Practical 5 - for Loops

Objectives

On completion of this lab you should understand variable scope and be able to code static drawings using for and while loops.

For Loop

- Create a new Processing sketch in your workspace and call it **Practical05_for_loops**.
- Enter the following code into your sketchbook (don't copy and paste...write the code out):

```
int yCoordinate = 60;

size(600, 300);
background(102);
fill(255);
noStroke();

for(int i = 0; i < 4; i++)
{
   rect(50, yCoordinate, 500, 10);
   yCoordinate = yCoordinate + 20;
}
```

- Run your code. This code should draw four white horizontal blocks.
- Does it work as you would expect?

Same loop, but without the yCoordinate variable

- Update the above code by removing the yCoordinate variable and updating the for loop accordingly (the solution is in your lectures, but try to do this without looking at the slides).
- Does it work the same?

Nested For Loops

- Create a new Processing sketch in your workspace and call it **Pracitcal08_nested_for_loops**.
- Enter the following code into your sketchbook (don't copy and paste...write the code out):

```
for (int i=0; i < 4; i++)
{
    for (int j=0; j < 4; j++)
   {
      println("The value of i is: " + i + " and j is: " + j);
    }
}
```

- Run your code. This code should print out a series of lines to your console.
- Look at these lines, in particular, look at the values printed for i and for j. Do you understand the mechanics of how the nested for loop works?

Exercises

- For each exercise listed below, open a new sketchbook.
- You may need to visit the Processing website for additional information.
- When you are finished all your exercises, zip all your exercises into one file and send them as **Practical5** to your lecturer.

Console Exercise 1

- Create a new sketch and use a **for** loop and the println method to print hello 5 times to the console.

Console Exercise 2

- Create a new sketch and use a **for** loop and the println method to print the numbers 1 to 10 to the console.

Console Exercise 3

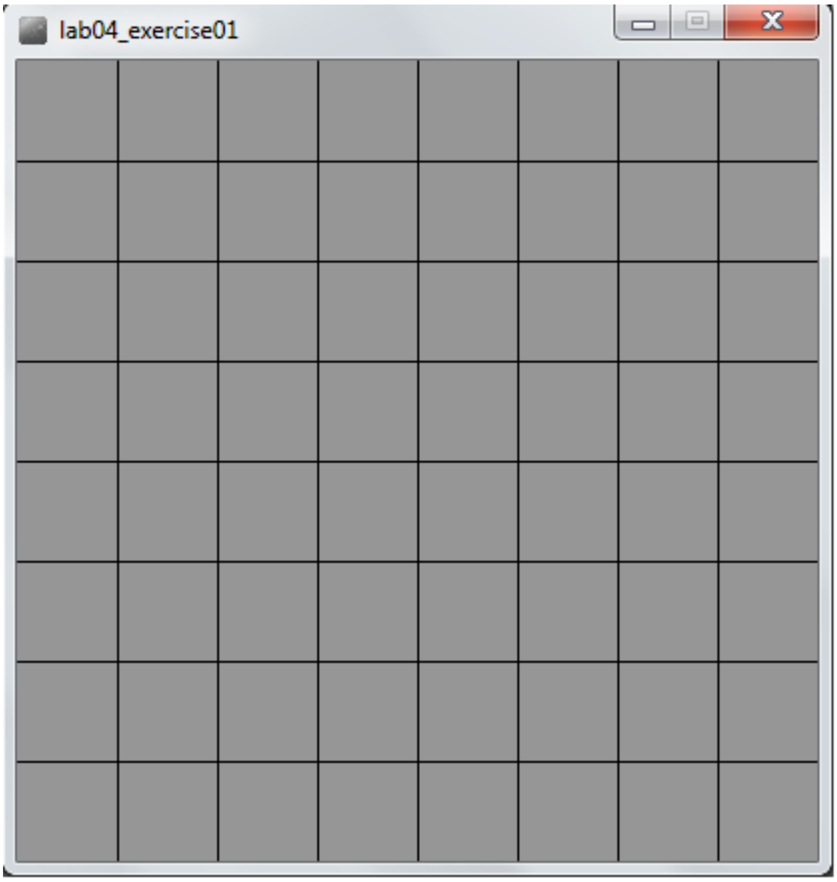
- Create a new sketch and use a **for** loop and the println method to print **10, 9, 8, 7, 6, 5, 4, 3, 2, 1, blast off** to the console.

