Classes

Class Files

Classes in C++ can have two files associated with each class:

- The Interface file (*.h)
- The implantation file (*.cpp)

Interface File Example

```cpp
//
// class rational - rational number data abstraction
//
class rational {
public:
    //constructors
    rational    ();
    rational    ( int );
    rational    ( int, int );
    rational    ( const rational & );

    //accessor functions
    int         numerator () const;
    int         denominator () const;

    //assignments
    void        operator =  ( const rational & );
    void        operator += ( const rational & );

private:
    //data areas
    int         top;
    int         bottom;

    //operation used internally
    void        normalize ();
}
```

Member vs Non-Member Functions

Inside a Class

Member Function

```cpp
int exampleFunction()
```

Non-Member Function

```
friend int exampleFunction()
```

Outside a Class

Member Function

```
//exampleFunction must declared inside of ExampleClass
int ExampleClass::exampleFunction()
```

Non-Member Function

```
int exampleFunction()
```

Const

There are 3 placements of `const` in C++:

Before Function

This entails that the returned variable will be a constant

```
const int exampleFunction()
```

After Function

Declares that no variables inside the function will be created or changed

```
int exampleFunction() const
```

Before Variables

The variables which are declared with `const` cannot be changed

```
int exampleFunction(const int exampleVariable)
```