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Elevator System Design

We firstly give a simple assumption and then modify based on that.

Assumption:

1 Each cart can lift up/down with constant speed(improv: each carts can accelerate/decelerate the speed to steady speed within one floor distance)

2 Each carts will check if there is some people waiting or going to the next floor whenever it reached some floor and determine whether to stop at next floor or not.(FCFS)

3 When carts stop, people go in/out immediately and set their floors on the panel(improv: the speed should be relevant with number of person)

4 When there is at least one cart idle and some people wait, scheduler should pick the nearest one to go to pick them.

5 When there is no more tasks for each carts, they remain staying on their current floor.

Let F to be the number of floors, E to be the number of Elvators

Shared data:

vector<int> cartLocation(F)//indicate the location distribution of current state

vector<int> waitPeoplePerFloor(F)

Elevator:

Int peopleTotal //total number of hold people of this elevator

Vector<int> goToCountEachFloor(F) //to convince the calculation of peopleTotal

Int targFloor //furthest floor to go for current direction

Bool isUp

Every time the cart location changes(or the people move in/out), we demonstrate the state.