import java.util.Scanner;

public class Vehicle {

private String plateNumber;

private String vehicleType;

private int entryTime;

private int exitTime;

private double fee;

private boolean slotAvailable;

public static int vehicleCount = 0;

private static final int MAX\_SLOTS = 10;

public Vehicle(String plateNumber, String vehicleType, int entryTime) {

this.plateNumber = plateNumber;

this.vehicleType = vehicleType.toUpperCase();

this.entryTime = entryTime;

this.slotAvailable = true;

vehicleCount++;

}

public void setExitTime(int exitTime) {

this.exitTime = exitTime;

}

public void calculateFee() {

int duration = exitTime - entryTime;

double rate;

switch (vehicleType) {

case "CAR":

rate = 2.0;

break;

case "BIKE":

rate = 1.0;

break;

case "EV":

rate = 1.5;

break;

default:

rate = 2.0;

break;

}

if (duration <= 0) {

duration = 1;

}

this.fee = duration \* rate;

}

public void exitLot() {

slotAvailable = false;

vehicleCount--;

}

public void displayReceipt() {

System.out.println("\n=== Parking Receipt ===");

System.out.println("Plate Number : " + plateNumber);

System.out.println("Vehicle Type : " + vehicleType);

System.out.println("Entry Time : " + entryTime + ":00");

System.out.println("Exit Time : " + exitTime + ":00");

System.out.printf("Parking Fee : $%.2f\n", fee);

System.out.println("========================\n");

}

public static boolean isSlotAvailable() {

return vehicleCount < MAX\_SLOTS;

}

// ✅ main() moved here

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

while (true) {

System.out.println("==== Smart Parking Lot Management ====");

System.out.println("1. Enter Vehicle");

System.out.println("2. Exit Vehicle");

System.out.println("3. Show Current Count");

System.out.println("4. Exit Program");

System.out.print("Select an option: ");

if (!scanner.hasNextInt()) break;

int option = scanner.nextInt();

scanner.nextLine(); // Consume newline

switch (option) {

case 1:

if (!Vehicle.isSlotAvailable()) {

System.out.println("Parking Full. No slots available.\n");

break;

}

System.out.print("Enter Plate Number: ");

String plate = scanner.nextLine();

System.out.print("Enter Vehicle Type (Car/Bike/EV): ");

String type = scanner.nextLine();

System.out.print("Enter Entry Time (0-23): ");

int entry = scanner.nextInt();

scanner.nextLine();

Vehicle vehicle = new Vehicle(plate, type, entry);

System.out.println("Vehicle Entered Successfully.\n");

break;

case 2:

System.out.print("Re-enter Plate Number for Exit: ");

String exitPlate = scanner.nextLine();

System.out.print("Enter Vehicle Type (Car/Bike/EV): ");

String exitType = scanner.nextLine();

System.out.print("Enter Entry Time (0-23): ");

int startTime = scanner.nextInt();

System.out.print("Enter Exit Time (0-23): ");

int endTime = scanner.nextInt();

scanner.nextLine();

Vehicle exitVehicle = new Vehicle(exitPlate, exitType, startTime);

exitVehicle.setExitTime(endTime);

exitVehicle.calculateFee();

exitVehicle.exitLot();

exitVehicle.displayReceipt();

break;

case 3:

System.out.println("Current Vehicles in Lot: " + Vehicle.vehicleCount + "\n");

break;

case 4:

System.out.println("Exiting... Thank you!");

scanner.close();

return;

default:

System.out.println("Invalid Option. Please try again.\n");

}

}

}

}