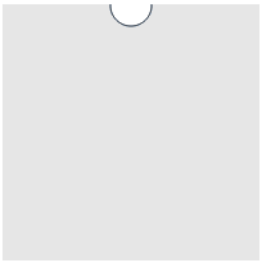
Working out Class Exercises

Job – 1 Write a program so that a ball has 10% chance of moving up, a 20% of chance moving down, and a 70% chance of doing nothing.

```
var y = 0;

function setup() {
  createCanvas(200, 200);
}

function draw() {
  background(230);









  ellipse(width / 2, y, 32, 32);
}
```



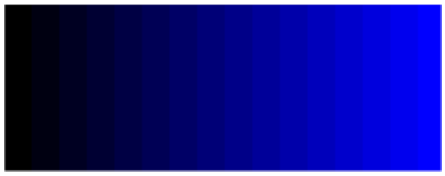
Job – 2 Given:

```
createCanvas(256, 100);

var x = 0;

while (x < 256) {
  stroke(x);
  line(x, 0, x, height);
  x++;
}
```

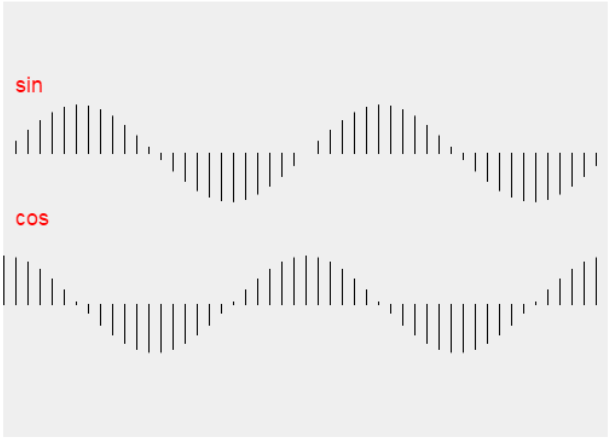
```
createCanvas(400, 100);

var x = 0;

while (x < width) {
  var c = map(x, 0, width, 0, 256);
  stroke(c);
  line(x, 0, x, height);
  x++;
}
```

Your task: Generate 16 stripes in gradients of blue:

```
createCanvas(256, 100);
noStroke();

var s = 0;

while (s < 16) {
  var c = map(s, ___, ___, ___, ___);

  fill(0, 0, c);
  rect(s * 16, 0, 16, 100);

  s++;
}
```

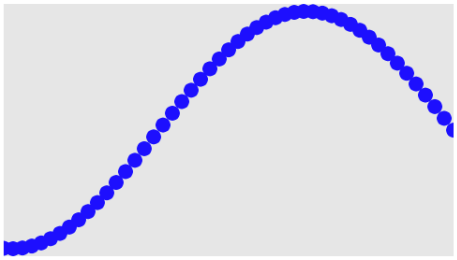


Study Sample Program 4



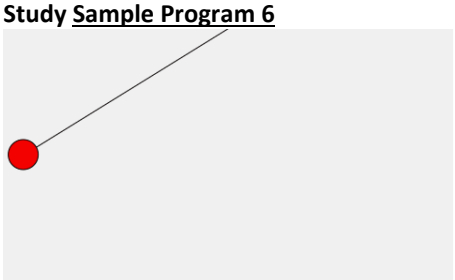

```
function setup() {
  createCanvas(500, 360);
  background(240);
  fill(255, 0, 0);
  textSize(18);
  text("sin", 10, 75);
  text("cos", 10, 185);

  var a = 0.0;
  var inc = TWO_PI / 25;

  for (var i = 0; i < 50; i++) {
    line(i*10, 125, i*10, 125 - sin(a)*40);
    line(i*10, 250, i*10, 250 - cos(a)*40);
    a = a + inc;
  }
}
```

Study Sample Program 5



```
//The first theta whose sine value is drawn as a dot on the canvas
var firstTheta = 0.0;

function setup() {
  createCanvas(480, 270);
  noStroke();
  fill(0, 0, 255);
}

function draw() {
  background(230);

  // Increment firstTheta for every frame
  firstTheta += 0.02; // Todo: try other values of "angular velocity"

  var theta = firstTheta;

  // draws all points along a sine wave (scaled to canvas size).
  for (var x = 0; x <= width; x += 10) {
    var y = map(sin(theta), -1, 1, 8, height-8);
    ellipse(x, y, 16, 16);
    theta += 0.1;
  }
}
```

