CS 342000 | CS343000  
Instructor: Professor Izidor Gertner

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Azwad Shameem, 3/13/2022

Graphical user interface

Description automatically generated

**Lab 4A**

Graphical user interface

Description automatically generatedThe screenshot above follows Lab 4A’s waveform guides and shows that in this waveform Q is in an undefined state which is shown in a red line.

This time, input E is 1 always which makes output Q follows the value of input D, which is also shown in the simulation for Lab 4A.

Graphical user interface

Description automatically generatedGraphical user interface

Description automatically generatedAt the moment when input E first moves from 0 to 1, output Q leaves the undefined state and starts mirroring D. This is the same waveform as the third simulation in Lab 4A.

Output Q drops to 0 and stays there as long as CLRN is 0. This is the third setup in LAB 4A and it still follows the waveform showed.

Graphical user interface, application

Description automatically generatedPart 2

Simulation of the Master-Slave D-FlipFlop shows the same wave patterns as the simulation lab.

Graphical user interface, application

Description automatically generatedPart 3

Forced CLRN and PRN to 1 and Edge as a clock oscillating twice the speed of D. This resulted in the same waveform as the lab simulation.

Graphical user interface

Description automatically generated**Lab 4B**

Graphical user interface

Description automatically generatedThe waveform follows the instructions of the signals as shows the same waveform as the simulation.

Waveform after adding after adding new data for 145 ps to 155 ps.

Graphical user interface, text, application

Description automatically generated**Memory Lab**

LPM SRAM VHDL Code in ModelSim compiled successfully