Console Exercise 4

- Create a new sketch and use a **for** loop and the println method to print all the even numbers between 2 and 10 to the console.

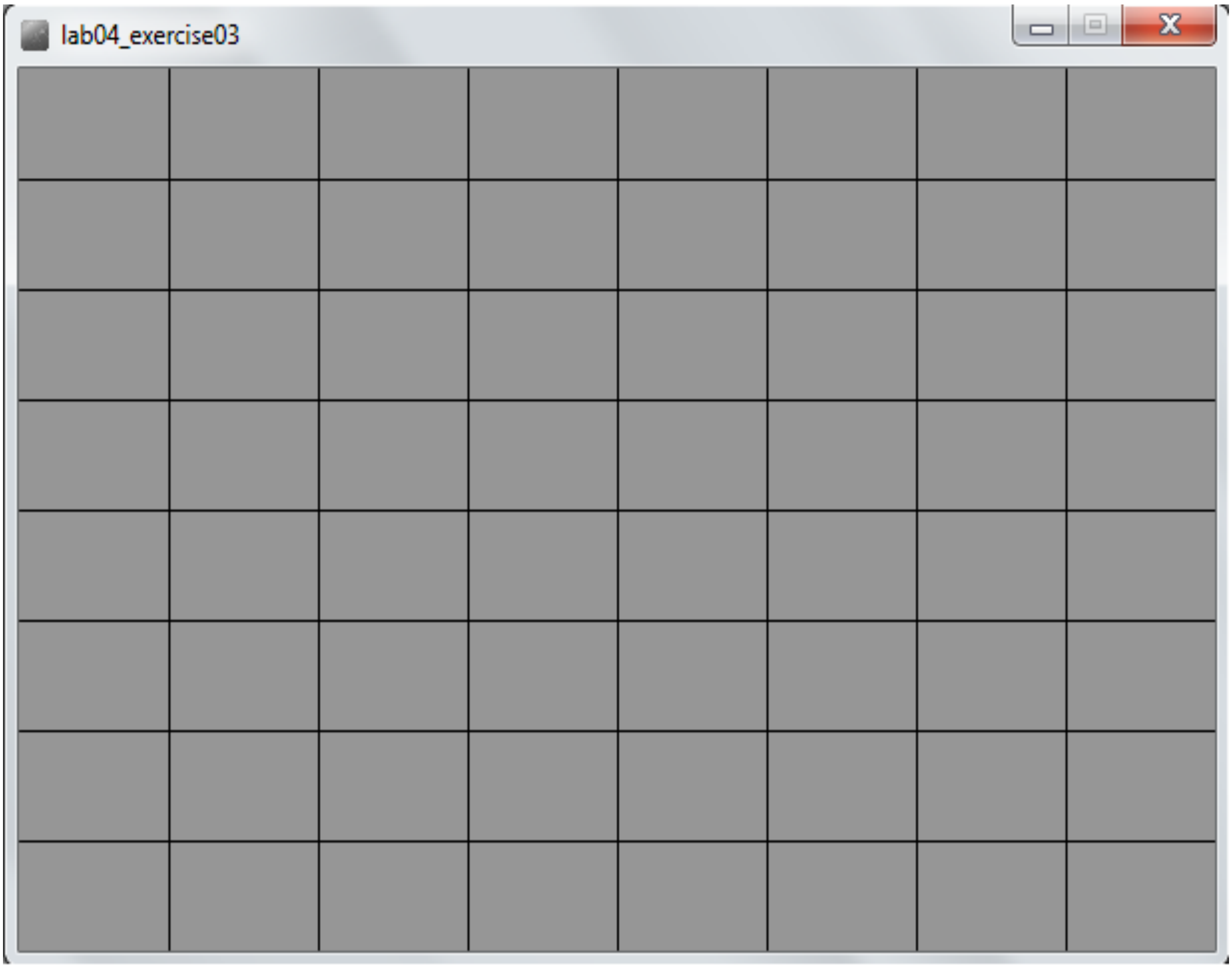
Exercise 1 (static drawing)

