REPORT CO3I

M. H. SABOO SIDDIK POLYTECHNIC

OOP MICROPROJECT ON

SCHOOL MANAGEMENT SYSTEM

-UNDER THE GUIDANCE OF

KAUSAR MA'AM

HEAD OF THE DEPARTMENT :

MS. ZAIBUNNISA MALIK

GROUP MEMBERS:

SR. NO.	NAME	ROLL NO.
1	ANAM ANSARI	19401
2	AYESHA LOLADIA	19416
3	ARISHA RAKHANGI	19420
4	NUSRA SHAIKH	19428

MAHARASHTRA STATE
BOARD OF TECHNICAL EDUCATION
CERTIFICATE

This is to certify that

Mr / Ms:

_____

Roll No: _____ Enrollment No: _____

of First Semester of Diploma in **Computer Engineering** of Institute

M. H. Saboo Siddik Polytechnic (Code **: 0002**) has completed their term work satisfactorily in course **Object Oriented Programming using C++(22316)** for the academic year 2020 to 2021 as prescribed in the curriculum.

Place : Mumbai Date : .....

Exam. Seat No : .....

Subject Teacher. Head of the Department. Principal

Seal of Institute

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(NAME AND SIGNATURE OF FACULTY)

ANNEXURE

Evaluation sheet for the micro-project.

Academic year: 2020-21. **Name of faculty: Kausar Akumalla**

Course: OOP. **Course code: 22316.** **Semester: III.**

Title of the project:

CO's addressed by the micro-project:

A._____

B._____

Major learning outcomes achieved by the students by doing the project :

(a) Practical Outcomes:

_____

_____

_____

_____

(b) Unit outcomes in cognitive domain:

_____

_____

_____

(c) Outcomes in effective domain:

_____

_____

_____

Comments/ suggestions about teamwork/ leadership/ inter-personal communication (if any):

Roll No:	Student Name	Marks out of 6 for performance in group activity	Marks out of 4 for performance in oral or presentation	Total out of 10
19401	Ansari Anam			
19416	Loladia Ayesha			
19420	Rakhangi Arisha			
19428	Shaikh Nusra			

I. Rationale

In the modern world of information technology, the object oriented programming has become the most preferred approach for software development. It offers a powerful way to cope up with complexity of real world problems. Among the OOP languages available, C++ is the primitive language which develops fundamental understanding of Object Oriented Programming concepts. This course enables students to develop programmes in 'C++' using Object Oriented Programming approach. School Management system is used to manage the school data and records of student's, staff's, teacher's, principal's efficiently. It is a tool for organizing school data that before was generally stored in hard-copy form or in spread sheets.

II. Course Outcomes Integrated

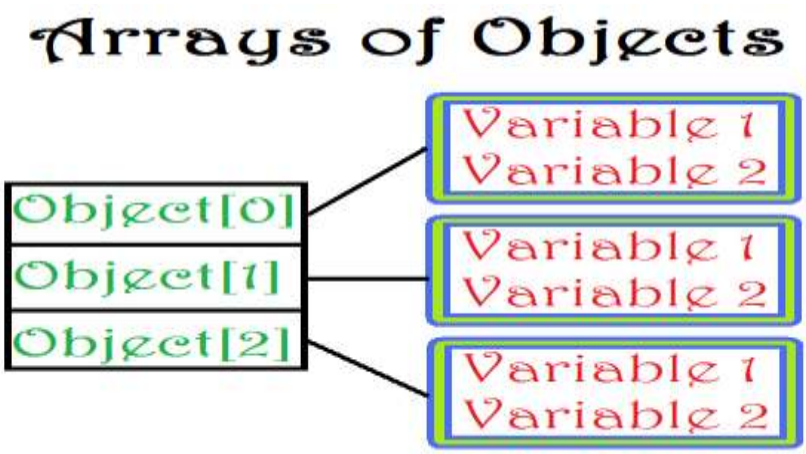
a. Develop C++ programs using classes and objects.
b. Implement array of objects.
c. Develop C++ programs to perform Inheritance.

III. Literature Review

➢ Arrays of objects

Arrays of variables of type "class" is known as "Array of objects". An array of objects is stored inside the memory in the same way as in an ordinary array.

Like array of other user-defined data types, an array of type class can also be created. The array of type class contains the objects of the class as its individual elements. Thus, an array of a class type is also known as an array of objects. An array of objects is declared in the same way as an array of any built-in data type.



