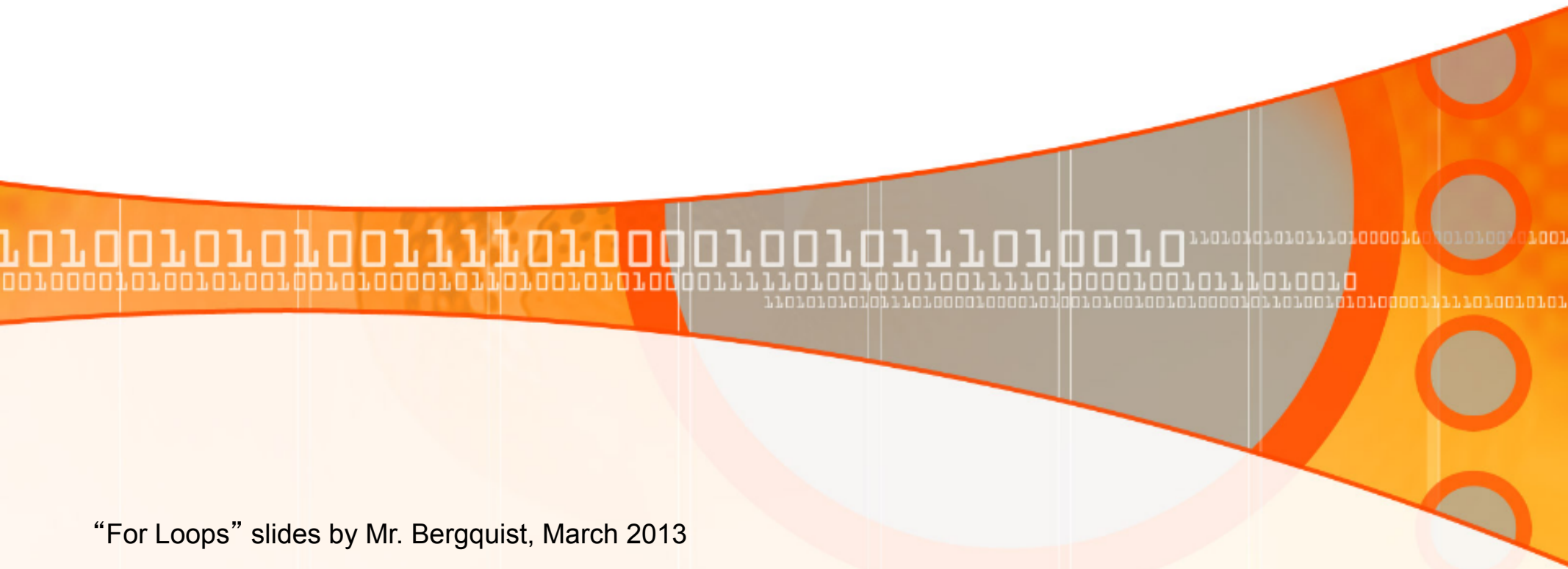
Introduction to Computer Science

For Loops



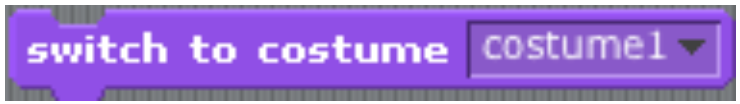
"For Loops" slides by Mr. Bergquist, March 2013

Key Concepts: Initialization

- Initialization of:

  - Position of all Sprites

  - Correct first Costume of Sprite & Background of Stage



  - Set the value of variables – could be 0, 1 or other values depending on what they do

  - Appearance: show or hide Sprites & clear screen

What do you think this Code does?

