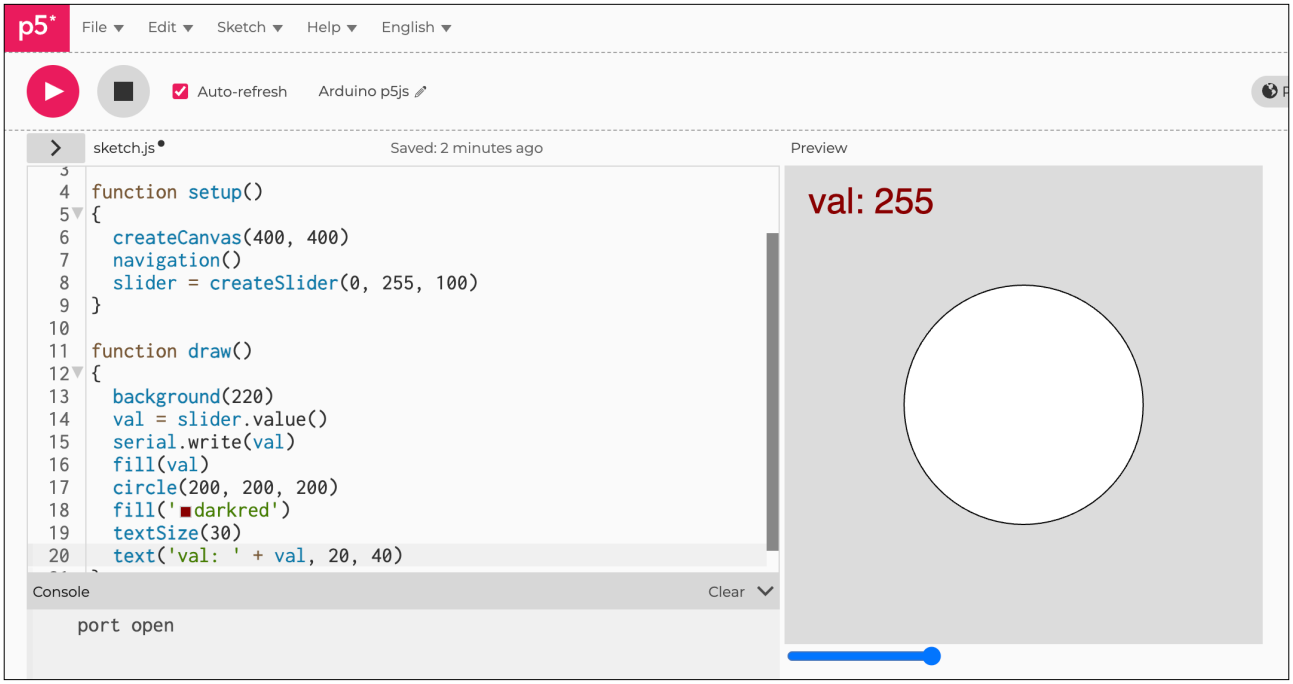
sketch.js

```
let slider
let val

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

function draw()
{
  background(220)
  val = slider.value()
  serial.write(val)
  fill(val)
  circle(200, 200, 200)
  fill('darkred')
  textSize(30)
  text('val: ' + val, 20, 40)
}
```

Notes

Adding a circle and text to the p5.js sketch.

Figure B3.5


p5*
File
Edit
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Auto-refresh
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sketch.js
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Preview
function setup()
{
createCanvas(400, 400)
navigation()
slider = createSlider(0, 255, 100)
}
function draw()
{
background(220)
val = slider.value()
serial.write(val)
fill(val)
circle(200, 200, 200)
fill('darkred')
textSize(30)
text('val: ' + val, 20, 40)
Console
Clear
port open
val: 255