- Syntax :

```
class class_name

{

private:

data_type members;

public:

data_type members;

member functions;

};

void main()

{

Class_name object_name[size];

-----

}
```

➢ Class

Class is a user defined data type, which holds its own data members and member functions, which can be accessed and used by creating instance of that class.

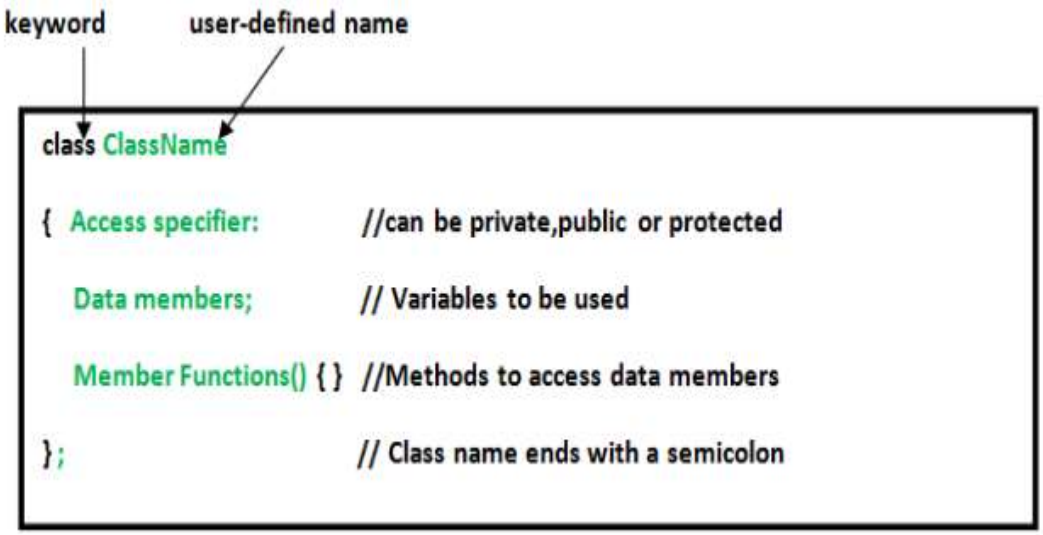
Where The variables inside class definition are called as **data members** and the functions are called **member functions.**

It Binds the data and its associated functions together. Allows Data and functions to be hidden from the external users. **You can see a class as a blueprint or a template.**

- **Specifying a Class**

- **Class Specification has two parts:**

1. Class declaration
2. Class function definition



- Syntax Defines:
  - Class
  - {}
  - Body contains declaration of variable and functions – **Class members**
  - Private members can be accessed only from within the class.(keyword private is optional)
  - Public members can be accessed only from outside the class.

➢ Object

When a class is defined, only the specification for the object is defined; no memory or storage is allocated. To use the data and access functions defined in the class, you need to create objects. **Objects are instances of class**, which holds the data variables declared in class and the member functions work on these class objects.

- **Syntax:**

  ClassName ObjectName;

➢ Inheritance:

The mechanism of deriving a new class from old is known as inheritance. Where the new class will inherit properties from one or more than one class. The old class is known as Base Class and the new one is known as Derive Class.

Inheritance is the capability of one class to acquire properties and characteristics from another class. The class whose properties are inherited by other class is called the **Parent** or **Base** or **Super** class. And, the class which inherits proprieties of other class is which inherits called **Child** or **Derived** or **Sub** class.

Inheritance makes the code reusable. When we inherit an existing class, all its methods and fields become available in the new class, hence code is reused. **All members of a class except Private, are inherited**

- **Syntax of Inheritance**

```
class parent_class
{
  //Body of parent class
};
class child_class : visibility_mode parent_class
```

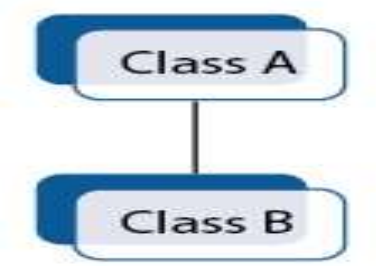
```
{
  //Body of child class
};
```

Types of Inheritance

- Single Inheritance
- Multilevel Inheritance
- Multiple Inheritance
- Hierarchical Inheritance
- Hybrid Inheritance

➢ Single Inheritance

In single inheritance, there is only one base class and one derived class. The Derived class gets inherited from its base class. This is the simplest form of inheritance.