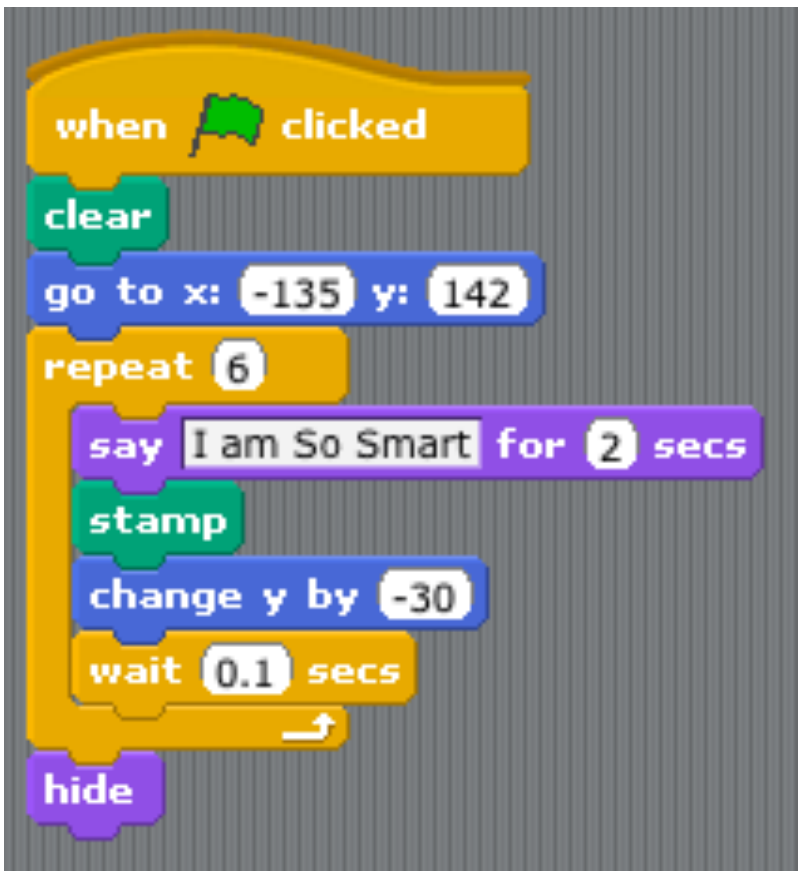
```
for (int i = 1; i <= 6; i = i + 1) {
   System.out.println("I am so smart");
}
```

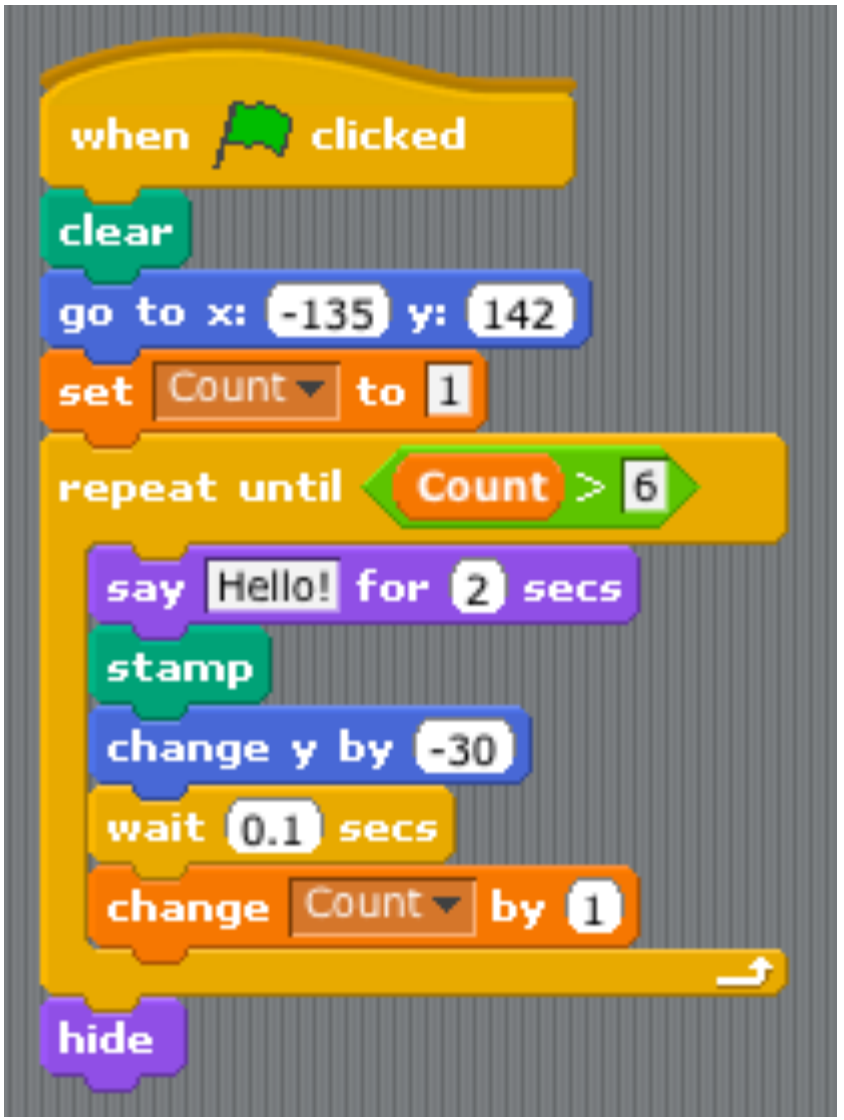
```
I am so smart
I am so smart
I am so smart
I am so smart
I am so smart
I am so smart
```

