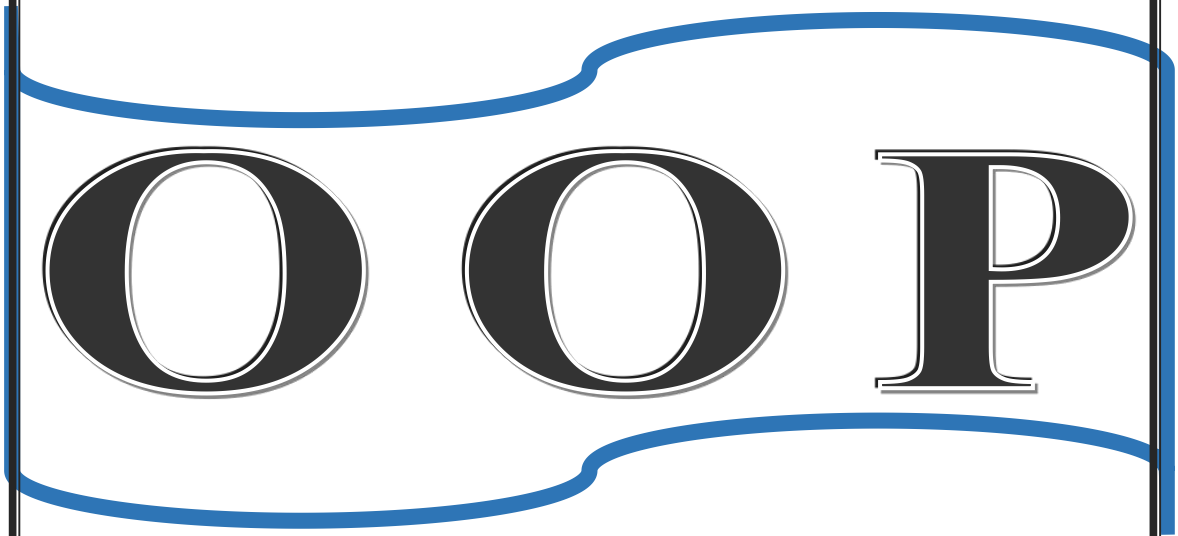

LAB MAMNUAL

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112705

Software Engineering

2nd smester

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Fsd

CH# 14

Program 01

M hanzala 112705.cpp

```cpp
#include<iostream>
using namespace std;
class Time
{
private:
int h,m,s;
public:
Time()
{
    h=m=s=0;
}
Time(int hh, int mm, int ss)
{
    h = hh;
    m=mm;
    s=ss;
}
int operator ++(int)
{
    if(m==59)
    {
        m = 0;
        h++;
    }
    else
        m++;
}
int operator --(int)
{
    if(m==0)
    {
        m = 59;
        h--;
    }
     else
        m--;
}
int show()
{
cout<<h<<":"<<m<<":"<<s<<endl;
}
};
int main()
{
Time x(10,50,50);
x.show();
x++;
x.show();
x--;
x.show();
return 0;
}
```

```
10:50:50
10:51:50
10:50:50

--------------------------------
Process exited after 0.4451 seconds with return value 0
Press any key to continue . . .
```

Program 02

M hanzala 112705.cpp

```cpp
#include <iostream>
#include <string>
using namespace std;

class Bank {
private:
    string name;
    int acno;
    string actype;
    int bal;

public:
    Bank() {
        cout << "Enter account name: ";
        getline(cin, name);
        cout << "Enter account number: ";
        cin >> acno;
        cin.ignore();
        cout << "Enter account type: ";
        getline(cin, actype);
        cout << "Enter opening balance: ";
        cin >> bal;
    }
    void deposit(int amt) {
        bal += amt;
        cout << "\nBalance after deposit: " << bal << endl;
    }
    void withdraw(int amt) {
        if (amt > bal) {
            cout << "Not enough balance in the account!" << endl;
        } else {
            bal -= amt;
            cout << "Balance after withdrawal: " << bal << endl;
        }
    }
    void display() const {
        cout << "\nAccount Details:\n";
        cout << "Account Name: " << name << endl;
        cout << "Account Number: " << acno << endl;
        cout << "Account Type: " << actype << endl;
        cout << "Current Balance: " << bal << endl;
    }
    void add(const Bank& ac) {
        bal += ac.bal;
        cout << "\nNew Balance after adding: " << bal << endl;
    }
};

int main() {
    cout << "Enter details for Account 1:\n";
    Bank x;
    cout << "\nEnter details for Account 2:\n";
    Bank y;
    x.add(y);
    x.display();
    return 0;
}
```

```
Enter details for Account 1:
Enter account name: ak
Enter account number: 1234
Enter account type: business
Enter opening balance: 100

Enter details for Account 2:
Enter account name: Enter account number: ai
Enter account type: Enter opening balance:
New Balance after adding: 149

Account Details:
Account Name: ak
Account Number: 1234
Account Type: business
Current Balance: 149
```

