AVAMAE Interview Problem

The Problem

You are the chief engineer of AVAMAE Lift Solutions Ltd, a company that has recently won the contract for building a new lift for an office block called the MedicineChest. They would like one lift installed, and have given you the following helpful bits of information:

- There are ten floors in the block
- The people working in the offices are distributed evenly across all floors
- People start arriving for work at around 8 AM, and everyone has gone home by 6 PM
- The lift needs only one external call button on each floor, instead of the usual up/down buttons. Inside the lift should be a set of buttons to send the lift to a desired floor, as with any other lift
- The lift should have a maximum capacity of eight people at any given time

The MedicineChest have high expectations of their new lift: given the above information, can you design an efficient algorithm for the lifts operation? What factors do you need to consider? Think about the lifts behaviour when empty, when it's called from a floor, and when people send it to a floor. General thoughts and pseudocode are all that are necessary - as chief engineer, you have juniors to do the actual coding!

Extensions

Off the back of your successful design at the MedicineChest, the Ritz Hotel would you like you to design their new lift system. They are a much bigger client, and some new problems need addressing:

- The hotel has 30 floors, and people are no longer distributed evenly across all of them. The ground and 15th floors are much more popular, for example.
- The hotel would like four lifts installed instead of one.

How would your original algorithm work in this new situation? Would anything have to be changed?

AVAMAE Lift Solutions Ltd want to start selling lifts with two external buttons: one for going up and one for going down, to indicate which direction you want to travel. Would this change your lift algorithm?