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
```

While example – Fence Post

```java
// Example while loop - fencepost problem
int numberPosts = 7;
String rail = "---";
String post = "I";
int counter = 1;
System.out.print(post);
while (counter < numberPosts)
{
    System.out.print(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