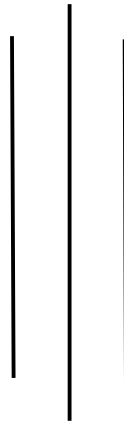


# **Object Oriented Programming Laboratory**

## **Assignment – 6**



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CSE-34

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## Question 1:

/\* Create a class shape. Derive three classes from it; Circle, Square and Triangle. Find area of each shape and display it, using virtual function. \*/

```
#include<iostream>
#include<conio.h>
using namespace std;

class shape
{
    public:
        float area;
        virtual void calc_area()=0;
        virtual void display()=0;
};

class circle:public shape
{
    float r;
    public:
        void calc_area()
        {
            cout<<"Enter the radius of circle: ";
            cin>>r;
            area=3.14*r*r;
        }
        void display()
        {
            cout<<"Area of circle is: "<<area<<endl;
        }
};

class square:public shape
{
    float s;
    public:
        void calc_area()
        {
            cout<<"Enter the length of square: ";
            cin>>s;
            area=s*s;
        }
        void display()
        {
```

```

        cout<<"Area of square is: "<<area<<endl;
    }
};

class triangle:public shape
{
    float b,h;
public:
    void calc_area()
    {
        cout<<"Enter the base and height of triangle: ";
        cin>>b>>h;
        area=0.5*b*h;
    }
    void display()
    {
        cout<<"Area of triangle is: "<<area<<endl;
    }
};

int main()
{
    shape *s;
    circle c;
    square sq;
    triangle t;
    s=&c;
    s->calc_area();
    s->display();
    s=&sq;
    s->calc_area();
    s->display();
    s=&t;
    s->calc_area();
    s->display();
    getch();
    return 0;
}

```

Output:

```

PS C:\Users\KIIT01\Desktop\programming> cd "c:\Users\KIIT01\Desktop\programming\OOPs-classes\27 october\" ;
Enter radius of circle: 5
Area of circle is: 78.5
Enter side of square: 15
Area of square is: 225
Enter base and height of triangle: 5 7
Area of triangle is: 17.5
PS C:\Users\KIIT01\Desktop\programming\OOPs-classes\27 october> █

```

## Question 2:

```
/* Create a class which stores employee name,id and salary Derive two classes
from
'Employee' class: 'Regular' and 'Part-Time'. The 'Regular' class stores DA,
HRA and basic salary.
The 'Part-Time' class stores the number of hours and pay per hour.
Calculate the salary of a regular employee and a par-time employee, using
virtual function. */

#include<iostream>
#include<conio.h>
using namespace std;

class employee
{
    public:
        char name[20];
        int id;
        float salary;
        virtual void calc_salary()=0;
        virtual void display()=0;
};

class regular:public employee
{
    float da,hra,basic;
    public:
        void calc_salary()
        {
            cout<<"\nFor regular employee"<<endl;
            cout<<"\nEnter the name : ";
            cin>>name;
            cout<<"Enter the id : ";
            cin>>id;
            cout<<"Enter the basic salary : ";
            cin>>basic;
            cout<<"Enter the DA : ";
            cin>>da;
            cout<<"Enter the HRA : ";
            cin>>hra;
            salary=da+hra+basic;
        }
        void display()
        {
```

```

        cout<<"\nName: "<<name<<endl;
        cout<<"Id: "<<id<<endl;
        cout<<"Total Salary: "<<salary<<endl;
    }
};

class part_time:public employee
{
    float hours,pay;
public:
    void calc_salary()
    {
        cout<<"\nFor part time employee"<<endl;
        cout<<"Enter the name : ";
        cin>>name;
        cout<<"Enter the id : ";
        cin>>id;
        cout<<"Enter the number of hours : ";
        cin>>hours;
        cout<<"Enter the pay per hour : ";
        cin>>pay;
        salary=hours*pay;
    }
    void display()
    {
        cout<<"\nName: "<<name<<endl;
        cout<<"Id: "<<id<<endl;
        cout<<"Total Salary: "<<salary<<endl;
    }
};

int main()
{
    regular r;
    part_time p;
    employee *e;
    e=&r;
    e->calc_salary();
    e->display();
    e=&p;
    e->calc_salary();
    e->display();
    getch();
    return 0;
}

```

## Output:

```
PS C:\Users\KIIT01\Desktop\programming> cd "c:\Users\KIIT01\Desktop\programming\OOPs-classes\27 october\" ;  
  
For regular employee  
  
Enter the name : Yishap  
Enter the id : 210  
Enter the basic salary : 70000  
Enter the DA : 8000  
Enter the HRA : 12000  
  
Name: Yishap  
Id: 210  
Total Salary: 90000  
  
For part time employee  
Enter the name : Ram  
Enter the id : 222  
Enter the number of hours : 40  
Enter the pay per hour : 1500  
  
Name: Ram  
Id: 222  
Total Salary: 60000  
PS C:\Users\KIIT01\Desktop\programming\OOPs-classes\27 october> |
```

### Question 3:

/\* Create a class which stores account number, customer name and balance.  
Derive two classes from 'Account' class: 'Savings' and 'Current'.  
The 'Savings' class stores minimum balance. The 'Current' class stores the over-due amount.

