# Data Structures and Algorithms SP19 Project

# Phase I

**Each Region has as data members:**

# List of Frozen orders (Queue ADT)

# List of VIP orders (Priority Queue ADT)

# List of Normal orders (List ADT)

# Two Lists for available and in-service Frozen Motorcycles (Queue ADT, List ADT)

# Two Lists for available and in-service VIP (Fast) Motorcycles (Queue ADT, List ADT)

# Two Lists for available and in-service Normal Motorcycles (Queue ADT, List ADT)

**The Restaurant has as data members:**

# Array of Regions (Expansion is easier)

# List of All Finished orders (Queue ADT)

# Queue ADT is quite reasonable for Frozen orders (no priority for assigning a frozen order except its AT. So, first in -> first out)

# We applied the same concept for idle motorcycles because, in real life, motorcycles need a rest period after delivering orders so it would not be damaged, while for the in-service motorcycles List ADT is suitable for tolerating the idea that it is not always the case that the first motorcycle to be in-service must be the first to come back. List ADT was our choice due to the frequent removal from the middle of the list.

# This is not the case in VIP orders because the priority is not just AT, others factors are taken into consideration according to our priority equation. That is why Priority Queue is the best ADT for this list.

# In Normal orders, we are applying the same concept as Frozen orders, but we could not use the same ADT due to the complexity of deletion from the middle applied on Normal orders in cancellation event.

# In Finished orders, we are keeping them all in Queue in order to meet the requirement of Phase II by printing them in chronological order.

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