How would we do this in Scratch?

Let's try…

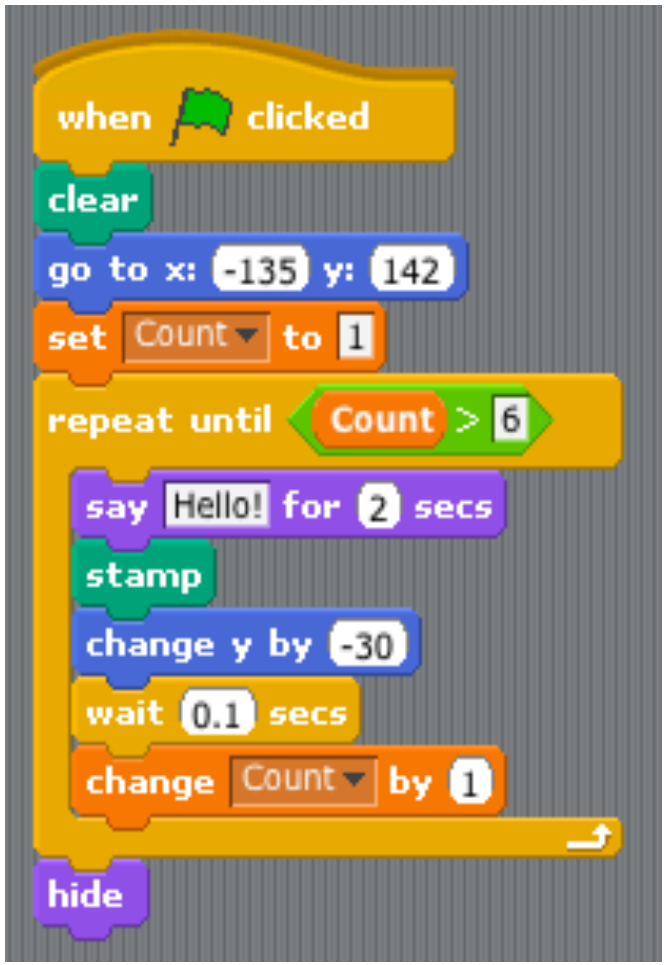
How can we do this using a "repeat until" loop with a "Count" variable?





