EECS 481 Software Engineering
Project 2 Description

Problem

Detroit Metro Airport and Northwest Airlines are developing a new 74-gate terminal to match the increased needs for flights into and out of Detroit. Finding a parking spot is a non-trivial job in a large parking ramp full of vehicles. Detroit airport has decided to develop a parking management system for its large multi-entrance, multi-exit parking structure.

At an entrance, each vehicle is assigned an exact parking slot (via a number and a graphical depiction of the layout of the level). In addition to the entrance time, the parking ticket indicates the location of the assigned parking slot. In order to utilize the parking ramp efficiently, the parking structure has different areas for cars of different widths. A larger vehicle cannot park in a smaller slot, whereas a smaller vehicle can be assigned a larger slot if there is no appropriate slot available. Thus, the system should provide a method to determine the width of vehicle at the entrance. If no parking slot is available, then the system will inform the customer of the estimated waiting time. When an appropriate slot becomes available, the customer that arrives earliest is served first (A queue).

At an exit, the system shall charge the vehicles according to parking time and vehicle width, as well as return the assigned parking slot to the available parking slot pool for use. The system is integrated with the TRAFFIC group, which contains information regarding traffic in the vicinity of the air terminal.

Constraints

Issues to be considered:

- the same slot must not be assigned to multiple vehicles.
- any customer may lose the parking permit.
- a customer may park in another slot by mistake.
- a customer may find the assigned slot unavailable.
- integration with TRAFFIC group.