- **Syntax:**

```
class  base_class
{
properties;
methods;
};
class derived_class:visibility_mode base_class_name
{
```

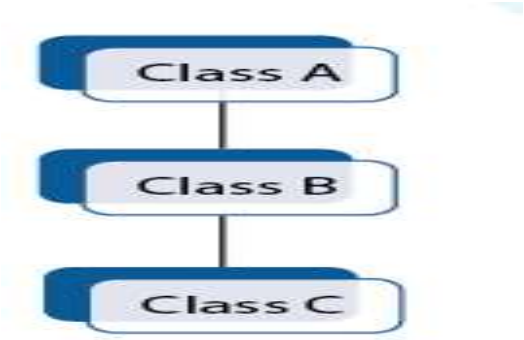
properties;

methods;

}

- **Multilevel Inheritance**

The classes can also be derived from the classes that are already derived. This type of inheritance is called multilevel inheritance. The chain ABC is known as inheritance path.



- **Syntax:**

class base_class1

{

properties;

methods;

};

class derive_class_1:visibility_mode base_class1

{

properties;

methods;

};

---

class derived_class2:visibility_mode derive_class_1

{

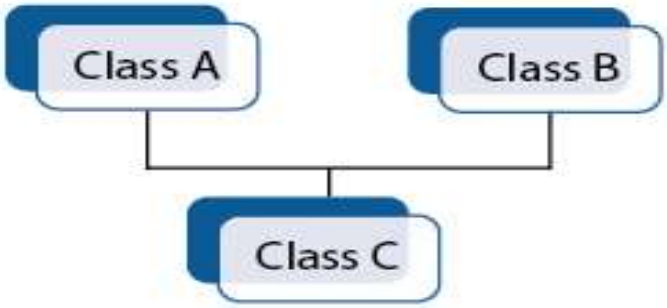
properties;

methods;

}

- **Multiple Inheritance**

  In this type of inheritance, a single derived class may inherit from two or more base classes. A class that can inherit the attribute of two or more classes is known as multiple inheritance. It allows us to combine the features of several existing base classes into new derived class



- **Syntax:**

class base_class1

{

properties;

methods;

};

class base_class2

{

properties;

methods;

};

------

class derived_class:visibility_mode base_class1, visibility_mode base_class2 ……

{

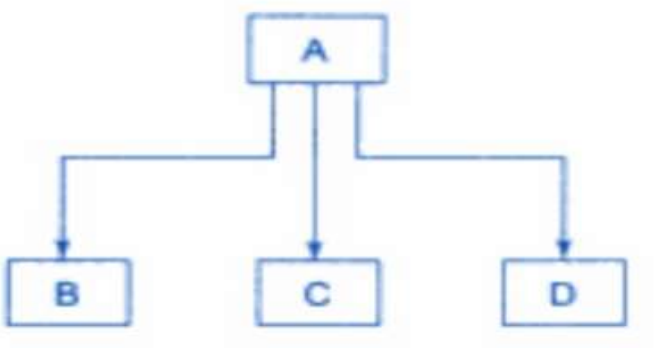
properties;

methods;

}

- **Hierarchical Inheritance**

If more than one class is inherited from the base class, it's known as hierarchical inheritance. In hierarchical inheritance, all features that are common in child classes are included in the base class.



- **Syntax:**

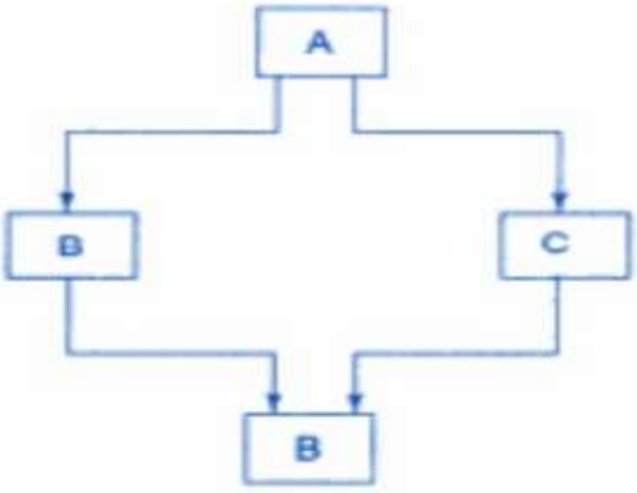
```
class A
{
    .....
};
class B : public A
{
    .....
} ;
class C
{
    .....
};
 class D : public B, public C
{
```

.....

