



THE UNIVERSITY
of NORTH CAROLINA
at CHAPEL HILL

COMP 110

Introduction to Programming

Thursday September 25, 2014

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Fall 2014

TR 9:30 - 10:45, GS-G100



Previous Class

- What did we discuss?



Announcements

- **Midterm – Tue, Oct 14** (before Fall Break)
- **Assignment 3 OPEN today**
- Lab3 due Thu, Sep 25

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3



Notes...

- Getting multiple user inputs and using Scanner

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4



While and Do-While Statements

- These two pieces of code perform identically

```
initialization;
do {
    body_statements
} while (boolean_expression);
```



```
initialization;
body_statements;
while (boolean_expression) {
    body_statements;
}
```

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5



For Statement

- Is there a better way to organize the code?
- For statement (or usually called *for loop*)
 - Used to execute the body of a loop a **fixed number** of times

```
number = keyboard.nextInt();
count = 1;
while (count <= number) {
    // all the actions
    count++;
}
```

```
number = keyboard.nextInt();
int count;
for (count = 1;
     count <= number; count++) {
    // all the actions
}
```

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6



For Statement

- Syntax:

```
– for (Initializing_Action; Boolean_Expression;
      Update_Action){
    Body;
}
```

```
for (count = 1; count <= number; count++) {
    // all the actions
}
```

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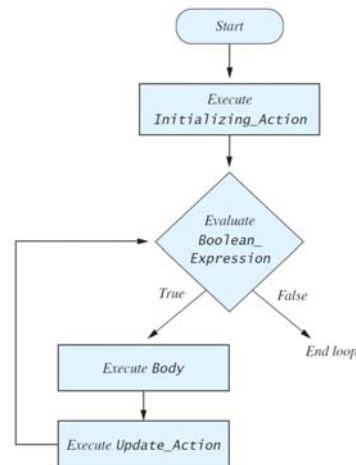
7



For Statement

- Flow chart

```
– for (Initializing_Action;
      Boolean_Expression;
      Update_Action){
    Body;
}
```



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8



For Statement

- Unrolled code

```
for (count = 1;
     count <= 2; count++)
{
    // all the actions
}
```

```
count = 1; // initialize for only once
if (count <= 2) { // count == 1, so yes
    // all the actions
    count++;
}
if (count <= 2) { // count == 2, yes again
    // all the actions again
    count++;
}
if (count <= 2) { // count == 3, so no
    // no action;
    // no count++;
}
// stop
```

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9



For Loop: Don't Overcount

- Repeat 3 times

```
for (int count = 1; count <= 3; count++) {
    // all the actions
}
```

- Repeat 3 times

```
for (int count = 0; count < 3; count++) {
    // all the actions
}
```

- Repeat **4 times!**

```
for (int count = 0; count <= 3; count++) {
    // all the actions
}
```

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10



For Loop: Infinite Loop

- Still, if you get things wrong, it may never end

```
int num = 3;  
// initializing action; boolean expression; update action  
for (count = 5; count >= num; count++)  
{  
    System.out.print(count + ", ");  
}
```



Ending a Loop

- If you know number of loop iterations?
 - Count-controlled loops
 - ***for(count = 0; count < iterations; count++)***
- User controlled ending
 - Ask-before-iterating (e.g. “yes/no”)
 - Sentinel value



Exercise 1

- Ask user to input an integer
- If input is a one-digit number, then print the product of three consecutive integers, starting with the input
- If input is a two-digit number, then print the square of the number
- If input is a three or more digits, then quit the program with a message to user
- Setup a loop for the above to run this 5 times

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13



Exercise 2

- Ask user to input an integer
- If input is a one-digit number, then print the product of three consecutive integers, starting with the input
- If input is a two-digit number, then print the square of the number
- If input is a three or more digits, then quit the program with a message to user
- Continue if the user says “yes” to the question: “Do you wish to continue”?

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14



Brackets

- Consider this:

$2 * 5 + 7$

$2 * (5 + 7)$

$2 * (5 + (7 * 6))$

$2 * (5 + (7 * (6 - 3)))$



Local Variables

- Open Eclipse
- New Java project etc.. You know the drill!

```
public class test123 {
    public static void main(String[] args)
    {
        int num1 = 5;
        int count;

        for (count = 0; count <= num1; count++){
            System.out.println(count);
        }
    }
}
```




Local Variables

```
public class test123 {  
  
    public static void main(String[] args)  
    {  
  
        int num1 = 5;  
        int count;  
  
        for (count = 0; count <= num1; count++) {  
            int num2 = 10;  
            System.out.println(count);  
            System.out.println(num2);  
        }  
    }  
}
```

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17



Local Variables

```
public class test123 {  
  
    public static void main(String[] args)  
    {  
  
        int num1 = 5;  
        int count;  
  
        for (count = 0; count <= num1; count++) {  
            int num2 = 10;  
            System.out.println(count);  
            System.out.println(num2);  
        }  
        System.out.println(num2);  
    }  
}
```

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18



Next class (Tue, Sep 30)

- Even more on loops