

Lab Week 2. Loops

You should now have completed last week's portfolio exercise 'Scalable Stick Person' (it should be signed off today, next week at the latest please). Please open it up ready for checking later. If incomplete you should attend a support session to get help with the exercise (see moodle for dates/times)

Last Week

- Program flow
- Using Variables
- Drew a face, then a stick person of size and position dictated by variable values.

Learning Objectives

- Using For Loop
- Local variable – for loop counter
- Using Nested loops

Resources

- Lecture Notes
- Processing website – reference
- <https://processing.org/reference/for.html>

Create a new directory in Programming called week2. Save your code after each exercise

Exercise 1 [tutor talk through]

```
int x=10;
int y=20;

size(100,100); //set size of canvas screen
for(int i=0;i<5;i=i+1)
{
  x=x+10;
  print(" i:"+i+",x:"+x); //display variable value in console window
  ellipse(x,y,5,5);
}
```

Enter the code precisely as above, and run.

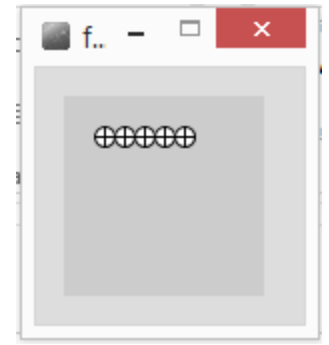
Note the print command, prints the value of local variable **i** and global variable **x** to the console (bottom of sketch window)

Ex1.1 Alter the code so that it draws 5 wheels (a cross within a circle).

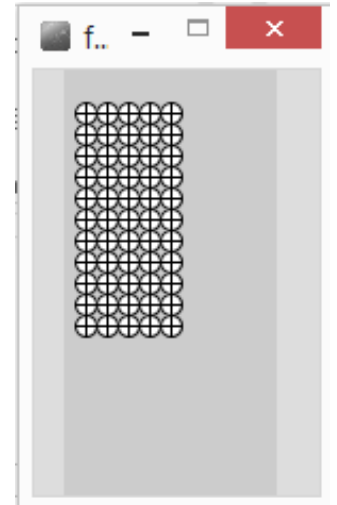
Ex1.2 Produce some code to draw wheels across the screen using a while loop

[hint : **width** is a built-in variable that holds the width of the screen]

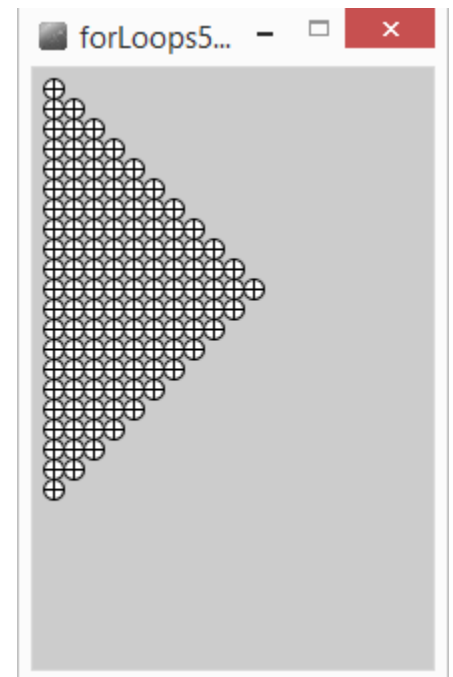
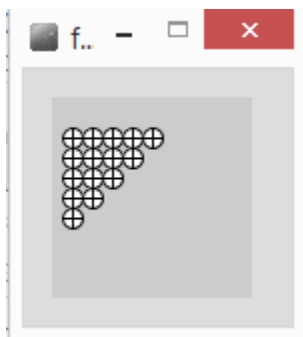
Ex1.3 Produce code to draw 10 wheels in a vertical line



Ex1.4 Alter the code so we get a block of wheels – 5 wide, by 10 deep



Exercise2. Produce a program to draw the 2 images (below and right)



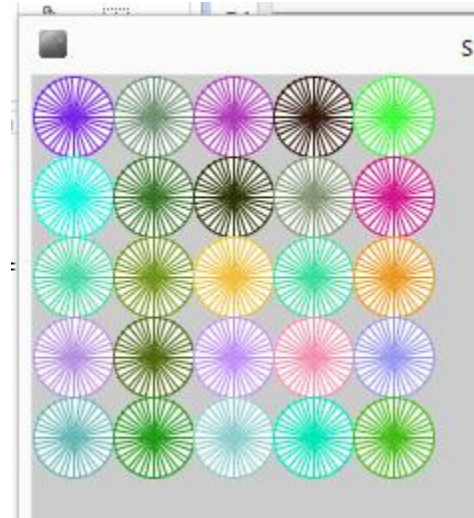
Exercise 3 Try out the code below, what does it do and why?

```
float x= 25;
float y=25;
float radius = 20;
for(int i=0;i<360;i=i+10)
{
  line(x,y,x+radius*sin(radians(i)),y+radius*cos(radians(i)));
}
```

Put the code below into the for loop to change the colour of each 'spoke'.

```
float r = random(50); //random number [0..50]
float g = random(50);
float b = random(50);
stroke(r*5,g*5,b*5); //random line colour
```

Exercise 4. Create a piece of Pop Art “wheels”, a 10 by 10 block of wheels, each of a different random colour



Extension exercises.

```
1  2  3  4  5  6  7  8  9 10
11 12 13 14 15 16 17 18 19 20
21 22 23 24 25 26 27 28 29 30
31 32 33 34 35 36 37 38 39 40
41 42 43 44 45 46 47 48 49 50
51 52 53 54 55 56 57 58 59 60
61 62 63 64 65 66 67 68 69 70
71 72 73 74 75 76 77 78 79 80
81 82 83 84 85 86 87 88 89 90
91 92 93 94 95 96 97 98 99 100
```

```
text("*",100,100); //draws a text string '*' at position 100,100
```

```
int count=10;
```

```
text(""+count,x,y); //draws value of count at x,y
```

draw the image, left.

Extension 2. Use the code we met earlier to help draw a bicycle with 2 spoked wheels, a stretched ellipse for a seat and lines for the various frame parts.

Comment each line command, which will help when coding the different line positions

