OOP Assignment

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DEGREE: BSAI_(SECTION A)

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PROGRAM 1:

```cpp
#include<iostream>

#include<string>

using namespace std;

class publisher{

    public:

        string title;

        float price;


        void publisherdata(){

            cout<<"Enter the title"<<endl;

            cin>>title;

            cout<<"enter the price"<<endl;
```

```cpp
            cin>>price;

        }

        void displaypublisher(){

            cout<<"the tile is:"<<title<<endl;

            cout<<"the price is:"<<price<<endl;

        }

};

class book: public publisher{

    public:

        int pagecount;


        void bookdata(){

            cout<<"enter number of pages"<<endl;

            cin>>pagecount;

        }

        void displaybook(){

            cout<<"No. of pages are:"<<pagecount<<endl;

        }
```

```cpp
};
class audio: public book{
    public:
        float minutes;

        void audiodata(){
            cout<<"enter minute of audio"<<endl;
            cin>>minutes;
        }
        void displayaudio(){
            cout<<"the minutes are: "<<minutes<<endl;
        }
};
int main(){

    cout<<"_____"<<endl;
    book obj1;
    obj1.publisherdata();
```

```cpp
        obj1.bookdata();


        cout<<"_____with respect to
book_____"<<endl;


        obj1.displaypublisher();
        obj1.displaybook();


        cout<<"_____
_____"<<endl;


        audio obj2;
        obj2.publisherdata();
        obj2.audiodata();


        cout<<"_____with respect to
audio_____"<<endl;
        obj2.displaypublisher();
        obj2.displayaudio();
```
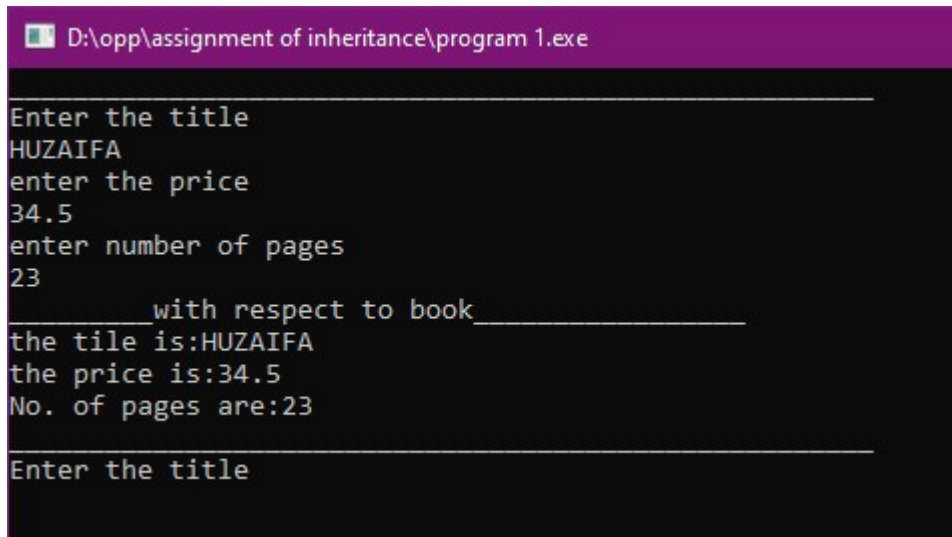
}

