for Loops

CSC 116 – Section 002
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for Loops

- Ideal loop for count-controlled loops
- Syntax:

```
for(<initialization>; <Boolean expression>;
        <increment>) {
    <loop body>
}
```

for Loops (2)

- Ex: Sum numbers from 1 to 100

```
int sum = 0;
for(int i = 1; i <= 100; i++) {
    sum += i;
}
```

- i is the control variable. You can declare it outside of the loop or in the initialization statement.

<initialization> Component

- Initialized the control variable to some value
- The value is usually 0 or 1, but can be anything

<Boolean expression> Component

- The for loop executes as long as the Boolean expression is true.
- The Boolean expression is evaluated before the loop is started

<increment> Component

- We can increment or decrement the control value
- Need to increment or decrement in such a way that you will eventually break out of the loop.

Sample Decrement for Loop

```
int sum = 0;
for(int i = 100; i > 0; i--) {
   sum += i;
}
```


Variable Scope

- Local variables can only be used in the block of code which they are declared
- Remember blocks are defined by { }s
- If you declare the control variable inside of the for loop declaration, the control variable only has scope inside of the loop
- If you want the control variable to have scope outside of the for loop, declare the variable before the for loop

Variable Scope (2)

- Ex:

```
for(int i = 0; i < 10; i++) {
    System.out.println(i);
}
System.out.println(i);     //Can't use i here
                           //out of scope
```


References

- Jason Schwarz's Lecture 12 slides: http://courses.ncsu.edu/csc116/