

# Java Object-Oriented Programming: Questions & Answers

## Question:

**Write a Java class for a LightBulb that has an on/off state. Implement methods to turn it on, turn it off, and check its status.**

## Answer:

```
class LightBulb {
    boolean isOn;

    LightBulb() {
        this.isOn = false;
    }

    void switchOn() {
        isOn = true;
        System.out.println("LightBulb is switched ON.");
    }

    void switchOff() {
        isOn = false;
        System.out.println("LightBulb is switched OFF.");
    }

    void checkStatus() {
        System.out.println("LightBulb is " + (isOn ? "ON" : "OFF"));
    }

    public static void main(String[] args) {
        LightBulb bulb = new LightBulb();
        bulb.checkStatus();
        bulb.switchOn();
        bulb.switchOff();
    }
}
```

## Expected Output:

```
LightBulb is OFF
LightBulb is switched ON.
LightBulb is switched OFF.
```

## Question:

**Create a Java class for a Car that keeps track of its fuel level, distance traveled, and fuel efficiency. Implement methods to drive, refuel, and check odometer readings.**

## Answer:

```
class Car {
    double fuel;
    double totalKm;
```

```

double efficiency;

Car(double fuel, double efficiency) {
    this.fuel = fuel;
    this.totalKm = 0;
    this.efficiency = efficiency;
}

void drive(double km) {
    double requiredFuel = km / efficiency;
    if (fuel >= requiredFuel) {
        fuel -= requiredFuel;
        totalKm += km;
        System.out.println("Car drove " + km + " km.");
    } else {
        System.out.println("Not enough fuel to drive " + km + " km.");
    }
}

void loadGas(double liters) {
    fuel += liters;
    System.out.println("Added " + liters + " liters of gas.");
}

void checkGas() {
    System.out.println("Remaining fuel: " + fuel + " liters.");
}

void checkOdometer() {
    System.out.println("Total kilometers driven: " + totalKm + " km.");
}

public static void main(String[] args) {
    Car myCar = new Car(10, 15);
    myCar.checkGas();
    myCar.drive(100);
    myCar.checkOdometer();
    myCar.loadGas(5);
    myCar.checkGas();
}
}

```

### Expected Output:

```

Remaining fuel: 10.0 liters.
Car drove 100.0 km.
Total kilometers driven: 100.0 km.
Added 5.0 liters of gas.
Remaining fuel: 5.67 liters.

```

### Question:

**Write a Java class for a BankAccount with methods to deposit, withdraw, and check balance. Ensure that withdrawals do not exceed the available balance.**

## Answer:

```
class BankAccount {
    double balance;

    BankAccount(double initialBalance) {
        this.balance = initialBalance;
    }

    void deposit(double amount) {
        balance += amount;
        System.out.println("Deposited: $" + amount);
    }

    void withdraw(double amount) {
        if (amount <= balance) {
            balance -= amount;
            System.out.println("Withdrawn: $" + amount);
        } else {
            System.out.println("Insufficient balance.");
        }
    }

    void checkBalance() {
        System.out.println("Current balance: $" + balance);
    }

    public static void main(String[] args) {
        BankAccount myAccount = new BankAccount(500);
        myAccount.checkBalance();
        myAccount.deposit(200);
        myAccount.withdraw(100);
        myAccount.checkBalance();
    }
}
```

## Expected Output:

```
Current balance: $500.0
Deposited: $200.0
Withdrawn: $100.0
Current balance: $600.0
```