Let's Compare this with the Java for Loop

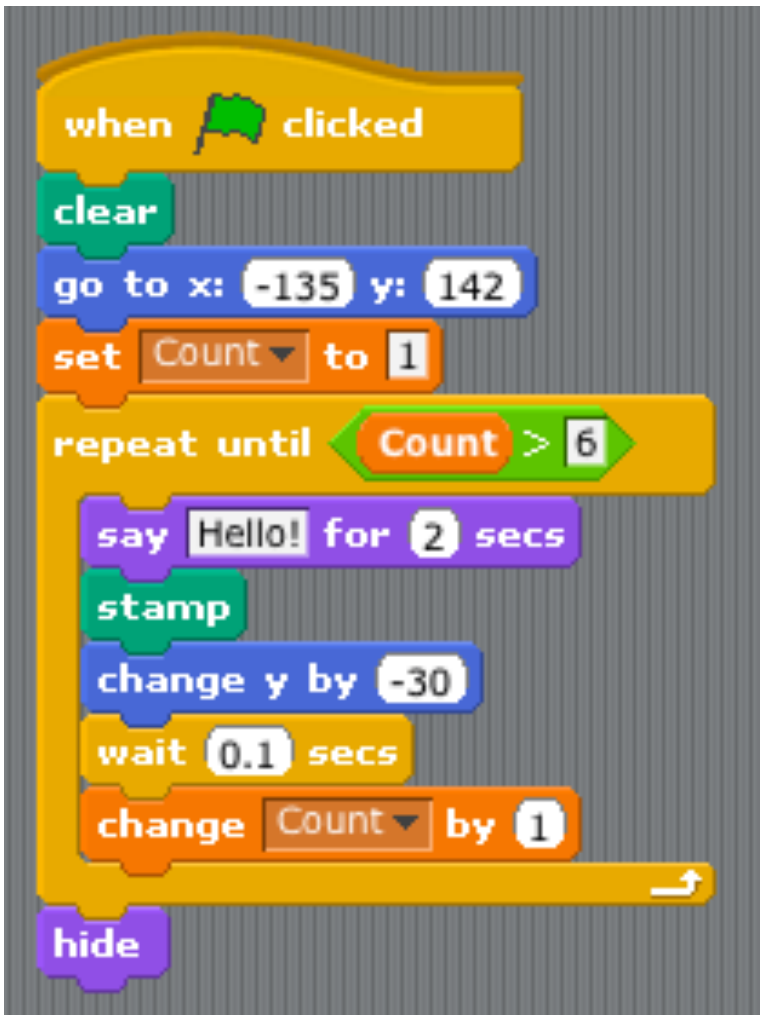
```
for (int i = 1; i <= 6; i = i + 1) {
   System.out.println("I am so smart");
}
```

