1.2.1. Demultiplexer

The operation of the demultiplexer is the opposite of the multiplexer's operation. It has a single input and the address buts define the output where to propagate (Fig. 5., Fig. 6.). The other outputs are in inactive state. Its most important application field is computer science.

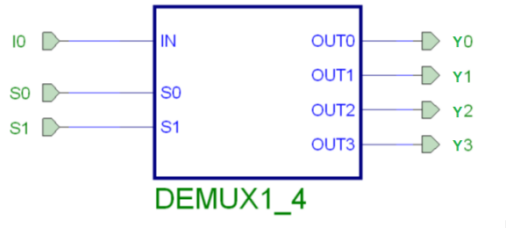

Figure 5. – 4 bit multiplexer

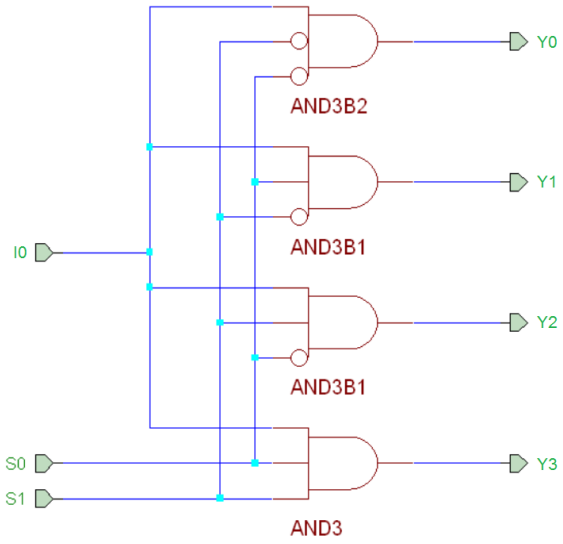

Figure 6. – Schematic of 4 bit multiplexer

1.3. Creation of the schematic during lab

Design the schematic for an 8 bit multiplexer (Fig. 7.). Give **mplxtop.sch** as the name of the top module in your project. Create the multiplexer in a separate macro (by using AND and OR gates), to do this create a new schematic (mplx.sch). Connect the data inputs of the multiplexer to the switches (SW0-SW7) on the Digilent Basys board, the address bits are controlled by a 3 bit counter. The counter can be found among the symbols by the name of CB4CE, which shall be connected to the clock signal (clk) via the BNT0 push button. The local values are corresponding to the local values of switches and counter values. Execute the simulation of the schematic.

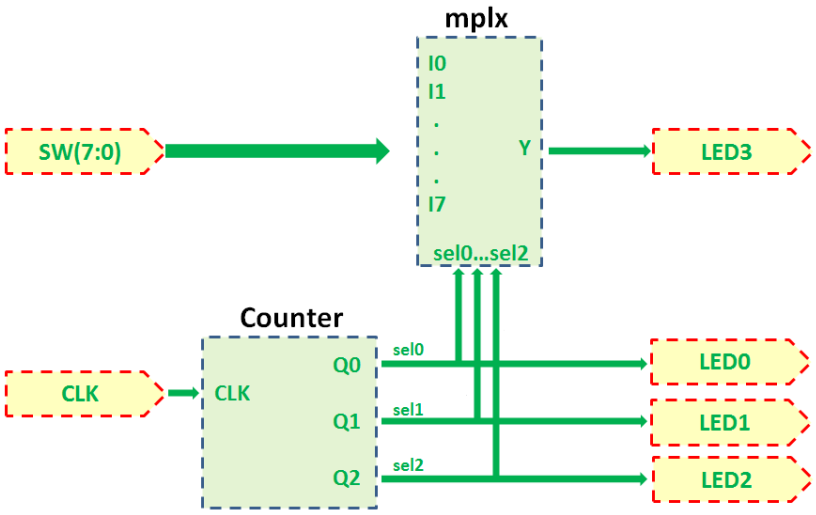

Figure 7. – Block scheme of the multiplexer

If the operation is satisfactory, then implement it on the Basys board. Test its operation with the help of switches and push buttons