Loops

- Provide a way to run code multiple times
- DRY - Don't Repeat Yourself
- Two types of loops
  - For Loops
  - While Loops
Bart could have used a loop
For vs. While

For Loop
- Simpler
- Finite set of iterations
- Automatic iteration
- Some good uses:
  - Use whenever possible, usually for iterating over a fixed size (e.g. counting to X)

While Loop
- More complex
- Unknown number of iterations
- Manual iteration
- Some good uses:
  - Run for an indeterminate amount of iteration
  - Reading files of undetermined size
For Loop

```java
for (int i=0; i<10; i++) {
    System.out.println("Count:" + i);
}
```

- i - short for index or iterator
- Declare the iterator
- Set the range for that iterator
  - Watch for off by one errors
- Set the value to iterator for
While Loop

i = 0       // initialize loop counter
while (i < 10) {
    System.out.println(i);
    i = i + 1; // increment loop counter
}

0) initialize loop counter
   (done in the for loop declaration in 'for' loops)
1) check if condition is still true
2) increment counter
   (done by the loop in 'for' loops)
Are you stuck in an infinite loop?

NO

YES
Infinite Loop

while (true) {
    System.out.println("Hello");
}
while (true) {
    System.out.println('inside')
    break;
}

Breaking out of a Loop
i = 0;
while (i < 100):
    i = i + 1;
    if (i % 2):
        continue;
    System.out.println("Odd: ", i);
}