Class 4: (Some) Visualization Forms

Fall2012/New School
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Processing!

Declaring and Initializing a Variable

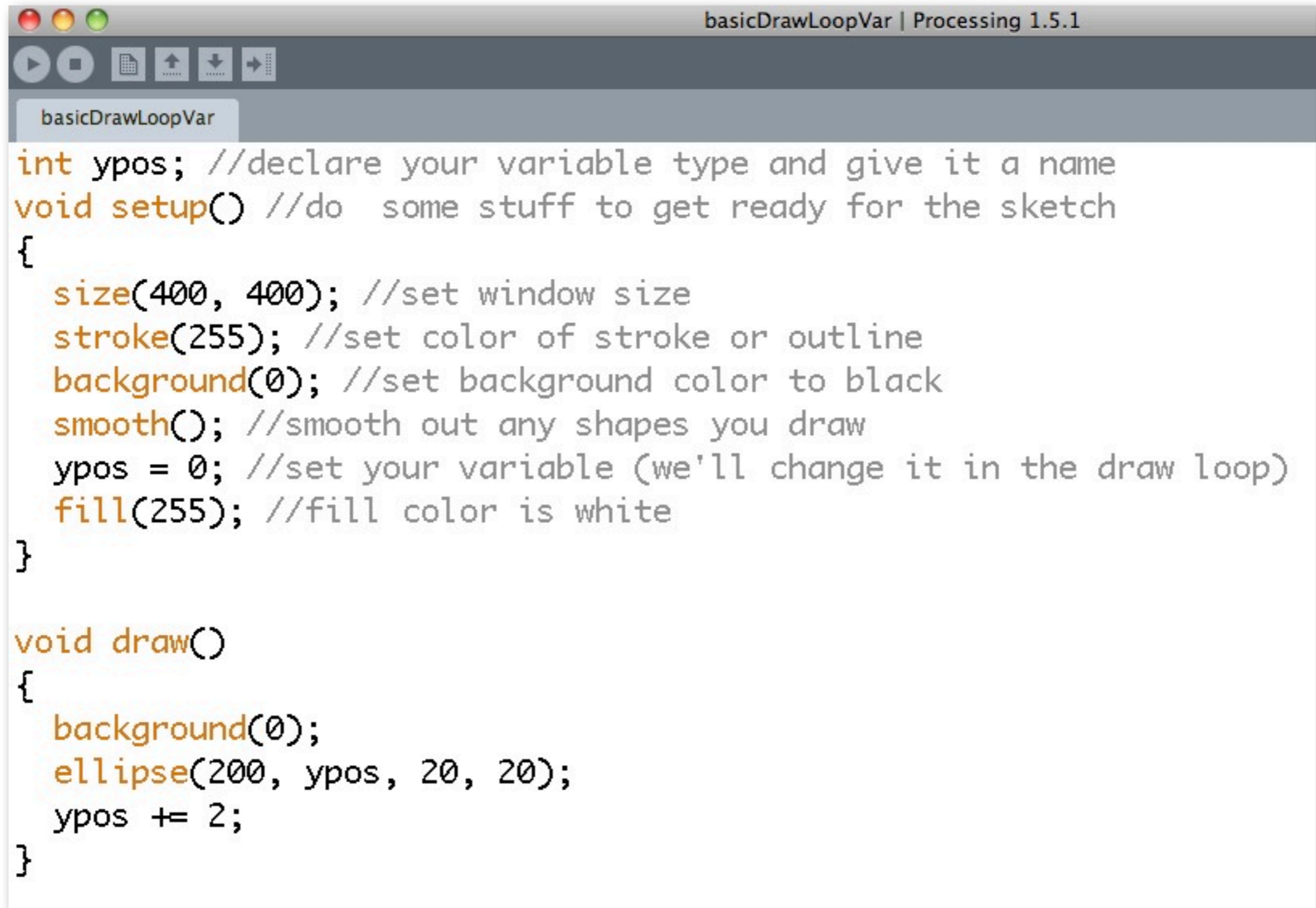*in two separate steps:*

int ypos;   ypos = 10;

↑   ↑   ↑

data type   variable name   set it equal to a value
             (you make up)

or in one step:

int ypos =10;

Let's look at some code....

```
basicDrawLoopVar | Processing 1.5.1

basicDrawLoopVar

int ypos; //declare your variable type and give it a name
void setup() //do  some stuff to get ready for the sketch
{
  size(400, 400); //set window size
  stroke(255); //set color of stroke or outline
  background(0); //set background color to black
  smooth(); //smooth out any shapes you draw
  ypos = 0; //set your variable (we'll change it in the draw loop)
  fill(255); //fill color is white
}

void draw()
{
  background(0);
  ellipse(200, ypos, 20, 20);
  ypos += 2;
}
```

Adding a conditional (**if statement**)

Think in **pseudocode:** make up a human sentence about what you want the computer to do....