Program 03

M hanzala 112705.cpp

```cpp
#include <iostream>
using namespace std;
class Array {
private:
    int arr[5];
public:
    Array() {
        for (int i = 0; i < 5; i++)
            arr[i] = -1;
    }
    void input() {
        for (int i = 0; i < 5; i++) {
            cout << "Enter an integer: ";
            cin >> arr[i];
        }
    }
    void show() const {
        cout << "Array values: ";
        for (int i = 0; i < 5; i++)
            cout << arr[i] << " ";
        cout << endl;
    }
    bool operator==(const Array& a) const {
        for (int i = 0; i < 5; i++) {
            if (arr[i] != a.arr[i])
                return false;
        }
        return true;
    }
};
int main() {
    Array x, y;
    cout << "Input for first array:\n";
    x.input();
    cout << "\nInput for second array:\n";
    y.input();
    cout << "\nFirst Array: ";
    x.show();
    cout << "Second Array: ";
    y.show();
    if (x == y)
        cout << "\nBoth arrays are equal." << endl;
    else
        cout << "\nBoth arrays are different." << endl;
    return 0;
}
```

```
Input for first array:
Enter an integer: 1
Enter an integer: 2
Enter an integer: 3
Enter an integer: 9
Enter an integer: 8

Input for second array:
Enter an integer: 1
Enter an integer: 2
Enter an integer: 3
Enter an integer: 9
Enter an integer: 8
```

CH# 15

Program 04

M hanzala 112705.cpp

```cpp
#include <iostream>
#include <string>
using namespace std;
class Employee {
protected:
    int eid;
    int scale;
public:
    Employee() : eid(-1), scale(0) {}
    void input() {
        cout << "Enter employee ID: ";
        cin >> eid;
        cout << "Enter scale: ";
        cin >> scale;
    }
    void show() const {
        cout << "Employee ID: " << eid << endl;
        cout << "Scale: " << scale << endl;
    }
};
class Manager : public Employee {
private:
    int mid;
    string dept;
public:
    Manager() : mid(0) {}
    void input() {
        Employee::input();
        cout << "Enter manager ID: ";
        cin >> mid;
        cin.ignore();
        cout << "Enter department: ";
        getline(cin, dept);
    }
    void show() const {
        Employee::show();
        cout << "Manager ID: " << mid << endl;
        cout << "Department: " << dept << endl;
    }
};
int main() {
    Manager m;
    cout << "Enter Manager Details:" << endl;
    m.input();

    cout << "\nDisplaying Manager Details:" << endl;
    m.show();

    return 0;
}
```

```
Enter Manager Details:
Enter employee ID: 12
Enter scale: 10
Enter manager ID: 13
Enter department: SE

Displaying Manager Details:
Employee ID: 12
Scale: 10
Manager ID: 13
Department: SE
```

Program 05

M hanzala 112705.cpp

```cpp
#include <iostream>
using namespace std;

class LocalPhone {
protected:
    long ph;

public:
    virtual void input() {
        cout << "Enter phone number: ";
        cin >> ph;
    }
    virtual void show() const {
        cout << ph << endl;
    }
    virtual ~LocalPhone() = default;
};
class NatPhone : public LocalPhone {
protected:
    int ccode;
public:
    void input() override {
        cout << "Enter city code: ";
        cin >> ccode;
        LocalPhone::input();
    }
    void show() const override {
        cout << ccode << " ";
        LocalPhone::show();
    }
};
class IntPhone : public NatPhone {
private:
     int ncode;
public:
    void input() override {
        cout << "Enter country code: ";
        cin >> ncode;
        NatPhone::input();
    }
    void show() const override {
        cout << ncode << " ";
        NatPhone::show();
    }
};
int main() {
    IntPhone p;
    cout << "Enter International Phone Details:" << endl;
    p.input();
    cout << "\nDisplaying Phone Details:" << endl;
    p.show();
    return 0;
```

```
Enter International Phone Details:
Enter country code: 92
Enter city code: 40
Enter phone number: 03425678987

Displaying Phone Details:
92 40 2147483647

--------------------------------
Process exited after 29.71 seconds with ret
Press any key to continue . . .
```