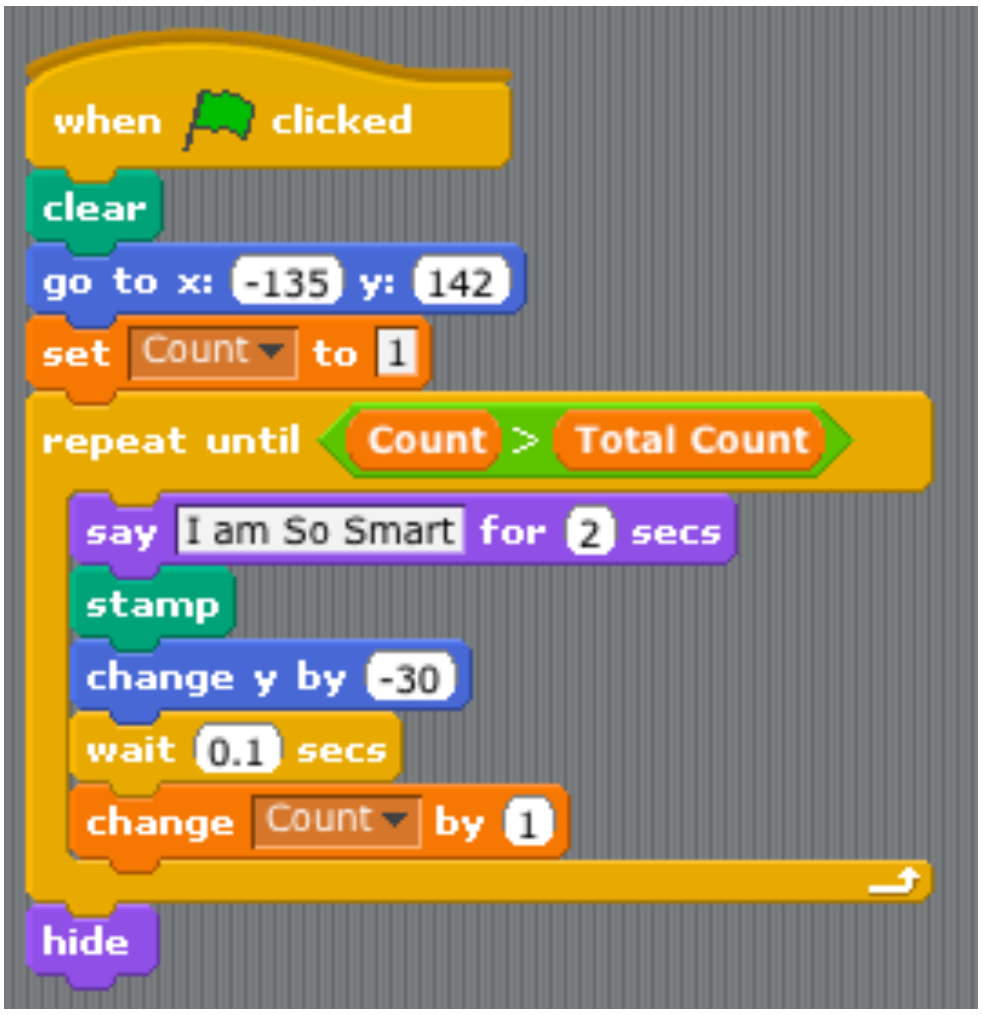


In Python, it's:

```
for i in range(6):
      print "I am so smart"
```

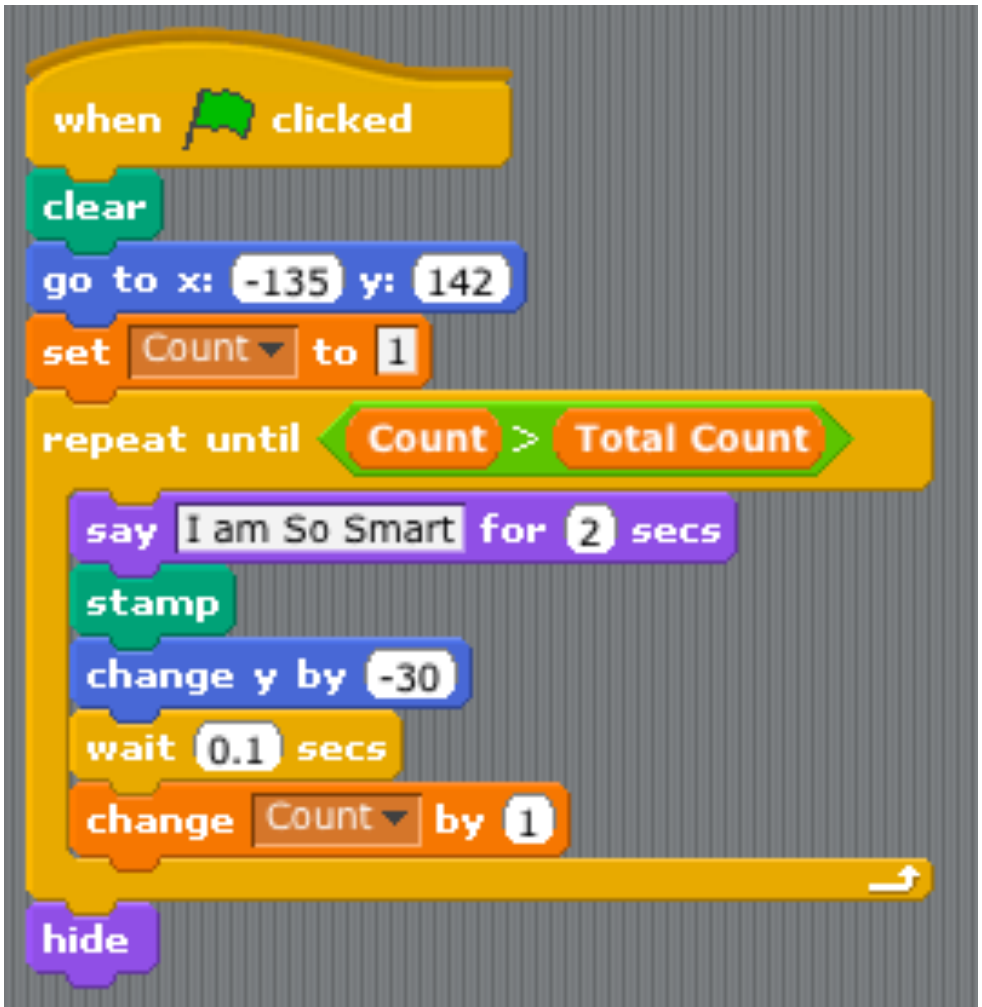
How can we have the number printed be based on a variable Total Count?





