**Task: EV Charging and Billing System**

Design a simplified backend script that schedules EV charging for a small residential building and computes session costs based on charging duration and electricity prices.

**Scenario**

* You manage 5 EVs and 3 charging ports for a shared parking area.
* Each EV may have a charging request on certain days to reach a target SoC by a specific hour.
* Charging is allowed only when the car is available at the station, and each port can charge one car at a time.

**Requirements**

1. **Charging Logic**
   * Schedule charging sessions based on:
     + Port availability
     + Car's max charging rate
     + Arrival SoC and capacity
     + Desired SoC at a specific time
   * Distribute charging sessions across available ports fairly.
2. **Billing**
   * For each session, compute:
     + Energy charged = (target SoC - initial SoC) × capacity
     + Assume 95% efficiency (i.e. real energy = energy / 0.95)
     + Cost = ∑ (energy × price at each hour)
3. **Output**
   * For each car:
     + Charging schedule (hours and power)
     + Final SoC
     + Total cost

You’ll receive:

* cars.json — list of 5 cars with capacity, max rate, efficiency
* availability.csv — car × hour matrix (1 = available, 0 = not)
* requirements.json — {car: {day: {hour: target\_soc}}}
* prices.csv — hourly electricity price in €/kWh (for 7 days)

**Assumptions**

* Charging step = 1 hour
* Each port can charge only one car per hour
* Ignore battery degradation
* No need for authentication or user interface

**Deliverables**

* Python script or notebook
* Charging schedule per car
* Cost summary table
* Readme (explain structure, assumptions, and how to run)

**Submission**

Upload your solution to a public GitHub repository or share as a ZIP file. Include a README.md with:

* Setup instructions
* Model explanation
* Notes on optional parts