

CS 161

Intro to CS I

Strings, cin, and errors

Finish C++ String Demo

- What does cin do when reading...
 - Int/Floats
 - Strings
- What does getline do?

```
1 #include <iostream>
2 using namespace std;
3
4 int main() {
5     int x;
6     float f;
7
8     //Not a good way to handle errors because 4.6, 4t, etc. will work
9     do {
10         if(cin.fail()) {
11             cin.clear(); //reset failbit
12             cin.ignore(256, '\n'); //ignore 256 chars or until newline
13         }
14         cout << "enter int: ";
15         //cin ignores leading whitespace and reads until char not of
16         //the type specified or whitespace (newline, space, tab, etc.)
17         cin >> x;
18         cout << "value of x: " << x << endl;
19     } while(cin.fail()); //fail bit set if it doesn't get type expected
20
21     cout << "enter a float: ";
22     cin >> f;
23     cout << f << endl;
24
25     return 0;
26 }
```

More cin Demo...

More about **break**, **exit**, and **return**

- **break** – used with switch and loops, breaking out of the closest associated case or loop(for, while, or do while). **This statement can only occur in a loop or case**, otherwise the compiler yells!
- **return** – leave the current function, which exits the program when in the main() function. You can put this **anywhere inside any function**, otherwise the compiler yells!
- **exit()** – exit the entire program, no matter where this is encountered. You can put this **anywhere inside any function**, as long as you include **<cstdlib>**, otherwise the compiler yells!

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

- Segmentation fault or Core dump
 - Read a file that doesn't exist
 - Go outside of memory bounds
 - Infinite loop that eats memory
 - Divide by variable that is zero

Debugging Errors

- Syntax:
 - **READ compiler errors** (pay attention to line #)
 - Use **google** to search for error
- Logic/Runtime
 - Use **std::cout** to find where the code is breaking
 - Print variable values
 - Print indicator messages
 - **Trace** through the code
 - **Comment** out code

Demo...