How would it look in the Java for Loop?

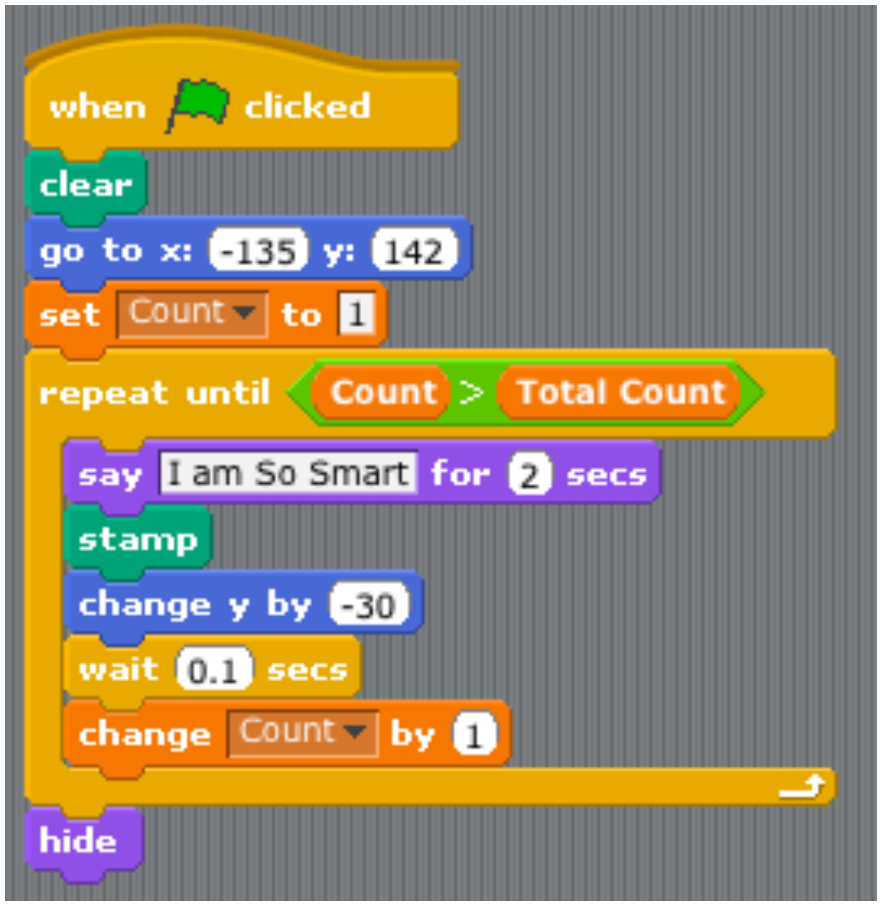
```
for (int i = 1; i <= totalCount; i = i + 1) {
   System.out.println("I am so smart");
}
```

