Oregon State University

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

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";

- Refer online for common escape sequences: http://en.cppreference.com/w/cpp/language/escape

Data Type

What are you sending the function?

- # 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 * 4 + 6 * 10

  ((12 * 4) + 6) * 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...