CS 161
Intro to CS I

Finish Conditionals/Begin Loops
Odds and Ends

• Assignment 3 Design due Sunday
• Back Evaluations due Sunday
Fun Friday...

• What if we didn’t have a break in the case of a switch statement?
• How could you write an if/else to match not having breaks in this switch?

```cpp
switch( x ) {
    case 0:
    case 1:
        std::cout << "X is zero or one\n";
    case 2:
        std::cout << "X is two\n";
    default:
        std::cout << "You have entered an invalid number!!!\n";
}
```

• What do you think this does in C++?
```cpp
<expression1> ? <expression2> : <expression3>
```
The for Loop Examples

```cpp
for(x=1; x <= 1; x++) {
    cout << "hello world\n";
}
```

```cpp
for(x=1; x < 1; x++) {
    cout << "hello world\n";
}
```
The while loop

for(x=1; x <= 100; x++)
    cout << "hello world\n";

vs.

int x=1;
while(x<=100) {
    cout << "hello world\n";
    x++;
}

Common Mistakes

```cpp
int x = 1;
while(x <= 100) {
    cout << "hello world\n";
    x++;
}
```

What if we forget this?
int x=1;
do {
    cout << “hello world\n”;
    x++;
} while(x<=100);

• Difference b/w while and do/while?
Nested for Loops

for(x = 0; x < 10; x++) {
    for(y = 0; y < 10; y++) {
        cout << "hello world\n";
    }
}

• How many times is Hello World printed?
Reuse Variables

```cpp
for(x = 0; x < 10; x++) {
    cout << "The value of x is: " << x << endl;
}
for(x = 0; x < 10; x++) {
    cout << "The value of x is: " << x << endl;
}
```
int x;
for(x = 0; x < 10; x++) {
  for(x = 0; x < 10; x++) {
    cout << "The value of x is: " << x << endl;
  }
}

• What is the output from this nested loop?
Infinite Loops

int x;
for(x = 0; x < 10; x++) {
    for(x = 0; x < 5; x++) {
        cout << "The value of x is: " << x << endl;
    }
}

Infinite Loops

```cpp
int x, y;
for(x = 0; x < 10; x++) {
    for(y = 0; y < 5; x++) {
        cout << "The value of x is: " << x << endl;
    }
}
```
Infinite Loops

```cpp
int x, y;
for(x = 0; x < 10; x++) {
    for(y = 0; x < 5; y++) {
        cout << "The value of x is: " << x << endl;
    }
}
```
Infinite Loops

```cpp
int x;
for(x = 1; x <= 10; x++) {
    cout << "The value of x is: " << --x << endl;
}
```
Why is this good/bad?

```cpp
for(int x = 0; x < 10; x++) {
    for(int y = 0; y < 10; y++) {
        cout << "hello world" << endl;
    }
}
```

• Where can we access x and y?
Loops Recap...

- for loops
  - Repeat for specific number of times
  - Example?
- while loops
  - Repeat while a condition is being met
  - Example?
- do while loops
  - Always do once, and repeat while condition is met
  - Example?
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!
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
  getline(cin,mssg);  //get a line of txt
  ```
Demo...