**Use Case: Scan Plate**

* **Primary Actor:** User
* **Goal:** To scan the license plate of a vehicle using the app's camera feature.

**Stakeholders and Interests:**

* **User:** Wants to quickly and accurately scan the license plate to determine parking authorization.
* **System:** Needs to provide accurate scanning functionality and feedback to the user.

**Preconditions:**

* The user must be logged into the app.
* The app must have access to the device's camera.

**Success Guarantee (Postconditions):**

* The license plate is captured and processed for recognition.

**Main Success Scenario:**

1. The user opens the camera feature within the app.
2. The user aligns the vehicle's license plate within the camera's frame.
3. The app captures the image and utilizes the YOLOv8n model for plate detection.
4. The app displays the captured license plate for user confirmation.

**Extensions:**

* 2a. The camera cannot detect the license plate:
  + 2a1. The app prompts the user to adjust the camera angle or lighting.
* 3a. The YOLOv8n model cannot process the image:
  + 3a1. The app provides an error message and the option to retry or enter the plate manually.

**Special Requirements:**

* The app must process images in various lighting conditions.
* The recognition must be completed within a few seconds to ensure efficiency.

**Technology and Data Variations List:**

* The app may use different models for plate recognition if YOLOv8n is not suitable.

**Frequency of Occurrence:**

* Potentially high during peak parking hours.

**Use Case: Read Output**

* **Primary Actor:** User
* **Goal:** To review and confirm the information captured from the scanned license plate.

**Stakeholders and Interests:**

* **User:** Wants to ensure the accuracy of the scanned information.
* **System:** Needs to accurately display the recognized license plate text and state.

**Preconditions:**

* A license plate has been scanned successfully.

**Success Guarantee (Postconditions):**

* The user is presented with the recognized license plate information.

**Main Success Scenario:**

1. The app processes the scanned image and extracts the license plate text and state.
2. The app displays the results to the user for review.
3. The user reviews the output for accuracy.

**Extensions:**

* 2a. The output is incorrect or incomplete:
  + 2a1. The user chooses to re-scan the license plate or enter the details manually.

**Special Requirements:**

* The app must display the text in a clear and readable format.

**Frequency of Occurrence:**

* Occurs every time a license plate is scanned.

**Use Case: Enter Plate Manually**

* **Primary Actor:** User
* **Goal:** To manually input the license plate number and state into the app.

**Stakeholders and Interests:**

* **User:** Needs to input or correct license plate information manually.
* **System:** Must verify and process manual entries accurately.

**Preconditions:**

* The app is unable to scan the license plate automatically, or the user chooses to enter details manually.

**Success Guarantee (Postconditions):**

* The license plate data is entered and available for processing.

**Main Success Scenario:**

1. The user selects the option to enter the license plate details manually.
2. The user inputs the license plate number and state into the respective fields.
3. The app accepts the data and processes it for authorization check.

**Extensions:**

* 2a. The user enters invalid or incomplete data:
  + 2a1. The app prompts the user to correct the data.

**Special Requirements:**

* The manual entry fields must include format validation to help ensure data accuracy.

**Frequency of Occurrence:**

* Could be frequent in cases where the plate is unreadable by the scanner.