1. *What are the names of the 74xx series logic gates that you should use to do the above problem in real-life situation?*
   A: 74LS08, 74LS32, 74LS16

2. *Calculate the delay performance (time delay between change of any input which leads to change of the output) of the two circuits designed above. Assume that you have used 74Fxx or 74LSxx series gates to implement the circuit. Use respective data sheets for the required chips.*
   A: If 74LS08 = 18ns, 74LS32 = 15ns, 74LS16 = 20ns,
      Circuit 1 = 2 * 74LS32 + 2 * 74LS08 => 36 + 30 = 66ns
      Circuit 2 = 2 * 74LS08 + 2 * 74LS32 + 1 * 74LS16 = 66ns + 20ns = 86ns

3. *Which data sheet parameter(s) did you use to calculate the delay performance and why?*
   A: I used the link in the lab manual http://category.alldatasheet.com/index.jsp?semiconductor=Logic

4. *Identify the following design parameters –*
   a. *Number of switches that will be required.*
      A: Seven switches, one for each car.

   b. *Number of the bits/wires required in the data bus.*
      A: Each car is encoded with a three bit truth table.

	Bit A	Bit B	Bit C
Front Car	1	1	1
Car 1	1	0	0
Car 2	0	1	0
Car 3	0	0	1
Car 4	1	1	0
Car 5	1	0	1
Car 6	0	1	1

   c. *Size of the encoder and decoder.*
      A: The encoder is three OR gates to convert the car input to bits, then seven AND gates to distinguish cars and get correct bit input. The decoder translates the car data and outputs it onto the LED display. The decoder is seven OR gates.

5. *Submit your design with a brief text explanation/description on how it will actually work. You must explain the working of your system to get full credit.*
   A: When a passenger in a car pushes the button, it will show the number of the car on the 7 segment LED in the driver's dashboard. This is accomplished with seven OR gates that will filter input to the correct output on the display.
Note: It does not handle more than one switch at a time.