Parking Lot System Design

→ **System Requirements**

- The parking lot must have multiple floor.
- It has multiple entries and exits.
- The customer collects parking ticket @ entry & pays the fee @ exit.
- The fee can be payed @ automated exit panel or the parking attendant
- The payment can be done via cash or credit.

- Payment can also be done @ Info portol, which is on each floor. If. done, payment need not be done at exit.

- The System should not allow cars more than the capacity of the parking lot. On reaching the limit the System should show this message @ enterance.

- Each floor has multiple parking spots. The System should Support multiple types eg → Compact → Large → Handicapped → 2 wheeler etc.,

- The parking lot has certain spots for electrical vehicles. Customer can pay and charge their vehicles as well.

- System supports parking of different types of vehicles. eg, Car, Truck, van, etc.

- Each floor must have display which shows available parking spots.

- The system supports a per hour parking fee model. eg. 4 $ hr 1   3.5 $ for 2nd hr   2.5 $ for remaining.
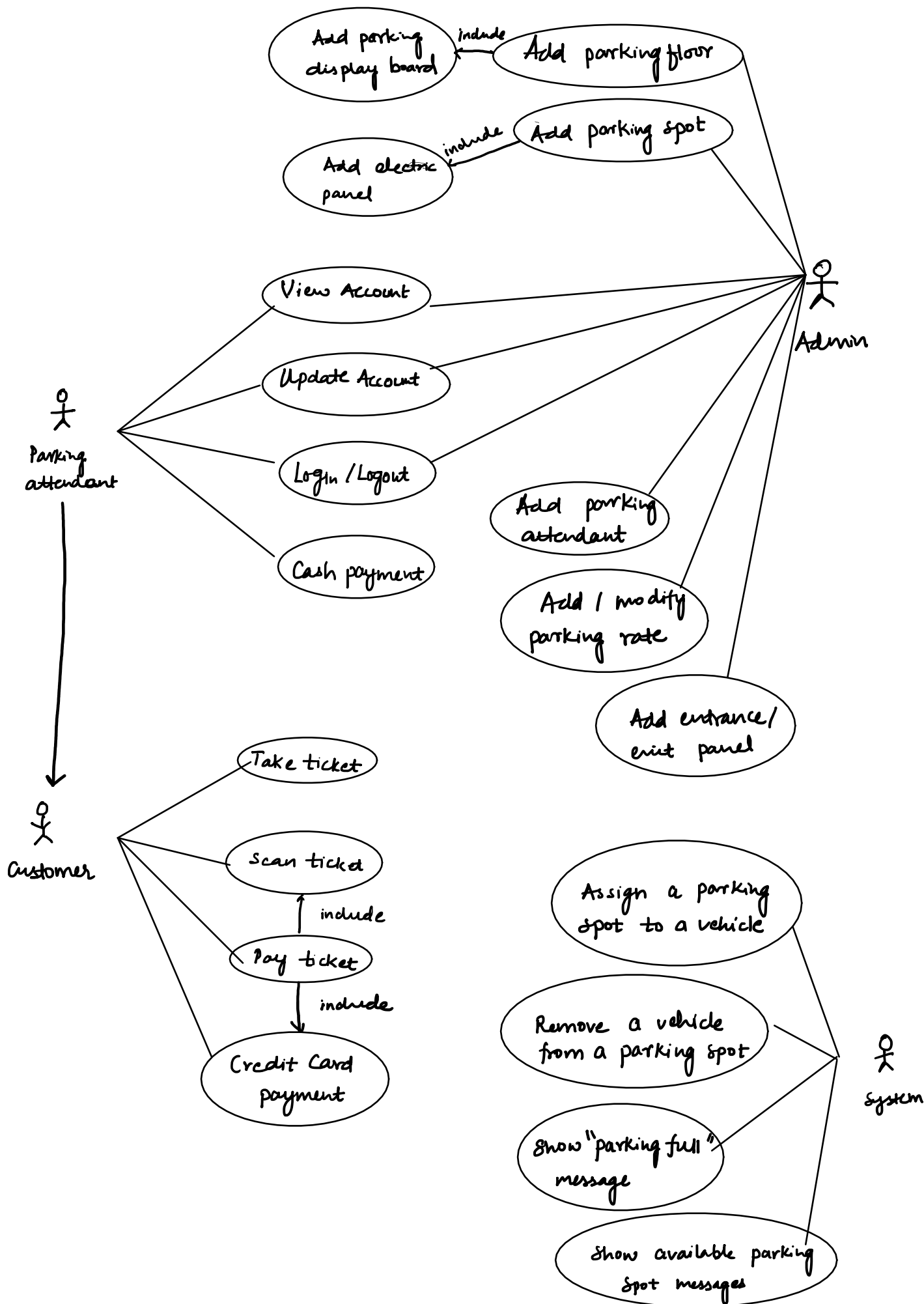
Case Diagram

The main actors in the system

→ **Admin:-** Responsible for adding / modifying / removing
  - → Parking floor   → Entrance   → Parking attendants
  - → Parking spots   → Exit   etc.

→ **Customer:-** → Recieve parking ticket

  → Pay fee

→ **Parking attendent :-**
  → Can do all the activities on customers behalf and take Cash for ticket payment.

→ **System:-**
  → To display messages on different info panels, as well as assigning and removing a vehicle from a parking spot.

⇒ **Top Uses**

→ Add / Remove / Edit parking floor
→ Add / Remove parking spot
→ Add / Remove a parking attendant
→ Take ticket
→ scan ticket
→ Credit Card payment

→ Cash payment

→ Add / modify parking rate.

Use Case Diagram — Parking Lot System

Add parking display board —include→ **Add parking floor**

Add electric panel —include→ **Add parking spot**

Admin connects to:
- Add parking floor
- Add parking spot
- View Account
- Update Account
- Login / Logout
- Add parking attendant
- Add / modify parking rate
- Add entrance / exit panel

Parking attendant connects to:
- View Account
- Update Account
- Login / Logout
- Cash payment

Parking attendant → **Customer**

Customer connects to:
- Take ticket
- Scan ticket
- Pay ticket
- Credit Card payment

Pay ticket —include→ **Scan ticket**

Pay ticket —include→ **Credit Card payment**

System connects to:
- Assign a parking spot to a vehicle
- Remove a vehicle from a parking spot
- Show "parking full" message
- Show available parking spot messages

Activity Diagram

10 June 2021   12:39

→ Customer paying for parking ticket.

Customer inserts parking ticket in panel

System scan parking ticket & fetches ticket's details

◇ Ticket Already paid?
— Yes
No

System calculates the parking fee.

System shows the fee on display panel and asks for credit card details.

Customer Inserts Card

System reads the card details & processes the payment.

◇ Payment Successful — NO → System shows the error → ◇ Try Again! — Yes

Yes

System shows Success message

◇ Print Reciept — Yes → System prints the reciept

No

System sends the signal to open the parking gate