# Week 4 Assignment – Smart Parking System with Priority Access

## Smart Parking System with Priority Access

The **Smart Parking System** manages vehicle parking using a combination of stacks, queues, circular queues, and priority queues. The system supports the following features:

* Manage Vehicles in the parking bay
* Handling of vehicles in general waiting area
* Handling of vehicles with special priority (Emergency vehicles)
* Dynamic Pricing for parking fee based on the vehicle priority
* Record the time of vehicle entry and exit in the parking bay and calculate the price based on duration

1. **Vehicle Entry:**

Vehicles are assigned to the parking bay or waiting area based on availability.

High-priority vehicles (Emergency) bypass the waiting queue and are parked first.

1. **Vehicle Exit:**

Vehicles leave from the parking bay, and the next available vehicle (from priority queue or waiting queue) is parked

1. **Priority Access:**

Emergency and VIP vehicles have higher precedence over normal vehicles

1. **System Reports:**

Display the total number of cars parked, Status of the parking bay, waiting queue, and priority queue.

1. **Dynamic Pricing:**

Parking fee is calculated based on vehicle priority:

* Normal vehicles: $10/hour.
* Emergency vehicles: $25/hour.

1. **Parking Duration:**

Records the time each vehicle enters and exits the parking lot.

1. **Total Revenue:**

Keeps track of the cumulative revenue generated by the parking system.