Creative Coding Workshop

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Objectives

- Introduce p5.js

- Learn some basic programming techniques

- Build a simple game

What is p5.js?

- Javascript library for creative coding

- Designed to make coding accessible for artists, designers & beginners

- Built on top of web standards (HTML5 canvas, JS)

Why use p5.js?

- Beginner-friendly syntax

- Instant visual feedback

- Interactive 'sketches' can be used for games, art, data visualisations and more

- Lots of community examples and references

p5.js Examples

- Snakes
- Networks
- Escheresque

Many more and more…

Galactic-orb Bopper

- Simple circle clicking game

- Key Concepts:
  - Basic logic and control structures
  - Canvas drawing
  - Randomisation
  - Event handling

- References:
  - Slides - https://bit.ly/cc-ob-slides

Step 1 - Setup

- Go to editor.p5js.org
- Add the following code

```
function setup() {
  createCanvas(windowWidth, windowHeight);
}

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

Step 2 - Add an Orb

```javascript
let circleX = 275, circleY = 175, circleSize = 50;

function setup() {
  createCanvas(600, 400);
}

function draw() {
  background(220);
  ellipse(circleX, circleY, circleSize);
}
```

Step 3 - Randomising the Orb

```javascript
let circleX, circleY, circleSize = 50;

function setup() {
  createCanvas(600, 400);
  newCircle();
}

function draw() {
  background(220);
  ellipse(circleX, circleY, circleSize);
}

function newCircle() {
  circleX = random(circleSize, width - circleSize);
  circleY = random(circleSize, height - circleSize);
}
```

Step 4 - Detecting clicks

```
function mousePressed(){
  newCircle();
}
```

Step 5 - Bopping Orbs

```
function mousePressed(){
  let d = dist(mouseX, mouseY, circleX, circleY);
  if (d < circleSize / 2) {
    newCircle();
  }
}
```

Step 6 - Adding Score (i)

```
let score = 0; // add score variable
```

```
function mousePressed(){
  let d = dist(mouseX, mouseY, circleX, circleY);
  if (d < circleSize / 2) {
    score++; // increment score
    newCircle();
  }
}
```

Step 6 - Adding score (ii)

```
function draw() {
  background(220);
  ellipse(circleX, circleY, circleSize);

  // drawing the score to screen
  fill(0);
  textSize(24);
  text("Score: " + score, 10, 30);
}
```

Step 7 - Add a timer (i)

```
let timeLeft = 30; // add variable
```

```javascript
function setup() {
  createCanvas(windowWidth, windowHeight);
  newCircle();

  //Create a timer that runs every second
  setInterval(() => {
    if (timeLeft > 0){
        timeLeft--;
    }
  }, 1000);
}
```

Step 7 - Add a timer (ii)

```javascript
function draw() {
  background(220);
  ellipse(circleX, circleY, circleSize);

  fill(0);
  textSize(24);
  text("Score: " + score, 10, 30);

  text("Time: " + timeLeft, 10, 60);//draw time to screen


  if (timeLeft == 0) {//check if time remains
    noLoop();
    text("Game Over", width / 2 - 50, height / 2);
  }
}
```

Extending the game

- Fade circles
  - Alter difficulty
- Change circle colours
  - Different points for different circles
- Move the circles
- Store high score
- Add sounds

Thank You

Full Code available at: https://bit.ly/ob-code