

Assignment 11

Laboratory 6

Inheritance

Example 1)

```
#include<iostream>
using namespace std;
class A{
    public:    void show(){        cout<<"I am base"<<endl;    }    };
class B:public A{
    public :    void show(){        cout<<"I am derived"<<endl;    }    };
int main(){    A a;    a.show();    B b;    b.show();    }

shyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory6/examples$ g++ example1.cpp -o 1
shyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory6/examples$ ./1
I am base
I am derived
shyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory6/examples$ █
```

Example 2)

```
#include<iostream>
using namespace std;
class A{    public:    int i;    };
class B:virtual public A{    public:    int j;    };
class C:virtual public A{    public :    int k;    };
class D:public B,public C{    };
int main(){    D d;    d.j=10;    d.j=13;    d.k=18;    }

shyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory6/examples$ g++ example2.cpp -o 1
shyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory6/examples$ ./1
shyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory6/examples$ █
```

Example 3)

```
#include<iostream>
using namespace std;
class rectangle{
    protected:    double len,width;
    public:
    rectangle(double l,double w){        len=l;        width=w;    }    };
class box:public rectangle{
    double height;    public:
    box(double l,double w,double h):rectangle(l,w){        height=h;    }
    double findvolume(){        return len*width*height;    }    };
int main(){    box b(5.0,4.0,3.0);    double d=b.findvolume();
    cout<<"Volume = "<<d<<endl;    }
```

```
shyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory6/examples$ g++ example3.cpp -o 1
shyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory6/examples$ ./1
Volume = 60
shyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory6/examples$ █
```

Program 3)

```
#include<iostream>
#include<cstring>
using namespace std;
class account{
public:    string coustomer_name;    string account_type;
    long int account_number;    double min_balance;    double Amount;
    account(string c_name,string _account_type,long int Account_number){
        coustomer_name=c_name;        account_type=_account_type;
        account_number=Account_number;    min_balance=1000;    Amount=0.00;
    }
    void update_Balance(double _amount){
        if(_amount<min_balance){
            cout<<"\n Amount cannot be accepted. Minimum amount should
be Rs 1000";
        }
        else{
            Amount=Amount+_amount;
        }
    }
    void show_Balance(){
        cout<<"\n Your current balance is "<<Amount;
    }
    void cashWithdrawal(double cash){
        Amount=Amount-cash;
    }
    void check_balance(){
        if(Amount<min_balance){
            cout<<"\n 100 is deducted from your account due to low
balance";
            Amount=Amount-100;
        }
        cout<<"\n Your current balance is "<<Amount;
    }
    void compute_interest(){
        Amount=Amount+0.06*Amount;
    }
    void Account_info(){
        cout<<"\n Account owner name "<<coustomer_name;
        cout<<"\n Account Type "<<account_type;
        cout<<"\n Account number "<<account_number;
        cout<<"\n current balance "<<Amount;
    }
};
class Current_account:public account{
```

```

    public:
        Current_account(string c_name,string account_type,long int
Account_number):account(c_name,account_type,account_number){

    }
};
class Saving_account:public account{
    public:
        Saving_account(string c_name,string account_type,long int
Account_number):account(c_name,account_type,account_number){

    }
};
int main(){
    Saving_account s_account("Shyam Tiwari","Savings",3543213);
    s_account.update_Balance(456778);
    s_account.Account_info();
}

```

```

shyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory6/questions$ g++ 3.cpp -o 1
shyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory6/questions$ ./1

Account owner name Shyam Tiwari
Account Type Savings
Account number 140004517908424
current balance 456778shyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory6/questions$ █

```

Program 4)

```

#include<iostream>
using namespace std;
class employee{    protected:    string name;    string department;
    double salary;    public:
    void get_info(string _name,string _department,double _salary){
        name=_name;    department=_department;    salary=_salary;    }    };
class manager:public employee{
    public:
    void print(){
        cout<<"\n Manager name : "<<name;
        cout<<"\n Department: "<<department;
        cout<<"\n Salary : "<<salary;
    }
};
class executive:public manager{
    public:
    void print(){    cout<<"\n Execute";    }    };
int main(){
    manager manager1;    executive exe1;
}

```

```
manager1.get_info("Shyam", "R&D", 50000);manager1.print();exel.print(); }
```

```
shyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory6/questions$ ./1
```

```
Manager name : Shyam  
Department: R&D  
Salary :50000
```

```
shyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory6/questions$ █
```

