# Parking Lot Design

Requirement.

Pawan has recently bought a plot of land in a prime area, which he wants to convert into parking space and rent it out to people visiting nearby market for shopping. The parking lot has enough room to park 500 cars. Car parking slots numbered 1 to 500 have been marked, 1 being the nearest to the entry gate and 500 being the farthest. The plan is to have a parking ticket issuing machine at the entry. When the car driver entering the parking space presses the button on this machine, it will issue a ticket that will have the exact slot number of the ***nearest available car parking slot***. This operation should be supported for user role “PARKING\_MACHINE” only.

I, as the business owner of the parking lot, should also be able to access the analytics report for any specific month that would show me data like

* Total number of cars parked every day
* Total cars parked in a given month
* Average number of cars parked per day in a given month etc. You can assume more of such analytical data. This analytical data should be allowed for user with MANAGER role.

Design the REST API backend system for this using Java. Please apply SOLID design principles and appropriate design patterns where applicable.

**Expected submission:**

* **Class diagram clearly stating the associations (aggregation/composition)**
* **Design patterns applied**
* **Java code base for the API designed.**
* **DB design**

Please design keeping change in mind. It should be able to support any future changes in business plan that will be shared in Part B of the assignment.