COMPUTER SOFTWARE LAB

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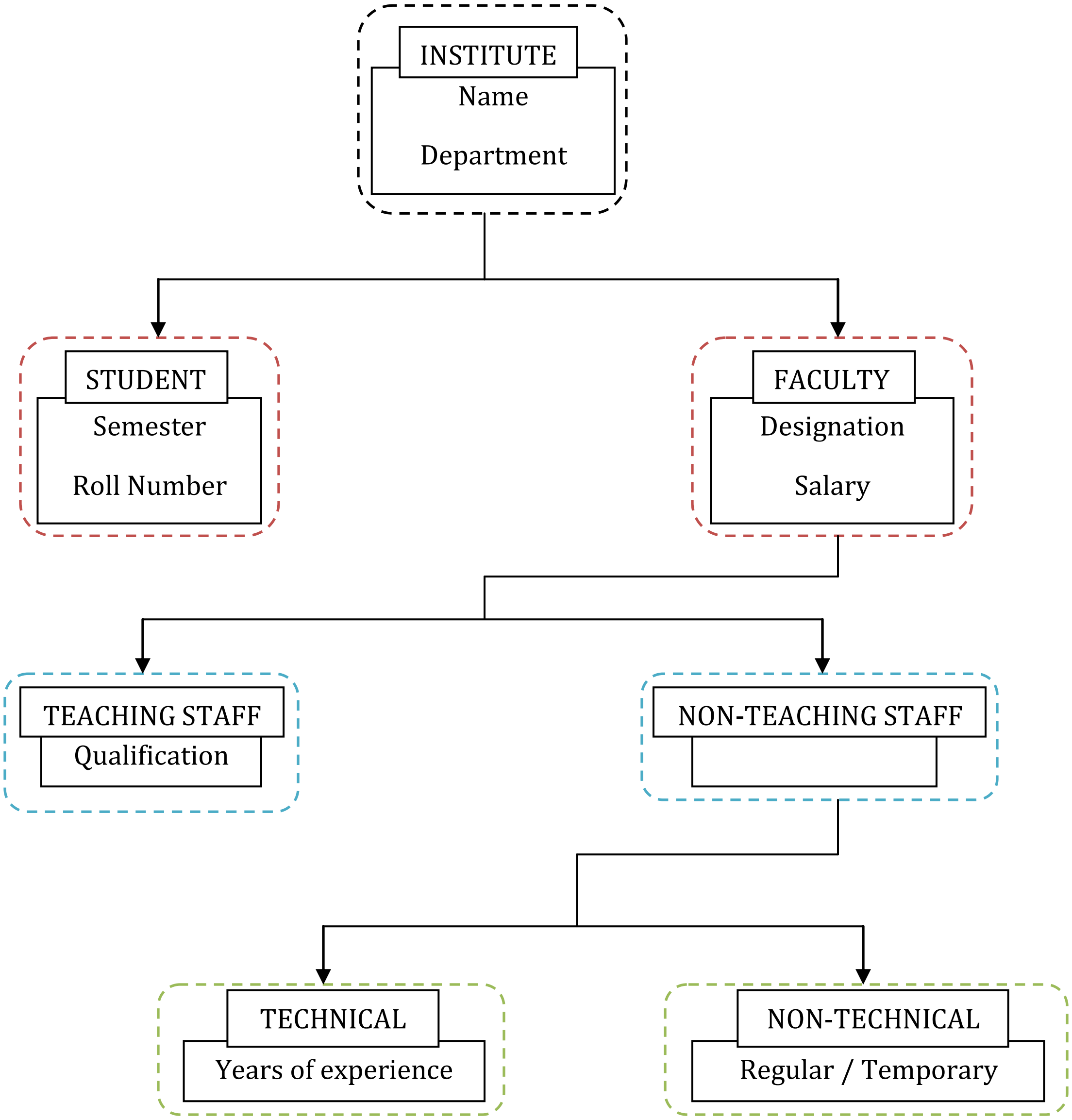
PROBLEM STATEMENT:

Using the concept of inheritance, define classes with the required members and write a driver program to test the classes by creating instances of them and displaying the data members related to them. Use the derivation hierarchy as shown:



