KALINGA INSTITUTE OF INDUSTRIAL TECHNOLOGY (KIIT)

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LAB 9

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```
//q1 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 <math.h>
using namespace std;

class shape
{
```

```
public:
    virtual void inp()
    {
    }
    virtual void area()
    {
    }
};

class circle : public shape
{
    int r;

public:
    void inp()
    {
        cout << "\nEnter the value of radius";
        cin >> r;
    }
    void area()
    {
        cout << "area of circle is " << 3.14 * r * r <<
endl;
    }
};
class square : public shape
{
    int a;

public:
    void inp()
    {
        cout << "\nEnter the value of side";
        cin >> a;
    }
    void area()
```

```
    {
        cout << "area of sqr is " << a * a << endl;
    }
};
class triangle : public shape
{
    int a, b, c;

public:
    void inp()
    {
        cout << "\nEnter the value of 3 sides";
        cin >> a >> b >> c;
    }
    void area()
    {
        float s = (a + b + c) / 2.0;
        float area = pow((s * (s - a) * (s - b) * (s -
c)), 1.0 / 2);
        cout << "area of triangle is " << area << "
squnit";
    }
};
int main()
{
    /* circle *c=new circle;

     square  *sq=new square;
     triangle *tri=new triangle;
     shape *s[] = {c, sq, tri};
     for (int i = 0; i < 3; i++)
     {   s[i]->inp();
         s[i]->area();
     }*/

    circle c;
```

```
    square sq;
    triangle tri;
    shape *s[] = {&c, &sq, &tri};
    for (int i = 0; i < 3; i++)
    {
        s[i]->inp();
        s[i]->area();
    }

    return 0;
}
```

OUTPUT -1

/*Q2 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

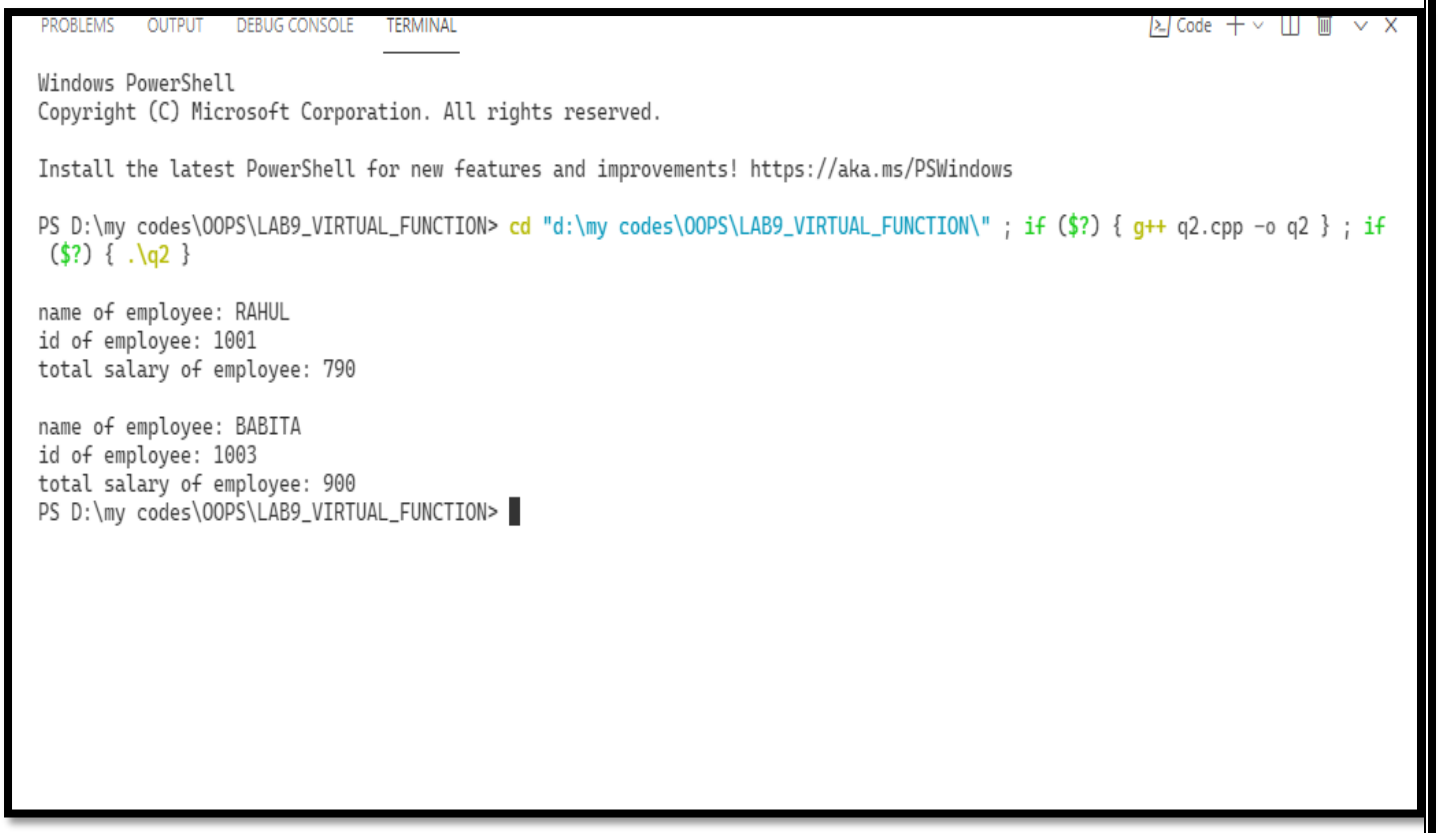
```
number of hours and pay per hour. Calculate the salary of
a regular
employee and a par-time employee, using virtual
function*/