PROGRAM 2:

```cpp
#include<iostream>

#include<string>

using namespace std;

class sales {

public:

    static const int n = 3;

    float salesArr[n];


    void getSalesData() {
```

```cpp
        cout << "Enter the sales for the last three months: "
<< endl;

        for (int i = 0; i < n; ++i) {

            cin >> salesArr[i];

        }

    }


    void displaySalesData() const {

        cout << "Sales data for the last three months: " <<
endl;

        for (int i = 0; i < n; ++i) {

            cout << "Month " << i + 1 << ": $" << salesArr[i] <<
endl;

        }

    }
};
class publisher{

    public:
```

```cpp
        string title;

        float price;


        void publisherdata(){

                cout<<"Enter the title"<<endl;

                cin>>title;

                cout<<"enter the price"<<endl;

                cin>>price;

        }

        void displaypublisher(){

                cout<<"the tile is:"<<title<<endl;

                cout<<"the price is:"<<price<<endl;

        }

};

class book:public publisher , public sales{

    public:

        int pagecount;
```

```cpp
        void bookdata(){
                cout<<"enter number of pages"<<endl;
                cin>>pagecount;
        }
        void displaybook(){
                cout<<"No. of pages
are:"<<pagecount<<endl;
        }
};
class audio: public publisher,public sales{
        public:
                float minutes;

                void audiodata(){
                        cout<<"enter minute of audio"<<endl;
                        cin>>minutes;
```

```cpp
		}
		void displayaudio(){
			cout<<"the minutes are: "<<minutes<<endl;
		}
};
int main(){

	cout<<"_____
_____"<<endl;

	book obj1;

	obj1.publisherdata();

	obj1.bookdata();

	obj1.getSalesData();


	cout<<"_____with respect to
book_____"<<endl;
```

```cpp
        obj1.displaypublisher();

        obj1.displaybook();

        obj1.displaySalesData();


        cout<<"_____
_____"<<endl;


        audio obj2;

        obj2.publisherdata();

        obj2.audiodata();

        obj2.getSalesData();


        cout<<"_____with respect to
audio_____"<<endl;

        obj2.displaypublisher();

        obj2.displayaudio();

        obj2.displaySalesData();
```
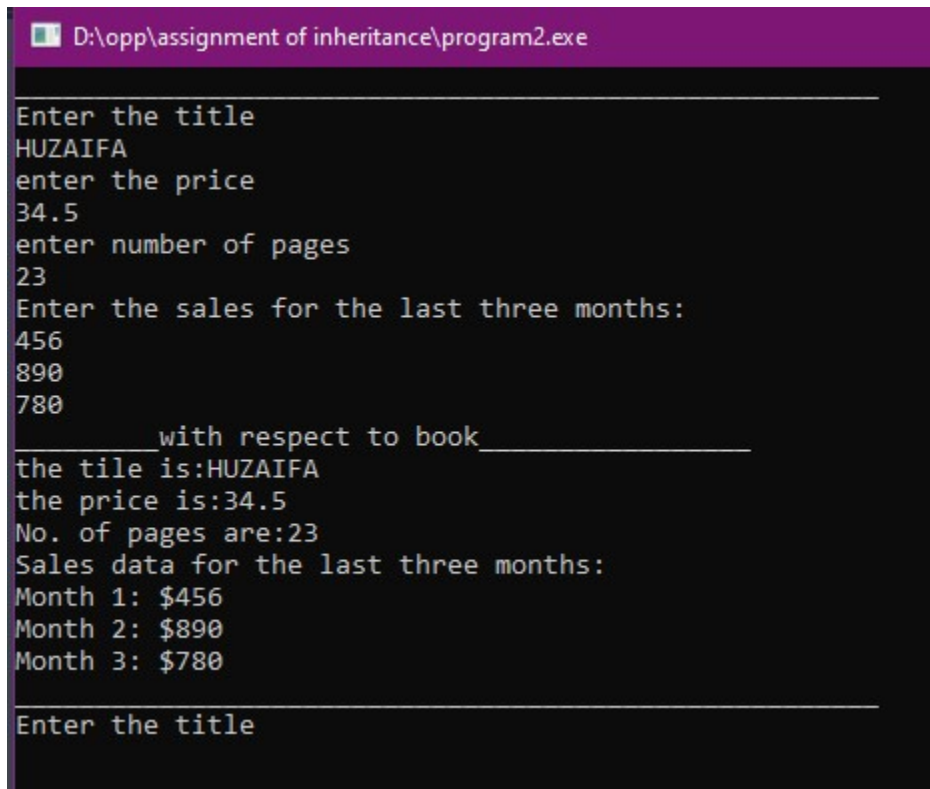
}


```
D:\opp\assignment of inheritance\program2.exe

Enter the title
HUZAIFA
enter the price
34.5
enter number of pages
23
Enter the sales for the last three months:
456
890
780
_____with respect to book_____
the tile is:HUZAIFA
the price is:34.5
No. of pages are:23
Sales data for the last three months:
Month 1: $456
Month 2: $890
Month 3: $780

Enter the title
```

PROGRAM 3:

#include<iostream>

#include<string>

using namespace std;

class sales {

public:

    static const int n = 3;