- If there is jam in the jar, open the jar

- If there is jam in the jar, open the jar ELSE put down the jar

- If the y-position of the ellipse is off the screen...

If statement

```
if ( some condition)
{

  do this...

}
```

Add text to the screen!

- Use the PFont object to store your font info

- Declare it like a regular variable: PFont font;

- Create your font using Tools > create font

- Initialize it using the loadFont() function, which takes the font file name as an argument

- Call the function textFont() with your new font variable: textFont(font); this will ready the font for use onscreen
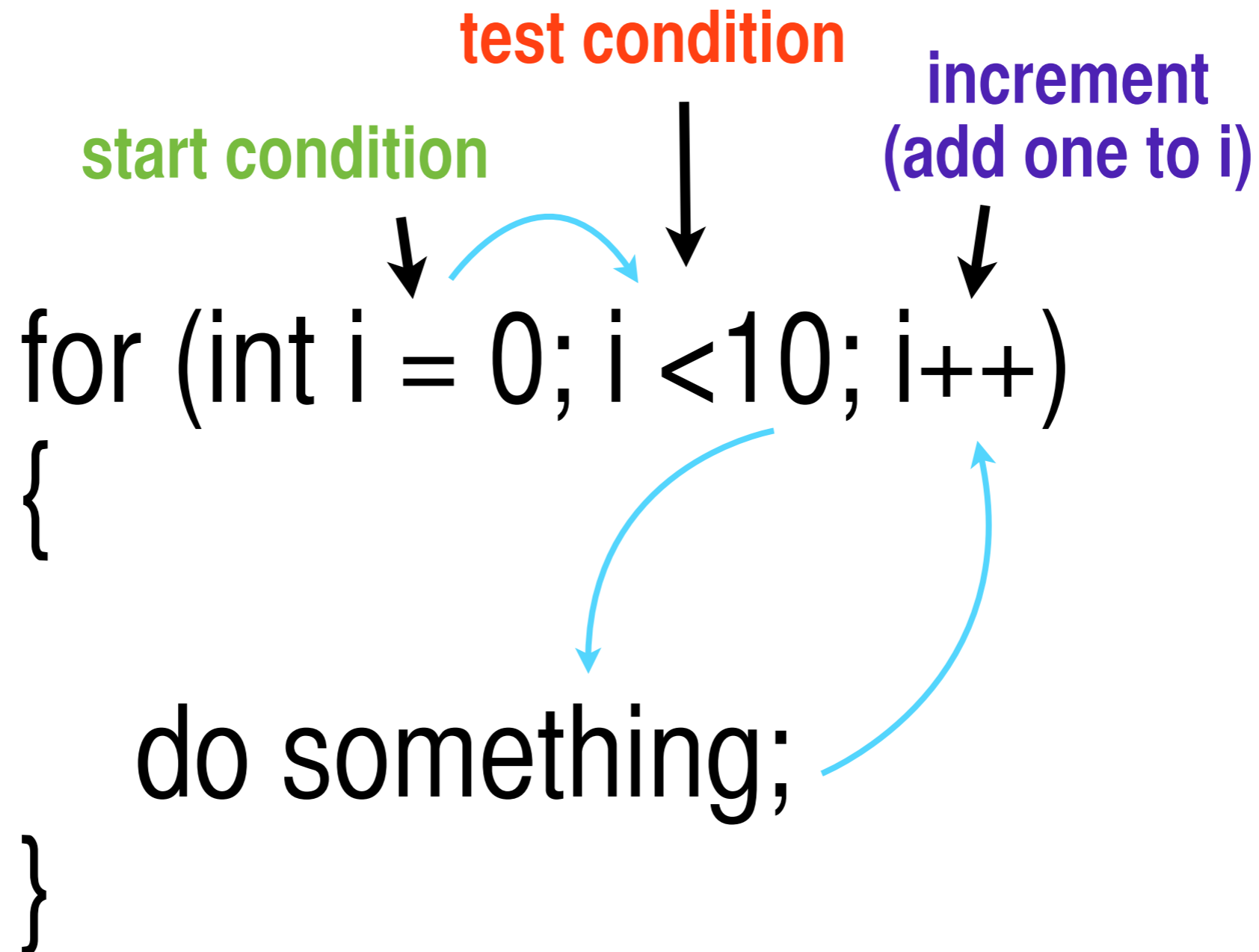
Thinking about loops...

- why are they useful?
- how can we harness them?
- what are their pitfalls?

The mighty **For** loop!

Use a for loop to do something a certain number of times.
Here, i is a variable that keeps track of your loop, like a counter...

test condition

**increment
(add one to i)**

start condition

```
for (int i = 0; i <10; i++)
{

    do something;

}
```

Debugging— What can go wrong?

Why use loops? Why use functions?

