CS 161
Intro to CS I

What is CS all about?
Odds and Ends

• Assignment 1 Due Sunday, 11:59pm

• Questions?
Reflections

• What do the following Linux commands do?
  – ls
  – mkdir
  – cd

• What is vi/vim?

• How do get into the insert mode? Command mode?
001 Code/002 will finish Friday

```cpp
#include <iostream>  //library

int main() {
  std::cout << "hello everyone" << std::endl;
  return 0;
}
```
More C++

• Programming Style: please read your class style guide
  – Program Header/Description
  – Placement of {} 
  – Indentation: spaces vs. tabs

• String Literal in quotations, “”
  – Not single quotes!
    • INCORRECT: std::cout << ‘Hello World’;
  – Do not span more than one line!
    • INCORRECT: std::cout << “Hello World”;}
More C++

• Escape Sequences
  – Display special characters
  – Use backslash, \, before special character to print

• Examples:
  std::cout << "\"Hello World\"\n";

Data Type

• What is data?
  – Information
  – Ex: `std::cout << “Hello World!” << std::endl;`
  – Literals
    • 23, 79.5, “Hello”, etc.

• What is a data type?
  – Description of the kind of information
    • Primitive Data
    • User Created – (we will cover later)
C++ Primitive Types

- char, double, float, int, long, short, bool
- Fundamental
  - **short/int/long**: whole numbers, e.g. 45, -89, 0
  - **float/double**: real numbers, e.g. 2.612, -30.5, 2.3e5
  - **char**: characters, e.g. ‘A’, ‘&’, ‘x’, ‘\’

- Signed by default, need to preface with unsigned keyword
  - **unsigned int**
  - **unsigned float**
  - **unsigned char**
Assignment #1 Macros

• C++: <climits>
• Use MIN and MAX macros from library
  http://www.cplusplus.com/reference/clibrary/climits/
  (Note that the values listed are not the values on our system!!!)
  – INT_MAX
  – INT_MIN
  – LONG_MAX
  – LONG_MIN
  – SHRT_MAX
  – SHRT_MIN
• Remember unsigned too...
<climits> Demo...
What is an expression?

• Set of operations producing a value

\[ 12 \times 4 + 6 \times 10 \]
\[ ((12 \times 4) + 6) \times 10 \]
Pieces of an Expression

- **Operators**: indicate operation
  - Add +
  - Subtract -
  - Multiply *
  - Divide /
  - Remainder %

- **Operands**: values in the expression

- **Evaluation**: process of obtaining results from operations on operands
Arithmetic

• Integer Arithmetic
  
  ```
  std::cout << 3/8;  /*prints 0*/
  std::cout << 34/5;  /*prints 6*/
  ```

• Floating Point Arithmetic
  
  ```
  std::cout << 34.0/5.0;  /*prints 6.8*/
  std::cout << 3.0/8;  /*prints .375*/
  std::cout << 3/8.0;  /*prints .375*/
  ```
Type Casting

• Casting
  
  std::cout << 34 / (int) 5.0;  /*prints 6*/
  std::cout << (int) (34 / 5.0);  /*prints 6*/
  std::cout << (float) 34 / 5;    /*prints 6.8*/

• What is wrong with these?
  
  std::cout << (int) 34 / 5.0;  /*prints 6.8*/
  std::cout << (float) (34/5);  /*prints 6.0*/
Precedence

• What is precedence?
  – Binding power of operator
  – (*, /, %) vs. (+, -)

• How do we override precedence?
  – Parenthesis!

• Examples:
  12 * 4 + 6 * 10 vs. ((12 * 4) + 6) * 10
Size of Things Demo...