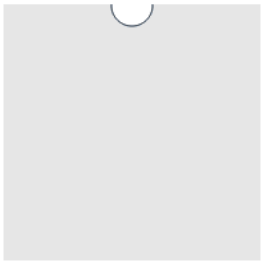
Study Sample Program 6



```
var theta = 0.0;

function setup() {
  createCanvas(480, 270);
  fill(255, 0, 0);
  stroke(0);
}

function draw() {
  background(240);

  // The output of the sin() function oscillates
  // smoothly between -1 and 1.  We map it
  // to an x coordinate between 16 and width-16
  var x = map(sin(theta), -1, 1, 16, width - 16);

  // With each cycle, increment theta
  theta += 0.05;

  // Draw the ellipse at the value produced by sine
  line(width / 2, 0, x, height / 2);
  ellipse(x, height / 2, 32, 32);
}
```

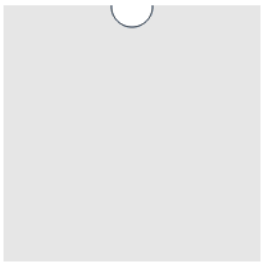
Job – 3

(a) The ping pong ball bounces back when hitting the ground, and drops when reaching certain height. Using sin wave, you should see that the ball moves more naturally.
[Approach: Map the sin values of -1 to +1 to vertical positions between top and bottom]



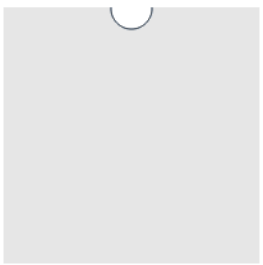
```
function setup() {
  createCanvas(200, 300);
  fill(0);
  stroke(0);
}

function draw() {
  background(230);









}
```

(b) The ping pong ball rises and drops slower at high positions, then hits and bounces the ground quickly.
[Approach: Using theta from 0 to PI only, map the sin values of 0 to +1 to vertical positions between bottom and top]



```
function setup() {
  createCanvas(200, 300);
  fill(0);
  stroke(0);
}

function draw() {
  background(230);









}
```

(c) The speed of the ball decays and the ball eventually stops. *Hint*: initialize a path-height and reduce it gradually.



```
function setup() {
  createCanvas(200, 300);
  fill(0);
  stroke(0);
}

function draw() {
  background(230);









}
```

Study
Sample Program 7

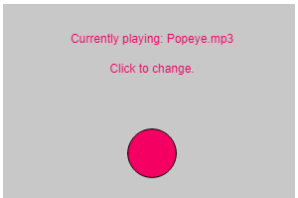

```
<script src="https://cdnjs.cloudflare.com/ajax/libs/p5.js/0.5.14/p5.js"></script>
<script src="https://cdnjs.cloudflare.com/ajax/libs/p5.js/0.5.14/addons/p5.sound.js"></script>

<script>
    var sound;

    function preload() {
      sound = loadSound("Canon5s.mp3");
    }

    function setup() {
      createCanvas(200, 200);
      textAlign(CENTER, CENTER);
    }

    function draw() {
      background(200);
      if (sound.isPlaying()) {
        text("Song is playing.  Click to stop.", width / 2, height / 2);
      } else {
        text("Click to play", width / 2, height / 2);
      }
    }

    function mousePressed() {
      if (sound.isPlaying()) {
        sound.stop();
      } else {
        sound.play();
      }
    }
</script>
```

Job – 4a

- Create an array of sound files
- Loop over each to load them
- Select a random sound to loop
- Click mouse to select a new one to loop

Job – 4b

Modify your program of Job 4a so that the beat of the playing sound is shown.




```
var files = ["Sheep.mp3", "Canon5s.mp3", "DeerHunter.mp3", "Popeye.mp3"];
var sound = [];
var iCurrent = 0; //The index of the sound that is playing

function preload() {
  //Load the sounds in a loop



}

function setup() {
  createCanvas(300, 200);
  textAlign(CENTER, CENTER);

  //Pick a random sound and loop it




}

function draw() {
  background(200);

  //Display the file name of the current sound
  text("Currently playing: "          , width / 2, height / 2 - 15);
  text("Click to change.", width / 2, height / 2 + 15);
}

function mousePressed() {
  //Stop the current sound


  //Pick a random sound and loop it




}
```