

## **1920aGroup3 – ParkingLot1**

### Requirements Document for Parking-Lot Project

#### Version 3.0 (PURPOSE):

The purpose of the Parking-Lot project is to allow vehicles to enter and exit the parking lot while supporting all the complex situations.

The parking-lot is considering every possible situation such as VIP vehicles entering the parking lot, full parking-lot, multiple vehicles want to enter the parking lot.

VIP vehicles enter through a specific gate (currently the left one) and they are gained priority to enter the parking lot. However, the entrance to the parking lot also depends on the pedestrian traffic lights.

#### Main Assumptions:

1. Vehicles of any type are allowed to enter the parking lot while there is space.
2. Eventually, a vehicle needs to exit the parking lot. Therefore, there is no situation where the parking lot is always full.
3. Eventually, every vehicle which wants to enter the parking lot will enter and not disappear.
4. Vehicles may enter the parking lot only when the gate is open.
5. Pedestrian don't wait to cross the cross-walk forever.
6. ~~Cars in the parking lot shouldn't collide.~~

### Main Guarantees:

1. We support FIFO principle for cars parking. (The meaning of FIFO in our project regards the gate – which means the first car that will reach the gate will be the first one to enter the parking lot)
2. If a vehicle wants to enter the parking lot and there is space, the entrance gate will open.
3. If a vehicle wants to leave the parking lot, the exit gate will open.
- ~~4. If a parking spot is under maintenance, it's color will turn into red which means that the spot isn't available for vehicles.~~
- ~~5. A parking spot can be under maintenance only if there isn't a car in it.~~
6. If Vip and regular vehicles want to enter – the priority will be given to the Vip vehicle, it also depends on the pedestrian lights
7. We allow several cars driving in the parking lot in the same time.
8. If a pedestrian is waiting to cross the cross-walk, he will eventually get a green light.
9. When pedestrian gets green lights, the relevant gates won't open. Since if they do the cars will run over the pedestrians.

Requirements:

ID	Priority (H/M/L)	Description
1	H	Parking cars mechanism
<del>1.1</del>	<del>H</del>	<del>Safe parking mechanism — no collision between cars</del>
1.2	H	Fair car parking mechanism (FIFO)
1.2.1	H	Every vehicle wishing to park will park eventually in the parking lot.
2	H	VIP cars parking mechanism
2.1	H	VIP cars get parking spot priority.
<del>3.</del>	<del>M</del>	<del>Closed parking spot situations</del>
4	H	GUI
<del>4.1</del>	<del>H</del>	<del>Design</del>
4.1.1	M	Parking lot design
<del>4.2</del>	<del>M</del>	<del>UX</del>
<del>4.2.1</del>	<del>M</del>	<del>Environment Control Panel</del>
<del>4.2.2</del>	<del>H</del>	<del>Action Screen</del>
4.3	H	Connection with the controller API
4.4	H	Clearing parking lot before playing
4.5	H	GUI System mechanism
4.6	H	GUI core
4.7	H	Spectra assumptions and guarantees
4.8	H	Motion mechanism
4.9	H	Controller's states and environment synchronization

Scenarios:

Scenario #	Nickname	Description
0	Ariel	One car enters and exits the parking lot.
1	BGU	More than one vehicle wants to enter the parking lot.
2	TAU	It's rush hour and the parking lot is full with regular cars.
3	IDC	It's rush hour and the parking lot is full with both regular and vip vehicles.
4	Afeka	Pedestrian cross both cross-walks while cars want to enter the parking lot.
5	Technion	Regular vehicle and Vip vehicle want to enter the parking lot at the same time. (Note: it also depends on the pedestrian lights)
6	Random	Some cars want to enter and leave the parking lot while pedestrians are crossing the cross-walks.