Static Data Members, and Static Member Functions
static Class Members

• Each object gets it’s own copy of the data members

• What if we wanted a data member to be shared between all objects
  ◦ Each object sees the same value for the data member
  ◦ Each object can modify that data member, and the other objects will see the change

• Data members of this type are called static
static Class Member (11.2)

- **static** members represent class-wide information and are not specific to one object
- There is only one copy of the member and it is shared between all objects
- Why would we ever need or want a static class member? Can you think of an example.
static Class Members

- They are not global variables
- The static data member could be declared public, private, or protected
- static data members must be initialized once
Example

```cpp
#ifndef EMPLOYEE_H
#define EMPLOYEE_H

class Employee
{
    private:
        char *firstName;
        char *lastName;
        static int count;
    
    public:
        Employee (const char *, const char *);
        ~Employee ();
        char *getFirstName () const;
        char *getLastName () const;
        static int getCount ();
};
#endif
```
Employee::Employee (const char * first, const char * last)
{
    firstName = new char[strlen(first) + 1];
    strcpy(firstName, first);
    lastName = new char[strlen(last) + 1];
    strcpy(lastName, last);
    count++;
}
What is the value of count?

```cpp
int Employee::count = 0;

int main()
{
    Employee emp1 ("john", "doe");
    Employee emp2 ("jane", "doe");
    Employee emp3 ("bob", "doe");
}
```
static Member Functions

class IntVal
{
    private:
        int value;
        static int valCount;
    public:
        static int getValCount()
        {
            return valCount;
        }
};
Calling Static Functions

• Can be called independently of class objects, through the class name:

```cpp
cout << IntVal::getValCount();
```

• Can be called before any objects of the class have been created

• Used mostly to manipulate static member variables of the class