};

- **Hybrid Inheritance**

A combination of any two above type of inheritance is known as hybrid inheritance.



- **Syntax:**

```
class A
{
    .....
};
class B : public A
{
    .....
} ;
class C
{
    .....
};
 class D : public B, public C
```

```
{
   ..........
};
```

VI. CODE:

```
#include <iostream.h>
#include <conio.h>

class staff
{
 protected:
    int code;
    char name[20];
 public:
    void getstaff(void)
    {
   cout<<"\n\nEnter ID :";
   cin>>code;
   cout<<"Enter name :";
   cin>>name;
    }
    void dispstaff(void)
    {
     cout<<"\nNAME      :"<<name;
     cout<<"\nCODE      :"<<code;
    }
};
```

```
class teacher : public staff
{
     char sub[20];
     int sal;
  public:
     void create(void)
     {
    getstaff();
    cout<<"Enter Subject :";
    cin>>sub;
    cout<<"Enter Salary :";
    cin>>sal;
     }
     void display(void)
     {
     dispstaff();
     cout<<"\nSUBJECT    :"<<sub;
     cout<<"\nSALARY     :"<<sal;
     }
};

class student : public staff
{
      char grade;
   public:
    void create(void)
    {
```

```
      getstaff();
      cout<<"Enter Grade (ex: any character):";
      cin>>grade;
   }
   void display(void)
   {
      dispstaff();
      cout<<"\nGRADE     :"<<grade;
   }
};

class principle : public staff
{
      int age;
  public:
     void get(void)
     {
   getstaff();
   cout<<"Enter age:";
   cin>>age;
     }
     void disp(void)
     {
   dispstaff();
   cout<<"\nAGE     :"<<age;
     }
};
```

```
class casual : public principle
{
    int salary;
  public:
     void create(void)
   {
     get();
     cout<<"Enter Salary :";
     cin>>salary;
   }
   void display(void)
   {
     disp();
     cout<<"\nSalary:"<<salary;
   }
};

void main()
{
clrscr();
teacher o1t[10];
casual  o1c[10];
student  o1s[10];
int choice,i;
char test;
```

```
while(1)
{
int count;
start:
 clrscr();
  cout<<"\n=====OBJECT ORIENTED PROGRAMMING USING C++ MICRO PROJECT=====\n"<<endl;
  cout<<"\n=====SCHOOL MANAGEMENT SYSTEM=====\n\n\n";
  cout<<"Choose Category of Information\n";
  cout<<"1)   Teachers\n";
  cout<<"2)   Students\n";
  cout<<"3)   Principles\n";
  cout<<"4)   Exit\n";
  cout<<"Enter your choice:";
  cin>>choice;
  switch(choice)
  {
    case 1 :  while(1)
          {
          clrscr();
          cout<<"\n=====TEACHERS INFORMATION=====\n\n";
          cout<<"\nChoose your choice\n";
          cout<<"1) Create\n";
          cout<<"2) Display\n";
          cout<<"3) Jump to Main Menu\n";
          cout<<"Enter your choice:";
          cin>>choice;
```

```
switch(choice)
{
 case 1 :  for(count=0,i=0;i<10;i++)
     {
          cout<<endl;
          o1t[i].create();
          count++;
          cout<<endl;
          cout<<"\n\nAre you Interested in entering data\n";
          cout<<"Enter y or n:";
          cin>>test;
          if(test=='y' || test=='Y')
         continue;
          else goto out1;
          }
          out1:
          break;
 case 2 : for(i=0;i<count;i++)
     {
         cout<<endl;
          o1t[i].display();
          cout<<endl;
     }
     getch();
     break;
 case 3 : goto start;
 default: cout<<"\nEnter choice is invalid\ntry again\n\n";
```

