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>
  }
  ```

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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

```java
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 `{ }`
- 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:
  
  ```java
  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/](http://courses.ncsu.edu/csc116/)