Program 5)

```
#include<iostream>
using namespace std;
class student{
public:   string fname;   string lname;   string branch;
int rollNo;   void getData(){
    cout<<"Enter the first name of the student ";   cin>>fname;
    cout<<"Enter the last name of the student ";   cin>>lname;
    cout<<"Enter rollNo of the student ";
    cin>>rollNo;   cout<<endl;
}
void showData(){
    cout<<"The first name of the student is "<<fname<<endl;
    cout<<"The last name of the student is "<<lname<<endl;
    cout<<"The RollNo of the student is "<<rollNo<<endl;
}
};

class GradStudent:public student{
private:   string specialization;   public:
void getData(){
    cout<<"Enter the first name of the student ";   cin>>fname;
    cout<<"Enter the last name of the student ";   cin>>lname;
    cout<<"Enter rollNo of the student ";   cin>>rollNo;
    cout<<"Enter specialization paper name ";
    cin>>specialization;   cout<<endl;
}
void showData(){
    cout<<"The first name of the student is "<<fname<<endl;
    cout<<"The last name of the student is "<<lname<<endl;
    cout<<"The RollNo of the student is "<<rollNo<<endl;
    cout<<"The   specialization   paper   name   is
"<<specialization<<endl;
}
};

class UGStudent:public student{
private:   string elective;   public:
void getData(){
```

```

        cout<<"Enter the first name of the student ";        cin>>fname;
        cout<<"Enter the last name of the student ";        cin>>lname;
        cout<<"Enter rollNo of the student ";        cin>>rollNo;
        cout<<"Enter elective paper name ";
        cin>>elective;        cout<<endl;
    }
    void showData() {
        cout<<"The first name of the student is "<<fname<<endl;
        cout<<"The last name of the student is "<<lname<<endl;
        cout<<"The RollNo of the student is"<<rollNo<<endl;
        cout<<"The elective paper name is "<<elective<<endl;
    }
};
int main() {
    student s;    s.getData();    s.showData();    GradStudent gs;
    gs.getData();    gs.showData();    UGStudent ugs;    ugs.getData();
    ugs.showData();    }

```

```

shyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory6/questions$ g++ 5.cpp -o 1
shyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory6/questions$ ./1
Enter the first name of the student Shyam
Enter the last name of the student Tiwari
Enter rollNo of the student 2

The first name of the student is Shyam
The last name of the student is Tiwari
The RollNo of the student is 2
Enter the first name of the student Shyam
Enter the last name of the student Tiwari
Enter rollNo of the student 3
Enter specialization paper name DSA

The first name of the student is Shyam
The last name of the student is Tiwari
The RollNo of the student is 3
The specialization paper name is DSA
Enter the first name of the student Shyam
Enter the last name of the student Tiwari
Enter rollNo of the student 36
Enter elective paper name OOP

The first name of the student is Shyam
The last name of the student is Tiwari
The RollNo of the student is 36
The elective paper name is OOP
shyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory6/questions$ █

```

Program 8)

```

#include<iostream>
using namespace std;
class Student{    protected:    string Student_name;    int rollNo;
public:
    void getData(string name,int rollno){

```

```

        Student_name=name;          rollno=rollNo;    }  };
class Internalmarks:virtual public Student{    protected:
    float Isub1_marks,Isub2_marks,Isub3_marks;    public:
    void get_Internalmarks(float x,float y,float z){
        Isub1_marks=x;          Isub2_marks=y;          Isub3_marks=z;    }
};
class Semestermarks:virtual public Student{
    protected:    float Ssub1_marks,Ssub2_marks,Ssub3_marks;
    public:    void get_Semestermarks(float x,float y,float z){
        Ssub1_marks=x;          Ssub2_marks=y;          Ssub3_marks=z;    }
};
class Seasonalmarks:virtual public Student{
    protected:    float SEAsub1_marks,SEAsub2_marks,SEAsub3_marks;
    public:    void get_Seasonalmarks(float x,float y,float z){
        SEAsub1_marks=x;          SEAsub2_marks=y;          SEAsub3_marks=z;
    }
};
class    result:public    Internalmarks,public    Semestermarks,public
Seasonalmarks{
    private:    double totalMarks1,totalMarks2,totalMarks3;
    public:    void grandTotal(){
        totalMarks1=Isub1_marks+Ssub1_marks+SEAsub1_marks;
        totalMarks2=Isub2_marks+Ssub2_marks+SEAsub2_marks;
        totalMarks3=Isub3_marks+Ssub3_marks+SEAsub3_marks;    }
    void DisplayInfo(){
        cout<<"Name of student is "<<Student_name<<endl;
        cout<<"RollNo of student is "<<rollNo<<endl;
        cout<<"Total marks in subject1 is "<<totalMarks1<<endl;
        cout<<"Total marks in subject2 is "<<totalMarks2<<endl;
        cout<<"Total marks in subject3 is "<<totalMarks3<<endl;
    }
};
int main(){
    result S;S.getData("Shyam",36);    S.get_Internalmarks(7,8,9);
    S.get_Semestermarks(55,66,67);
    S.get_Seasonalmarks(17,18,19);    S.grandTotal(); S.DisplayInfo();
}

```

```

shyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory6/questions$ g++ 8.cpp -o 1
shyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory6/questions$ ./1
Name of student is Shyam
RollNo of student is 0
Total marks in subject1 is 79
Total marks in subject2 is 92
Total marks in subject3 is 95
shyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory6/questions$ █

```