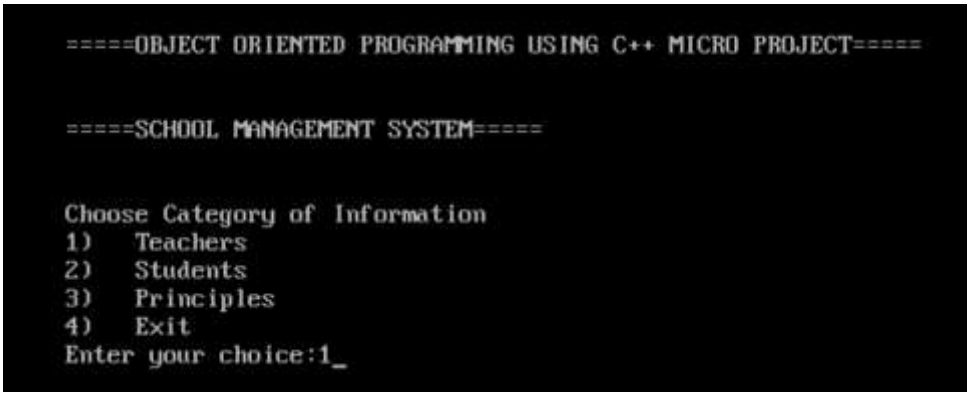
```
        }
        }
case 2 :   while(1)
        {
        clrscr();
       cout<<"\n=====STUDENTS INFORMATION=====\n\n";
       cout<<"\nChoose your choice\n";
       cout<<"1) Create\n";
       cout<<"2) Display\n";
       cout<<"3) Jump to Main Menu\n";
       cout<<"Enter your choice:";
       cin>>choice;
       switch(choice)
       {
        case 1 : for(count=0,i=0;i<10;i++)
            {
                 cout<<endl;
                 o1s[i].create();
                  count++;
                  cout<<endl;
                  cout<<"\n\nAre you Interested in entering data\n";
                  cout<<"Enter y or n:";
                  cin>>test;
                  if(test=='y' || test=='Y')
                 continue;
                  else goto out2;
                  }
```

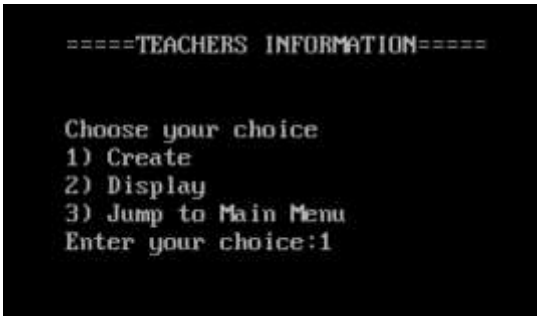
```
                out2:
                break;
        case 2 : for(i=0;i<count;i++)
            {
                cout<<endl;
                o1s[i].display();
                cout<<endl;
            }
            getch();
            break;
        case 3 : goto start;
        default: cout<<"\nInvalid choice\ntry again\n\n";
        }
        }
case 3 :  while(1)
        {
        clrscr();
        cout<<"\n=====PRINCIPLE INFORMATION=====\n\n";
        cout<<"\nChoose your choice\n";
        cout<<"1) Create\n";
        cout<<"2) Display\n";
        cout<<"3) Jump to Main Menu\n";
        cout<<"Enter your choice:";
        cin>>choice;
        switch(choice)
        {
        case 1 : for(count=0,i=0;i<10;i++)
```

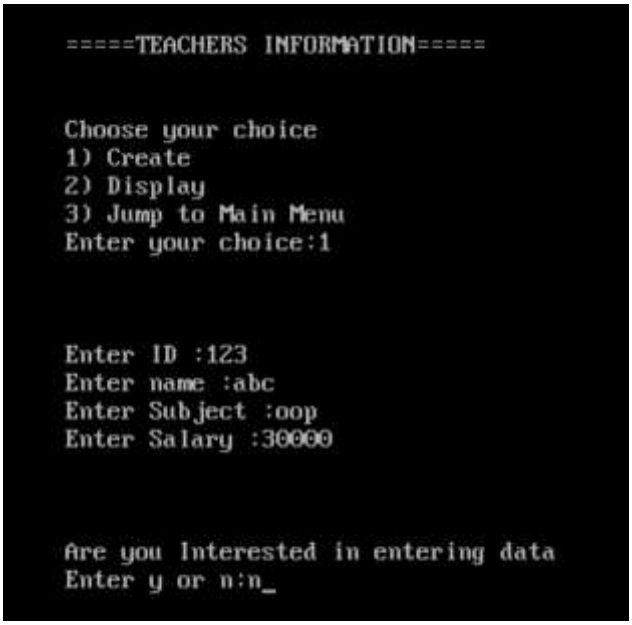
```
        {
            cout<<endl;
            o1c[i].create();
            count++;
            cout<<endl;
            cout<<"\n\nAre you Interested in entering data\n";
            cout<<"Enter y or n:";
            cin>>test;
            if(test=='y' || test=='Y')
           continue;
            else goto out3;
            }
            out3:
            break;
    case 2 : for(i=0;i<count;i++)
        {
            cout<<endl;
            o1c[i].display();
            cout<<endl;
        }
        getch();
        break;
    case 3 : goto start;
    default: cout<<"\nInvalid choice\ntry again\n\n";
    }
    }
case 4 : goto end;
```

```
  }
}
end:
}
```