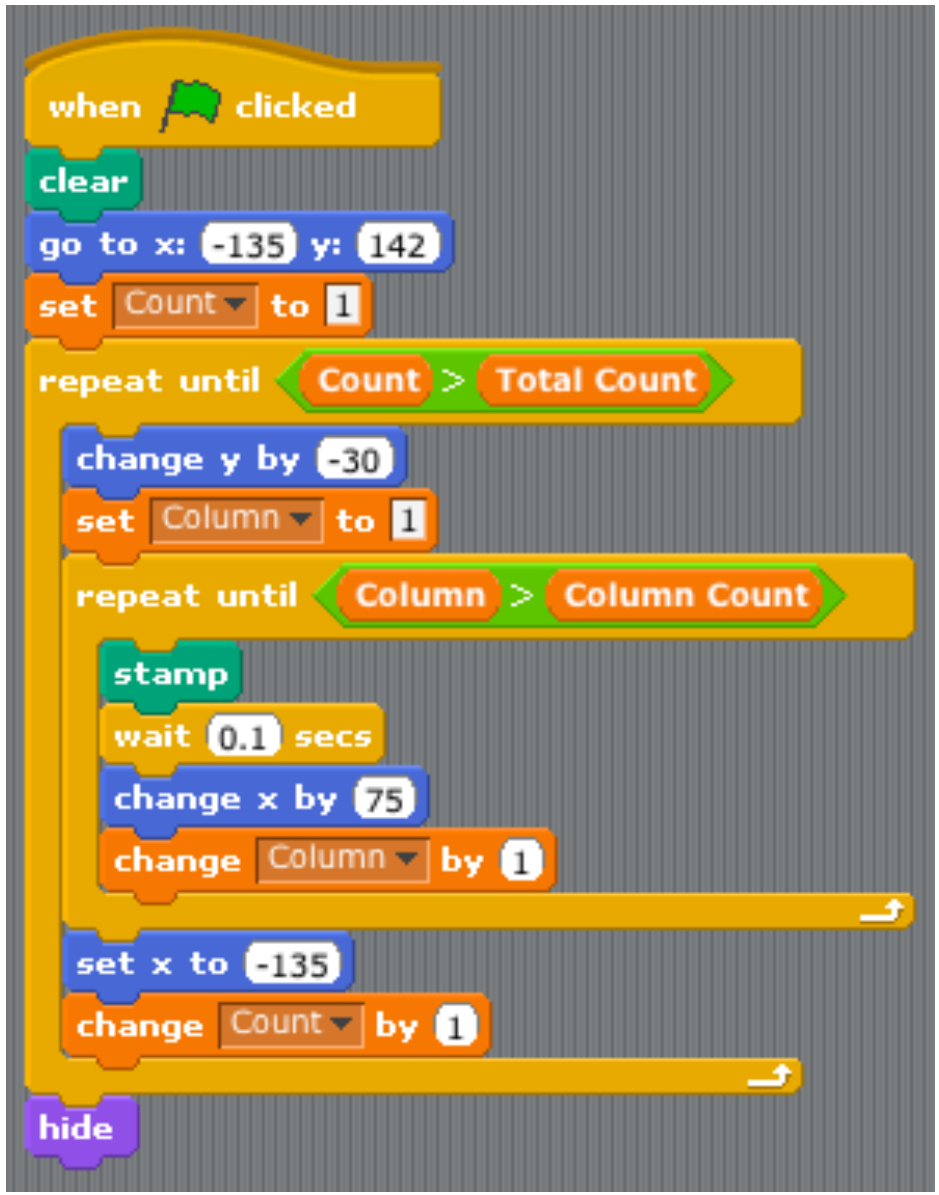


In Python, it's:

```
for i in range(totalCount):
    print "I am so smart"
```

Now Let's "Nest" some loops to add a few columns…





Key Concepts: Loops

- Control action with the “repeat until” loop:
- Two kinds of variables:

  - Counts – changes tracking your state (i.e. Column)
  - Limits – set to determine the max (i.e. ColumnCount)
- Compare the Count with Limit atop “repeat until”