#include <bits/stdc++.h>

    using namespace std;

class employee

{

protected:
    char name[20];

    int id;

    float salary;

public:
    employee(const char *n, int i)

    {

        strcpy(name, n);

        id = i;
    }

    virtual void calc()

    {
    }

    virtual void show()
```

```
    {
    }
};

class reg_employee : public employee

{

    float da, hra, basic_sal;

public:
    reg_employee(const char *n, int i, float d, float h,
float b) : employee(n, i)

    {

        da = d;

        hra = h;

        basic_sal = b;
    }

    void calc()

    {

        salary = basic_sal + da + hra;
    }

    void show()

    {

        cout << "\nname of employee: " << name;
```

```
        cout << "\nid of employee: " << id;

        cout << "\ntotal salary of employee: " << salary;
    }
};

class part_employee : public employee

{

    int n_hrs, p_hrs;

public:
    part_employee(const char *n, int i, int nh, int ph) :
employee(n, i)

    {

        n_hrs = nh;

        p_hrs = ph;
    }

    void calc()

    {

        salary = n_hrs * p_hrs;
    }

    void show()

    {

        cout << "\n\nname of employee: " << name;
```

```
        cout << "\nid of employee: " << id;

        cout << "\ntotal salary of employee: " << salary;
    }
};

int main()

{

    reg_employee r("RAHUL", 1001, 650, 80, 60);

    part_employee p("BABITA", 1003, 6, 150);

    employee *e[2] = {&r, &p};

    for (int i = 0; i < 2; ++i)

    {

        e[i]->calc();

        e[i]->show();
    }

    return 0;
}
```

OUTPUT -2




```
/*Q3.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 <bits/stdc++.h>

    using namespace std;
```

```
class bank

{

public:
    int minbal, bal, wd, dp, s_bal, c_bal;

    char name[20];

    long int ac;

    void input(const char *n, int b, long int a)

    {

        strcpy(name, n);

        bal = b;

        ac = a;
    }

    void saving(int w, int d)

