Indian Institute of Technology

Dept. of Electrical Engineering

EE-705: VLSI Design lab.

Assignment 3

Submission Deadline: Feb 14 (Sunday) 11:55 pm

Description of design:

Design a lift controller, which controls a lift that services passengers in a 6-floor building.

Each floor has two *hall call* buttons (except the ground and top floors where they have only one), an up button to request transport to a higher floor and a down button to request transport to a lower floor. These buttons illuminate when pressed. The illumination is cancelled when lift visits the floor and is either moving in the desired direction or has no outstanding requests. In the latter case, if both floor buttons are pressed, only one should be cancelled

Lift has a set of buttons (*car call* button), one for each floor. These illuminate when pressed and cause the lift to visit the corresponding floor. The illumination is cancelled when the corresponding floor is visited by the lift.

When lift has no requests to service, it should remain at its final destination with its doors closed and await further requests.

The lift control system has a set of sensors to detect the floor it is visiting which is communicating lift asynchronously.

The controller should satisfy the following conditions:

- A upward traveling lift should not change its direction at any floor when it has passengers wishing to go to higher floor, and vice-versa for downward traveling lift.
- Any request (*hall call*, and *car call*) should eventually be serviced

Write a *synthesizable behavioural description* of the above circuit in VHDL.