- Create a display window of 400x400 with a grey background.
- In the setup( ) method, use a **for** loop to draw a chessboard (for this exercise, use the line( ) method).
- A chess board is an 8x8 grid and should look like the screen shot below:



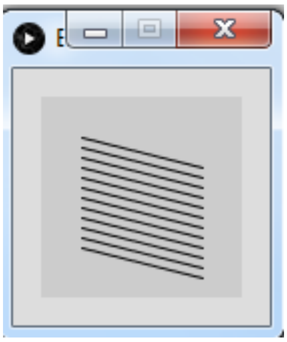
Exercise 2 (static drawing)

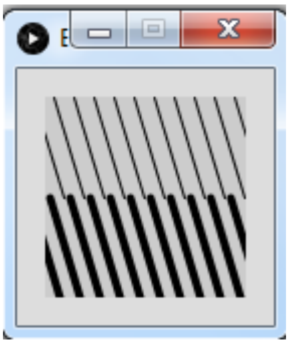
- Create a new sketch and re-write the **Exercise 1** code so that the chess board is drawn correctly regardless of the width and height of the display window.

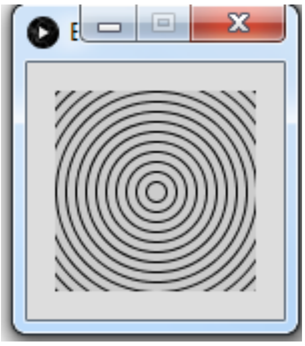


Exercise 3 (static drawing)

Draw the following loops for a, b and c.



