

COLLEGE OF ENGINEERING School of Election and Computer

School of Electrical Engineering and Computer Science

CS 161 Intro to CS I

What is CS all about?

Odds and Ends



- Assignment 1 Due Sunday, 11:59pm
- Questions?



Reflections

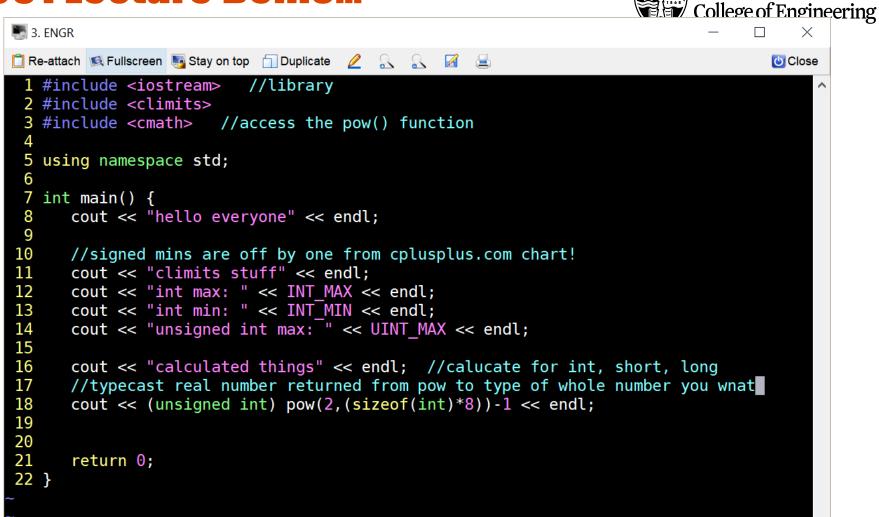
- What do the following Linux commands do?
 -Is 1; st contents of directory/folder
 -mkdir create directory
 -cd change directory
- What is vi/vim? Lext ed, tor
- How do get into the insert mode? Command mode?

001 Code/002 will finish Friday



	2. ENGR	_	
(4)	📋 Re-attach 📧 Fullscreen 🌆 Stay on top 📋 Duplicate 🛛 🖉 🔒 📓		🕑 Close
Preprocessor divector Unerchurn unerchurn			
	INSERT 4	, 4	All

001 Lecture Demo...



Oregon State University

002 Lecture Demo...

```
S. ENGR
                                                                                     \times
📋 Re-attach 📧 Fullscreen 🌆 Stay on top 📋 Duplicate 🛛 🖉 🛛 🔀
                                                                                       Close
 1 #include <iostream> //brings in library, by preprocessor directive
                                                                                             ~
 2 #include <climits>
 3 #include <cmath>
 4
 5 using namespace std;
 6
 7 int main() {
      cout << "hello" << endl;</pre>
 8
 9
      cout << "climits" << endl;</pre>
10
      cout << "LONG MAX: " << LONG MAX << endl;</pre>
11
      cout << "SHRT MAX: " << SHRT MAX << endl;
12
      cout << "SHRT MIN: " << SHRT MIN << endl;</pre>
13
      cout << "USHRT MAX: " << USHRT MAX << endl;
14
15
      cout << "sizeof" << endl; //calucate for int, short, long</pre>
      //typecast real number returned from pow to type of whole number you wnat
16
17
      cout << (unsigned short) pow(2,sizeof(short)*8)-1 << endl;</pre>
18
      cout << pow(2,sizeof(long)*8)-1 << endl; //without typecast, you get real #</pre>
19
      cout << (unsigned long) pow(2,sizeof(long)*8)-1 << endl;</pre>
20
21
      return 0;
                   //there are no problems
22 }
```

Oregon State University College of Engineering



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";

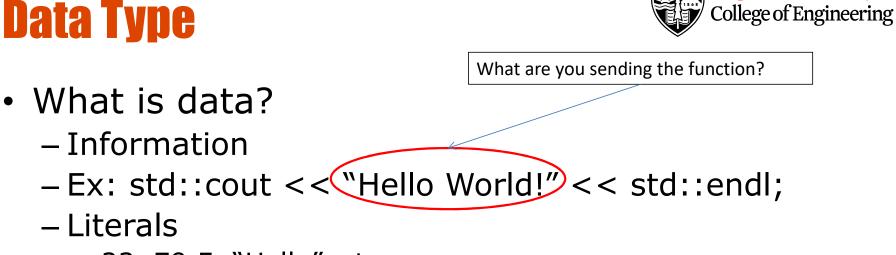


More C++

- Escape Sequences
 - Display special characters
 - Use backslash, $\$, before special character to print
- Examples:

std::cout << "\"Hello World\"\n";</pre>

 Refer online for common escape sequences: <u>http://en.cppreference.com/w/cpp/language/es</u> <u>cape</u>



- 23, 79.5, "Hello", etc.
- What is a data type?
 - Description of the kind of information
 - Primitive Data
 - User Created (we will cover later)

Oregon State University



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 <u>http://www.cplusplus.com/reference/clibrary/climits/</u> (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...

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*/</pre>

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*/</pre>



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*/</pre>

 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...



