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OBJECT ORIENTED PROGRAMMING

ASSIGNMENT#2

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ASSIGNMENT 2

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STATIC AND DYNAMIC MEMORY ALLOCATION

TASK: A car rental company wants to develop a fleet management system to keep track of their rental cars. Each car has specific details, and customers can rent cars for a certain period. Your task is to develop a C++ program that allows dynamic allocation of car objects and manages their rental status.

1. **Create a class Car with the following private attributes:**
    - **carID (integer), brand (string), model (string), rentalPricePerDay (float), isRented (boolean)**
2. **Implement the following functions:**
    - **setCarDetails() – A setter function to input car details.**
    - **rentCar() – A function to mark the car as rented.**
    - **returnCar() – A function to mark the car as available again.**
    - **display() – A function to display car details along with its rental status.**
3. **In the main() function:**
    - **Ask the user how many cars they want to register.**
    - **Dynamically allocate an array of pointers to Car objects.**

- ❖ Take input for each car using setCarDetails().
- ❖ Allow the user to rent or return a car by entering its carID.
- ❖ Display the updated list of available and rented cars.
- ❖ Properly deallocate memory before exiting the program.

CODE:

```
#include<iostream>
using namespace std;
class Car {
private:
    int CarId;
    string Brand;
    string Model;
    float rentalpricePerDay;
    bool Is_rented;
public:
    Car();
    Car(int id, string brand, string model, float rpricepday);
    void setvalues(int id, string brand, string model, float rpricepday);
    void RentCar();
```

```
        void RenturnCar();
        void displaydetalis();
        int returncarID();
};
Car::Car() {
        CarId = 0;
        Brand = " ";
        Model = " ";
        rentalpricePerDay = 1200;
        Is_rented = false;
}
Car::Car(int id, string brand, string model, float rpricepday) {
        CarId = id;
        Brand = brand;
        Model = model;
        rentalpricePerDay = rpricepday;
        Is_rented = false;
}
void Car::setvalues(int id, string brand, string model, float
rpricepday) {
        CarId = id;
```

```
        Brand = brand;
        Model = model;
        rentalpricePerDay = rpricepday;
}
void Car::RentCar() {
        if (!Is_rented) {
                Is_rented = true;
                cout << "Car " << CarId << " is rented now" << endl;
        }
        else {
                cout << "Car " << CarId << " is rented already or not
available" << endl;
        }
}
void Car::RenturnCar() {
        if (Is_rented) {
                Is_rented = false;
                cout << "Car " << CarId << " is return to Car rent office."
<< endl;
        }
        else {
```

```
            cout << "Car " << CarId << " is available in office
already." << endl;
        }
}
void Car::displaydetalis() {
        cout << "Car ID is: " << CarId << endl;
        cout << "Car Brand is: " << Brand << endl;
        cout << "Car Model is: " << Model << endl;
        cout << "Car rented price per day: " << rentalpricePerDay <<
endl;
        cout << "Car status :" << (Is_rented ? "Rented" : "Available")
<< endl;
}
int Car::returncarID() {
        return CarId;
}
int main() {
        Car c1;
        int id;
        string b, m;
        float price;
        int num;
```

