GROUP 3

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Parking lot- Case Study(1)

1. Terminology used
- EV - Electric vehicle
- Spot - Numbered space allotted for parking
- Economy - Includes no additional services (restricted to simple parking)
- Admin - (Actor)Owner of building

2. Description of parking lot

- Parking lot has 3 floors. Trucks, cars, bikes parked at floor 1,2,3 respectively from heavy to light weights(NOTE: Heavy vehicles are parked in lower floors for easy movement in building)
- Vehicle can opt additional services:
    a. Economy(No additional services)
    b. EV(electrical vehicles have an electrical charging service)
    c. VIP(can also have a car wash service)
- Time is taken into the parking lot system using LocalTime class which makes it more suitable for real world usage.
- Payment can be done at the information portal at each floor or end of floor.
- Two types of payment methods.Cash and credit(validates pin number).
- There are 2 exit points at each floor. One for economy class other for VIP and EV division.
- Token system implemented so as to decode floor and spot number(from token number) during payment time.
- FILE HANDLING has been used to store data in the parking lot system.
- A password protected system for ADMIN has been established.
- Admin can reserve spots in any floor and unreserve them also.

- **Fee structure:**

S.no.	Vehicle	Time (minutes)	Amount (Rupee)	Additional services	Amount (Rupee)
1	Truck	<60 60-180 >180	60 80 +20(per hour)	Electric charge Vehicle wash	40 100
2	Car	<60 60-180 >180	30 40 +10(per hour)	Electric charge Vehicle wash	20 50
3	Bike	<60 60-180 >180	15 20 +5(per hour)	Electric charge Vehicle wash	10 25

3. Test Cases :

// Test case -1(Customer perspective)

Please enter 1 to view display board, 2 to park your vehicle, 3 to exit, 4 to get ADMIN access and other to exit the software
1
Floor 1 status:

0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
Floor 2 status:

0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0

```
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
```
Floor 3 status:

```
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
```
Please enter 1 to view display board, 2 to park your vehicle, 3 to exit, 4 to get ADMIN access
and other to exit the software
2
Enter 'bike' if your vehicle is bike
Enter 'car' if your vehicle is car
Enter 'truck' if your vehicle is truck
bike
Enter vehicle registration number without spaces:
AP237172
If electrical vehicle, enter '1' else '0'
0
If vehicle wants VIP service, enter '1' else '0'
0
Please proceed to floor 3

Assigned spot: 1
Please remember this token number : 3.3000

1 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
Please enter 1 to view display board, 2 to park your vehicle, 3 to exit, 4 to get ADMIN access
and other to exit the software
2
Enter 'bike' if your vehicle is bike
Enter 'car' if your vehicle is car
Enter 'truck' if your vehicle is truck
car
Enter vehicle registration number without spaces:
MH217172
If electrical vehicle, enter '1' else '0'
1
If vehicle wants VIP service, enter '1' else '0'
1
Do you want to recharge your vehicle? (1 for yes and 0 for no) >>
1
Please proceed to floor 2
Assigned spot: 86
Please remember this token number : 2.2000

0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0

```
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 1 0 0 0 0
0 0 0 0 0 0 0 0 0 0
```
Please enter 1 to view display board, 2 to park your vehicle, 3 to exit, 4 to get ADMIN access and other to exit the software

2

Enter 'bike' if your vehicle is bike
Enter 'car' if your vehicle is car
Enter 'truck' if your vehicle is truck
car
Enter vehicle registration number without spaces:
TS196482
If electrical vehicle, enter '1' else '0'
1
If vehicle wants VIP service, enter '1' else '0'
0
Do you want to recharge your vehicle? (1 for yes and 0 for no) >>
1
Please proceed to floor 2
Assigned spot: 87
Please remember this token number : 2.2001

```
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 1 1 0 0 0
0 0 0 0 0 0 0 0 0 0
```
Please enter 1 to view display board, 2 to park your vehicle, 3 to exit, 4 to get ADMIN access and other to exit the software

1
Floor 1 status:

0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
Floor 2 status:

0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 1 1 0 0 0
0 0 0 0 0 0 0 0 0 0
Floor 3 status:

1 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
Please enter 1 to view display board, 2 to park your vehicle, 3 to exit, 4 to get ADMIN access
and other to exit the software
3
Please enter your token number
2.2001

