**Day 99/180 Object Oriented Programming**

## **3 Programming Challenges with Classes:**

**1. Bank Customer Class:**

**Challenge: Design a Customer class for a bank system that manages customer information and basic operations.**

**Attributes:**

* **name: String containing the customer's full name.**
* **accountNumber: Unique integer identifying the customer's account.**
* **accountBalance: Double representing the current balance in the account.**
* **isActive: Boolean indicating whether the account is active.**

**Methods:**

* **deposit(amount): Adds the specified amount to the account balance.**
* **withdraw(amount): Deducts the specified amount from the account balance (check for sufficient funds).**
* **transfer(amount, targetAccount): Transfers the specified amount to another customer's account (within the system).**
* **printDetails(): Prints the customer's name, account number, and current balance.**

**2. Car Class:**

**Challenge: Create a Car class that simulates the behavior of a vehicle.**

**Attributes:**

* **model: String representing the car model name.**
* **year: Integer indicating the car's manufacturing year.**
* **fuelLevel: Double representing the remaining fuel quantity (percentage or liters).**
* **speed: Integer representing the current speed in kilometers per hour.**
* **isRunning: Boolean indicating whether the car is currently running.**

**Methods:**

* **startEngine(): Sets isRunning to true and prints a starting message.**
* **stopEngine(): Sets isRunning to false and prints a stopping message.**
* **accelerate(amount): Increases the car's speed by the specified amount (check engine state and fuel level).**
* **brake(amount): Decreases the car's speed by the specified amount (ensure speed doesn't become negative).**
* **refuel(amount): Increases the fuel level by the specified amount (check for tank capacity).**
* **printStatus(): Displays the car's model, speed, fuel level, and running state.**

**3. Laptop Class:**

**Challenge: Design a Laptop class that represents a portable computer system.**

**Attributes:**

* **brand: String representing the laptop brand and model.**
* **screenSize: Double indicating the screen size in inches.**
* **processor: String specifying the processor type and speed.**
* **ram: Integer representing the available RAM capacity in gigabytes.**
* **storage: Integer representing the storage capacity in gigabytes.**
* **batteryLevel: Double showing the remaining battery percentage.**
* **isOn: Boolean indicating whether the laptop is currently powered on.**

**Methods:**

* **powerOn(): Sets isOn to true and prints a startup message.**
* **powerOff(): Sets isOn to false and prints a shutdown message.**
* **openApps(numApps): Simulates opening a specified number of applications, potentially impacting battery life.**
* **closeApps(numApps): Simulates closing applications, restoring battery life.**
* **charge(amount): Increases the battery level by the specified amount (check for maximum capacity).**
* **printSpecs(): Displays the laptop's brand, screen size, processor, RAM, storage, and battery level.**