Lesson 5: Code Blocks - Setup and Draw

Setup and Draw - keys to dynamic programs

void setup() and **void draw**() are special functions. We call them "*{code blocks}*" - this means that they each have **a block of code associated with them**. The blocks start with a "**{**", and end with a "**}**".

IMPORTANT: When you enter a "{" you should always immediately enter the matching "}". Mismatched brackets are by far the single most common mistake made by students at the Academy of Code!

For now, any program that uses **setup**() and **draw**() should have all code inside those code blocks (there are special cases we'll see later on where this isn't true).

```
void setup(){
    //everything in here
    //is associated with
    //the void setup()
}

void draw(){
    //everything in here
    //is associated with
    //the void draw()
}
```

NOTE: a double slash ("//") means a line is a "comment". The computer will not run this line - these are just for us.

Example!

Here is something that we did before, try it out again.

```
void setup(){
  size(600,600); //← in setup code block
}

void draw(){
  ellipse(mouseX, mouseY, 100, 100);  //← in draw code block
}
```

Quick tasks:

1. Type the example on the last page into Processing and save it (the filename should start with "Lesson5").
2. Change this program to make a rectangle follow the mouse.
3. We can use a function called **background**() to add a colour to the background. Simple add the numbers for a colour between the brackets, as you did with fill. Eg **background**(255, 0, 0); will make the background red. Add in a **background**() function to:
   a. the start of the **setup**() *{code block}*
   b. the start of the **draw**() *{code block}*
   Why are the results different?
4. Make the rectangle coloured.
   a. Where do you have to put the **fill**() function?
5. Make a circle and a rectangle follow the mouse around. (both at the same time!)
   a. Once you have completed this add a target (like we did in lesson 1 and 3) which follows the mouse.

Setup vs. Draw

What is the difference between the code in the "**void setup**()" code block and the "**void draw**()" *{code block}*?

differences\code blocks	void setup()	void draw()
How many times is the code run?	Once	Infinity times - depends on how long the app is running for
When is the code in this block run?	Right at the start, when the program is launched	After the void setup() block
How often is this code block run in the program	Once, at the start	Normally 60 times a second (60 fps) - this can be changed though