Chapter 1 : Color

Exercise P.1.2.3

Step 1:
In this exercise we focus on color palettes from rules. Firstly we declare 3 variables. We let these three variables equal to empty arrays . We do this because we want to have an individual array for hue, sat and brightness and depending on what key is pressed, the arrays are filled according to different rules. We also set the tileCountX and tileCountY accordingly to constrain the amount of tiles we want.

```
var hueValues = [];
var saturationValues = [];
var brightnessValues = [];
```

Step 2:
In the draw function we limit the mouse coordinates to the canvas by using the variables mX and mY. We set a counter for the tiles and set it to 0.

```
function draw() {
  // white back
  background(0, 0, 100);


  var mX = constrain(mouseX, 0, width);
  var mY = constrain(mouseY, 0, height);

  // tile counter
  var counter = 0;
```

Step 3:
When the grid is drawn the colors are selected from the arrays individually. The variable counter starts to cycle through the same values because of the modulo operator(%). This is to ensure that only the first colors in the array are used in the grid

```
for (var gridY = 0; gridY < tileCountY; gridY++) {
  for (var gridX = 0; gridX < tileCountX; gridX++) {
    var posX = tileWidth * gridX;
    var posY = tileHeight * gridY;
    var index = counter % currentTileCountX;

    // get component color values
    fill(hueValues[index], saturationValues[index],
    brightnessValues[index]);
    rect(posX, posY, tileWidth, tileHeight);
    counter++;
  }
}
}
```

Step 4:

We create a keyPressed function here. When the key '1' is pressed, the three arrays are filled with random values from the complete ranges of values. Any color can appear in the palette.

```
if (key == '1') {
  for (var i = 0; i < tileCountX; i++) {
    hueValues[i] = random(360);
    saturationValues[i] = random(100);
    brightnessValues[i] = random(100);
  }
}
```

When the key '2' is pressed, the brightness is always set at 100 and cannot change. This creates a bright palette. When the key of '3' i pressed the saturation is always set at 100 which creates a very dark saturated palette of colors. When the key of' 4' is pressed the hue and saturation value is set to 0 which creates no color at all. Only brightness are active. When the key of '5' is pressed the range of hue is lowered from 360 to 195. This limits the amount of hue used in the palette. If the key of '7' is pressed the hue is set to random for colors between 0 and 180. The saturation and brightness values have two parameters here. This means that the randomness must be between the two constraints given .