Announcements

• ACM Programming competition
  – McKenzie lab, 12:00-5:00

• Game Night
  – Deschutes, 6:00-8:00

• Office Hours – they **do** occur early in the week

Errors and Lit Review

November 12, 2010

When Programming...
...things can go wrong.

![Diagram]

Compile Time Errors

- Syntax: missing braces, missing semicolon,
- type mismatch
- variable not declared
Runtime Errors

Live Environment

- Divide by Zero
- Array Index
- Null Pointer

Program Flow: Return from Method

```java
public class ProgramFlow {
    public static void main(String[] args) {
        int x = 5;
        int y = 42;
        int z = computeSum(x, y);
        System.out.println("Result: " + z);
    }
    static int computeSum(int a, int b) {
        return a + b;
    }
}
```

Exceptions

- For CIS 210, you should understand that an exception is how Java tells you that something went wrong at runtime.

- You will not need to handle all exceptions within the code. As you write and test your code, we expect that you will find the cause(s) and eliminate it (them).

- If you are interested in exploring exception handling, the next few slides discuss this briefly.

Program Flow (2)

```java
public class ProgramFlow {
    public static void main(String[] args) {
        int x = 2;
        int y = 0;
        int z = computeQuotient(x, y);
        System.out.println("Result: " + z);
    }
    static int computeQuotient(int a, int b) {
        return a / b;
    }
}
```

a/b becomes 2/0 (divide by zero)
throw an exception
Exceptions

- What can be thrown can be passed on
- What can be thrown can be caught

- Checked (example: FileNotFoundException)
- Unchecked (example: ArithmeticException)

FileNotFoundException

class MuppetMaster {
    // Configuration (Class Variables)
    static final String infile = "costumes.txt";
    static final int MAXMUPPETS = 100;
    // Internal state of MuppetMaster object (Object variables)
    Muppet[] muppets = new Muppet[MAXMUPPETS];
    int muppetCount = 0;

    /**
     * Main program instantiates the class and starts its
     * main instance method. It is also responsible for
     * obtaining a scanner on the input file.
     */
    public static void main(String[] args) throws FileNotFoundException {
        Scanner in = new Scanner(new File(infile));
    }
}

FileNotFoundException

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http://download.oracle.com/java/6/docs/api/java/util/Scanner.html

Scanner

class Scanner {
    public Scanner(File source) throws FileNotFoundException {
        Constructs a new Scanner that produces values scanned from the
        specified file. Bytes from the file are converted into characters using
        the underlying platform's default charset.
        Parameters:
        source - A file to be scanned
        Throws:
        FileNotFoundException - if source is not found
    }
}
ArithmeticException

```
ArithmeticException

try{
    System.out.println("Int result: "+x/zeroInt);
} catch(ArithmeticException e){
    System.out.println("You cannot divide by zero");
}
```

Logic Errors

```
Logic Errors
Computers do what they are told... and nothing more

• Integer division truncates the result
• Conditional logic
```
Literature Review

• Position Paper

• Selected Sections (1-5)

• Small Group Discussion – 5 minutes

• Class Discussion