V. OUTPUT:


=====OBJECT ORIENTED PROGRAMMING USING C++ MICRO PROJECT=====
=====SCHOOL MANAGEMENT SYSTEM=====
Choose Category of Information
1) Teachers
2) Students
3) Principles
4) Exit
Enter your choice:1_

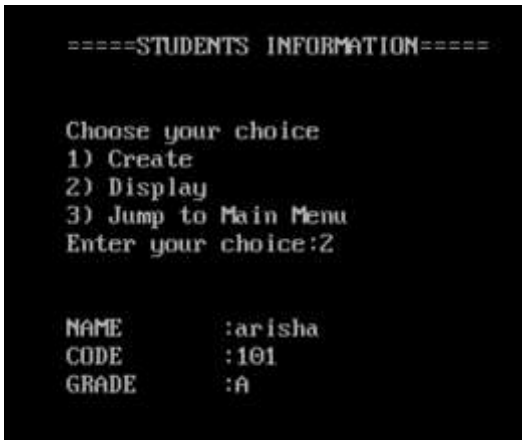

=====TEACHERS INFORMATION=====
Choose your choice
1) Create
2) Display
3) Jump to Main Menu
Enter your choice:1

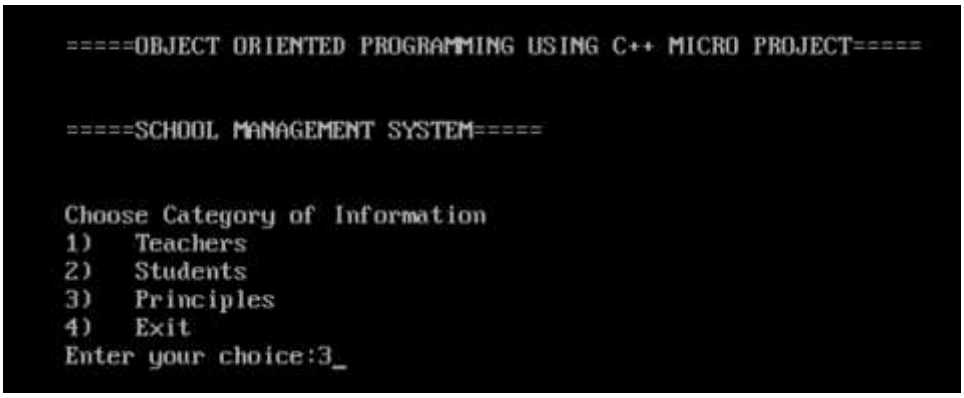

=====TEACHERS INFORMATION=====
Choose your choice
1) Create
2) Display
3) Jump to Main Menu
Enter your choice:1
Enter ID :123
Enter name :abc
Enter Subject :oop
Enter Salary :30000
Are you Interested in entering data
Enter y or n:n_