Where do you want to pay the bill?
Enter 1 to pay at information portal, 2 to pay at the exit
1
Time: 2
Amount: 50
Press 1 for cash and press 2 for credit card payment >>
2
Enter four digit credit card number:
1234
Amount paid successfully
Please visit again.
Please exit through gate 2
Thanks for using our parking lot
Please enter 1 to view display board, 2 to park your vehicle, 3 to exit, 4 to get ADMIN access
and other to exit the software
3
Please enter your token number
3.3000
Where do you want to pay the bill?
Enter 1 to pay at information portal, 2 to pay at the exit
2
Time : 5
Amount: 15
Press 1 for cash and press 2 for credit card payment >>
1
Payment successful
Please visit again.
Please exit through gate 1
Thanks for using our parking lot
Please enter 1 to view display board, 2 to park your vehicle, 3 to exit, 4 to get ADMIN access
and other to exit the software
3
Please enter your token number
2.2000
Where do you want to pay the bill?
Enter 1 to pay at information portal, 2 to pay at the exit
2
Time: 5
Amount: 50
Press 1 for cash and press 2 for credit card payment >>
2
Enter four digit credit card number:
4355
Amount paid successfully

Please visit again.
Please exit through gate 2
Thanks for using our parking lot
Please enter 1 to view display board, 2 to park your vehicle, 3 to exit, 4 to get ADMIN access and other to exit the software
1
Floor 1 status:

0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
Floor 2 status:

0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
Floor 3 status:

0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
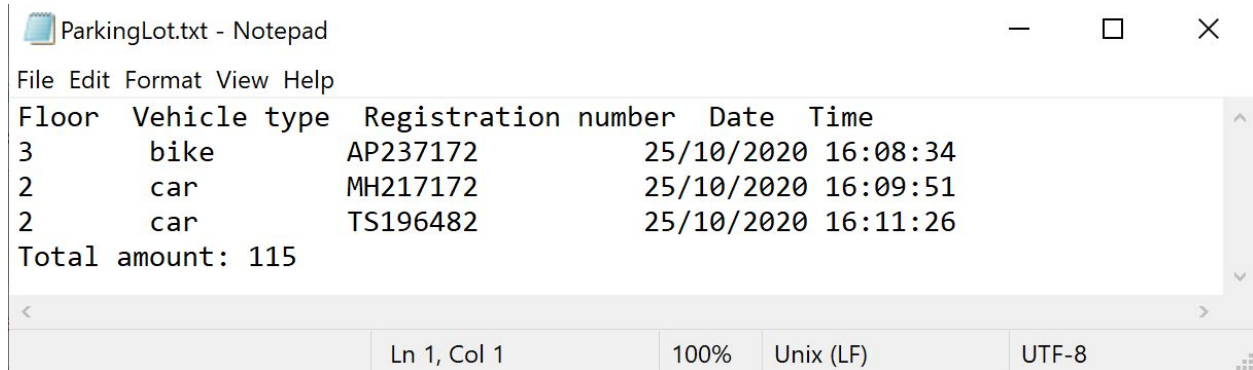0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0

```
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
```

Please enter 1 to view display board, 2 to park your vehicle, 3 to exit, 4 to get ADMIN access and other to exit the software
9

Process finished with exit code 0

At the same time parking lot system gets data stored inside its system using FILE HANDLING

```
ParkingLot.txt - Notepad                                —    □    ✕

File  Edit  Format  View  Help
Floor   Vehicle type   Registration number   Date   Time
3         bike          AP237172              25/10/2020 16:08:34
2         car           MH217172              25/10/2020 16:09:51
2         car           TS196482              25/10/2020 16:11:26
Total amount: 115

              Ln 1, Col 1            100%    Unix (LF)        UTF-8
```

// Test Case-2 (Admin perspective)

Please enter 1 to view display board, 2 to park your vehicle, 3 to exit, 4 to get ADMIN access and other to exit the software
4
User name: Admin
Password: admin
Enter 1 for reservation and 2 for unreserving
1
Displaying current status:
Floor 1 status:

```
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
```
Floor 2 status:

```
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
```

```
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
```
Floor 3 status:

```
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
```
Which floor do you want to reserve:
2
Type 1 for economy, 2 for VIP, 3 for ElectricalVehicles
2
Number of seats to be reserved :
8
Reserved 8 spots.

```
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
```

```
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 8 8 8 8 8
8 8 8 0 0 0 0 0 0 0
```

Please enter 1 to view display board, 2 to park your vehicle, 3 to exit, 4 to get ADMIN access and other to exit the software

4

User name: Admin

Password: admin

Enter 1 for reservation and 2 for unreserving

2

Enter floor number:

2

```
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
```

Please enter 1 to view display board, 2 to park your vehicle, 3 to exit, 4 to get ADMIN access and other to exit the software

5

Process finished with exit code 0

At the same time this is what the system stores

ParkingLot.txt - Notepad — ☐ ✕

File Edit Format View Help

```
Floor  Vehicle type  Registration number  Date  Time
Total amount: 0
```

Ln 1, Col 1   100%   Unix (LF)   UTF-8