# Webinar 1A: Introduction to Java Programming Using Processing

* Java syntax
* Program sequence
* Variables
* Expressions

## Learning Objectives

* Familiarity with Processing Environment
  + Writing and saving a program
  + Running a program
  + Correcting syntax errors
* Simple problem decomposition – break problem into smaller chunks
* Program flow (order of commands)
* Using Variables within expressions

## Resources:

open these and have them available for reference

* [Processing.org](https://processing.org/) website (add to favourites)

**Exercise 1 Simple program**

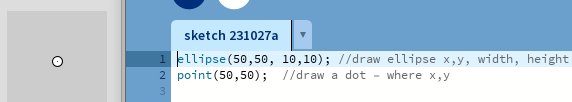
//this is a comment – first program

point(20,20); //draw a dot – where x,y

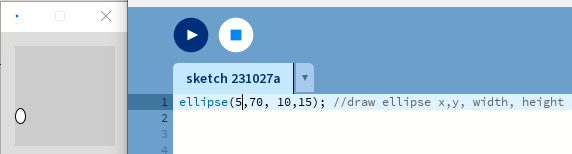
ellipse(50,50, 10,10); //draw ellipse x,y, width, height

see <https://processing.org/reference/ellipse_.html>

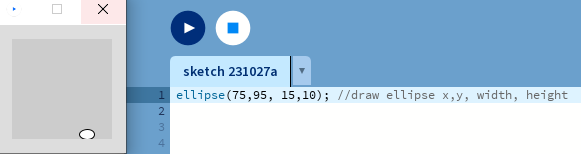
1. Move the point to the centre of the ellipse.



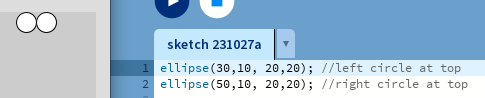
1. Draw an egg standing up – touching left hand side



1. Draw an egg on its side – touching the bottom of the screen



1. Draw 2 circles side by side touching the top of the screen



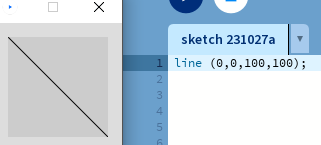
**Exercise 2 : drawing lines**

See <https://processing.org/reference/line_.html>

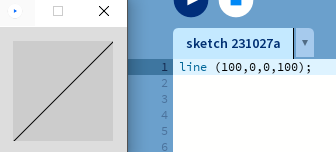
1. Draw a horizontal line of length 20 pixels



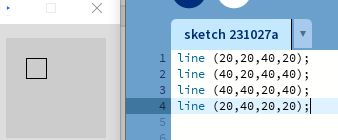
1. Draw a diagonal line, top left, to bottom right



1. Add a diagonal line top right to bottom left



1. Using **line** command, draw a square, with an edge of length 20 – how



**Exercise 3. What does this do?**

//Using a variable - algebra

int x; //declare a box, called x, to store an integer number

x=20;

line(x,20, x,40); //draw line using variable

line(20,x, 40,x); //draw line using variable

Improve the code : variable names should be meaningful – use y, improve the comments

**3.b** write a program to draw a cross at position specified by ( x,y )

**Extra’s**

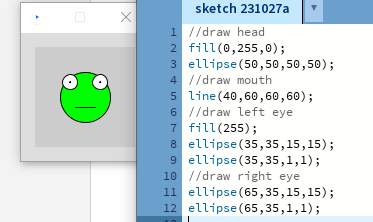
**Exercise 3**. Draw a bemused lizard face similar to the picture. Design steps?

//draw head

//draw mouth

//draw left eye

//draw right eye



The fill command (see processing reference page) changes the fill colour using 3 parameters

fill (Red,Green,Blue);

here each parameter has a range of [0..255], so fill( **255**, **0**, **0**) would be **red**.

Because, maximum amount of Red and 0 Green and 0 Blue.

When using multiple fill colours, the fill command is like dipping your paintbrush in a pot of colour. You have only one brush, so when you draw something new it will be filled in the current fill colour.

Save your program.

**Exercise 4** . We are going to amend our green face to allow it to be positioned at an **x** and **y** location. Introduce 2 global variables, **x** and **y** to the top of your code and set them to (100,100). Amend the appropriate commands replacing fixed values with variables.

**Exercise 5**– Alter our code so that the face can be scaled as well as positioned, depending on **x**,**y** & **size** variables. You should introduce new variables to ease the coding.

**Exercise 6 – Debug** , fix the following code

float x;

float size = 50;

30=x;

ellipse(x,y,size/2,size/2);

fill(0,0;

line(x,y,x+size,y);

line(x,y,x+size/2,y-size/2);

line(x+size,y,x+size/2,y-size/2)

ellipse(x,y,size/2,size/2);

**Strategy :**

1. Fix syntax errors – what do we have. Correct from top of file downwards
2. Run it – does it produce something sensible? Try to add comments to blocks of code
3. Correct the logic – in this case, reposition an ellipse, move fill command