    float salesArr[n];

```cpp
    void getSalesData() {

        cout << "Enter the sales for the last three months: "
<< endl;

        for (int i = 0; i < n; ++i) {

            cin >> salesArr[i];

        }

    }


    void displaySalesData() const {

        cout << "Sales data for the last three months: " <<
endl;

        for (int i = 0; i < n; ++i) {

            cout << "Month " << i + 1 << ": $" << salesArr[i] <<
endl;

        }

    }
};
```

```cpp
class publisher{

    public:

        string title;

        float price;


        void publisherdata(){

            cout<<"Enter the title"<<endl;

            cin>>title;

            cout<<"enter the price"<<endl;

            cin>>price;

        }

        void displaypublisher(){

            cout<<"the tile is:"<<title<<endl;

            cout<<"the price $:"<<price<<endl;

        }

};

class book: public publisher, public sales{
```

```cpp
    public:

        int pagecount;


        void bookdata(){

            cout<<"enter number of pages"<<endl;

            cin>>pagecount;

        }

        void displaybook(){

            cout<<"No. of pages
are:"<<pagecount<<endl;

        }

};

enum class DiskType { CD, DVD };


class Disk : public publisher, public sales {

public:

    DiskType diskType;
```

```cpp
void getdiskData() {

    publisher::publisherdata();

    char type;

    cout << "Enter the type of disk (c for CD, d for DVD): ";

    cin >> type;

    if (type == 'c' || type == 'C') {

        diskType = DiskType::CD;

    } else if (type == 'd' || type == 'D') {

        diskType = DiskType::DVD;

    } else {

        cout << "Invalid disk type entered. Defaulting to CD." << endl;

        diskType = DiskType::CD;

    }

    sales::getSalesData();
```

```cpp
    }


    void displaydiskData(){

        publisher::displaypublisher();

        cout << "Disk Type: " << (diskType == DiskType::CD ?
"CD" : "DVD") << endl;

        sales::displaySalesData();

    }
};


int main(){


    cout<<"_____
_____"<<endl;

    book obj1;

    obj1.publisherdata();

    obj1.bookdata();
```

```cpp
        cout<<"_____with respect to book_____"<<endl;


    obj1.displaypublisher();

    obj1.displaybook();


    cout<<"_____
_____"<<endl;


    Disk obj2;

    obj2.getdiskData();


    cout<<"_____with respact to disk_____"<<endl;

  obj2.displaydiskData();
}
```

```
_____
Enter the title
HUZIAFA
enter the price
374.4
enter number of pages
23
_____with respect to book_____
the tile is:HUZIAFA
the price $:374.4
No. of pages are:23

_____
Enter the title
HUZAIFA
enter the price
377.4
Enter the type of disk (c for CD, d for DVD): CD
Enter the sales for the last three months:
_____with respact to disk_____
the tile is:HUZAIFA
the price $:377.4
Disk Type: CD
Sales data for the last three months:
Month 1: $0
Month 2: $1.21525e+33
Month 3: $4.59065e-41

-------------------------------
Process exited after 43.11 seconds with return value 0
Press any key to continue . . .
```

PROGRAM 4:

#include<iostream>

#include<string>

using namespace std;

```cpp
class employee{

    private:

        int num;

    protected:

        string name;

        long id;

        char type;


    public:

        void employeedata(){

            cout<<"enter name :"<<endl;

            cin>>name;

            cout<<"enter id: "<<endl;

            cin>>id;

            cout<<"enter type (M , S , L)"<<endl;

            cin>>type;

        }
```

```cpp
                void displayemployee(){
                        cout<<"name:"<<name<<endl;

                        cout<<"id:"<<id<<endl;

                        cout<<"type:"<<type<<endl;

                }
};


class employee2 : public employee {
        protected :
                double compensation;
                enum class period {hourly,weekly,monthly}
period;
                char periodtype;
                public:
                        void getemployee2(){
                                employee::employeedata();
```

```cpp
cout<<"emplyees compesation:"<<endl;

cin>>compensation;

switch(periodtype){
    case 'H':
    case 'h':
        period = period::hourly;
        break;
    case 'W':
    case 'w':
        period = period::weekly;
        break;
    case 'M':
    case 'm':
        period = period::monthly;
        break;
```

```cpp
                default:
                        cout <<"invalid!"<<endl;
                        period = period::hourly;
                        break;
                }
        }
        void putemployee2(){
                employee::displayemployee();
                cout<<"compensation: $"<<compensation<<endl;

                switch(period){
                        case period::hourly:
                cout << "Pay Period: Hourly" << endl;
                break;
```

```cpp
                case period::weekly:

                    cout << "Pay Period: Weekly" << endl;

                    break;

                case period::monthly:

                    cout << "Pay Period: Monthly" << endl;

                    break;

                }

            }

};


class manager: public employee2{};

class scientist : public employee2{};

class labour : public employee2{};



int main(){

    manager m;
```

```cpp
scientist s;

labour l;


cout << "enter manager data: "<<endl;

m.getemployee2();



cout<<"enter scientist data:"<<endl;

s.getemployee2();



cout<<"enter labour data:"<<endl;

l.getemployee2();


cout<<"_____"<<endl;

cout<<"manager's details:  ";
```

```cpp
        m.putemployee2();


        cout<<"_____"<<endl;

        cout<<"scientist details:";

        s.putemployee2();


        cout<<"_____"<<endl;

        cout<<"labour details:";

        l.putemployee2();

}
```

```
D:\opp\assignment of inheritance\program 4.exe

enter manager data:
enter name :
HUZAIFA
enter id:
3
enter type (M , S , L)
M
emplyees compesation:
234
invalid!
enter scientist data:
enter name :
ALI
enter id:
3
enter type (M , S , L)
S
emplyees compesation:
HUZAIFA
invalid!
enter labour data:
enter name :
enter id:
enter type (M , S , L)
emplyees compesation:
invalid!
_____
manager's details:  name:HUZAIFA
id:3
type:M
compensation: $234
Pay Period: Hourly
_____
scientist details:name:ALI
id:3
type:S
compensation: $0
Pay Period: Hourly
_____
labour details:name:
id:16
type:
compensation: $0
Pay Period: Hourly

-------------------------------
Process exited after 37.78 seconds with return value 0
Press any key to continue . . .
```

