CVK Abhiroop

creative coding final presentation

concept

concept

ARDUINO DRUMS

PROGRAM

P5.bots
Arduino

SUMMARY

Use different colors to encode for different drum kit sounds

References:

https://www.youtube.com/watch?v=x8kiiMCqjqk

Domenick Propati's Masters Project

CALENDAR: OBTAIN AND BUILD HARDWARE (11.28), GET FIRST DRAFT OF CODE (11.30)

SKETCH:

SETUP

Initialise all the sensors (IR) as well as the ports

VOID/DRAW

-Play different sounds for different colors on the kit
-Maybe include different visualisations on screen for different sounds too (if time permits)

WHAT I KNOW:

Arduino
P5.js

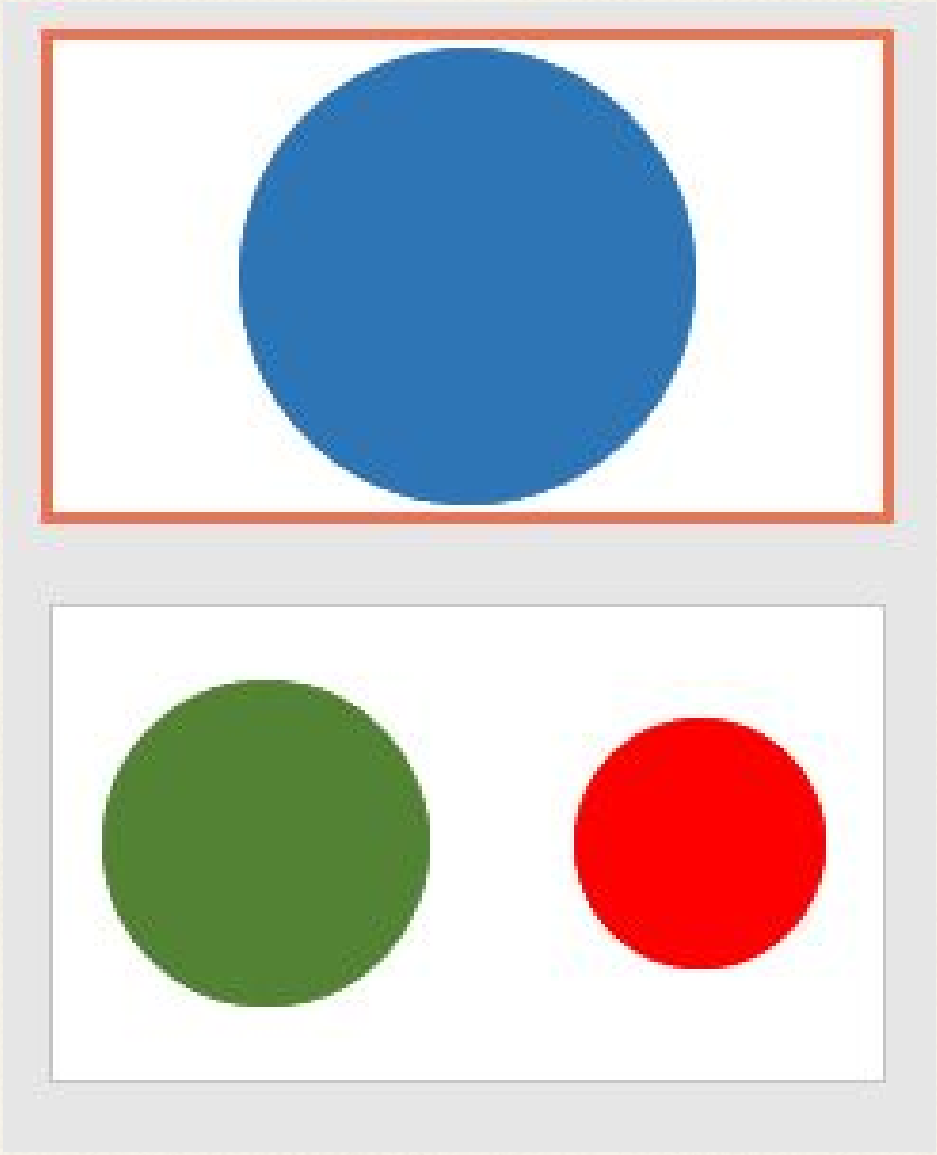
CHALLENGES:

