Lab Assignment 1

Title: Direction Logic for Lift Controller

Objective:

1. To learn how to design simple combinational circuits
2. To familiarize with Schematic entry and simulation using Xilinx tools

Description:

Design a combinational circuit that decides the direction in which a lift for a 4 floor building is to move in response to various requests from passengers.

Inputs to the circuit are as follows.

Input Name	Meaning
UP0, UP1, UP2	Requests from floors to go up
DN1, DN2, DN3	Requests from floors to go down
B0, B1, B2, B3	Requests from inside the lift
F0, F1, F2, F3	Floor on which the lift is (one of these is '1', others are '0')
Ascending	Lift is in ascending mode
Descending	Lift is in descending mode

Outputs from the circuit are as follows.

Output Name	Meaning
Go_dn	Lift should go down
Go_up	Lift should go up

The circuit should decide the direction of lift movement using the following criteria.

1. The lift should continue in same direction as far as possible.
2. Passengers who want to go in upward direction should be given preference over those who want to go in downward direction.

Do extensive simulation to ensure that your circuit works correctly in all conditions.