



Lab session #08

November 21, 2024

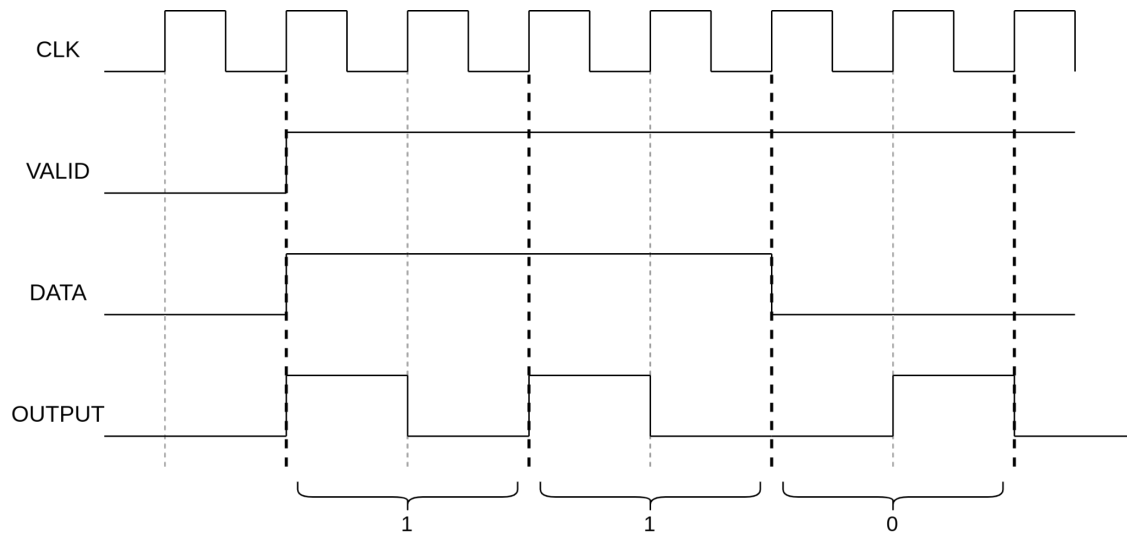
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FSM-based Manchester encoder



- ❑ Design a circuit capable of encoding an input data stream according to the Manchester convention according to the following specifications:
 - ❑ G.E. Thomas convention
 - ❑ when asserted, the signal *valid* tells that the data on the input serial line *data* can be encoded. Otherwise, the output should be binded to '0'.
 - ❑ Synchronous reset
- ❑ On your testbench make sure to cover the relevant cases. Run a simulation by feeding the input vector from a file.

FSM-based pulse generator

- ❑ Design a pulse generator using a HLSM and FSM-D approach. It should work in this way:
- ❑ Input signals *go* and *stop* control the behavior: when asserted together the configuration phase (3 clock cycles) begins. After the configuration phase has ended, an assertion of the *go* alone signals the begin of the pulse generation on the *pulse* line, which will last for the configured nr. of clock cycles or until *stop* is asserted.
- ❑ Write a testbench to test the architecture in relevant cases.

