CS342/CS343 Spring 2022   
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Graphical user interface

Description automatically generatedLab Simulation

Figure 1: majority simulation follows tutorial and simulates

Graphical user interface, application

Description automatically generated

Figure 2: Simulation of mux 2:1 circuit

Table, calendar

Description automatically generated

Figure 3: Truth Table for the mux 2:1.

This Truth table will be used for validation of the simulation results.

There are 8 different cases for possible combinations of inputs X, A and B and these cases will be evaluated on their correctness with the truth table for the mux 2:1.

Each of the 8 cases are in increments of 100 ns in the simulation, which is shown per vertical bar in the simulation.

1. In case one from 0 to 100 ns, the simulation is correct because the inputs and outputs reflects the truth table. The truth table for the mux 2:1 shows inputs X = 0, A = 0, B = 0 and output Y = 0, which is also shows in the simulations proving that the first case is right.
2. In case four from 100 to 200 ns, the simulation continues to be correct because the inputs and outputs reflects the truth table. The truth table for the mux 2:1 shows inputs X = 0, A = 0, B = 1 and output Y = 0 which is also shows on the simulations proving it is correct.
3. In case four from 200 to 300 ns, the simulation is still correct because the inputs and outputs reflects the truth table. The truth table for the mux 2:1 shows inputs X = 0, A = 1, B = 0 and output Y = 1 which is also reflected in the simulation where Y goes from 0 to 1, proving the simulation is correct.
4. In case four from 300 to 400 ns, the simulation is still correct because the inputs and outputs reflects the truth table. The truth table for the mux 2:1 shows inputs X = 0, A = 1, B = 1 and output Y = 1 which is also shows on the simulations proving it is correct.
5. In case five, from 400 to 500 ns, the simulation is still correct because the input and outputs continue to show the same results as the truth table. The mux 2:1 truth table shows inputs X = 1, A = 0, B = 0 and output Y = 0, which again is reflected in the simulation where Y goes from 1 to 0.
6. In case five, from 500 to 600 ns, the simulation continues to be correct because the input and outputs continue to show the same results as the truth table. The mux 2:1 truth table shows inputs X = 1, A = 0, B = 1 and output Y = 1, which again is reflected in the simulation where Y goes from 0 to 1.
7. In case six, from 600 to 700 ns, the simulation is still correct because the input and outputs continue to show the same results as the truth table. The mux 2:1 truth table shows inputs X = 1, A = 1, B = 0 and output Y = 0, which sees Y in the simulation go from 1 to 0.
8. Lastly, in case seven from 700 to 800 ns, the simulation is correct because the inputs, outputs still reflects the truth table. The mux 2:1 truth table shows X = 1,

A = 1, B = 1 and output Y = 1, which in the simulation shows Y going from 0 to 1 proving that the simulation is correct.