**Assignment 02**

//Q1) Write a functions to add 2 int value, 2 float value, 1 int and 1 float value and vice versa. similary write functions for all other arithmetic operations.

#include <iostream>

using namespace std;

struct Calculator

{

    // Add

    int add(int a, int b) { return a + b; }

    float add(float a, float b) { return a + b; }

    float add(int a, float b) { return a + b; }

    float add(float a, int b) { return a + b; }

    // Suctract

    int sub(int a, int b) { return a - b; }

    float sub(float a, float b) { return a - b; }

    float sub(int a, float b) { return a - b; }

    float sub(float a, int b) { return a - b; }

    // Divide

    int div(int a, int b) { return a / b; }

    float div(float a, float b) { return a / b; }

    float div(int a, float b) { return a / b; }

    float div(float a, int b) { return a / b; }

    // Mul

    int mul(int a, int b) { return a \* b; }

    float mul(float a, float b) { return a \* b; }

    float mul(int a, float b) { return a \* b; }

    float mul(float a, int b) { return a \* b; }

};

int main()

{

    int a, b;

    float c, d;

    Calculator ad;

    cout << "Enter Two Integers : ";

    cout << "\nNumber1 :";

    cin >> a;

    cout << "\nNumber2 :";

    cin >> b;

    cout << "\nAddition : " << ad.add(a, b);

    cout << "\nSub : " << ad.sub(a, b);

    cout << "\nMul : " << ad.mul(a, b);

    cout << "\nDiv : " << ad.div(a, b);

    cout << "\n\nEnter Two Floats : ";

    cout << "\nNumber1 :";

    cin >> c;

    cout << "\nNumber2 :";

    cin >> d;

    cout << "\nAddition : " << ad.add(c, d);

    cout << "\nSub : " << ad.sub(c, d);

    cout << "\nMul : " << ad.mul(c, d);

    cout << "\nDiv : " << ad.div(c, d);

    cout << "\n\nEnter  one integer One Float : ";

    cout << "\nNumber1 :";

    cin >> b;

    cout << "\nNumber2 :";

    cin >> d;

    cout << "\nAddition : " << ad.add(b, d);

    cout << "\nSub : " << ad.sub(b, d);

    cout << "\nMul : " << ad.mul(b, d);

    cout << "\nDiv : " << ad.div(b, d);

    cout << "\n\nEnter One Float one integer : ";

    cout << "\nNumber1 :";

    cin >> c;

    cout << "\nNumber2 :";

    cin >> a;

    cout << "\nAddition : " << ad.add(c, a);

    cout << "\nSub : " << ad.sub(c, a);

    cout << "\nMul : " << ad.mul(c, a);

    cout << "\nDiv : " << ad.div(c, a);

}

Output:

PS D:\Fullstack-Java-FirstBit-Solutions> & 'c:\Users\bhagv\.vscode\.....\TDM-GCC-64\bin\gdb.exe' '--interpreter=mi'

Enter Two Integers :

Number1 :123

Number2 :10

Addition : 133

Sub : 113

Mul : 1230

Div : 12

Enter Two Floats :

Number1 :120.80

Number2 :12.8

Addition : 133.6

Sub : 108

Mul : 1546.24

Div : 9.4375

Enter one integer One Float :

Number1 :120

Number2 :11.999

Addition : 131.999

Sub : 108.001

Mul : 1439.88

Div : 10.0008

Enter One Float one integer :

Number1 :119.9999999

Number2 :10

Addition : 130

Sub : 110

Mul : 1200

Div : 12

PS D:\Fullstack-Java-FirstBit-Solutions>

// 2. Write a function to calculate area of shape, for calculating area of triangle, rectangle, circle differently.