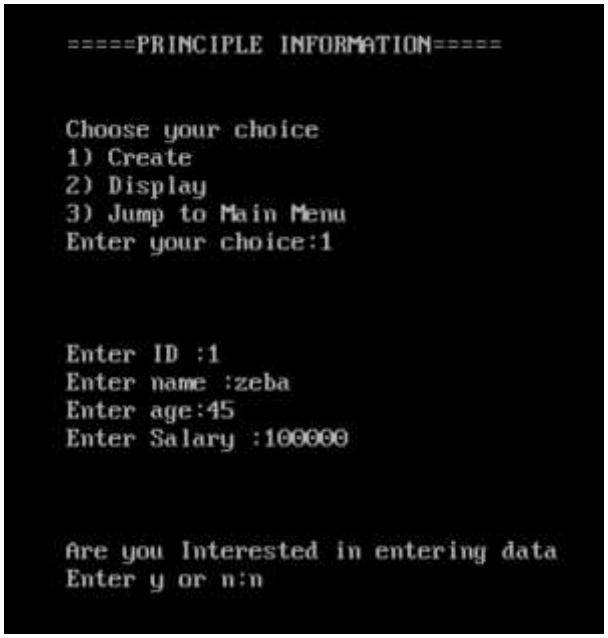
```
=====TEACHERS INFORMATION=====


Choose your choice
1) Create
2) Display
3) Jump to Main Menu
Enter your choice:2


NAME        :abc
CODE        :123
SUBJECT     :oop
SALARY      :30000
_
```

```
=====OBJECT ORIENTED PROGRAMMING USING C++ MICRO PROJECT=====


=====SCHOOL MANAGEMENT SYSTEM=====


Choose Category of Information
1)   Teachers
2)   Students
3)   Principles
4)   Exit
Enter your choice:2_
```

```
=====STUDENTS INFORMATION=====


Choose your choice
1) Create
2) Display
3) Jump to Main Menu
Enter your choice:1



Enter ID :101
Enter name :arisha
Enter Grade (ex: any character):A



Are you Interested in entering data
Enter y or n:n_
```







VII. Skill Developed

1. Improved programming skills.
2. We have learned practical application of various OOP concepts like classes and objects , inheritance and array of objects.

3. With the help of this microproject we are able to improve our Object Oriented Programming.
4. We have enhanced our debugging ability.

V. Application of the micro-project :

1. Easy access to students data.
2. Improved efficiency.
3. Reduces scope of error
4. Increased data security and scope of ability.
5. Increased productivity.
6. Saves natural resources.
7. Improved management of students data.

Student name: Ansari Anam **Roll no:19401**

Day: 1 Duration: 2 HR

Today, we were informed to form groups of 4 students for the OOP micro-project, we were required to create an enhancive microproject and mam specified that the group strength should not exceed more than 5 students. And told us to search the micro-project topic, the topic should be industry application based, internet-based, workshop-based, laboratory-based or field-based. And told that the micro-project should encompass two or more Cos which are in fact, an integration of PrOs, UOs, and ADOs. She also told that each group member will have to maintain a dated diary consisting of individual contribution in the project work and give a seminar presentation of it before submission. The total duration of the micro-project should not be less than 16 student engagement hours during the course. And the micro-project should be submitted before the end of the semester to develop the industry oriented Cos.

Following are my team-members:

1) Loladia Ayesha (19416)
2) Rakhangi Arisha (19420)
3) Shaikh nusra (19428)

Day: 2 Duration: 2 HR

Today, we started searching the micro-project topic on the internet. We found many topics like Library Management System, Hotel Billing System, Medical Store stock management , Hospital management system etc. So, we decided to work on **School Management System**. Ma'am explained to us the classes to be made, the concept of OOP that should be considered and begin the work on micro-project. We started discussing the topics to be

covered that has to be done to make the project complete. We decided to divide the work between us and work individually to make the project.

Day: 3 Duration: 2 HR

We divided the work to each group member: I was working on the actual code that has to be implemented. We decided to make only 5 classes containing all the functions that has to be performed such as getdata , putdata, create and display and more…..

Day: 4 Duration: 2 HR

Today, we decided to make the base class (i.e first class) of the project. We decided to insert member functions and data members in various classes.

Day: 5 Duration: 2 HR

As we decided to make a program containing multi-level inheritance it became easy for us to divide the work. First of all we all decided to create a rough idea and pattern on which we are going to implement our logic and then we started actual implementation of our code. We divided the code and report in equal halves and started working on it, And decided to complete it on Day 6 and explain the code to everyone one if anyone has any doubts . I started searching the best possible way that can be implemented.

Day: 6 Duration: 2 HR

I finally completed my work and explained the code to my fellow members. We integrated the code and run the final program. The code was error-free we got the output on our first attempt to run it. Now, the final work was to create a report on the micro-project which we decided to make on Day 7.

Day: 7 Duration: 2 HR

Ma'am instructed us the format of the report and according to it we started creating the report. Ma'am told us to submit the report on the first week of February. The report was completed and we took the hard copy of it. We created the slides for the seminar on our project.