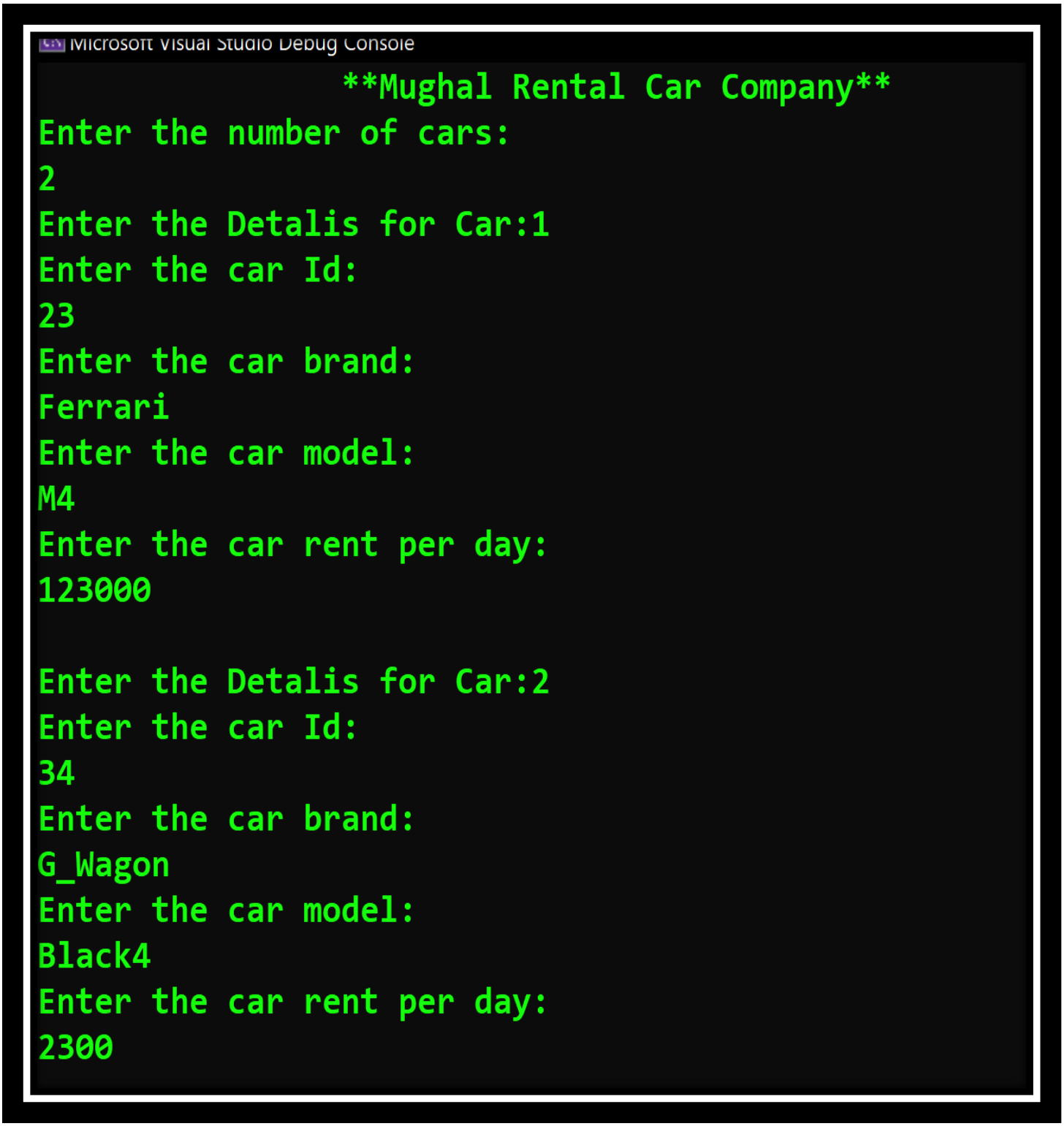
```
cout << "\t\t**Mughal Rental Car Company**" << endl;
cout << "Enter the number of cars: " << endl;
cin >> num;
Car* c = new Car[num];
for (int i = 0;i < num;i++) {
        cout << "Enter the Detalis for Car:" << i + 1 << endl;
        cout << "Enter the car Id: " << endl;
        cin >> id;
        cout << "Enter the car brand: " << endl;
        cin >> b;
        cout << "Enter the car model: " << endl;
        cin >> m;
        cout << "Enter the car rent per day:" << endl;
        cin >> price;
        c[i].setvalues(id, b, m, price);
        cout << endl;
}
int choice;
do {
        cout << "\t************************\n";
        cout << "\t* Enter your choice:\t*" << endl;
```