Include member functions in the appropriate class for:

-deposit money

-withdraw [For saving account minimum balance should be checked.] [For current account overdue amount should be calculated.]

-display balance

Display data from each class using virtual function. \*/

```
#include<iostream>
#include<conio.h>
using namespace std;

class account
{
public:
    int acc_no;
    char name[20];
    float balance;
    virtual void deposit()=0;
    virtual void withdraw()=0;
    virtual void display()=0;
};

class savings:public account
{
    float min_bal;
public:
    void deposit()
    {
        cout<<"\nFor savings account"<<endl;
        cout<<"Enter the account number : ";
        cin>>acc_no;
        cout<<"Enter the name : ";
        cin>>name;
        cout<<"Enter the balance : ";
        cin>>balance;
        cout<<"Enter the minimum balance : ";
        cin>>min_bal;
    }
    void withdraw()
```

```

    {
        float w;
        cout<<"Enter the amount to withdraw: ";
        cin>>w;
        if(balance-w>=min_bal)
        {
            balance-=w;
            cout<<"Withdraw successful"<<endl;
        }
        else
        {
            cout<<"Withdraw unsuccessful"<<endl;
        }
    }
    void display()
    {
        cout<<"Account number: "<<acc_no<<endl;
        cout<<"Name: "<<name<<endl;
        cout<<"Balance: "<<balance<<endl;
    }
};

```

```

class current:public account
{
    float over_due;
public:
    void deposit()
    {
        cout<<"\nFor current account"<<endl;
        cout<<"Enter the account number : ";
        cin>>acc_no;
        cout<<"Enter the name : ";
        cin>>name;
        cout<<"Enter the balance : ";
        cin>>balance;
        cout<<"Enter the over due amount : ";
        cin>>over_due;
    }
    void withdraw()
    {
        float w;
        cout<<"Enter the amount to withdraw: ";
        cin>>w;
        if(balance-w>=over_due)
        {

```



```

        balance-=w;
        cout<<"Withdraw successful"<<endl;
    }
    else
    {
        cout<<"Withdraw unsuccessful"<<endl;
    }
}

void display()
{
    cout<<"Account number: "<<acc_no<<endl;
    cout<<"Name: "<<name<<endl;
    cout<<"Balance: "<<balance<<endl;
}

};

int main()
{
    savings s;
    current c;
    account *a;
    a=&s;
    a->deposit();
    a->withdraw();
    a->display();
    a=&c;
    a->deposit();
    a->withdraw();
    a->display();
    getch();
    return 0;
}

```

Output:

```

PS C:\Users\KIIT01\Desktop\programming> cd "c:\Users\KIIT01\Desktop\programming\OOPS-classes\27 october\" ; if ($?) { g++ q3_bank_vtr_fctn.cpp -o q3_bank_vtr_fctn } ; if ($?) { .
For savings account
Enter the account number : 12345678
Enter the name : Vishap
Enter the balance : 80000
Enter the minimum balance : 6000
Enter the amount to withdraw: 39000
Withdraw successful
Account number: 12345678
Name: Vishap
Balance: 41000

For current account
Enter the account number : 87654321
Enter the name : Khanal
Enter the balance : 50000
Enter the over due amount : 25000
Enter the amount to withdraw: 30000
Withdraw unsuccessful
Account number: 87654321
Name: Khanal
Balance: 50000
PS C:\Users\KIIT01\Desktop\programming\OOPS-classes\27 october> █

```

## Question 4:

```
// WAP to demonstrate use of pure virtual function and abstract base class.

#include<iostream>
#include<conio.h>
using namespace std;

class Test{
public:
    int a,b;
    virtual void total()=0;
    virtual void display()=0;
};

class Result:public Test{
public:
    int c;
    void total(){
        c=a+b;
    }
    void display(){
        cout<<"Total is: "<<c<<endl;
    }
};

int main(){
    Result r;
    r.a=10;
    r.b=20;
    r.total();
    r.display();
    return 0;
}
```

Output:

```
PS C:\Users\KIIT01\Desktop\programming> cd "c:\Users\KIIT01\Desktop\programming"
Total is: 30
PS C:\Users\KIIT01\Desktop\programming\OOPs-classes\27 october>
```