

Week 2

Announcements

- Zybooks Lab
 - due 10/16 (tonight!) by 11pm
- Project 2
 - 10/22 (next Thursday) by 11pm
- Midterm 1 (sneaking up)
 - 10/29

Agenda

1. Review topics from this week
2. Week 2 worksheet (on class website)

Notes

Variable Declarations

```
// Not initialized
int h;
double d;

// value of a is undefined, h holds whatever was in memory at the time
int a = h + 10;

// Initialized with a value
int h2 = 5;

// *** strings ***
string s;           // holds the empty string if not initialized
string s = "val";
```

Strings (Read and Write)

```
#include <string>
using namespace std    // <-- assume this is at the top of the file

// *** Writing ***

// 2 ways to put a newline
cout << "string\n";
cout << "string" << endl;

// *** Reading ***

string s;
getline(cin, s);      // for now, don't use 'cin <<' for strings

/*
reads everything up to the newline, which is written when you press enter
spaces count as characters, so if you type "  h ii \n" that's what will be stored
*/
```

Ignore Input

```
/*
Use cin.ignore when you read a string after you read an int!
The two arguments to the function: (10000, '\n'). Ignore either
    the next 10000 characters
    or everything up till the next newline character, whichever happens first
*/

// read in an int
int x;
cin >> x;
cin.ignore(1000, "\n");    // don't forget to do this!
// In discussion I used double quotes above, but it should be single quotes!

// and then a string
string s;
getline(cin, s);

// If I tried to input this without using cin.ignore,
// x would have 5 and s would have the empty string
$ 5      fdjakljfdlkadsjfdkj \n
```

Conditionals

```
if (boolean condition) {
    statement;
    statement;
}

// one statement if-statement
// if you have one statement in your if-statement, you don't need curly braces
if (x < 4)
    cout << "x is less than 4!" << endl;

// *** Example 1 ***
// the else statement would never run
if (3 < 4) {
    cout << "3 is less than 4!" << endl;
}
else {
    cout << "3 isn't less than 4!\n";
}

// *** Example 2 ***
int x;
cin >> x;
cin.ignore(1000, "\n"); // just to be safe

string s;

if (x < 4) {
    cout << "true" << endl;
}
else {
    cout << "false" << endl;
}

// *** Example 3 ***
// We streamlined the code to only cout once, clean style is easier to debug!
int x;
cin >> x;
cin.ignore(1000, "\n");

string s;

if (x < 4) {
    s = "true";
}
else {
    s = "false";
}
```

Comparison Operators

```
// e.g. <, >, ==, !=, >=, <=
// "at-least" >=
// "at-most" <=
if (x >= 18)
    cout << "x is at least 18!" << endl;
```

Logical Operators

```
// and - &&, or - ||

if (x < 10) {
    if (x >= 5) {
        // 5, 6, 7, 8, or 9
        cout << "hi" << endl;
    }
}

// combine the two if-statements into one with &&
if (x < 10 && x >= 5) {
    cout << "hi" << endl;
}

/*
let's write a simple program
output - "yes" or "no"
    "yes" - if your major is "Cs" or your major is "MATH" and you have a GPA
            of at least 3.2
    "no" otherwise
*/

string major;
getline(cin, major);

double gpa;
cin >> gpa;
// cin.ignore(10000, "\n"); // don't need this, we read the string before the int

if ( major == "Cs" || (major == "MATH" && gpa >= 3.2) )
    cout << "yes" << endl;
else
    cout << "no" << endl;
```