

# National University of Computer and Emerging Sciences



## Lab Manual # 06 Object oriented programming

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Section(s)	BSE-B
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## Objectives

After performing this lab, students shall be able to:

- ✓ Composition
- ✓ Association
- ✓ Aggregation

### **TASK 1: Composition**

1. Implement a class called **Time**. The **Time** class will have two private data members:

```
int hr;  
int min;
```

You have to implement the following functions for time class

```
Time();  
Time(int, int);  
void setTime(int, int);  
void getTime(int&, int&);  
void printTime();  
void incrementHours();  
void incrementMinutes();
```

2. Implement a class called **Date**. The **Date** class will have three private data members:

```
int month;  
int day;  
int year;
```

You have to implement the following functions for Date class

```
Date();  
Date(int, int, int);  
void setDate(int, int, int);  
void getDate(int&, int&, int&);  
void printDate();
```

3. . Implement a class called **Event**. The **Event** class will have three private data members:

```
string eventName;  
Time eventTime;  
Date eventDay;
```

You have to implement the following functions for Event class

```
Event(int hours = 0, int minutes = 0, int m = 1,  
      int d = 1, int y = 1900, string name = "Christmas");  
void setEventData(int hours, int minutes, int m, int d, int y, string  
name);  
void printEventData();
```

Your Main function should be like this

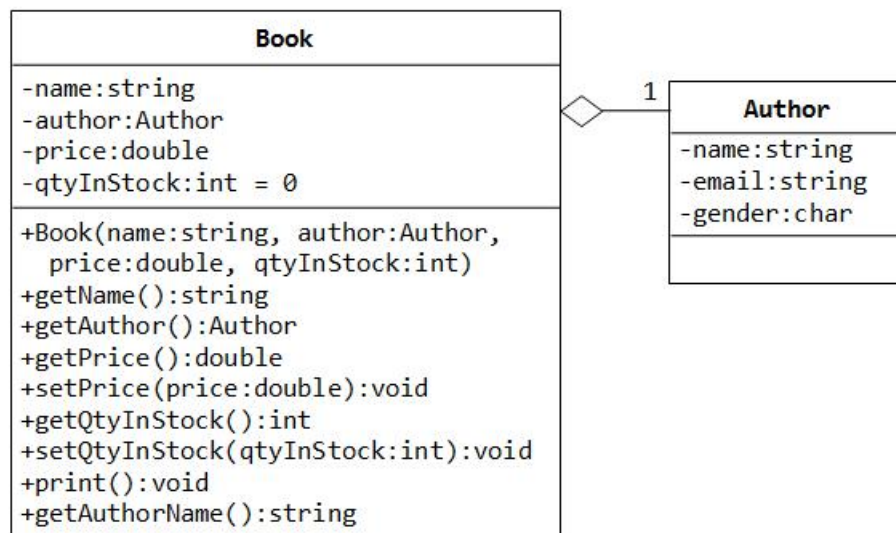
```
int main()
{
    //instantiate an object and set data for Christmas
    Event object;
    object.setEventData(6, 0, 12, 25, 2010, "Christmas");
    //print out the data for object
    object.printEventData();
    //instantiate the second object and set date for the fourth of July
    Event object2;
    object2.setEventData(1, 15, 7, 4, 2010, "Fourth of July");
    //print out the data for the second object
    object2.printEventData();

    return 0;
}
```

Please define each function outside the class properly.

## **TASK 2: Association**

Understand the diagram and write a code for it.



Implement all functions in book class

Your Author class must have the following functions

- `Author(const string & name, const string & email, char gender);`
- `string getName() const;`
- `string getEmail() const;`
- `void setEmail(const string & email);`
- `char getGender() const;`
- `void print() const;`

Your driver function must be like this.

```
int main() {  
    // Declare and construct an instance of Author  
    Author peter("Peter Jones", "peter@somewhere.com", 'm');  
    peter.print(); // Peter Jones (m) at peter@somewhere.com  
  
    // Declare and construct an instance of Book  
    Book book("C++ for Dummies", peter, 19.99);  
    book.print();  
    // 'C++ for Dummies' by Peter Jones (m) at peter@somewhere.com  
  
    peter.setEmail("peter@xyz.com");  
    peter.print(); // Peter Jones (m) at peter@xyz.com  
    book.print();  
    // 'C++ for Dummies' by Peter Jones (m) at peter@somewhere.com  
  
    book.getAuthor().setEmail("peter@abc.com");  
    book.print();  
    // 'C++ for Dummies' by Peter Jones (m) at peter@somewhere.com  
}
```