Loops
CSCI 201L

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HTTP://WWW-SCF.USC.EDU/~CSCI201
Outline

- Loops
- Program
Loops Overview

- Loops give us a way to execute the same code multiple times
  - Any time you find yourself copying and pasting code, you should either think “loop” or “method”

- There are four different ways you can loop in Java, all of which exist in C++
  - for loops
  - while loops
  - do..while loops
  - Recursion (direct or indirect)
for Loops

```java
1 for (int i=0; i < 10; i++) {
2    System.out.print("i=" + i);
3 }
4 int numArr[10]; // assume populated
5 for (int i=0; i < num; i++) {
6    for (int j=i+1; j < num; j++) {
7        if (numArr[i] > numArr[j]) {
8            int temp = numArr[i];
9            numArr[i] = numArr[j];
10           numArr[j] = temp;
11        }
12    }
13 }
```
while Loops

Scanner scan = new Scanner(System.in);
char ch = scan.nextChar();
while (ch != 'q') {
    System.out.println("Not right character");
    System.out.print (""Try again: ");
    ch = scan.nextChar();
}

Loops
do..while Loops

1. Scanner scan = new Scanner(System.in);
2. System.out.print(“Enter a number: “);
3. int val = scan.nextInt();
4. int remainder;
5. do {
6.     remainder = val % 2;
7.     System.out.print(remainder);
8.     val /= 2;
9. } while (val != 0);
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Program

- Write a program that randomly generates dice rolls. The number of rolls will be provided by the user. Output the number of times each number occurred followed by the percentage. Here is a sample execution with user input bolded.

```
c:\> java csci201.Dice
How many rolls? 5000
The number 1 occurred 800 times (16%).
The number 2 occurred 750 times (15%).
The number 3 occurred 850 times (17%).
The number 4 occurred 825 times (16.5%).
The number 5 occurred 775 times (15.5%).
The number 6 occurred 800 times (16%).
c:\>
```