**Problem Statement: Design a Parking Lot System (Console App)**

**Objective:**

Design a simplified **Parking Lot Management System** for a console application. The system should support operations like parking vehicles, un-parking, and displaying parking status.

**🎯 Requirements**

**1. Parking Lot Setup**

* The parking lot has a fixed number of slots.
* There can be **multiple floors**, and each floor can have **multiple slots**.
* Each slot can hold **one vehicle**.

**2. Vehicle Types**

* Support for multiple vehicle types:
  + Car
  + Bike
  + Truck
* Different types of vehicles may occupy different number of slots (you can define this mapping).

**3. Parking**

* Park a vehicle:
  + Assign the **nearest available slot** based on floor and slot number.
  + Generate a **ticket** containing:
    - Ticket ID
    - Vehicle number
    - Slot number
    - Time of entry

**4. Un-Parking**

* When a vehicle leaves:
  + Free the slot
  + Calculate the **parking fee** (e.g., fixed per hour based on vehicle type)
  + Print a **receipt** containing:
    - Ticket ID
    - Vehicle number
    - Total time parked
    - Amount charged

**5. Status Display**

* Show free and occupied slots for each floor
* Search for a vehicle by its number

**🧱 Expected Design & Constraints**

* Use **OOP design** principles (inheritance for Vehicle types, composition for ParkingLot → Floor → Slot).
* Use **services or managers** to handle business logic.
* Store everything **in-memory**, no database.
* Use **interfaces** where applicable.
* Follow **clean code** and **SOLID principles** as much as possible.

**⏱ Time Limit Suggestion**

* **Basic Working System**: 90–120 minutes
* **Clean + Extensible Design**: Additional 30–45 minutes

**✨ Optional Extensions (if time permits)**

* Add reservation feature
* Support re-parking vehicles
* Persist data using files (e.g., save/load parking lot state)