

Comparing C and C++

C Programming

- C is a general programming language.
 - Can create blocks of reusable code (methods)
 - Collection of variables and methods
 - Even though code is broken up into different files, this does not provide any protection or privacy.
- C++ builds on top of C
 - Adds the concept of classes into the language

Classes

- A ***class*** contains data (variables) and methods that act on that data
- Programs are broken down into smaller parts that are specific to a certain purpose (i.e. the code to control a camera)
- Instances (creations) of a class are called ***objects***.

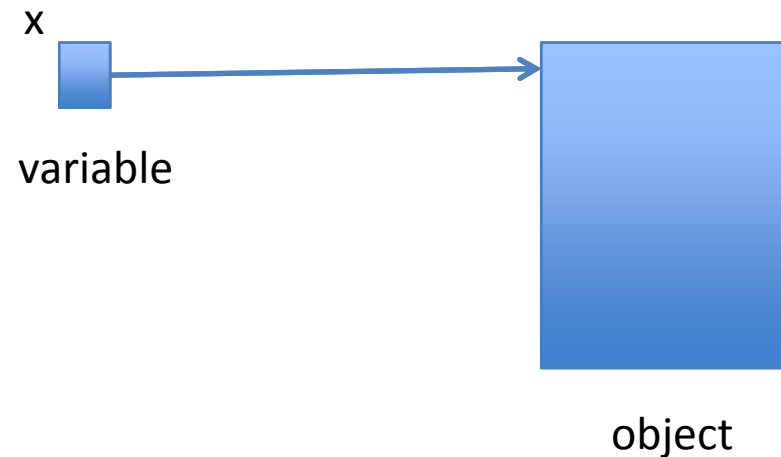
Breakup of Files

- Code is generally broken into two files:
 - .h
 - Declaration of the class, its members (variables), and methods.
 - .cpp
 - Actual implementation of the methods.

Pointers

- There are different styles of variables for objects, but we will look at how pointers work.
- The * means that the variables is a pointer to the object.

```
MyClass* x = new MyClass();
```



Making a Class

Counter.h

```
class Counter
{
private:
    int counter;

public:
    Counter(int n);

    void increment();
    void decrement();
    void set(int n);
    int get();
}
```

Counter.cpp

```
#include "Counter.h"

MyClass::MyClass(int n)
{
    counter = n;
}

void
    MyClass::increment()
{
    counter++;
}

int MyClass::get()
{
    return counter;
}

// more code after this!
```

Calling Methods

- Methods are called on a specific object of the class.
- Each object created from the class has the same methods.
- Methods are called using “->”

```
Counter* c = new Counter(5);  
c->increment();  
int x = c->get();
```