CompSci 6
Programming Design and Analysis

September 1, 2009
Prof. Rodger and Prof. Forbes
Announcements

• Read next time Chap. 3.1-3.8, Chap. 6.1-6.5
• Assignment 2 out – due Friday, submit online
• Finish Classwork before next class
• Reading Quiz for next time
• Consulting Hours starting now (see web page)
While and For loops

• Both While and For
  – Initialization
  – Condition
  – Body
  – Increment
• While – conditional loop
• For – for known number of repetitions
While example one

• What does this loop do?

```java
// Example while loop
int answer = 0;
while (answer <= 1000)
{
    answer = answer + 17;
}
System.out.println("answer is "+ answer);
```
While Example Two

• What does this loop do?

```java
// Example while loop
int number = 85273;
int digit;
int sum = 0;
while (number > 0)
{
    digit = number % 10;
    number = number / 10;
    sum += digit;
}
System.out.println("sum is " + sum);
```
For Loop Example One

- What does this loop do?

```java
// Example for loop
int num = 45;
sum = 0;
for (int i=1; i<=num; i++)
{
    sum += i;
}
System.out.println("sum is " + sum);
```
For Loop Example two

- Another way for previous While problem

```java
// Example for loop
number = 85273;
// assume sum, digit and number are declared as int
for (sum = 0; number > 0; number = number / 10) {
    digit = number % 10;
    sum += digit;
}
System.out.println("sum is " + sum);
```
While loop – Fence Post Problem

• Looping on two items, one finishes before the other

• Example draw a Fence (rails and posts)

I===I===I===I===I===I===I
I===I===I===I===I===I
I===I===I===I===I===I
While example – Fence Post

// Example while loop - fencepost problem
int numberPosts = 7;
String rail = "===";
String post = "I";
int counter = 1;
System.out.println(post);
while (counter < numberPosts)
{
    System.out.println(rail + post);
    counter++;
}
System.out.println();
For Example – Fence Post

```java
// Example for loop - fencepost problem
// assume rail and post already defined
numberPosts = 5;
System.out.print(post);
for (int k=1; k < numberPosts; k++)
{
    System.out.print(rail + post);
}
System.out.println();
```
Solving an APT

- Work through a solution on paper (last time)
- In Eclipse, start a Java project, create a new class, type in problem til no syntax errors
- Load code in APT and run
- Get all green! Keep working if RED
- Put all problems in SAME project
- Submit solutions through Ambient
Classwork Today - APTs

• Work in pairs
• APT problems – Put both in SAME java project
  – OneHeapNim
  – Hinged Door
  – DivToZero
• When done, Submit the files with Ambient
• If using class laptop, Save the files to your Duke account before logging off (check-in)

• If finish early, work on Assignment 2