**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:

INSTITUTE

Name

Department

FACULTY

STUDENT

Semester

Roll Number

Designation

Salary

NON-TEACHING STAFF

TEACHING STAFF

Qualification

NON-TECHNICAL

TECHNICAL

Regular / Temporary

Years of experience

**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.