CS100M
Introduction to Computer Programming

Spring 2004
Lecture 16
Control Flow

Announcements
- Prelim 2 tonight
- Carpenter B101: do you know where this is?
- Consultants and their hours

Control Flow

- nice overview at http://java.sun.com/docs/books/tutorial/java/nutsandbolts/flowsummary.html
- Branching:
  - labeled statement, continue, break (avoid!)
  - return, break inside switch (good)
- Selection:
  - if else
  - switch
  - try, catch, finally
- Repetition:
  - do, while
  - for

Selection (if)

- Syntax:
  ```java
  if (expression)
  block
  if (expression)
  block
  else
  block
  if (expression)
  block
  else if (expression)
  block
  .
  .
  else
  block
  ```
More if important things to remember:

- blocks can be single statements (no braces)
- else and else if statements are optional
- can have no else
- else if statements can be multiple
- blocks can be single statements (no braces)
- important things to remember

Examples

```java
int x = -1;
if (x > 0)
    System.out.println("pos");
else if (x < 0)
    System.out.println("neg");
System.out.println("zero!");
```

```java
boolean t1 = true || false;
boolean t2 = false;
if (t1) // do I need braces?
    if (!t2)
        System.out.print(t1);
    else
        System.out.print(t1 && t2);
```

Another Example

```java
int x = 3;
if (x > 3) {
    int y = x-- + 1;
    System.out.println(x);
    System.out.println(y);
}
```

Loops

- while syntax:
  ```java
  while (expression)
      block
  ```
- do while syntax:
  ```java
  do
      block
  while (expression)
  ```
- for syntax:
  ```java
  for (inits; checks; incr_or_decr)
      block
  ```
while

int x = 1;
while (x < 4) {
    System.out.println(x);
    x++;
}

do while

int grade = -1;
do {
    System.out.print("Enter grade: ");
    grade = SavitchIn.readLineInt();
} while(grade >= 0 && grade <= 100);

for

for (int i = 1; i < 5; i++)
    System.out.println(i);

for (int i = 1; i < 5; i++)
    System.out.println(i);

for (int = 1; i < 5; i++) {
    for (int j = 1; i < 5; j++)
        System.out.print(""+i+j+" ");
    System.out.println();
}

for

for (; ; )
    System.out.println("eternity is eternal");

for (int i=0, int j=1; i + j < 5; i++)
    System.out.println(i+j);