M2.B2: Assignment: Homework Assignment 2: User Story

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1) **Identify three features relevant to driver-free parking.**
   - Auto Steering - The vehicle should park itself both parallel and perpendicularly using its auto-steering feature. It also handles the car's accelerator and brake without outside assistance.
   - Parallel Parking - Assume a person is looking for parallel parking between two cars. While parking the car, the person should hear a beep sound, similar to a buzzer, which can detect and assist the person in maintaining some distance from the aligned car to avoid an accident.
   - Reverse Parking - While reversing to park his car, a camera is in the back to guide the driver to complete the parking so that he or she does not damage the car behind. The vehicle should also detect nearby pedestrians and lane departures and provides drivers a warning of impending collision.

2) **Describe each of the three features as a use case.**

❖ Auto Steering Mode

- **Identify the actors:** Drivers, aligned cars, ultrasonic sensors, cameras
- **Identify the use cases:**
  - Speed control – The driver maintains the speed while parking
  - Judgement – The driver gets a judgement with the help of aligned cars to park the car
  - Alert - Driver getting a beep sound if he is too closed to the aligned cars or pedestrians.
- **Identify actors/use case relationship**
  - Drivers - Controls the speed
  - Aligned cars – Gives a better idea to the driver while parking
  - Buzzer – Beeps a sound whenever a car or any pedestrian is nearby
  - Ultrasonic Sensor – To check whether parking is available or no.
  - Camera – To give a clear vision to the driver.
- **Outline Scenarios**
  - Basic Flow – Driver attempts parking and parks the car properly between the aligned cars with a controlled speed
    Alternate Flow – Driver attempts parking and he crashed because he was not able to managed the speed.

  - Basic Flow – Driver parks the car without damaging the aligned cars
    Alternate Flow – Driver fails to park as he damages the aligned cars

  - Basic Flow – Driver gets parked in a proper parking area
    Alternate Flow – Driver parks into No-Parking area or crashes with the aligned car or pedestrian

❖ Parallel Parking

- **Identify the actors:** Drivers, aligned cars, buzzer, ultrasonic sensors
- **Identify the use cases:**
  - Speed control – The driver maintains the speed while parking
  - Judgement – The driver gets a judgement with the help of aligned cars to park the car
  - Alert - Driver getting a beep sound if he is too closed to the aligned cars
- **Identify actors/use case relationship**
  - Drivers - Controls the speed
  - Aligned cars – Gives a better idea to the driver while parking
  - Buzzer – Beeps a sound whenever a car or any pedestrian is nearby
  - Ultrasonic Sensor – Maintains a distance and notify the driver while ringing the buzzer whenever the distance of collision is very low.
- **Outline Scenarios**
  - Basic Flow – Driver attempts parking and parks the car properly between the aligned cars with a controlled speed
    Alternate Flow – Driver attempts parking and he crashed because he was not able to managed the speed.

  - Basic Flow – Driver parks the car without damaging the aligned cars
    Alternate Flow – Driver fails to park as he damages the aligned cars

  - Basic Flow – Driver attempted parking and the buzzer rang giving an alert resulting into damage to the aligned cars
    Alternate Flow – Driver attempted parking and the buzzer failed to give an alert resulting into colliding into aligned cars.

❖ Reverse Parking

- **Identify the actors:** Drivers, aligned cars, ultrasonic sensors, Cameras

- **Identify the use cases:**
  - Speed control – The driver maintains the speed while parking
  - Aligned cars – Gives a better idea to the driver while parking
  - Clarity – While taking reverse, driver is able to view the car or pedestrian which is behind his car.

- **Identify actors/use case relationship**
  - Drivers - Controls the speed
  - Aligned cars – Gives a better idea to the driver while parking
  - Ultrasonic Sensor – Maintains a distance and notify the driver while ringing the buzzer whenever the distance of collision is very low.
  - Camera – To give a vision to the driver while reversing.

- **Outline Scenarios**
  - Basic Flow – Driver parks the car without damaging the aligned cars
    Alternate Flow – Driver fails to park as he damages the aligned cars

  - Basic Flow – Driver attempted reverse parking and was able to park the car as the camera gave a clear vision of the behind car.
    Alternate Flow – Driver attempted reverse parking and was not able to park the car as the camera screen failed to display the car behind due to bad weather conditions.

3) Describe each of the same features as user stories.

- Title: Auto Steering Mode
  Acceptance Test: controlsSpeed and givesIdea
  Priority: 1
  Story Points: 3
  Description: As a driver, the car gets parked properly without damaging other cars or pedestrians or parking in no parking zone.

- Title: Parallel Parking
  Acceptance Test: givesAlert with buzzer
  Priority: 1
  Story Points: 4
  Description: The driver parks the car properly between the aligned cars with a controlled speed without damaging the cars.

- Title: Reverse Parking
  Acceptance Test: providesVision with a camera
  Priority: 1
  Story Points: 2
  Description: The driver wants a clear vision of the car behind so that the driver can park the car properly without having any collisions with the car or any pedestrians.

4) Describe the advantages and disadvantages of use cases and user stories for this task.

Advantages of use cases:

- Provides a summary and planning skeleton.
- Gives a clear and consistent description of what the system should do.
- Use case for this task force the developers to think through the design of a system from perspective of user.
- Handling the unforeseen combination events as safety is the main concern in self driving parking.

Disadvantages of use cases:

- Time consuming as compared to user stories
- Use cases look at each requirement separately and does not document the interaction between the requirements.
- Not as easy to read for non-UML users so it may make diagrams more confusing for users.

Advantages of user stories:

- Simple description of the desire of a user for a need.
- Brings everyone on the same page.
- Helps the product team in identifying the users and requirements.
- Encourages a user focused approach.
- Include sufficient detail to allow testing.

Disadvantages of user stories:

- User stories are expressed in simple, concise statements.
- Small teams with engaged customers.
- Answers from the customers may not be readily available.
- As the user stories and product evolve, gaps may appear and difficult to keep the track of changes on functionality.