

CS 161

Intro to CS I

Beginning to Program

More C++

\ + tab
"" strings
'\n' character

- 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;`
 - Simple value
 - Literals, e.g. 23, 79.5, "Hello", etc.
- What is a data type?
 - Description of the kind of information
 - Primitive Data 1161
 - User Created/Data Structures – (we will cover later)

end 1161 + 1162

C++ Primitive Types

Strongly typed

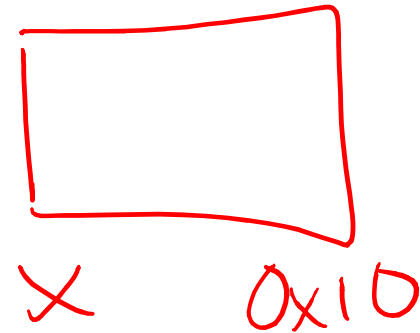
real

*C++
not C*

*true /
false*

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

Variables



- What is a variable?
 - Memory location with name and type to store value
- What is a declaration?
 - Statement requesting variable w/ name and type
 - Examples:
 - double height;
 - int age;

Variables/Identifiers

- Identifier: name given to item in program
 - Ex. Variables and Functions
 - Start with letter
 - Letters include: upper-case, lower-case, underscore (_)
 - Followed by sequence of letters and digits
 - Good examples: hiThere, two_plus_two, _hello
 - Bad examples: 5dogs, hi-there, hello there

camel case C/C++

BAD

- Can't Use Keywords:

<http://en.cppreference.com/w/cpp/keyword>

Variables

store
fetch

- How do we get a value in the variable?

– Assignment Statement

signed

```
int age;
```

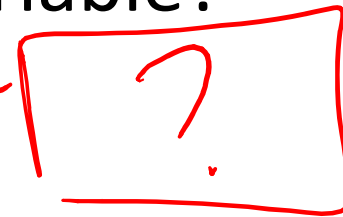
```
age = 20;
```

Or

```
int age = 20;
```

– = IS NOT equal to!!!!

- “gets” or “is assigned”



age
name 0x10
address

value rvalue
preferred way of initializing
age 0x10

Printing Variables/ Reading Into Variables

- C++: cout

- Example:

- std::cout << "The integer value is: " << value,

variable to print

- What about the newline?

- C++: cin

- Example:

- std::cin >> value;


```
1 #include <iostream>
2 using namespace std; //need std:: in front of cout and endl without this
3
4 int main() {
5     int age; //creates space to store whole number/integer named age
6     float remainder; //create space to store real/floating point number
7
8     //not good to have a cin without a prompt informing the user of what
9     //to enter!!!! You should always have a prompt before cin!!!
10    cin >> age; //read value from user and store it in space named age
11    cout << "Your age is: " << age << endl; //fetch value in age and print
12    cin >> remainder; //after reading an integer, read a float
13    cout << "Your remainder is: " << remainder << endl;
14
15    cout << "hello"
16         " everyone" << endl;
17
18    return 0;
19 }
```

```
flip3 ~/cs161/private 155% g++ hello.cpp
flip3 ~/cs161/private 156% a.out
4.6
Your age is: 4
Your remainder is: 0.6
hello everyone
flip3 ~/cs161/private 157% a.out
4
Your age is: 4
.6
Your remainder is: 0.6
hello everyone
flip3 ~/cs161/private 158% █
```