

## Lab Task#1

```
1  #include<iostream>
2  using namespace std;
3
4  class person
5  {
6      protected:
7      string name, address,id;
8      public:
9      person()
10     {
11         name="Nill";
12         address="Nill";
13         id="Nill";
14     }
15     void input()
16     {
17         cout<<"\nEnter name of the student: ";
18         cin>>name;
19         cout<<"\nEnter adress: ";
20         cin>>address;
21         cout<<"\nEnter ID: ";
22         cin>>address;
23     }
24     void display()
25     {
26         cout<<"The name is "<<name<<endl;
27         cout<<"The adress of the student is "<<address<<endl;
28         cout<<"The Id is "<<id<<endl;
29     }
30
31 };
32 class student : public person
33 {
34     protected:
35     int roll_no, marks;
36     public:
37     student()
38     {
39         roll_no=0;
40         marks=0;
41     }
```

```

42     void in()
43     {
44         cout<<"Enter Roll#: ";
45         cin>>roll_no;
46         cout<<"Enter marks: ";
47         cin>>marks;
48     }
49     void dis()
50     {
51         cout<<"\nRoll # is "<<roll_no<<endl;
52         cout<<"Marks are "<<marks<<endl;
53     }
54
55 };
56 int main()
57 {
58     student s;
59     cout << "There is no record of any student yet ";
60     s.display();
61     s.dis();
62     cout << endl << "Enter record of a student " << endl;
63     s.input();
64     s.in();
65     cout << endl << "Display record of a student " << endl;
66     s.display();
67     s.dis();
68     return 0;
69 }

```

## OUTPUT

```

There is no record of any student yet The name is Nill
The adress of the student is Nill
The Id is Nill

Roll # is 0
Marks are 0

Enter record of a student

Enter name of the student: Ali

Enter adress: Rawalpindi

Enter ID: 200999
Enter Roll#: 2003
Enter marks: 520

Display record of a student
The name is Ali
The adress of the student is 200999
The Id is Nill

```

## LAB TASK#2

```
1  #include<iostream>
2  using namespace std;
3  class localcontacts
4  {
5      protected:
6      long number;
7      public:
8      void input()
9      {
10         cout<<"\nEnter number: ";
11         cin>>number;
12     }
13     void display()
14     {
15         cout<<"\nThe number is "<<number<<endl;
16     }
17 };
18
19 class nationalcontacts:public localcontacts
20 {
21     protected:
22     string citycode;
23     public:
24     void in()
25     {
26         cout<<"\nEnter city code: ";
27         cin>>citycode;
28     }
29     void dis()
30     {
31         cout<<"\nThe city code is "<<citycode<<endl;
32     }
33 };
34
35 int main()
36 {
37     nationalcontacts n;
38     cout << endl << "Enter phone number " << endl;
39     n.in();
40     n.input();
41     cout << endl << "Display phone number " << endl;
42     n.dis();
43     n.display();
44     return 0;
45 }
```

## OUTPUT

```
Enter phone number

Enter city code: 4702

Enter number: 0314520000

Display phone number

The city code is 4702

The number is 314520000
```

## LAB TASK#3

```
1  #include<iostream>
2  using namespace std;
3
4  class worker
5  {
6      protected:
7      int id, pay;
8      public:
9      worker()
10     {
11         id=pay=0;
12     }
13     void input()
14     {
15         cout<<"\nEnter id:";
16         cin>>id;
17         cout<<"\nEnter pay:";
18         cin>>pay;
19     }
20     void display()
21     {
22         cout<<"\nID: "<<id<<endl<<"Pay: "<<pay<<endl;
23     }
24
25 };;
```

```

26 class supervisor : protected worker
27 {
28     string name, dept;
29     public:
30     supervisor()
31     {
32         name=dept="NA";
33     }
34     void in()
35     {
36         worker :: input();
37         cout<<"\nEnter name: ";
38         cin>>name;
39         cout<<"\nEnter department: ";
40         cin>>dept;
41     }
42     void dis()
43     {
44         worker :: display();
45         cout<<"\nName: " <<name<<endl;
46         cout<<"\nDepartment: " <<dept<<endl;
47     }
48 };
49
50 int main()
51 {
52     supervisor s;
53     cout << "There is no record of any worker yet ";
54     s.dis();
55     cout << endl << "Enter record of a worker " << endl;
56     s.in();
57     cout << endl << "Display record of a worker " << endl;
58     s.dis();
59     return 0;
60 }

```

## OUTPUT

```
There is no record of any worker yet
ID: 0
Pay: 0

Name:  NA

Department: NA

Enter record of a worker

Enter id:123

Enter pay:50000

Enter name: Ahmed

Enter department: EEE

Display record of a worker

ID: 123
Pay: 50000

Name:  Ahmed

Department: EEE
```

## LAB TASK # 4

```
1  #include <iostream>
2  using namespace std;
3
4  class Computer
5  {
6      protected:
7          string ram,hard_drive,core;
8          Computer()
9          {
10             ram=hard_drive=core="Nil";
11         }
12         void input()
13         {
14             cout<<"\nEnter Ram: ";
15             cin>>ram;
16             cout<<"\nEnter Hard Drive space: ";
17             cin>>hard_drive;
18             cout<<"\nEnter number of cores: ";
19             cin>>core;
20         }
21         void display()
22         {
23             cout<<"\nRam is "<<ram<<endl<<"Hard Drive space: "<<hard_drive<<endl<<"Cores: "<<core<<endl;
24         }
25     };
26
27
28     class Laptop : protected Computer
29     {
30         int length,height,width,weight;
31         public:
32         Laptop()
33         {
34             length=height=weight=width=0;
35         }
36         void input()
37         {
38             Computer::input();
39             cout<<"\nEnter length: ";
40             cin>>length;
41             cout<<"\nEnter height: ";
42             cin>>height;
43             cout<<"\nEnter weighth: ";
44             cin>>weight;
45             cout<<"\nEnter width: ";
46             cin>>width;
47         }
48         void display()
49         {
50             Computer::display();
51             cout<<"Length: "<<length<<endl<<"Heighth: "<<height<<endl<<"Weighth: "<<weight<<endl<<"Width: "<<width<<endl;
52         }
53     };
54
55     int main()
56     {
57         Laptop l;
58         l.input();
59         l.display();
60         return 0;
61     }
```

## **OUTPUT**

```
Enter Ram:3
Enter Hard Drive space: 150
Enter number of cores: 4
Enter length: 44
Enter height: 22
Enter weigth: 55
Enter width: 40

Ram is 3
Hard Drive space: 150
Cores: 4
Length: 44
Height: 22
Weight: 55
Width: 40
```

## **Conclusion:**

In this lab I learned about inheritance and how 'is a' relationship works in inheritance. I also learned about the three access modifiers i.e. private, public and protected that are used in classes. Inheritance helps to reduce our code. In inheritance we can derive many child classes from a single parent class that helps us to reduce our code.