Program 06

M hanzala 112705.cpp

```cpp
#include <iostream>
#include <string>
using namespace std;

class Teacher {
protected:
    string name, address;
    int age;
public:
    void input() {
        cout << "Enter teacher name: ";
        getline(cin, name);
        cout << "Enter teacher age: ";
        cin >> age;
        cin.ignore();
        cout << "Enter teacher address: ";
        getline(cin, address);
    }
    void show() const {
        cout << "Teacher Name: " << name << endl;
        cout << "Age: " << age << endl;
        cout << "Address: " << address << endl;
    }
};
class Writer {
protected:
    string name, address;
    int books;
public:
    void input() {
        cout << "Enter writer name: ";
        getline(cin, name);
        cout << "Enter writer address: ";
        getline(cin, address);
        cout << "Enter number of books written: ";
```

```
        cin >> books;
        cin.ignore();
    }
    void show() const {
        cout << "Writer Name: " << name << endl;
        cout << "Address: " << address << endl;
        cout << "Number of Books: " << books << endl;
    }
};
class Scholar : public Teacher, public Writer {
public:
    void input() {
        cout << "Input Teacher Details:" << endl;
        Teacher::input();
        cout << "\nInput Writer Details:" << endl;
        Writer::input();
    }
    void show() const {
        cout << "\nTeacher Details:" << endl;
        Teacher::show();
        cout << "\nWriter Details:" << endl;
        Writer::show();
    }
};
int main() {
    Scholar s;
    cout << "Enter Scholar Details:\n";
    s.input();
    cout << "\nDisplaying Scholar Details:\n";
    s.show();
    return 0;
}
```

```
Enter Scholar Details:
Input Teacher Details:
Enter teacher name: ak
Enter teacher age: 45
Enter teacher address: faisalabad

Input Writer Details:
Enter writer name: abdulreman
Enter writer address: chiniot
Enter number of books written: 7

Displaying Scholar Details:

Teacher Details:
Teacher Name: ak
Age: 45
Address: faisalabad

Writer Details:
Writer Name: abdulreman
Address: chiniot
Number of Books: 7
```

Program 07

M hanzala 112705.cpp

```cpp
#include <iostream>
#include <string>
using namespace std;

class Book {
protected:
    int bid;
    string bname;
    float price;

public:
    void input() {
        cout << "Enter book ID: ";
        cin >> bid;
        cin.ignore();
        cout << "Enter book name: ";
        getline(cin, bname);
        cout << "Enter book price: ";
        cin >> price;
    }

    void show() const {
        cout << "Book ID: " << bid << endl;
        cout << "Book Name: " << bname << endl;
        cout << "Price: $" << price << endl;
    }
};

class Writer {
protected:
    string name, address;
    int books;
    Book bk[5];

public:
    void input() {
        cout << "Enter writer name: ";
        cin.ignore();
        getline(cin, name);
        cout << "Enter writer address: ";
        getline(cin, address);
        cout << "Enter number of books written: ";
        cin >> books;
        cout << "Enter details of up to five books:" << endl;
        for (int i = 0; i < 5; i++) {
            cout << "\nBook " << (i + 1) << ":" << endl;
            bk[i].input();
        }
    }
```

```
50
51      void show() const {
52          cout << "\nWriter Name: " << name << endl;
53          cout << "Address: " << address << endl;
54          cout << "Number of Books Written: " << books << endl;
55          cout << "\nDetails of Books:" << endl;
56          for (int i = 0; i < 5; i++) {
57              cout << "\nBook " << (i + 1) << ":" << endl;
58              bk[i].show();
59          }
60      }
61  };
62
63  int main() {
64      Writer w;
65
66      cout << "Enter Writer Details:" << endl;
67      w.input();
68
69      cout << "\nDisplaying Writer Details:" << endl;
70      w.show();
71
72      return 0;
73  }
```

```
Enter Writer Details:
Enter writer name: Abdulrehman
Enter writer address: Chiniot
Enter number of books written: 2
Enter details of up to five books:

Book 1:
Enter book ID: 019379
Enter book name: friends
Enter book price: 6948646246460286

Book 2:
Enter book ID: 7492387
Enter book name: nice people
Enter book price: 548358036504365016543605656

Book 3:
Enter book ID: 085865865065086656
Enter book name: Enter book price:
Book 4:
Enter book ID: Enter book name: Enter book price:
Book 5:
Enter book ID: Enter book name: Enter book price:
Displaying Writer Details:

Writer Name: bdulrehman
Address: Chiniot
Number of Books Written: 2

Details of Books:

Book 1:
Book ID: 19379
Book Name: friends
Price: $6.94865e+015

Book 2:
Book ID: 7492387
Book Name: nice people
Price: $5.48358e+026

Book 3:
Book ID: 2147483647
Book Name:
Price: $1.4013e-045
```