-Combining Arduino with p5.bots library
-Ensuring hardware doesn't fail
-Encapsulating all of the hardware so it doesn't fall apart

SETUP:

Arduino + color pads

concept



stage 1 - testing

stage 1 - testing

```
/* Serial communication Arduino/Processing Sparkfun tutorial*/

void setup()
{
//initialize serial communications at a 9600 baud rate
Serial.begin(9600);
}


void loop()
{
//send 'Hello, world!' over the serial port
Serial.println("Hello, World!");
//wait 100 milliseconds so we don't drive ourselves crazy
delay(100);
}

/* Serial communication Arduino/Processing Sparkfun tutorial*/
```

stage 1 - testing

```
import processing.serial.*;


/* Sparkfun Arduino/Processing Serial communication tutorial */
Serial myPort;  // Create object from Serial class
String val;     // Data received from the serial port

void setup()
{
  // I know that the first port in the serial list on my mac
  // is Serial.list()[0].
  // On Windows machines, this generally opens COM1.
  // Open whatever port is the one you're using.
  String portName = Serial.list()[0]; //change the 0 to a 1 or 2 etc. to match your port
  myPort = new Serial(this, portName, 9600);
}


void draw()
{
  if ( myPort.available() > 0)
  {  // If data is available,
  val = myPort.readStringUntil('\n');         // read it and store it in val
  }
println(val); //print it out in the console
}


/* Sparkfun Arduino/Processing Serial communication tutorial */
```

stage 1 - testing

```
/*     Reference: Arduino Color Sensing Tutorial by Dejan Nedelkovski, www.HowToMechatronics.com
*/

// Declare ports
const int s0 = 4;
const int s1 = 5;
const int s2 = 6;
const int s3 = 7;
const int sensorOut = 8;

int frequency;

void setup() {
  //Setting pinModes for the ports
  pinMode(4, OUTPUT);
  pinMode(5, OUTPUT);
  pinMode(6, OUTPUT);
  pinMode(7, OUTPUT);
  pinMode(8, INPUT);

  //Turning on port 4, turning off port 5 at setup (start)
  digitalWrite(4, HIGH);
  digitalWrite(5, LOW);

  //Opening serial for serial monitor and serial communication with Processing
  Serial.begin(9600);
}

void loop() {
  //Filter Red
  digitalWrite(5, LOW);
  digitalWrite(5, LOW);
  filterColour(25,72,255, "Red = ");
```

stage 1 - testing

```
void loop() {
  //Filter Red
  digitalWrite(5, LOW);
  digitalWrite(5, LOW);
  filterColour(25,72,255, "Red = ");

  //Filter Green
  digitalWrite(5, HIGH);
  digitalWrite(5, HIGH);
  filterColour(30,90,255, "Green = ");

  //Filter Blue
  digitalWrite(5, LOW);
  digitalWrite(5, HIGH);
  filterColour(25,70,255, "Blue = ");
}

void filterColour(int x ,int y,int z,char a){
  //reads the values detected by the colour sensor
  frequency = pulseIn(8, LOW);
  //x, y, z will be updated according to the calibration of the colors detected by the colour sensor
  //Remaps the pulseIn values onto a scale of 0-255 for RGB reference (ease of reading)
  frequency = map(frequency, x, y, z, 0);
  //a will be the string name of the color being used
  Serial.print(a);
  Serial.print(frequency);
  Serial.println("  ");
  //Short delay to prevent overwhelming of the system
  delay(100);
}
```

stage 1 -testing

Arduino

Code works and success!

Processing

Preliminary code works.

Arduino x Processing

Test code runs and success!

Have to get final code from Processing and then test.

stage 2 - problems

stage 2 - problems

Serial communication

Have to find a way to refer to the variable from Processing (that exists in Arduino)

Ended up changing from serial.print to serial.write

Processing

Accessing the variable didn’t seem possible, but accessing a string had problems (tried split, parsing).

Ended up changing from myPort.readStringUntil to myPort.read

Audio

Kept looping, and had to figure out how to play ‘once’.

Used flag to keep track of each run, and ‘reset’ flag upon end of timer.

final result

More info on how to use this template at
www.slidescarnival.com/help-use-presentation-template