**Freight Elevator Challenge**

**Mission:** You are an employee at the Fischertechnik Factory. Your job requires you to deliver parts to various floors of the factory. Since a lifetime of climbing up and down a staircase doesn’t sound attractive to you, you seek an alternative. Luckily, you have found a solution to this problem, a freight elevator. Before a full size elevator can be built, you must build a scale model. This model must be fully functional

 **Notes to the Mechanical Engineer**: The Fischertechnik Factory has 3 floors, this means your elevator must have three stops: ground level, floor one, and floor two. This scale model must meet the following requirements:

1) The ground floor should be no more than one half inch from the base.

2) The first floor must be exactly 3 inches above the base.

3) The second floor must be exactly three inches above the base.

4) The elevator floor must be large enough to fit two lights arranged side by side.

 5) A section of each floor must be built for the elevator to stop at this section must also be large enough to fit two lights arranged side by side.

**Notes to the Electrical Engineer:** While the mechanical engineer is busy building the elevator, you should be busy designing the wiring for this elevator.

[ ]You must install a sensor at every floor to detect the approaching elevator.

[ ]These sensors should be installed in such a manner that when one is activated, the elevator will be level with the corresponding floor.

[ ]Additional sensors must be installed on each floor for people to call the elevators.

[ ]All sensors must be connected to inputs E1 through E8 using wires.

[ ] You must also connect wires to any motors that were installed by the mechanical engineer.

**Notes to the Computer Engineer**: While the Mechanical and electrical engineers are busy working, you have the job of creating a program that will control this elevator. Be extremely cautious with your design, you don’t want to trap people in the elevator. The program must meet the following requirements:

1) When a button is pressed on any one of the floors, the elevator should raise or lower to that floor level. This is unless the elevator is already at that floor.

2) Using input from installed sensors you must program the elevator to stop at the selected floor.

3) The elevator must be ready for use at all times, this means your program must be repeatable