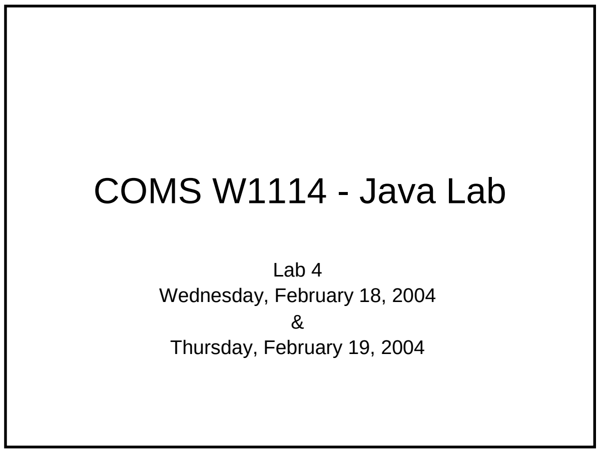
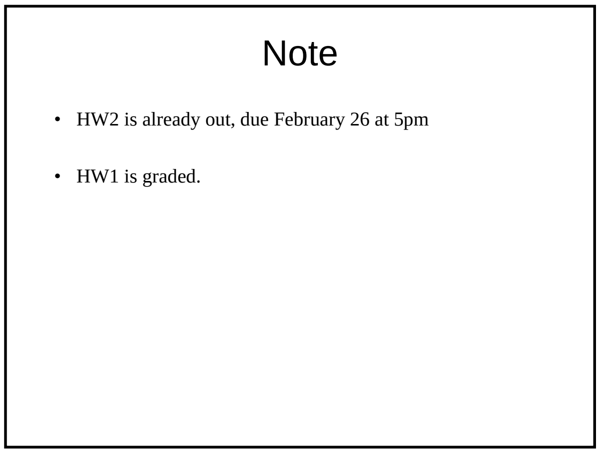


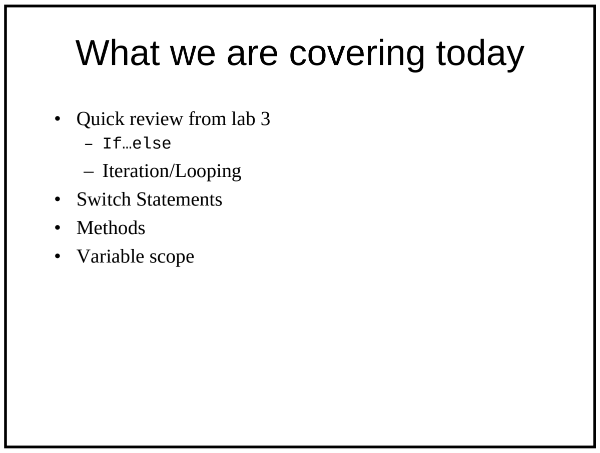
COMS W1114 - Java Lab

Lab 4
Wednesday, February 18, 2004
&
Thursday, February 19, 2004



Note

- HW2 is already out, due February 26 at 5pm
- HW1 is graded.



What we are covering today

- Quick review from lab 3
  - `If…else`
  - Iteration/Looping
- Switch Statements
- Methods
- Variable scope

if…else…if

```
if (condition){
    <statement1>
    <statement2>
}
else if (condition){
        <statement3>
        <statement4>
}
else{
    <statement5>
}
```

```
if (args.length==0) {
    System.out.println(“no input entered”);
}
else if(myArray.length==1){
    System.out.println(“one input entered”);
}
else {
    System.out.println(“>1 input entered”);
}
```

switch

```
switch (variable){
    case value1:
          <statement1>
          <statement2>
          break;
    case value2:
          <statement3>
          <statement4>
          break;
    default:
          <statement5>
}
```

```
switch (args.length) {
     case 0:
        System.out.println(“no input
        entered”);
        break;
     case 1:
        System.out.println(“one input
        entered”);
        break;
     default:
        System.out.println(“>1 input
        entered”);
}
```

Methods

- A method groups together statements in a logical manner
- So far we have seen a single method in any given java program

```
public static void main(String[] args){
     //method body (statements) goes here
}
```

- Components of a method declaration
  - public :: other java classes could hypothetically call this method
  - static ::
  - void :: return type
  - main :: identifier – name of method
  - ( ) :: delimits the input variables
  - String[] args :: the input variable TYPE and NAME (>1 variable are comma separated)

Methods

- There can be more than one method in a program. The way to jump from method to method is by **calling** the method

```
class Example{

  public float checkValidDiv( int a, int b ){
       double div=0;
       if (b==0){
          return -1;
       }
       else{
          div=(float)a/b;
       }
       return div;      //if the return value is not specified as void, you must ‘return’
a value
   }

   public static void main(String[] args){
       System.out.println(“program starts here”);
       int returnVal = checkValidDiv(4,0); // this is the method call!
       if (returnVal ==-1)
          System.out.println(“you tried to divide by 0”);
   }
}
```

- Components to a method call:
  input values, return value

main method is static

- The main method declaration will *always* look like that
- It *must* always be declared static
- Therefore it is not an ideal place to write the body of your program

Constructors

- Every class has a special method called a constructor.
- Like main, the constructor has a special syntax. No return value etc, only needs an identifier. The identifier *must* match the class name.

```
class HelloWorld{
     HelloWorld(){
          System.out.println(“Hello World”);
      }
     public static void main(String[] args){
          new HelloWorld();
      }
}
```

- In the main method, we will be calling the constructor for the class. to call the constructor method, we use the keyword ‘new’ before its identifier

Constructors can have input

```
class HelloWorld{
     HelloWorld(String[] printme){
          System.out.println(printme[0]);
      }
     public static void main(String[] args){
          new HelloWorld(args);
      }
}
```

Difference between a regular method call and a constructor method call
    *new keyword
    *never a return value

Example.java with a constructor

```
class Example{

  Example(String[] args){
       int returnVal = checkValidDiv(4,0); // this is the method call!
       if (returnVal ==-1)
          System.out.println("you tried to divide by 0");
  }

  public float checkValidDiv( int a, int b ){
       double div=0;
       if (b==0){
          return -1;
       }
       else{
          div=(float)a/b;
       }
       return div;
   }

   public static void main(String[] args){
       System.out.println("program starts here");
       new Example(args);
   }
}
```

HW2

- IMPORTANT! Name your class Palindrome
  - (your file should be called Palindrome.java)

- Write a method called *isPalindrome* that takes one parameter (a string) and returns a boolean (Java) indicating whether or not the supplied String is a palindrome.
- Modify the palindrome checking procedure so that it's case-insensitive. Hint: use java's Character.toLowerCase method
- Modify the palindrome checking procedure so that it ignores whitespace and punctuation. In particular, handle spaces ( ), periods (.), commas (,), and apostrophes (')

The Java API

- The java API contains information about all of java's methods

http://java.sun.com/j2se/1.4.2/docs/api/