

CS100M

Introduction to Computer Programming

Spring 2004
Lecture 16
Control Flow

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Announcements

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

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Control Flow

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

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Selection (**if**)

- Syntax:

```
if (expression)
    block

if (expression)
    block
else
    block

if (expression)
    block
else if (expression)
    block
.
.
else
    block
```

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More if

- important things to remember:
 - blocks can be single statements (no braces)
 - **else** and **else if** statements are optional
 - can have one or many **else if**s
 - can have no else
- **expression**:
 - must evaluate to **boolean** type!

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Examples

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

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);
```

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Another Example

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

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Loops

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

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while

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

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do while

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

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for

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

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

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for

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

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

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