***Computer Programming Paradigm Lab***

***Lab Experiment No. 2***

**Name: Shashwat Tripathi Roll. No.: 60**

**Batch: C Div: D10A**

**AIM:** Write a C++ program using the concept of inheritance and method overriding.

**PROBLEM STATEMENT:**

Write C++ code to implement the concept of inheritance for Vehicles.

1.There would be 3 classes - one superclass and two sub classes.

2. Vehicle is the super class, whereas Bus and Truck are subclasses of Vehicle class.

**CODE:**

#include <iostream>

using namespace std;

//SuperClass Vehicle

class vehicle

{

private:

    string Vmodel;

    int RegNum, Speed, FuelCapacity, Mileage;

public:

    vehicle()

    {

    }

    vehicle(string V, int R, int S, int F, int M)

    {

        Vmodel = V;

        RegNum = R;

        Speed = S;

        FuelCapacity = F;

        Mileage = M;

    }

    ~vehicle()

    {

        cout << "Vehicle Dismissed\n";

    }

    void setModel(string s)

    {

        Vmodel = s;

    }

    void setRegestrationNum(int r)

    {

        RegNum = r;

    }

    void setSpeed(int s)

    {

        Speed = s;

    }

    void setFuelCApacity(int fc)

    {

        FuelCapacity = fc;

    }

    void setMileage(int m)

    {

        Mileage = m;

    }

    string getModel()

    {

        return Vmodel;

    }

    int getRegestrationNum()

    {

        return RegNum;

    }

    int getSpeed(int s)

    {

        return Speed;

    }

    int getFuelCApacity(int fc)

    {

        return FuelCapacity;

    }

    int getMileage(int m)

    {

        return Mileage;

    }

    int fuelNeeded(int dist)

    {

        int result = dist / Mileage;

        return result;

    }

    int distanceCovered(int time)

    {

        int result = Speed \* time;

        return result;

    }

    void display()

    {

        cout << "Vehicle model: " << Vmodel << endl;

        cout << "Regestration Number: " << RegNum << endl;

        cout << "Speed(In km/hr): " << Speed << endl;

        cout << "Fuel Capacity(In litres): " << FuelCapacity << endl;

        cout << "Mileage(In km/litre): " << Mileage << endl;

    }

};

// Sub Class Bus of the Superclass Vehicle

class bus : public vehicle

{

private:

    int NumPass;

public:

    bus(int n)

    {

        NumPass = n;

    }

    ~bus()

    {

        cout << "Bus Dismissed\n";

    }

    void setNoPass(int n)

    {

        NumPass = n;

    }

    int getNoPass()

    {

        return NumPass;

    }

    void display()

    {

        cout << "Number of passengers: " << NumPass << endl;

    }

};

// Sub Class Truck of the Superclass Vehicle

class truck : public vehicle

{

private:

    int WtLim;

public:

    truck(int wt)

    {

        WtLim = wt;

    }

    ~truck()

    {

        cout << "Truck Dismissed\n";

    }

    void setWtLim(int w)

    {

        WtLim = w;

    }

    int getWtLim()

    {

        return WtLim;

    }

    void display()

    {

        cout << "Cargo Weight Limit: " << WtLim << " Ton" << endl;

    }

};

int main()

{

    truck t(27);

    bus b(50);

    t.setModel("Eicher");

    t.setRegestrationNum(404);

    t.setSpeed(75);

    t.setFuelCApacity(50);

    t.setMileage(10);

    b.setModel("BharatBenz 2700");

    b.setRegestrationNum(110);

    b.setSpeed(59);

    b.setFuelCApacity(40);

    b.setMileage(9);

    t.fuelNeeded(500);

    cout << "Fuel needed for truck to travel 500 Km: " << t.fuelNeeded(500) << " Litres\n";

    b.fuelNeeded(810);

    cout << "Fuel needed for bus to travel 810 Km: " << b.fuelNeeded(810) << " Litres\n";

    t.distanceCovered(2);

    cout << "Distance covered by truck in 2 hours: " << t.distanceCovered(2) << " Km\n";

    b.distanceCovered(3);

    cout << "Distance covered by bus in 3 hours: " << b.distanceCovered(3) << " Km\n";

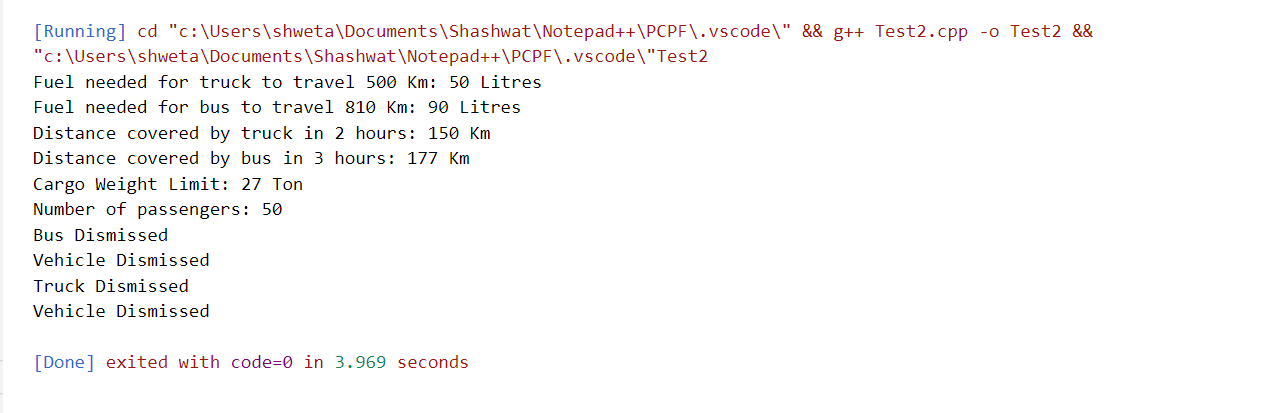
    t.display();

    b.display();

    return 0;

}

**OUTPUT:**

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