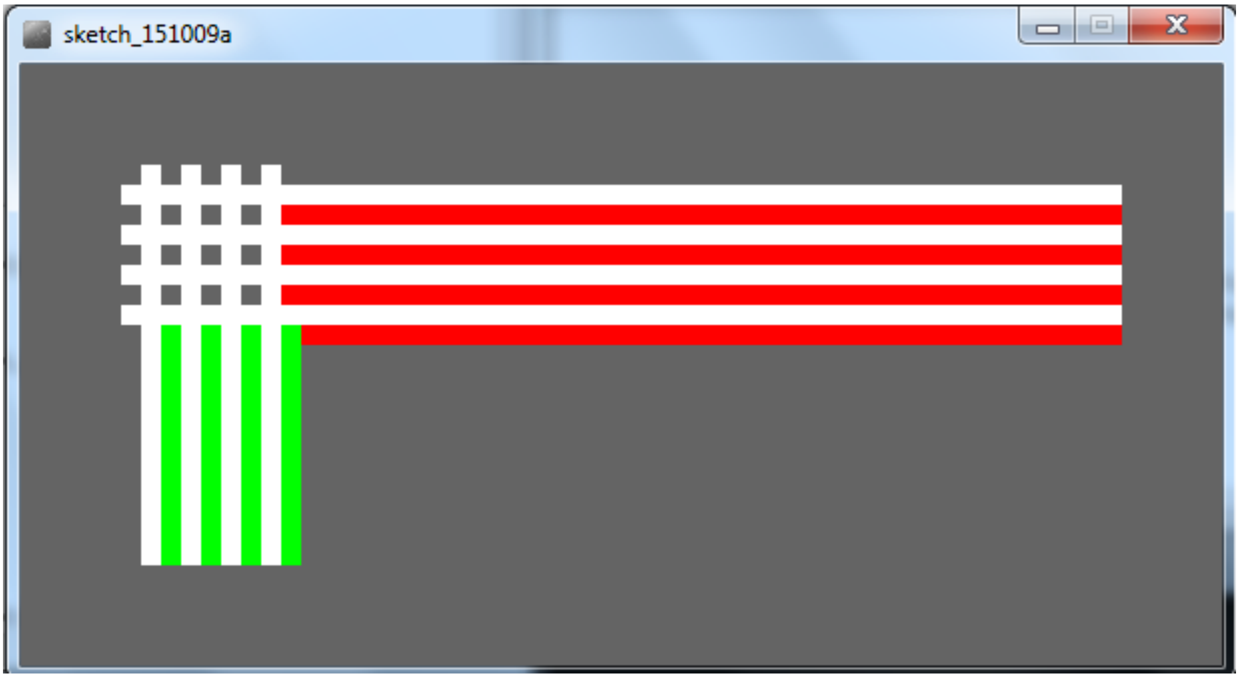




b) 2 for loops and use strokeWeight

Challenge Exercise 1 (static drawing)

- Create a new sketch and, using two **for** loops, draw this image:

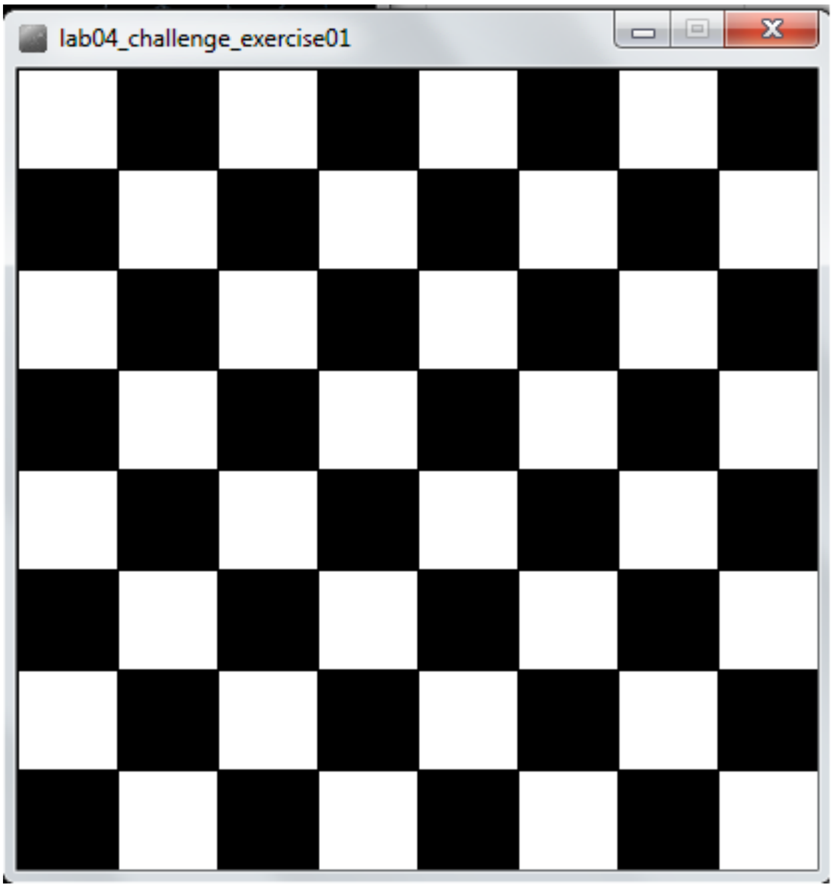


Challenge Exercise 2 (static drawing)

- Create a new sketch and draw your chessboard on a 400x400 window using the rect() method instead of the line() method. You will need a nested **for** loop to do this.

Challenge Exercise 3 (static drawing)

- Create a new sketch and using the code from Challenge Exercise 2, try to colour every subsequent square in a darker colour of gray, as shown in the image below:



Note: You will need to read up on the modulus (%) operator in order to do this exercise. This is quite a difficult exercise, so don't worry if you can't get it working.