LLD of Elevator System

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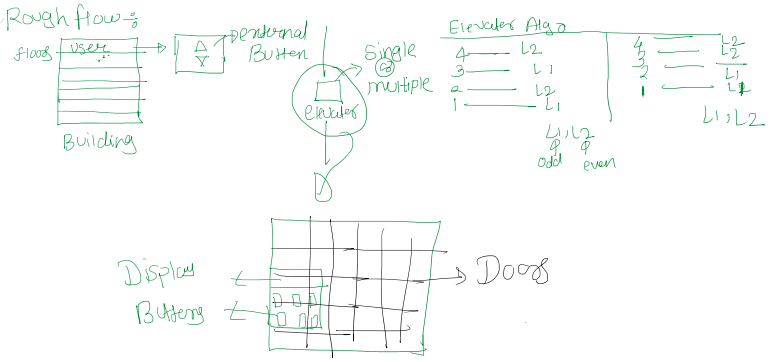
Rough flow :-

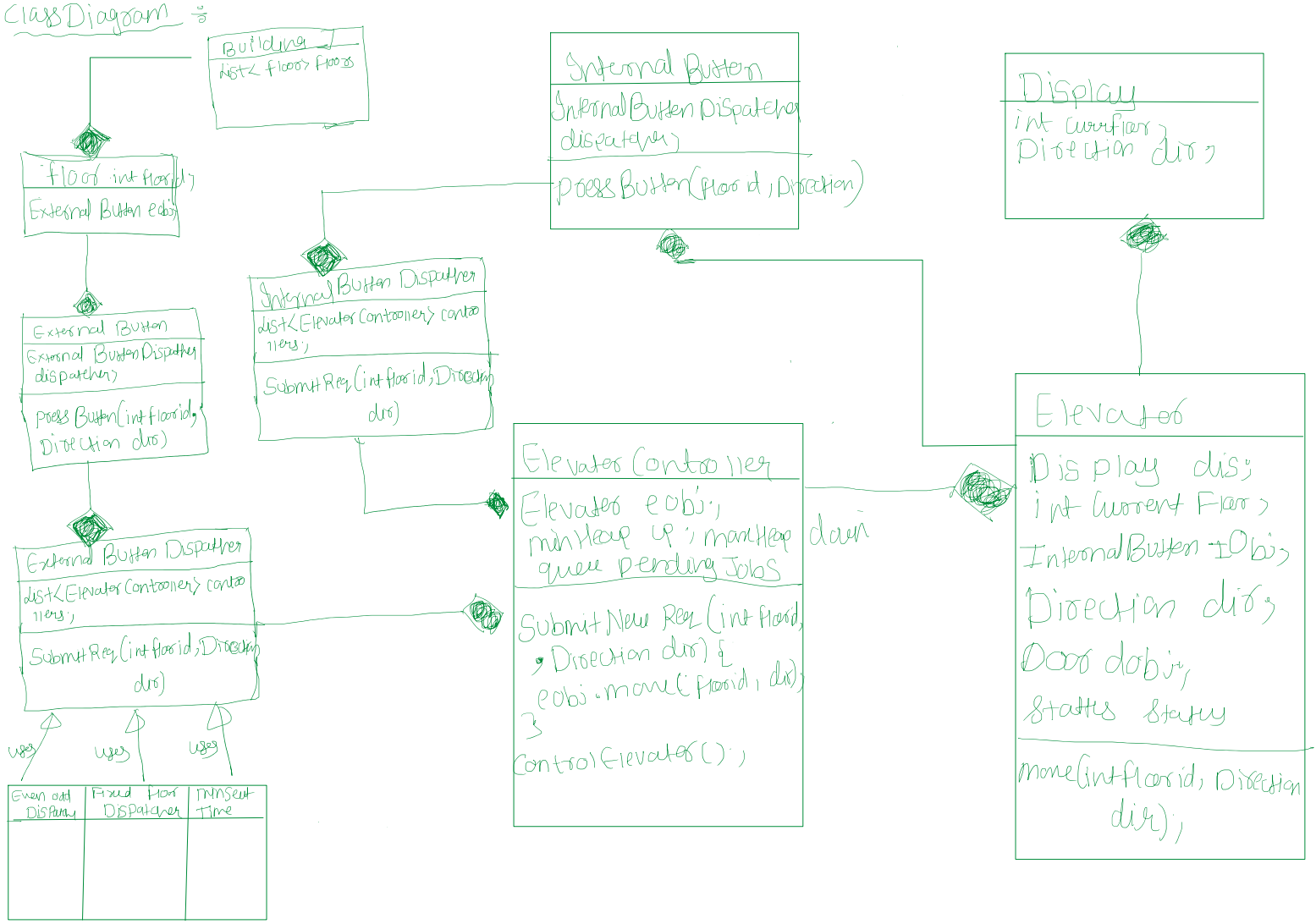


Request Classification (with Interviewer)	Objects
(1) Design for how many elevators? → 'n' (2) diff Dispatch Algo - Even/odd - fixed floors - min Seat time	(1) Building (2) floor (3) External Buttons (4) Elevator (5) Display (6) Internal Buttons (7) Door

enum State {
working,
Idle.
};
enum Direction {
Up
Down
};

(4) Elevator →
- Display
- current floor
- Direction
- State
- Internal Button
- Doors

Class Diagram :-



Algorithm of Elevator Controller -:
There can be two approach to implement it one can be Scan Algo and other is Look Algo

Scan Algorithm -:
1. we entertain all the requests which are in same direction in which elevator is moving and floor on which request is made >current_Floor of lift.
2. Once we have reached at last floor we change the direction of elevator and entertain all the requests where request made < current_floor of lift.
3. In such way we implement Elevator logic. One issue with this algorithm is that is current floor on which lift is present and there is no further more request on the floor next to it then we waste the lift iteration to got to either of the end. As a result we move to improvised algorithm that is Look.

Look Algorithm -:
1. The only difference is logic of changing direction . For elevator being on the current floor we check whether there is request on it's next floor if not then we change the direction of elevator form current floor only as result avoiding wastage of unnecessary elevator movement.

To Implement this Algorithm we make use of priority_queue and queue.
1. minHeap to store the requests whose direction is upwards direction and requestMade > currentFloorNumber.
2. maxHeap to store the requests whose direction is downward direction and requestMade < currentFLoorNumber.
3. Queue Pending_Jobs to store all the request where -:
   a. requestMade < currentFloorNumber when elevator was moving in upward Direction.
   b. requestMade > currentFLoorNumber when elevator was moving in downward Direction.