- Count:
  - Make sure you initialize them at the start of loop

  - Update them within

- Position:
  - Start at the right place

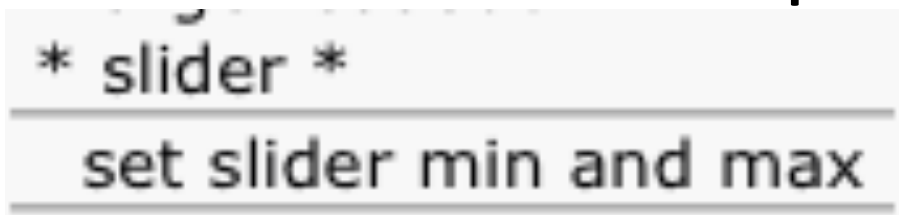
  - Move appropriately within the loop

How would our Nested Loops look Java?

```
for (int i = 1; i <= totalCount; i = i + 1) {
   for (int j = 1; j <= totalColumn: j++) {
      System.out.print("I am so smart ");
   }
   System.out.println(); //goes to next line
}
```

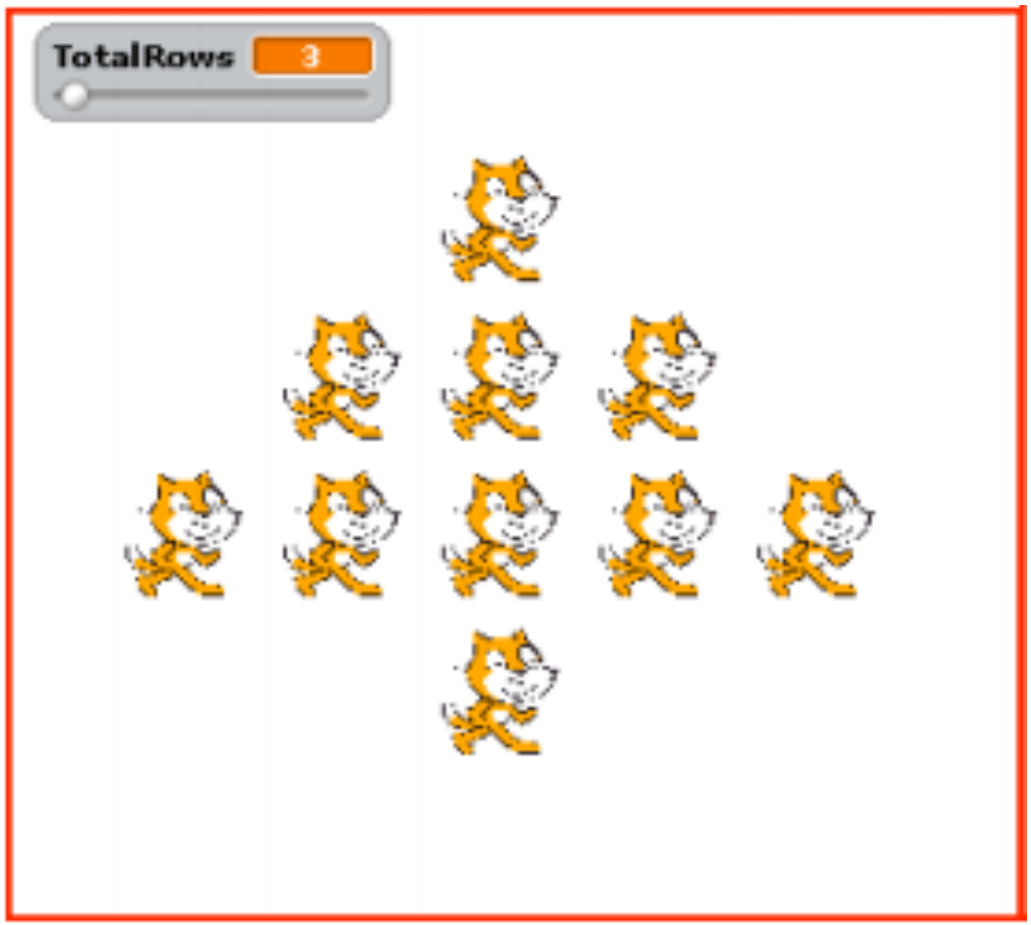
Make your Program Perfect

- Test it out with some sample values
- Determine what limits to put on your variables and then set both the min and max
- Re-test for min and max and some sample values in between.



- Ask yourself if it will be clear to your user how to use the program, if not add instructions – by creating a background with details and hide all sprites.

Hopefully this will help you master your box & trees…



Questions?