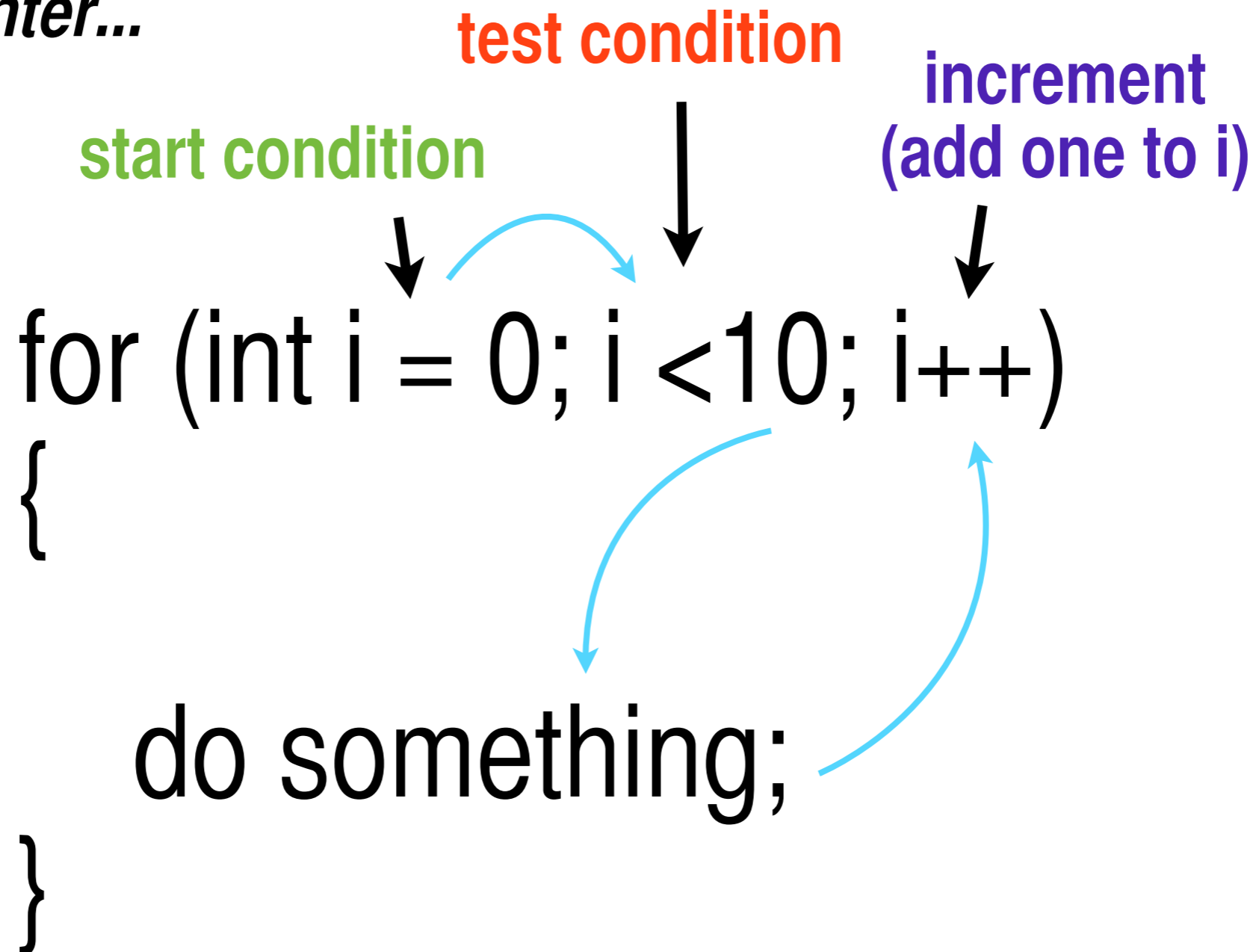# Defining and calling a function- 2 steps

Define:

```
void growRobot(int robotSize)
  {
    //your code to make a robot bigger  here
  }
```

Call:

```
growRobot(500);
```

Again: the mighty **For** loop!

Use a for loop to do something a certain number of times.
Here, i is a variable that keeps track of your loop, like a counter...

test condition

**increment
(add one to i)**

start condition

```
for (int i = 0; i < 10; i++)
{

    do something;

}
```

Adding a for loop

- Look for repetition or patterns in your existing code

- Look for values that could become variables

- Replace hard-coded values with variables, use the loop to update

dist() function!

- Built-in function in Processing

- Takes two pairs of coordinates, and **RETURNS** the distance between them

- Most often used in an if statement, to check if one thing is near or on top of another thing

- Here, less than "< " is used to check against a value

```
if(dist(mouseX, mouseY, 200,200)<50/2)
{
    text("Don't touch me!",100,100);
}
```

Our first sketch with data!