CS 161
Intro to CS I

Errors and Debugging
Assignment #2...

• Part 3
  – You only need to turn in computer guessing
• Resubmit ALL files, if you resubmit...
Quiz #3 Recap...

• What if we didn’t have a break in the case of a switch statement?

• How could you write an if/else to match not having breaks in this switch?

```cpp
switch( x ) {
    case 0:
        case 1:
            std::cout << “X is zero or one\n”;
        case 2:
            std::cout << “X is two\n”;
        default:
            std::cout << “You have entered an invalid number!!!\n”;
    }
```

• What do you think this does in C++?

```cpp
<expression1> ? <expression2> : <expression3>
```
```cpp
#include <iostream>

int main() { 
    int x = 0;
    switch (x) {
        case 0:
        case 1:
            std::cout << "X is zero or one\n";
            break;
        case 2:
            std::cout << "X is two\n";
            break;
        default:
            std::cout << "You have entered an invalid number!!!\n";
            break;
    }
    if (x == 0 || x == 1) {
        std::cout << "X is zero or one\n";
        std::cout << "X is two\n";
        std::cout << "You have entered an invalid number!!!\n";
    } else if (x == 2) {
        std::cout << "X is two\n";
        std::cout << "You have entered an invalid number!!!\n";
    } else 
        std::cout << "You have entered an invalid number!!!\n";
    (x > 0)? std::cout << "hello\n" : std::cout << "hello2\n";
    return 0;
} 
```
Programming Errors

• Syntax errors
  – Misuse of C++ language
  – How are they caught?

• Logic errors
  – Doesn’t perform task correctly (aka. bugs)
  – How are they caught?

• Runtime errors
  – Stops your program from running
  – How are they caught?
Syntax Error Examples

• Missing main function
• Use of identifier not declared
• Misspelled Words
• Forget a Semicolon
• Forget Required Keyword
• Missing quote, curly brace, and parenthesis
• Use of single quotes instead of double
Logic Error Examples

- Poorly written programs
  - Add instead of subtract (incorrect operation)
  - Using last two digits for date
  - Same error message for different errors
  - Program that never ends
  - Add one to the largest integer (could be syntax)
Runtime Error Examples

• Open a file that doesn’t exist
• Segmentation fault
  — Infinite loop that eats memory
  — Divide by variable that is zero