    {

        minbal = 1000;

        wd = w;

        dp = d;

        s_bal = bal + dp - wd;
    }
```

```
    void current(int w, int d)

    {

        wd = w;

        dp = d;

        c_bal = bal + dp - wd;
    }

    virtual void display()

    {
    }
};

class save : public bank

{

public:
    void display()

    {

        cout << "\naccount number: " << ac;

        cout << "\ncustomer name: " << name;

        cout << "\nminimum balance: " << minbal;

        if (s_bal < minbal)

        {
```

```
            cout << "\nyou can not withdraw
balance!!.\nyour balance is: " << s_bal;
        }

        else

            cout << "\nyou can withdraw balance.\nyour
balance is: " << s_bal;
    }
};

class curr : public bank

{

public:
    void display()

    {

        cout << "\naccount number: " << ac;

        cout << "\ncustomer name: " << name;

        if (c_bal < 0)

        {

            cout << "\noverdued ammount";
        }

        else

            cout << "\nyour current balance: " << c_bal;
    }
};
```

```
int main()
{
    save s;
    curr c;
    bank *b[2];
    b[0] = &s;
    b[1] = &c;
    cout << "\nfor saving account: ";
    b[0]->input("ABHI", 3000, 8392649);
    b[0]->saving(1000, 500);
    b[0]->display();
    cout << "\n\nfor current account: ";
    b[1]->input("MARTIN", 4000, 1723465);
    b[1]->current(2000, 1000);
    b[1]->display();
    return 0;
}
```

OUTPUT -3


```
/*q4 WAP to demonstrate use of pure virtual function and
abstract base class.[
May use the number class as base and hexadecimal , octal
and decimal as
derived classes]*/
#include<iostream>
using namespace std;
class number

{

protected:
    int value;

public:
```

```
    void input(int i)

    {

        value = i;
    }

    virtual void show() = 0;
};

class deci_ : public number

{

public:
    void show()

    {

        cout << "\ndecimal number: " << value;
    }
};

class hexa : public number

{

public:
    void show()

    {

        cout << "\nhexadecimal number: " << hex << value;
    }
};
```

```
class octa : public number

{

public:
    void show()

    {

        cout << "\nocta number: " << oct << value;
    }
};

int main()

{

    number *ptr[3];

    deci_ d;

    hexa h;

    octa o;

    ptr[0] = &d;

    ptr[0]->input(12);

    ptr[0]->show();

    ptr[1] = &h;

    ptr[1]->input(12);

    ptr[1]->show();
```

```
    ptr[2] = &o;

    ptr[2]->input(12);

    ptr[2]->show();

    return 0;
}
```

OUTPUT -4


```
//q5.Also do the media class as base class and book and
tape as derived class
//program too, as discussed in the theory class.
#include <bits/stdc++.h>
```

```
using namespace std;

class media

{

protected:
    char name[20];

    int price;

public:
    media(const char *n, int p)

    {

        strcpy(name, n);

        price = p;
    }

    virtual void display()

    {
    }
};

class book : public media

{

    int pages;

public:
    book(const char *n, int p, int pa) : media(n, p)
```

```
    {
        pages = pa;
    }
    void display()
    {
        cout << "\ntitle of book: " << name;
        cout << "\nprice of book: " << price;
        cout << "\npages of book: " << pages;
    }
};
class tape : public media
{
    int time_;
public:
    tape(const char *n, int p, int t) : media(n, p)
    {
        time_ = t;
    }
    void display()
    {
```

```
        cout << "\n\ntitle of book: " << name;

        cout << "\nprice of book: " << price;

        cout << "\nplay time of book: " << time_ << "
minutes";
    }
};

int main()

{

    book b("C", 450, 700);

    tape t("C++", 485, 90);

    media *m[2];

    m[0] = &b;

    m[0]->display();

    m[1] = &t;

    m[1]->display();

    return 0;
}
```

OUTPUT -5

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