FSM design

You need to be alert to (usually minor) changes that may be made to the assignment statement or to the guidelines after the assignment is first put up. Refresh this frame and re-read the assignment carefully before you make your final submission.

Part-1: Manchester encoding

Manchester code is a coding scheme used to represent a bit in a data stream. A *0* is encoded as a *0-1* transition while a *1* is encoded as a *1-0* transition. The advantage of Manchester encoding is that every bit has an signal transition and so the transmitted bit stream has the clock embedded in it which may be recovered to determine the bit boundaries. Inputs:

- D: the data line
- V: data on the data line is valid

If the the data is not valid the output is zero, otherwise, the output is the Manchester encoding of the input. Design and implement the FSM to carryout Manchester encoding.

Part-2: Traffic light controller (TLC)

A traffic light controller for horizontal and vertial traffic is to be designed with provision of timeout. Timeout is activated after a pass signal is given. If there's no traffic after a timeout, then timeout is not active. The pass signal does't change when timeout is active. If only horizontal or vertical traffic is present when timeout is inactive, that should be passed and timeout activated. If there's no traffic, the current pass signal is to be maintained. If both traffic are present when timeout is inactive, the one that was not favoured last time should be favoured this time and timeout should be activated -- favouring is applicable only when both are present together when there timeout is inactive.
Inputs:

- H: presence of horizontal traffic
- V: presence of vertical traffic
- T: timeout

Outputs:

- PH: pass horizontal traffic blocking vertical traffic
- PV: pass vertical traffic blocking horizontal traffic
- ST: activate timer

Design and implement the FSM for TLC.

Marking guidelines

Assignment marking is to be done only **after** the deadline expires, as submissions gets blocked after the assignment is marked. Enter the breakup of marks while marking.

Manchester encoding	
Next state function	**5**
Output function	**5**
Overall design and documentation	**5**
TLC	
Next state function	**10**
Output function	**10**
Overall design and documentation	**5**
Total Marks	***40***

Assignment submission

A PDF report, as appropriate, should be submitted. Submit all your files together.

Use electronic submission via the WBCM link

You should keep submitting your incomplete assignment from time to time after making some progress, as you can submit any number of times before the deadline expires. **You should submit all your files together**.

Warning

Cases of copying will be dealt with seriously and severely, with recommendation to the Dean to de-register the student from the course.