Day: 8 Duration: 2 HR

We submitted the report and gave a seminar on our project. Creating such projects boosts our Communication skills, debugging skills. It also gives us an experience of how to work in a team.

Student name: Loladia Ayesha **Roll no:19416**

Day: 1 Duration: 2 HR

Today, we were informed to form groups of 4 students for the OOP micro-project, we were required to create an enhancive microproject and mam specified that the group strength should not exceed more than 5 students. And told us to search the micro-project topic, the topic should be industry application based, internet-based, workshop-based, laboratory-based or field-based. And told that the micro-project should encompass two or more Cos which are in fact, an integration of PrOs, UOs, and ADOs. She also told that each group member will have to maintain a dated diary consisting of individual contribution in the project work and give a seminar presentation of it before submission. The total duration of the micro-project should not be less than 16 student engagement hours during the course. And the micro-project should be submitted before the end of the semester to develop the industry oriented Cos.

Following are my team-members:

1) Ansari Anam (19401)
2) Rakhangi Arisha (19420)
3) Shaikh Nusra (19428)

Day: 2 Duration: 2 HR

Today, we started searching the micro-project topic on the internet. We found many topics like Library Management System, Hotel Billing System, Medical Store stock management , Hospital management system etc. So, we decided to work on **School Management System**. Ma'am explained to us the classes to be made, the concept of OOP that should be considered and begin the work on micro-project. We started discussing the topics to be

covered that has to be done to make the project complete. We decided to divide the work between us and work individually to make the project.

Day: 3 Duration: 2 HR

We divided the work to each group member: I was working on the actual code that has to be implemented. We decided to make only 5 classes containing all the functions that has to be performed such as getdata , putdata, create and display and more…..

Day: 4 Duration: 2 HR

Today, we decided to make the base class (i.e first class) of the project. We decided to insert member functions and data members in various classes.

Day: 5 Duration: 2 HR

As we decided to make a program containing multi-level inheritance it became easy for us to divide the work. First of all we all decided to create a rough idea and pattern on which we are going to implement our logic and then we started actual implementation of our code . We divided the code and report in equal halves and started working on it. And decided to complete it on Day 6 and explain the code to everyone one if anyone has any doubts . I started searching the best possible way that can be implemented.

Day: 6 Duration: 2 HR

I finally completed my work and explained the code to my fellow members. We integrated the code and run the final program. The code was error-free we got the output on our first attempt to run it. Now, the final work was to create a report on the micro-project which we decided to make on Day 7.

Day: 7 Duration: 2 HR

Ma'am instructed us the format of the report and according to it we started creating the report. Ma'am told us to submit the report on the first week of February. The report was completed and we took the hard copy of it. We created the slides for the seminar on our project.

Day: 8 Duration: 2 HR

We submitted the report and gave a seminar on our project. Creating such projects boosts our Communication skills, debugging skills. It also gives us an experience of how to work in a team.

Student name: Rakhangi Arisha **Roll no:19420**

Day: 1 Duration: 2 HR

Today, we were informed to form groups of 4 students for the OOP micro-project, we were required to create an enhancive microproject and mam specified that the group strength should not exceed more than 5 students. And told us to search the micro-project topic, the topic should be industry application based, internet-based, workshop-based, laboratory-based or field-based. And told that the micro-project should encompass two or more Cos which are in fact, an integration of PrOs, UOs, and ADOs. She also told that each group member will have to maintain a dated diary consisting of individual contribution in the project work and give a seminar presentation of it before submission. The total duration of the micro-project should not be less than 16 student engagement hours during the course. And the micro-project should be submitted before the end of the semester to develop the industry oriented Cos.

Following are my team-members:

1) Ansari Anam (19401)
2) Loladia Ayesha (19416)
3) Shaikh Nusra (19428)

Day: 2 Duration: 2 HR

Today, we started searching the micro-project topic on the internet. We found many topics like Library Management System, Hotel Billing System, Medical Store stock management , Hospital management system etc. So, we decided to work on **School Management System**. Ma'am explained to us the classes to be made, the concept of OOP that should be considered and begin the work on micro-project. We started discussing the topics to be

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Student name: Shaikh Nusra **Roll no:19428**

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Following are my team-members:

1) Ansari Anam (19401)
2) Loladia Ayesha (19416)
3) Rakhangi Arisha (19420)

Day: 2 Duration: 2 HR

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