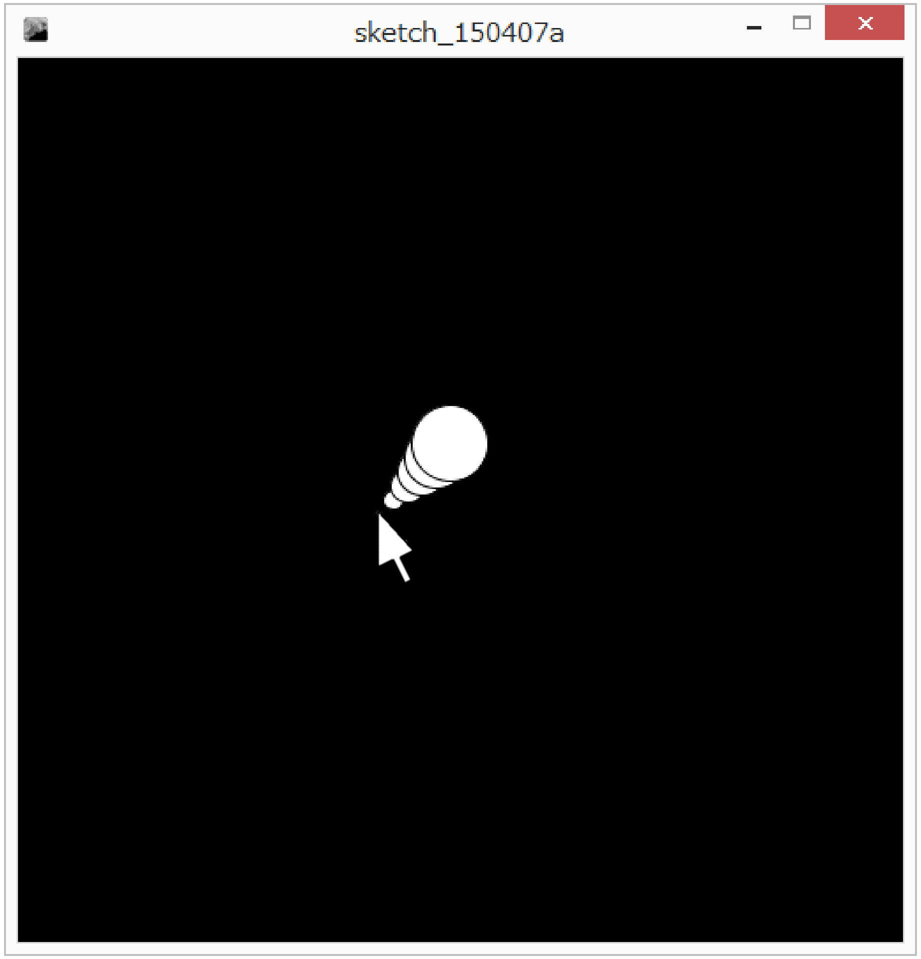
Mouse cursor bubbles!

Bubble starts size 0

Goes right (+x)

Goes up (-y)

Bursts at size 50



How to attack this???

When you’re stuck, start by doing what you know

- Draw a circle size 0 at the mouse!
- Next step – size 1, 1 above and 1 right
- Next.. Size 2
- Last? Size 50
- See a pattern?

At each step the command is the same except for that step number

Make a variable

Make the variable get bigger by one each time

What next??? How do we stop it from getting bigger?

We already learned the tool…

Non obvious – use modulo (remainder)

If you take any number *n* and divide it by 5, what is the possible range of remainders?

n	0	1	2	3	4	5	6	7	8	9	10	11	12
n/5	0	0	0	0	0	1	1	1	1	1	2	2	2
n%5	0	1	2	3	4	0	1	2	3	4	0	1	2

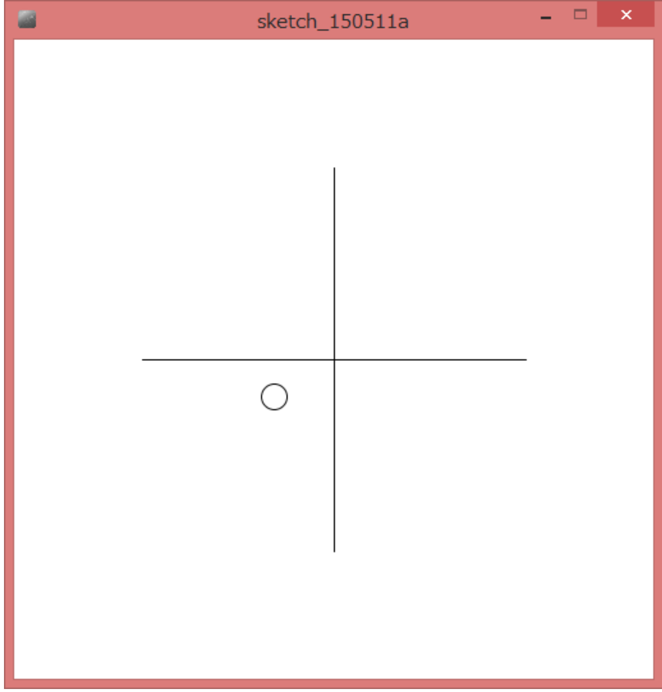
/5 -> remainders 0..4

If you do *n*/*m,* you get numbers in the range 0..m-1

How can we use modulo to help us with our step variable?

Modulo 50

Joystick for a ball!



Ball moves based on mouse position

- mouse in center – don’t move
- mouse to right/left – move to right/left
- mouse to top/bottom – move up or down

First, draw the crosshairs

Make globals to remember the position of the ball

How to calculate how much the ball moves?

X

    mouseX-250
        if mouse is at 250, we get 0
        if mouse is left of 250, we get neg.
        if mouse is right of 250, we get pos.

Make new variables: moveX and moveY

Woah! Flies off the screen!

How to make sure it doesn't go off the edge?

min and max!!!!

What is the smaller of 499, and mouseX going to be?

    if mouseX is right of the screen, then 499
    if mouseX is in the screen, then the mouse

```
ballX = min(mouseX,499);
```

What is the larger of 0 and mouseX going to be?

    if mouseX is left of the screen (negative), then 0
    if mouseX is on the screen, then mouseX

```
ballX = max(0,mouseX);
```

Too fast…

Scale down the movement

Make a drawing program!

- Don’t clear the background

A closer look at random…

Let’s lookup random in the reference

Random **returns a float**. Means the data gives you is floating point

Can only be stored in a floating point variable

block moving randomly around a screen

A block that jumps around

Globals

- block position
- block size
- how fast it can move

Block moving randomly…

What is random? How much the block moves. Not the block position

```
float moveX = random(MAX_MOVE);
```

Then we add the movement to the position

```
blockX = blockX + moveX;
```

The block can only move right!

How can we also make it move negative?

```
random(blockSpeed*2)-blockSpeed;
if blockspeed is 5..
random(5*2)-5;
```

- Generate double the range .
- Subtract the range from it.
- If random gives us 0
    - 0-5 is -5
- If random gives us 5
    - 5-5 is 0
- If random gives us 9
    - 9-5 is 4