**Program:**

#include <iostream>

#include <string>

using namespace std;

class Vehicle {

public:

    string brand;

    void setBrand(string b) {

        brand = b;

    }

};

class Car : public Vehicle {

public:

    string model;

    double rentPerDay;

    void setCarDetails(string m, double rpd) {

        model = m;

        rentPerDay = rpd;

    }

    void showCarDetails() {

        cout << "Brand: " << brand << ", Model: " << model

             << ", Rent/Day: Rs. " << rentPerDay << endl;

    }

};

class Rental : public Car {

public:

    int days;

    void setRentalDays(int d) {

        days = d;

    }

    double calculateBill() {

        return rentPerDay \* days;

    }

};

class Customer {

public:

    string name;

    long long phoneNumber;

    void setCustomer(string n, long long p) {

        name = n;

        phoneNumber = p;

    }

};

class Payment {

public:

    string paymentMode;

    void setPaymentMode(string mode) {

        paymentMode = mode;

    }

};

class Transaction : public Rental, public Customer, public Payment {

public:

    void displayTransaction() {

        cout << "\n------ Final Rental Transaction ------" << endl;

        cout << "Customer Name: " << name << endl;

        cout << "Phone Number: " << phoneNumber << endl;

        cout << "Car Details: ";

        showCarDetails();

        cout << "Rental Duration: " << days << " days" << endl;

        cout << "Payment Mode: " << paymentMode << endl;

        cout << "Total Bill Amount: Rs. " << calculateBill() << endl;

    }

};

class LuxuryCar : public Car {

public:

    void showFeatures() {

        cout << "Features: " << model << " (" << brand << ") includes a sunroof, leather seats, and an advanced infotainment system." << endl;

    }

};

class EconomyCar : public Car {

public:

    void showFeatures() {

        cout << "Features: " << model << " (" << brand << ") offers excellent mileage and low maintenance costs, ideal for city driving." << endl;

    }

};

int main() {

    cout << "===== C++ Car Rental System - Inheritance Demonstration =====" << endl;

    cout << "\n--- Demonstrating Single, Multilevel & Multiple Inheritance ---" << endl;

    Transaction t1;

    t1.setCustomer("Rahul Sharma", 9876543210);

    t1.setBrand("Mahindra");

    t1.setCarDetails("Scorpio-N", 4500);

    t1.setRentalDays(5);

    t1.setPaymentMode("UPI");

    t1.displayTransaction();

    cout << "\n\n--- Demonstrating Hierarchical Inheritance ---" << endl;

    LuxuryCar luxury;

    luxury.setBrand("Mercedes-Benz");

    luxury.setCarDetails("S-Class", 25000);

    cout << "\nLuxury Car Details:" << endl;

    luxury.showCarDetails();

    luxury.showFeatures();

    EconomyCar economy;

    economy.setBrand("Maruti Suzuki");

    economy.setCarDetails("Alto K10", 1800);

    cout << "\nEconomy Car Details:" << endl;

    economy.showCarDetails();

    economy.showFeatures();

    return 0;

}

**OUTPUT:**

PS C:\Users\btm9d\Desktop\College\CPP> g++ Ass-5.cpp

PS C:\Users\btm9d\Desktop\College\CPP> ./a.exe

===== C++ Car Rental System - Inheritance Demonstration =====

--- Demonstrating Single, Multilevel & Multiple Inheritance ---

------ Final Rental Transaction ------

Customer Name: Rahul Sharma

Phone Number: 9876543210

Car Details: Brand: Mahindra, Model: Scorpio-N, Rent/Day: Rs. 4500

Rental Duration: 5 days

Payment Mode: UPI

Total Bill Amount: Rs. 22500

--- Demonstrating Hierarchical Inheritance ---

Luxury Car Details:

Brand: Mercedes-Benz, Model: S-Class, Rent/Day: Rs. 25000

Features: S-Class (Mercedes-Benz) includes a sunroof, leather seats, and an advanced infotainment system.

Economy Car Details:

Brand: Maruti Suzuki, Model: Alto K10, Rent/Day: Rs. 1800

Features: Alto K10 (Maruti Suzuki) offers excellent mileage and low maintenance costs, ideal for city driving.

PS C:\Users\btm9d\Desktop\College\CPP>