Part 1 - System architecture

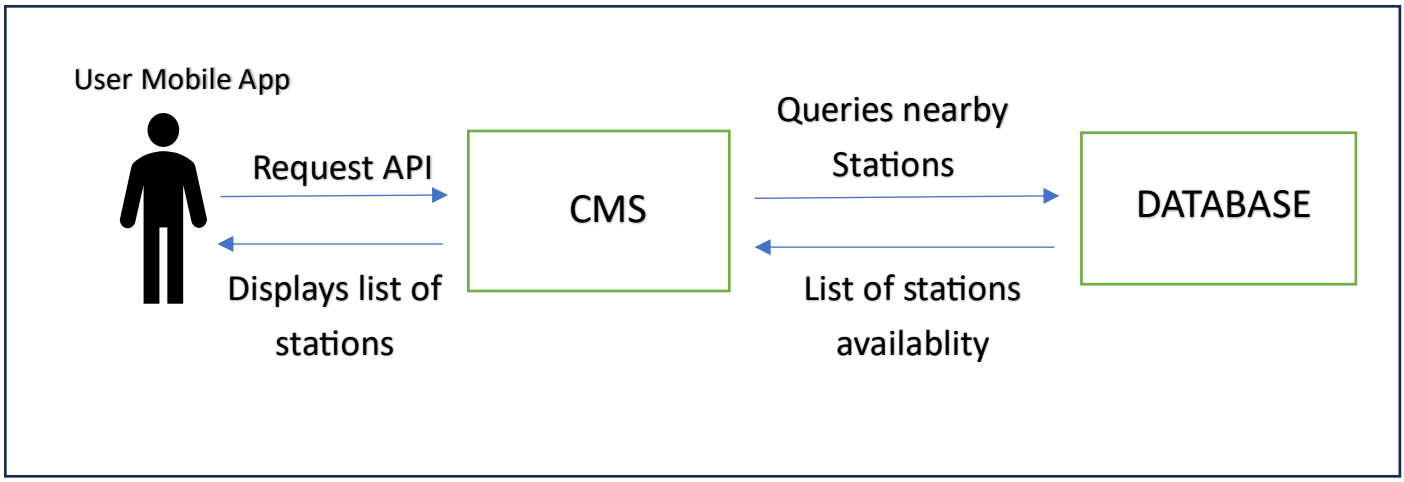
Two user journeys for Station Location and Charging Initiation:

1. Station Location:

The goal of this journey is to enable the user to find nearby charging stations and check their real-time availability of the charging station.

Steps:

- The **User** sends a request to the **Charging Management System (CMS**) via API to search for nearby charging stations.
- The **CMS** queries the **Database** for the nearest available charging stations and their real-time availability.
- The **Database** returns the list of stations available status to the **CMS**.
- The **CMS** sends this data back to the **User** through Mobile Application.
- The Mobile Application displays the charging stations and their availability to the **User**.



2. Charging Initiation:

Steps:

- The **User** plugs in the vehicle and opens the Mobile Application to authenticate.
- The Mobile Application sends an authentication request to the **Charging Management System (CMS).**
- The **CMS** validates the **User** and confirms the payment method.
- The **Charging Station** sends a start request to the **CMS** via the OCPP protocol.
- The **CMS** communicates with the **Energy Management** to determine the optimal charging rate based on grid conditions and user preferences.
- The **Energy Management** sends the optimal rate to the **CMS**.
- The **CMS** sends a command to the **Charging Station** to begin the charging session at the specified rate.

- The **Charging Station** begins charging the vehicle.
- The **CMS** updates the Mobile Application with the status of the charging session.
- The Mobile Application displays the charging status to the **User**.