#include <iostream>

#include <string.h>

using namespace std;

struct Shapes

{

    char shapeName[20];

    virtual float calculateArea()

    {

        cout << "\nShapes CalculateArea called\n";

        return 0;

    }

    // void draw()

    virtual void draw()

    {

        cout << "\nShape Draw called\n";

    }

};

struct Vartul : public Shapes

{

private:

    float radious;

public:

    // Constructor

    Vartul(float red)

    {

        this->radious = red;

        strcpy(this->shapeName, "Vartul");

    }

    Vartul()

    {

        strcpy(this->shapeName, "Vartul");

        this->radious = 0;

    }

    // Setter

    void setRadious(float radious) { this->radious = radious; }

    // Getter

    float getRadious() { return this->radious; }

    // Area of Circle

    float calculateArea() override

    {

        return 3.14 \* (this->radious \* this->radious);

    }

    virtual void draw()

    {

        cout << "\nVartul Draw called\n";

    }

};

struct Trikon : public Shapes

{

private:

    float base;

    float height;

public:

    // Constructor

    Trikon(float base, float height)

    {

        strcpy(this->shapeName, "Trikon");

        this->base = base;

        this->height = height;

    }

    Trikon()

    {

        strcpy(this->shapeName, "Trikon");

        this->base = 0;

        this->height = 0;

    }

    // Setter

    void setBase(float base) { this->base = base; }

    void setHeight(float height) { this->height = height; }

    // Getter

    float getBase() { return this->base; }

    float getHeight() { return this->height; }

    // Area of Trikon

    float calculateArea() override

    {

        return (0.5) \* this->base \* this->height;

    }

    virtual void draw()

    {

        cout << "\nTrikon Draw called\n";

    }

};

struct Aayat : public Shapes

{

private:

    float lambi;

    float width;

public:

    // Constructor

    Aayat(float lambi, float width)

    {

        strcpy(this->shapeName, "Aayat");

        this->lambi = lambi;

        this->width = width;

    }

    Aayat()

    {

        strcpy(this->shapeName, "Aayat");

        this->lambi = 0;

        this->width = 0;

    }

    // Setter

    void setWidth(float width) { this->width = width; }

    void setLambi(float lambi) { this->lambi = lambi; }

    // getter

    float getWidth() { return this->width; }

    float getLambi() { return this->lambi; }

    // Area of rectangle

    float calculateArea() override

    {

        return this->lambi \* this->width;

    }

    virtual void draw()

    {

        cout << "\nAayat Draw called\n";

    }

};

struct Chauras : public Shapes

{

private:

    float baju;

public:

    // Constructor

    Chauras(float baju)

    {

        this->baju = baju;

        strcpy(this->shapeName, "Chauras");

    }

    Chauras()

    {

        this->baju = 0;

        strcpy(this->shapeName, "Chauras");

    }

    // Setter

    void setBaju(float baju) { this->baju = baju; }

    // Getter

    float getBaju() { return this->baju; }

    // Area Of square

    float calculateArea() override

    {

        return this->baju \* this->baju;

    }

    virtual void draw()

    {

        cout << "\nChauras Draw called\n";

    }

};

int main()

{

    Shapes \*shape[5];

    shape[0] = new Trikon(12, 10);

    shape[1] = new Vartul(9);

    shape[2] = new Aayat(10, 12);

    shape[3] = new Chauras(12);

    for (int i = 0; i < 4; i++)

    {

        cout << "\nArea Of Shape " << shape[i]->shapeName << " : " << shape[i]->calculateArea();

        // cout << "\n......................................\n";

        shape[i]->draw();

        cout << "\n......................................\n";

    }

    // Trikon trikon(12, 32);

    // Vartul vartul(9);

    // Aayat aayat(6, 8);

    // Chauras chauras(10);

    // shape = &trikon;

    // cout << "\nArea Of Trikon : " << shape->calculateArea();

    // shape = &vartul;

    // cout << "\nArea Of Vartul : " << shape->calculateArea();

    // shape = &aayat;

    // cout << "\nArea Of Aayat : " << shape->calculateArea();

    // shape = &chauras;

    // cout << "\nArea Of Chauras : " << shape->calculateArea();

    return 0;

}

Output:

PS D:\Fullstack-Java-FirstBit-Solutions\Basic-C-and-CPP\CPP\Assignments\Assignment02\output> & .\'q2ShapesArea.exe'

Area Of Shape Trikon : 60

Trikon Draw called

......................................

