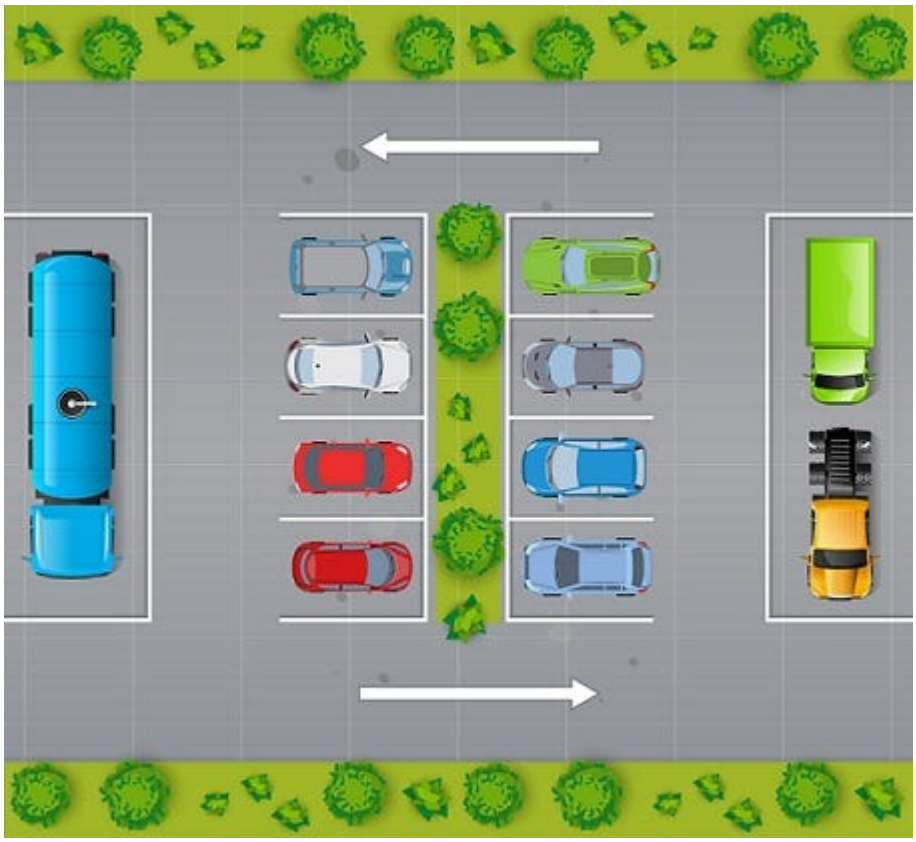
Design a parking lot

> A parking lot or car park is a dedicated cleared area that is intended for parking vehicles. In most countries where cars are a major mode of transportation, parking lots are a feature of every city and suburban area. Shopping malls, sports stadiums, megachurches, and similar venues often feature parking lots over large areas
> Reference

> Parking lot is an open area designated for parking cars. We will design a parking lot where a certain number of cars can be parked for a certain amount of time. The parking lot can have multiple floors where each floor carries multiple slots. Each slot can have a single vehicle parked in it.
> Reference



Requirements gathering

What are some questions you would ask to gather requirements?

1. Can a parking lot have multiple floors?
2. Can a parking lot have multiple entrances?
3. Can a parking lot have multiple exits?
4. Can a parking lot have multiple types of vehicles?
5. Can we park any type of vehicle in any slot?
6. How do we get a ticket?
7. How do we know if a slot is empty?
8. How are we allocated a slot?
9. How do we pay for parking?
10. What are the multiple ways to pay for parking?

Requirements

Build an online parking lot management system that can support the following requirements:

- Should have multiple floors.
- Multiple entries and exit points.

- A person has to collect a ticket at entry and pay at or before exit.
- Pay at:
  - Exit counter (Cash to the parking attendant)
  - Dedicated automated booth on each floor
  - Online
- Pay via:
  - Cash
  - Credit Card
  - UPI
- Allow entry for a vehicle if a slot is available for it. Show on the display at entry if a slot is not available.
- Parking Spots of 3 types:
  - Large
  - Medium
  - Small
- A car can only be parked at its slot. Not on any other (even larger).
- A display on each floor with the status of that floor.
- Fees calculated based on per hour price: e.g. 50 rs for the first hour, then 80 rs per extra hour.
  - Small - 50, 80
  - Medium - 80, 100
  - Large - 100, 120

Use case diagrams

Are the requirements clear enough to define use cases?
If not, try to think of the actors and their interactions with the system.

Actors

What would be the actors in this system?

1. Parking Attendant
2. Customer
3. Admin

Use cases

What would be the use cases i.e. the interactions between the actors and the system?

Actor 1

Name of actor - `Parking Attendant`

Use cases:

1. `Issue ticket`
2. `Collect payment`
3. `Get available slots`
4. `Checkout vehicle`

Actor 2

Name of actor - `Customer`
Use cases:

1. `Get ticket`
2. `Pay`

Actor 3

Name of actor - `Admin`
Use cases:

1. `Add parking lot`
2. `Add parking floor`
3. `Add parking spot`
4. `Add entry and exit points`

Draw the use case diagram.

```
Error: plantuml.jar file not found: ""

Please download plantuml.jar from https://plantuml.com/download.


If you are using VSCode or coc.nvim, then please set the setting "markdown

If you don't want to use plantuml.jar, then you can use the online plantum
by setting the setting "markdown-preview-enhanced.plantumlServer" to the U
```

Class diagrams

What will be the major classes and their attributes?

```
Class name
    - Attribute 1
    - Attribute 2
    ...
```

Draw the class diagram.