# 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

//
  
// 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

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)