PROGRAM 5:

```cpp
#include <iostream>

#include <string>

#include <cmath>


using namespace std;


class Shape {
protected:

    string color;


public:

    Shape(const string& color) : color(color) {}


    void printColor() const {

        cout << "Color: " << color << endl;
```

```cpp
    }
};


class Circle : public Shape {
private:
    double radius;

public:

    Circle(const string& color, double radius) :
Shape(color), radius(radius) {}


    double calculateArea() const {
        return M_PI * radius * radius;
    }
```

```cpp
    void printArea() const {

        cout << "Circle Area: " << calculateArea() << endl;

    }

};


class Rectangle : public Shape {

private:

    double length;

    double width;


public:

    Rectangle(const string& color, double length, double
width) : Shape(color), length(length), width(width) {}
```

```cpp
    double calculateArea() const {

        return length * width;

    }


    void printArea() const {

        cout << "Rectangle Area: " << calculateArea() <<
endl;

    }
};


int main() {

    Circle circle("Red", 5.0);

    cout << "Circle details:" << endl;

    circle.printColor();

    circle.printArea();
```

```cpp
    cout << "-----------------------------" << endl;


    Rectangle rectangle("Blue", 4.0, 6.0);

    cout << "Rectangle details:" << endl;

    rectangle.printColor();

    rectangle.printArea();


    return 0;

}
```
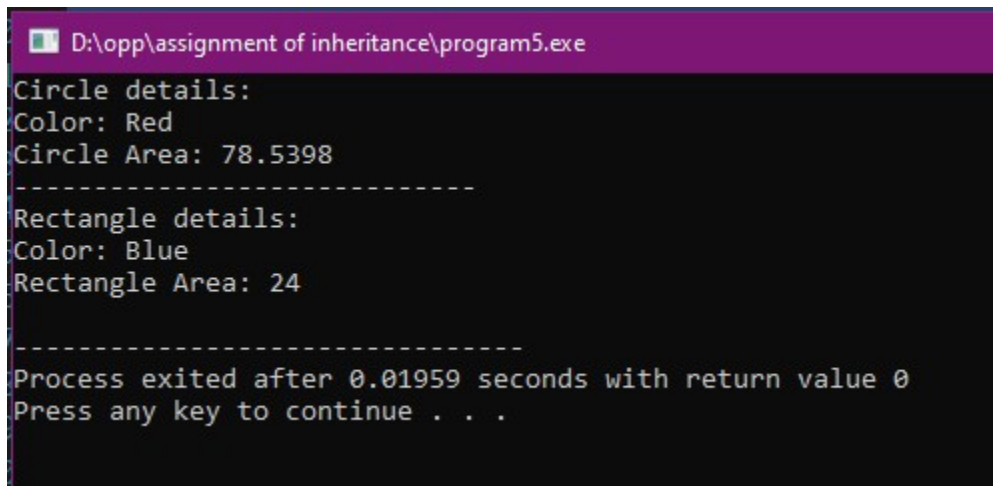
```
D:\opp\assignment of inheritance\program5.exe
Circle details:
Color: Red
Circle Area: 78.5398
-----------------------------
Rectangle details:
Color: Blue
Rectangle Area: 24


-----------------------------
Process exited after 0.01959 seconds with return value 0
Press any key to continue . . .
```