PROGRAM CODE:

```
#include<iostream>
using namespace std;
class inst                          //Institute
{
     private:
            char name[30];
            char dept[30];
     public:
           void getdata()
           {
                cout<<"\nEnter name of institute: ";
                cin.get(name,29,'\n');
                cin.ignore(30,'\n');
                cout<<"\nEnter the department: ";
                cin.get(dept,29);
                cin.ignore(30,'\n');
           }
           void putdata()
           {
                cout<<"\nInstitute: "<<name;
                cout<<"\nDepartment: "<<dept;
           }
};
class stud : public inst              //Student
{
     private:
            int sem;
            int roll;
     public:
           void getdata()
           {
                inst::getdata();
                cout<<"\nEnter semester: ";
                cin>>sem;
                cout<<"\nEnter roll number: ";
                cin>>roll;
           }
           void putdata()
           {
                inst::putdata();
                cout<<"\nSemester: "<<sem;
                cout<<"\nRoll: "<<roll;
           }
};
```

```
class fac : public inst              //Faculty
{
    private:
           char desig[10];
           int sal;
    public:
          void getdata()
          {
             inst::getdata();
             cout<<"\nEnter designation: ";
             cin>>desig;
             cout<<"\nEnter salary (in Rs.): ";
             cin>>sal;
          }
          void putdata()
          {
             inst::putdata();
             cout<<"\nDesignation: "<<desig;
             cout<<"\nSalary: Rs. "<<sal;
          }
};
class ts : public fac               //Teaching Staff
{
    private:
           char qual[10];
    public:
          void getdata()
          {
             fac::getdata();
             cout<<"\nEnter qualification: ";
             cin>>qual;
          }
          void putdata()
          {
             fac::putdata();
             cout<<"\nQualification: "<<qual;
          }
};
class nts : public fac              //Non-teaching Staff
{
    public:
          void getdata()
          {
             fac::getdata();
          }
```

```
        void putdata()
        {
            fac::putdata();
        }
};
class tech : public nts              //Technical Non-teaching Staff
{
    private:
            int yrs;
    public:
        void getdata()
        {
            nts::getdata();
            cout<<"\nEnter number of years of experience: ";
            cin>>yrs;
        }
        void putdata()
        {
            nts::putdata();
            cout<<"\nYears of experience: "<<yrs;
        }
};
class ntech : public nts              //Non-technical Non-teaching Staff
{
    private:
            int ch;         //Regular or Temporary
    public:
        void getdata()
        {
            nts::getdata();
            cout<<"\nChoose \n1. Regular\n2. Temporary\n";
            cin>>ch;
        }
        void putdata()
        {
            nts::putdata();
            if(ch==1)
            cout<<"\nType: Regular";
            else if(ch==2)
            cout<<"\nType: Temporary";
        }
};
```

```
int main()
{
   stud s[10];
   ts ts[10];
   tech tnts[10];
   ntech ntnts[10];
   int i,n1,n2,n3,n4;

   cout<<"Enter the number of students: ";
   cin>>n1;
   cout<<"Enter the number of teaching staff: ";
   cin>>n2;
   cout<<"Enter the number of technical non-teaching staff: ";
   cin>>n3;
   cout<<"Enter the number of non-technical non-teaching staff: ";
   cin>>n4;

   for(i=0;i<n1;i++)
   {
      cin.ignore(30,'\n');
      cout<<"\nEnter details for student "<<i+1<<":\n";
      s[i].getdata();
   }

   for(i=0;i<n2;i++)
   {
      cin.ignore(30,'\n');
      cout<<"\nEnter details for teaching staff "<<i+1<<":\n";
      ts[i].getdata();
   }


    for(i=0;i<n3;i++)
   {
      cin.ignore(30,'\n');
      cout<<"\nEnter details for technical non-teaching staff "<<i+1<<":\n";
      tnts[i].getdata();
   }

   for(i=0;i<n4;i++)
   {
      cin.ignore(30,'\n');
      cout<<"\nEnter details for non-technical non-teaching staff "<<i+1<<":\n";
      ntnts[i].getdata();
   }
```

```
    for(i=0;i<n1;i++)
    {
       cout<<"\n\nDetails of student "<<i+1<<":\n";
       s[i].putdata();
    }

    for(i=0;i<n2;i++)
    {
       cout<<"\n\nDetails of teaching staff "<<i+1<<":\n";
       ts[i].putdata();
    }

    for(i=0;i<n3;i++)
    {
       cout<<"\n\nDetails of technical non-teaching staff "<<i+1<<":\n";
       tnts[i].putdata();
    }

    for(i=0;i<n4;i++)
    {
       cout<<"\n\nDetails of non-technical non-teaching staff "<<i+1<<":\n";
       ntnts[i].putdata();
    }

    return 0;
}
```

OUTPUT:

```
Enter the number of students: 1
Enter the number of teaching staff: 1
Enter the number of technical non-teaching staff: 1
Enter the number of non-technical non-teaching staff: 1

Enter details for student 1:
Enter name of institute: NIT Trichy
Enter the department: EEE
Enter semester: 5
Enter roll number: 100

Enter details for teaching staff 1:
Enter name of institute: NIT Trichy
Enter the department: EEE
Enter designation: Dr.
Enter salary (in Rs.): 50000
Enter qualification: Ph.D

Enter details for technical non-teaching staff 1:
Enter name of institute: NIT Trichy
Enter the department: EEE
Enter designation: Mr.
Enter salary (in Rs.): 10000
Enter number of years of experience: 10

Enter details for non-technical non-teaching staff 1:
Enter name of institute: NIT Trichy
Enter the department: EEE
Enter designation: Mrs.
Enter salary (in Rs.): 10000
Choose
1. Regular
2. Temporary
1
```

```
Details of student 1:

Institute: NIT Trichy
Department: EEE
Semester: 5
Roll: 100

Details of teaching staff 1:

Institute: NIT Trichy
Department: EEE
Designation: Dr.
Salary: Rs. 50000
Qualification: Ph.D

Details of technical non-teaching staff 1:

Institute: NIT Trichy
Department: EEE
Designation: Mr.
Salary: Rs. 10000
Years of experience: 10

Details of non-technical non-teaching staff 1:

Institute: NIT Trichy
Department: EEE
Designation: Mrs.
Salary: Rs. 10000
Type: Regular
```

RESULT:

Hence, using the concept of inheritance, the given hierarchy is established and a driver program is written to put the code to test.