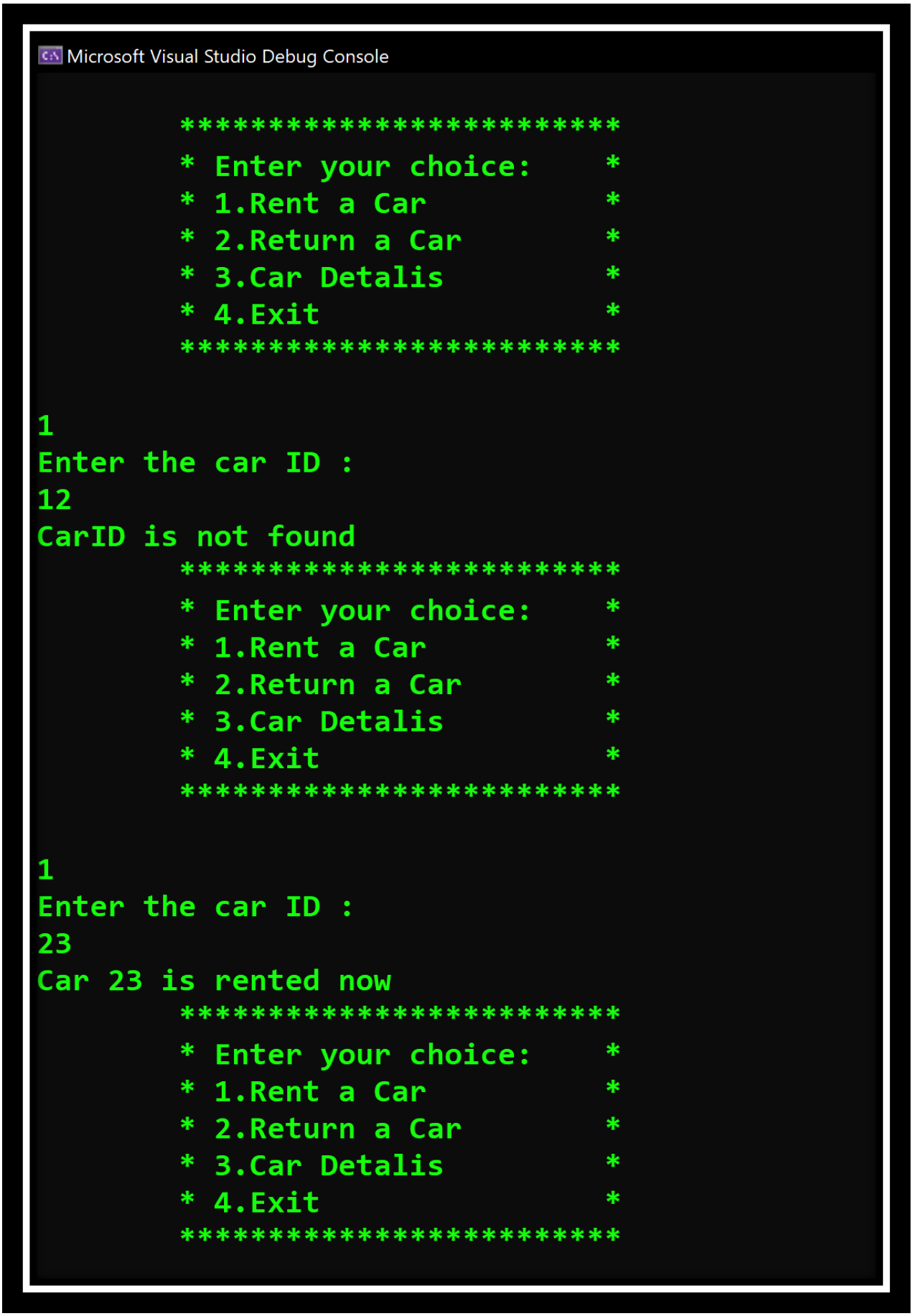
```
cout << "\t* 1.Rent a Car\t\t*" << endl;
cout << "\t* 2.Return a Car\t*" << endl;
cout << "\t* 3.Car Detalis\t\t*" << endl;
cout << "\t* 4.Exit\t\t*" << endl;
cout << "\t************************\n";
cout << endl;
cin >> choice;
if (choice == 1 || choice == 2) {
        int carID;
        cout << "Enter the car ID : " << endl;
        cin >> carID;
        bool present = false;
        for (int i = 0;i < num;i++) {
                if (c[i].returncarID() == carID) {
                        if (choice == 1) {
                                c[i].RentCar();
                        }
                        else {
                                c[i].RenturnCar();
                        }
                        present = true;
```

```
                }


            }
            if(!present) {
                cout << "CarID is not found" << endl;
            }
        }
        else if (choice == 3) {
            for (int i = 0;i < num;i++) {
                cout << "Car Detalis: "<<i+1 << endl;
                c[i].displaydetalis();
                cout << endl;
            }
        }
    } while ( choice != 4);
    delete[]c;
    cout << "Thank you for using Fleet Management System" <<
endl;
    return 0;
}
```

OUTPUT:


Microsoft Visual Studio Debug Console
Mughal Rental Car Company
Enter the number of cars:
2
Enter the Detalis for Car:1
Enter the car Id:
23
Enter the car brand:
Ferrari
Enter the car model:
M4
Enter the car rent per day:
123000
Enter the Detalis for Car:2
Enter the car Id:
34
Enter the car brand:
G_Wagon
Enter the car model:
Black4
Enter the car rent per day:
2300


Microsoft Visual Studio Debug Console
****
* Enter your choice: *
* 1.Rent a Car *
* 2.Return a Car *
* 3.Car Detalis *
* 4.Exit *
****
1
Enter the car ID :
12
CarID is not found
****
* Enter your choice: *
* 1.Rent a Car *
* 2.Return a Car *
* 3.Car Detalis *
* 4.Exit *
****
1
Enter the car ID :
23
Car 23 is rented now
****
* Enter your choice: *
* 1.Rent a Car *
* 2.Return a Car *
* 3.Car Detalis *
* 4.Exit *
****

```
3
Car Detalis: 1
Car ID is: 23
Car Brand is: Ferrari
Car Model is: M4
Car rented price per day: 123000
Car status :Rented

Car Detalis: 2
Car ID is: 34
Car Brand is: G_Wagon
Car Model is: Black4
Car rented price per day: 2300
Car status :Available

        ***************************
        * Enter your choice:    *
        * 1.Rent a Car          *
        * 2.Return a Car        *
        * 3.Car Detalis         *
        * 4.Exit                *
        ***************************

4
Thank you for using Fleet Management System
```

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