PROGRAM 6:

```cpp
#include<iostream>

using namespace std;
```

```cpp
class Employee {
private:

    string name, department;

    int EmpID;


public:

    void getEmpdata() {

        cout << "Enter Employee Name: ";

        cin >> name;

        cout << "Enter Employee Department: ";

        cin >> department;

        cout << "Enter Employee ID: ";

        cin >> EmpID;

    }


    void putEmpdata() {
```

```cpp
        cout << "Employee Name: " << name << endl;

        cout << "Employee Department: " << department << endl;

        cout << "Employee ID: " << EmpID << endl;

    }

};


class SalariedEmployee : public Employee {

private:

    int salary;


public:

    void getSEmpdata() {

        cout << "Enter Employee Salary: ";

        cin >> salary;

    }
```
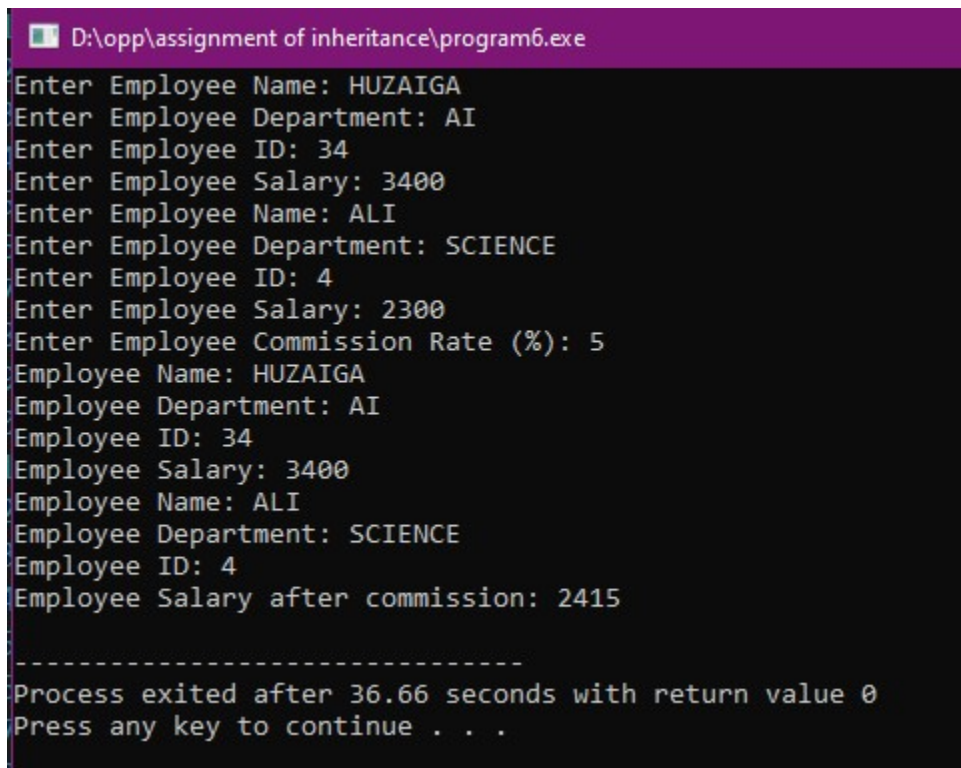
```cpp
    void putSEmpdata() {

        cout << "Employee Salary: " << salary << endl;

    }

};


class CommissionedEmployee : public Employee {

private:

    int salary;

    float commissionrate;


public:

    void getCEmpdata() {

        cout << "Enter Employee Salary: ";

        cin >> salary;

        cout << "Enter Employee Commission Rate (%): ";

        cin >> commissionrate;

    }
```

```cpp
    void putCEmpdata() {

        float commission = (salary * commissionrate) / 100;

        float totalSalary = salary + commission;

        cout << "Employee Salary after commission: " <<
totalSalary << endl;

    }

};


int main() {

    SalariedEmployee emp1;

    CommissionedEmployee emp2;


    emp1.getEmpdata();

    emp1.getSEmpdata();

    emp2.getEmpdata();

    emp2.getCEmpdata();
```

```
emp1.putEmpdata();

emp1.putSEmpdata();

emp2.putEmpdata();

emp2.putCEmpdata();


return 0;
}
```



```
D:\opp\assignment of inheritance\program6.exe

Enter Employee Name: HUZAIGA
Enter Employee Department: AI
Enter Employee ID: 34
Enter Employee Salary: 3400
Enter Employee Name: ALI
Enter Employee Department: SCIENCE
Enter Employee ID: 4
Enter Employee Salary: 2300
Enter Employee Commission Rate (%): 5
Employee Name: HUZAIGA
Employee Department: AI
Employee ID: 34
Employee Salary: 3400
Employee Name: ALI
Employee Department: SCIENCE
Employee ID: 4
Employee Salary after commission: 2415

----------------------------------
Process exited after 36.66 seconds with return value 0
Press any key to continue . . .
```