CS 161
Intro to CS I

C++ Strings, Errors, and Debugging
Odds and Ends...

• Last week to demo Assignment 1!
• Sign up for demoing Assignment 2 early!!
• Work on Assignment #3 Design due Sunday!!!
How do we read a string of chars?

- User-defined type in string library

```
#include <string>
```

- Declare/Create type

```
string mssg;
```

- Read with cin or getline

```
cin >> mssg; //get a word
generate(cin,mssg); //get a line of txt/sentence
```

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Using a String

• Finding the Length
  
  mssg.length()

• Getting a specific character

  mssg.at(0)  //Gives you the first character
```cpp
#include <iostream>
#include <string>  // location of C++ string object

using namespace std;

int main() {
    string mssg="hello";  // can assign a string literal to string object
    cout << "Enter a string: ";
    cin >> mssg;
    cout << mssg.length() << endl;  // find length/number of characters

    // don't access 3rd character if there aren't 3 or more characters
    if(mssg.length() >= 3)
        cout << mssg.at(2) << endl;
    else
        cout << "we can't get to third char" << endl;

    return 0;
}
```
Documentation

• cplusplus.com
• Letters - ASCII chart
Error Handling

• What can we do to prevent these errors?
  – Overflow
  – Divide by zero
  – Bad input by the user

(OSU) Oregon State University
```cpp
#include <iostream>
#include <string>  // location of C++ string object
#include <cstdlib>  // location of atoi() / ASCII to integer
using namespace std;

int main() {
    string mssg="hello";  // can assign a string literal to string object
    cout << "Enter a number: ";
    cin >> mssg;
    int i;  // declare it outside the for because we use if after the for
    for(i=0; i<mssg.length(); i++) {
        // if a character is not within the range of '0' - '9' on ASCII chart,
        // then it isn't a positive integer
        if(!(mssg.at(i) >= '0' && mssg.at(i) <= '9')) {
            cout << "bad input" << endl;
            break;
        }
    }
    if(i==mssg.length())  // if all the characters are digits in string, then...
        cout << atoi(mssg.c_str()) << endl;  // change it to an integer
    return 0;
}
```