Area Of Shape Vartul : 254.34

Vartul Draw called

......................................

Area Of Shape Aayat : 120

Aayat Draw called

......................................

Area Of Shape Chauras : 144

Chauras Draw called

......................................

PS D:\Fullstack-Java-FirstBit-Solutions\Basic-C-and-CPP\CPP\Assignments\Assignment02\output>

// 3. Write a function to approve the loan for student based on there percentage and for employee based on there annual salary.

// Condition for student:

// Above 80: 2 lakh

// Between 60-80: 1 lakh

// Between 40-50: 50 k

// Below 40: no loan approved

// Condition for employee:

// Above 12 LPA: 7 lakh

// Between 10-12 lpa: 6 lakh

// Between 6-10 lpa: 5 lakh

// Between 4-6 lpa: 4 lakh

// Below 4 lpa: no loan approved

#include <iostream>

#include <string.h>

using namespace std;

// Emp Class

class Employee

{

private:

    double income;

    char name[25];

    // int accNo;

public:

    Employee()

    {

        strcpy(this->name, "No Name");

        this->income = 0.00;

        // this->accNo = 0000;

    }

    Employee(char \*name, double income)

    {

        strcpy(this->name, name);

        this->income = income;

    }

    void setIncome(double income)

    {

        this->income = income;

    }

    double getIncome()

    {

        return this->income;

    }

    void setName(char \*name)

    {

        strcpy(this->name, name);

    }

    char \*getName()

    {

        return this->name;

    }

    void display()

    {

        cout << "\nName of Employee  :" << this->name;

        cout << "\nPercentage of Employee  :" << this->income;

    }

};

// Student class

class Student

{

private:

    double percentage;

    char name[25];

    // int accNo;

public:

    Student()

    {

        strcpy(this->name, "No Name");

        this->percentage = 0.00;

    }

    Student(char \*name, double percentage)

    {

        strcpy(this->name, name);

        this->percentage = percentage;

    }

    void setPercentage(double percentage)

    {

        this->percentage = percentage;

    }

    double getPercentage()

    {

        return this->percentage;

    }

    void setName(char \*name)

    {

        strcpy(this->name, name);

    }

    char \*getName()

    {

        return this->name;

    }

    void display()

    {

        cout << "\nName of Student  :" << this->name;

        cout << "\nPercentage of Student  :" << this->percentage;

    }

};

class LoanApplication

{

public:

    virtual void approve()

    // void approve()

    {

        cout << "\nLoanApplication Approval";

    };

};

class PersonalLoan : public LoanApplication

{

public:

    void approve(Student student)

    {

        // Condition for student:

        int percentage = student.getPercentage();

        if (percentage > 80)

        {

            // Above 80: 2 lakh

            cout << "\nCongratulations your Personal Loan of Rs. 200000.00 is approved...!" << endl;

        }

        else if (percentage < 80 && percentage > 60)

        // Between 60-80: 1 lakh

        {

            cout << "\nCongratulations your Personal Loan of Rs. 100000.00 is approved...!" << endl;

        }

        else if (percentage < 50 && percentage > 40)

        // Between 40-50: 50 k

        {

            cout << "\nCongratulations your Personal Loan of Rs. 50000.00 is approved...!" << endl;

        }

        else

        // Below 40: no loan approved

        {

            cout << "\nWe regret to say that your loan couldn't be approved...!" << endl;

        }

    }

    void approve(Employee employee)

    {

        // Condition for employee:

        int inc = employee.getIncome();

        if (inc > 1200000)

        {

            // Above 12 LPA: 7 lakh

            cout << "\nCongratulations your Personal Loan of Rs. 700000.00 is approved...!" << endl;

