**Task 1**

Write a Verilog code that computes a Boolean function $y = \bar{a}\bar{b}\bar{c} + a\bar{b}\bar{c} + a\bar{b}c$ with delays. See the lecture 4 (Timing) for details. Save your code into a file with the name sillydelay.v in the folder iverilog\samples
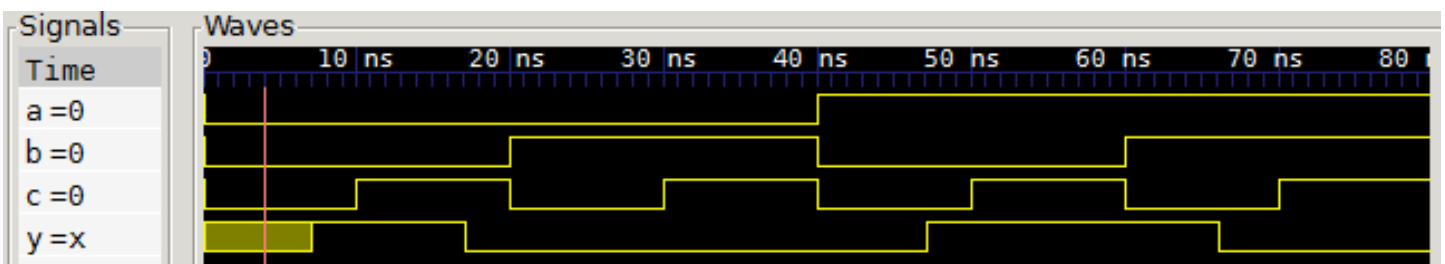
Add a testbench to the same file. The testbench should be almost the same as for the file silly.v but it should store your simulation in the file sillydelay.vcd Your code should not overwrite the file silly.vcd that you had created in the Lab 1.

Open both waveforms silly.vcd and sillydelay.vcd in GTKwave. They should look like this:

silly.vcd:
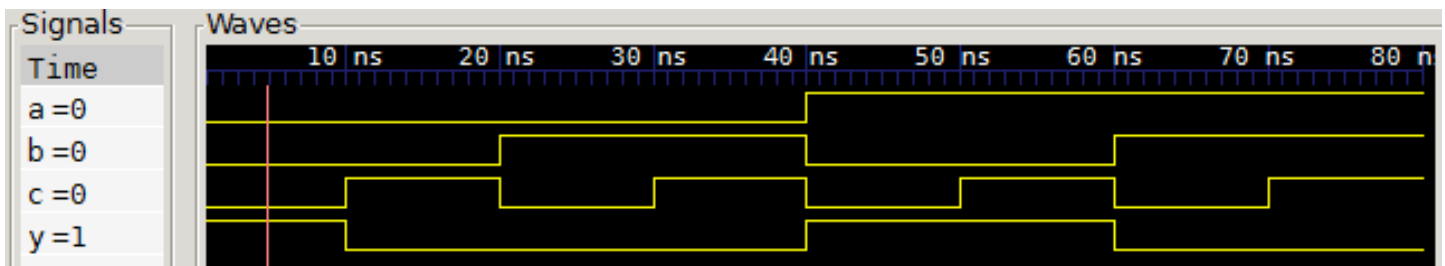
sillydelay.vcd:

Task 2

Perform a gate-level modelling of a 3-input XOR gate. See the lecture 4 (Timing) for details. Save your code into a file with the name xor3.v in the folder iverilog\samples
Supply all kinds of input to your gate so that it produces the following output:

```
C:\iverilog\samples>vvp xor3
a=0 b=0 c=0 y=0
a=0 b=0 c=1 y=1
a=0 b=1 c=0 y=1
a=0 b=1 c=1 y=0
a=1 b=0 c=0 y=1
a=1 b=0 c=1 y=0
a=1 b=1 c=0 y=0
a=1 b=1 c=1 y=1
```
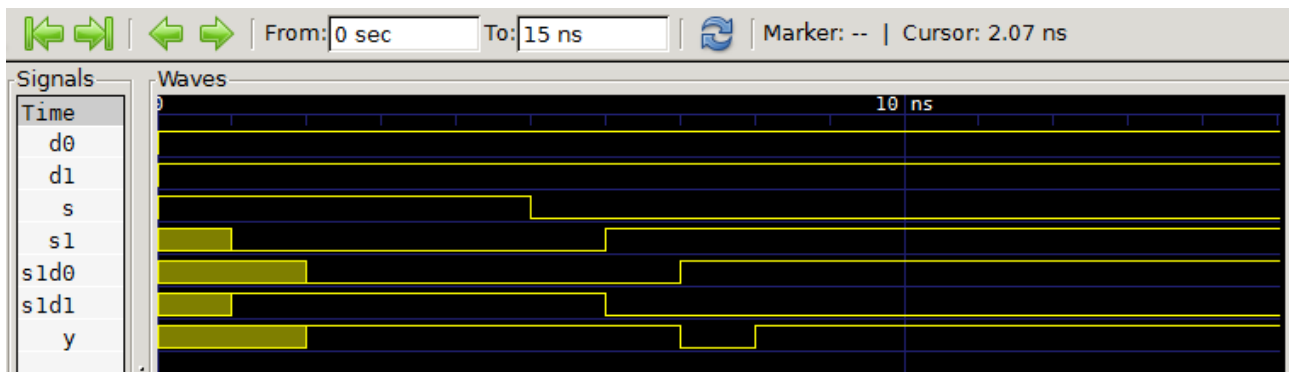
Task 3

Write a **structural gate-level model** of the 2-1 multiplexer discussed in the beginning of the lecture 4 (Timing). If you write a behavioral model, it will not be accepted. Save your code into a file with

the name mux2.v in the folder iverilog\samples
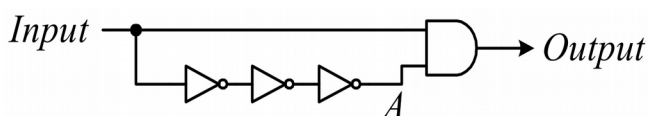The code should describe the following circuit:
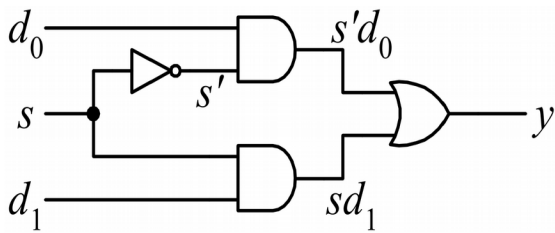
Add a testbench to the same file. The testbench should save the waveform into the file mux2.vcd
Your task is to reproduce the glitch that was discussed in the lecture 5 (Timing).

This is the waveform that you should get:

Task 4

Write a **structural gate-level model** of the one-shot circuit discussed in the lecture 4 (Timing). If you write a behavioral model, it will not be accepted. Save your code into a file with the name oneshot.v in the folder iverilog\samples
The code should describe the following circuit:

Add a testbench to the same file. The testbench should save the waveform into the file oneshot.vcd
Your task is to reproduce the glitch that was discussed in the lecture 4 (Timing).

This is the waveform that you should get: