Order lists

VIP orders:

They were chosen to be in a priority queue so that it can be easily arranged by the priority equation.

The advantages of this choice are that we can insert in O(log(n)) we can also extract the max priority in O(1).

Frozen orders:

They were chosen to be in a normal queue so that we can get the order to serve which is always at the beginning of the queue.

The advantages of this choice are that we can insert in O(1) we can also delete the order we want(always at the beginning) in O(1).

Normal orders:

They were chosen to be in a List so that we can get the first element to be served, we can also search the list for an element to delete.

The advantages of this choice are that we can insert in O(1) if we have tail in the linked list implementation we can also delete in O(1) from the beginning we can search the list in O(n).

Motorcycles

All the different types of motorcycles were put in priority queues because it should be sorted by its speed and we will make the bonus of different speeds.

Each type of motorcycle has 2 priority queues one for the idle motors and the other for the serving motorcycles because each one has different priority the first priority is the speed the second is when will it arrive at the restaurant again.

The advantages of this choice are that we can insert in O(log(n)) we can also extract the max priority in O(1).

We have two additional lists, one for the events queue which are stored in a queue as they are ordered by the arrival time and they are FIFO, other list is a priority queue used for the orders being served so we can order them by with priority of the finish time once the finish time is reached for an order it can be written in the output file then deleted insert in O(log(n)) delete max priority in O(1).