        }

        else if (inc < 1200000 && inc > 1000000)

        {

            // Between 10-12 lpa: 6 lakh

            cout << "\nCongratulations your Personal Loan of Rs. 600000.00 is approved...!" << endl;

        }

        else if (inc < 1000000 && inc > 600000)

        {

            // Between 6-10 lpa: 5 lakh

            cout << "\nCongratulations your Personal Loan of Rs. 500000.00 is approved...!" << endl;

        }

        else if (inc > 400000 && inc < 600000)

        // Between 4-6 lpa: 4 lakh

        {

            cout << "\nCongratulations your Personal Loan of Rs. 400000.00 is approved...!" << endl;

        }

        else

        {

            // Below 4 lpa: no loan approved

            cout << "\nWe regret to say that your loan couldn't be approved...!" << endl;

        }

    }

};

class EducationLoan : public LoanApplication

{

public:

    void approve(Student student)

    {

        // Condition for student:

        int percentage = student.getPercentage();

        if (percentage > 80)

        {

            // Above 80: 2 lakh

            cout << "\nCongratulations your Educational Loan of Rs. 200000.00 is approved...!" << endl;

        }

        else if (percentage < 80 && percentage > 60)

        // Between 60-80: 1 lakh

        {

            cout << "\nCongratulations your Educational Loan of Rs. 100000.00 is approved...!" << endl;

        }

        else if (percentage < 50 && percentage > 40)

        // Between 40-50: 50 k

        {

            cout << "\nCongratulations your Educational Loan of Rs. 50000.00 is approved...!" << endl;

        }

        else

        // Below 40: no loan approved

        {

            cout << "\nWe regret to say that your Educational loan couldn't be approved...!" << endl;

        }

    }

};

class HomeLoan : public LoanApplication

{

public:

    // void approve(Employee employee) { cout << "\nPersonalLoan Application Approval."; }

    void approve(Employee employee)

    {

        // Condition for employee:

        int inc = employee.getIncome();

        if (inc > 1200000)

        {

            // Above 12 LPA: 7 lakh

            cout << "\nCongratulations your Home Loan of Rs. 700000.00 is approved...!" << endl;

        }

        else if (inc < 1200000 && inc > 1000000)

        {

            // Between 10-12 lpa: 6 lakh

            cout << "\nCongratulations your Home Loan of Rs. 600000.00 is approved...!" << endl;

        }

        else if (inc < 1000000 && inc > 600000)

        {

            // Between 6-10 lpa: 5 lakh

            cout << "\nCongratulations your Home Loan of Rs. 500000.00 is approved...!" << endl;

        }

        else if (inc > 400000 && inc < 600000)

        // Between 4-6 lpa: 4 lakh

        {

            cout << "\nCongratulations your Home Loan of Rs. 400000.00 is approved...!" << endl;

        }

        else

        {

            // Below 4 lpa: no loan approved

            cout << "\nWe regret to say that your Home loan couldn't be approved...!" << endl;

        }

    }

};

class AutoLoan : public LoanApplication

{

public:

    void approve() { cout << "\nAutoLoan Application Approval."; }

    void approve(Employee employee)

    {

        // Condition for employee:

        int inc = employee.getIncome();

        if (inc > 1200000)

        {

            // Above 12 LPA: 7 lakh

            cout << "\nCongratulations your Auto Loan of Rs. 700000.00 is approved...!" << endl;

        }

        else if (inc < 1200000 && inc > 1000000)

        {

            // Between 10-12 lpa: 6 lakh

            cout << "\nCongratulations your Auto Loan of Rs. 600000.00 is approved...!" << endl;

        }

        else if (inc < 1000000 && inc > 600000)

        {

            // Between 6-10 lpa: 5 lakh

            cout << "\nCongratulations your Auto Loan of Rs. 500000.00 is approved...!" << endl;

        }

        else if (inc > 400000 && inc < 600000)

