**Lab Assignment 1**

Report:

Terms:

Above_up : The user of the lift is calling the lift up to ascend on a floor which is above the current floor on which the user is present.( user is out of the lift )

Above_down : The user of the lift is calling the lift up to descend on a floor which is below the current floor on which the user is present ( user is out of the lift )

Below_up : The user of the lift is calling the lift down to ascend on a floor which is above the current floor on which the user is present.( user is out of the lift )

Below_down : The user of the lift is calling the lift down to descend on a floor which is below the current floor on which the user is present.( user is out of the lift )

In_up : The user is inside the lift and has pressed a button to reach at a floor which is above the current floor on which he/she is present.

In_down : The user is inside the lift and has pressed a button to reach at a floor which is below the current floor on which he/she is present.

ASSUMPTIONS::

1. When the lift is at the ground floor then the value of ascending is assumed to be 1 and descending to be 0 because it cannot go down.

2. When the lift is at the topmost floor which IS THE 3RD one then the value of descending is 1 and ascending to be 0 because it is the extremity.

3. If the lift is going in a particular direction and haven't reached its extremity but no command to reach the extremity in that direction is given then it will reverse its direction; i.e. if it is ascending and reached floor 2 but no command is given to go on the third floor then by default value of descending will change to 1 and ascending to 0.

WORKING ::

Go_up= (F0 AND Ascending) AND (Above_up OR Above_down OR In_up) OR (F1 AND Ascending) AND (Above_up OR Above_down OR In_up) OR (F2 AND Ascending) AND (Above_up OR Above_down OR In_up) OR (F3 AND Ascending) AND (Above_up OR Above_down OR In_up)

Go_down = (F0 AND descending) AND (Below_up OR In_down OR Below_down) OR (F1 AND descending) AND (Below_up OR In_down OR Below_down) OR (F2 AND descending) AND (Below_up OR In_down OR Below_down) OR (F3 AND descending) AND (Below_up OR In_down OR Below_down)

For Ground Floor:

Above_up = UP1 OR UP2
Above_down = DN1 OR DN2 OR DN3
In_up = B1 OR B2 OR B3

For 1st floor:
Above_up = UP2
Above_down = DN2 OR DN3
In_up = B2 OR B3
Below_up = UP0
In_down = B0

For 2nd floor:
Above_down = DN3
In_up = B3
Below_up = UP1 OR UP0
In_down = B0 OR B1
Below_down = DN1

For 3rd Floor:

Below_up = UP0 OR UP1 OR UP2
In_down = B0 OR B1 OR B2
Below_down = B1 OR B2

Test Cases :
UP0=1
Ascending = 1
DN3 = 1
F1 = 1
Rest all are 0
Output: Go_up

F2 = 1
DN1 = 1
UP0=1
B3 = 1
Descending = 1
Rest all are 0
Output = Go_down

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