        // Between 4-6 lpa: 4 lakh

        {

            cout << "\nCongratulations your Auto Loan of Rs. 400000.00 is approved...!" << endl;

        }

        else

        {

            // Below 4 lpa: no loan approved

            cout << "\nWe regret to say that your Auto loan couldn't be approved...!" << endl;

        }

    }

};

int main()

{

    // LoanApplication \*LoanApplications[4];

    EducationLoan ed;

    Student s1("Happy", 84.99);

    s1.display();

    ed.approve(s1);

    // LoanApplications[0]->approve(s1);

    Student s2("Good", 75.69);

    s2.display();

    ed.approve(s2);

    // LoanApplications[0]->approve(s2);

    Student s3("OKesh", 47.89);

    s3.display();

    ed.approve(s3);

    // LoanApplications[0]->approve(s3);

    Student s4("sad", 35.50);

    s4.display();

    ed.approve(s4);

    // LoanApplications[0]->approve(s4);

    PersonalLoan pl;

    HomeLoan hL;

    AutoLoan al;

    Employee e1("Happy", 1800000);

    e1.display();

    pl.approve(e1);

    hL.approve(e1);

    al.approve(e1);

    Employee e2("Good", 1150000);

    e2.display();

    pl.approve(e2);

    hL.approve(e2);

    al.approve(e2);

    Employee e3("OKesh", 656000);

    e3.display();

    pl.approve(e3);

    hL.approve(e3);

    al.approve(e3);

    Employee e4("sad", 550000);

    e4.display();

    pl.approve(e4);

    hL.approve(e4);

    al.approve(e4);

    Employee e5("Verysad", 325000);

    e5.display();

    pl.approve(e5);

    hL.approve(e5);

    al.approve(e5);

    return 0;

}

Output:

PS D:\Fullstack-Java-FirstBit-Solutions\Basic-C-and-CPP\CPP\Assignments\Assignment02\output> & .\'q3studLoanApproval.exe'

Name of Student :Happy

Percentage of Student :84.99

Congratulations your Educational Loan of Rs. 200000.00 is approved...!

Name of Student :Good

Percentage of Student :75.69

Congratulations your Educational Loan of Rs. 100000.00 is approved...!

Name of Student :OKesh

Percentage of Student :47.89

Congratulations your Educational Loan of Rs. 50000.00 is approved...!

Name of Student :sad

Percentage of Student :35.5

We regret to say that your Educational loan couldn't be approved...!

Name of Employee :Happy

Percentage of Employee :1.8e+06

Congratulations your Personal Loan of Rs. 700000.00 is approved...!

Congratulations your Home Loan of Rs. 700000.00 is approved...!

Congratulations your Auto Loan of Rs. 700000.00 is approved...!

Name of Employee :Good

Percentage of Employee :1.15e+06

Congratulations your Personal Loan of Rs. 600000.00 is approved...!

Congratulations your Home Loan of Rs. 600000.00 is approved...!

Congratulations your Auto Loan of Rs. 600000.00 is approved...!

Name of Employee :OKesh

Percentage of Employee :656000

Congratulations your Personal Loan of Rs. 500000.00 is approved...!

Congratulations your Home Loan of Rs. 500000.00 is approved...!

Congratulations your Auto Loan of Rs. 500000.00 is approved...!

Name of Employee :sad

Percentage of Employee :550000

Congratulations your Personal Loan of Rs. 400000.00 is approved...!

Congratulations your Home Loan of Rs. 400000.00 is approved...!

Congratulations your Auto Loan of Rs. 400000.00 is approved...!

Name of Employee :Verysad

Percentage of Employee :325000

We regret to say that your loan couldn't be approved...!

We regret to say that your Home loan couldn't be approved...!

We regret to say that your Auto loan couldn't be approved...!

PS D:\Fullstack-Java-FirstBit-Solutions\Basic-C-and-CPP\CPP\Assignments\Assignment02\output>