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Lab 5

Theory

In this lab we went over how d flip flops worked and in combination created a shift register that takes in a bit and “shifts” it to the rest. A register is used for both storing data and transferring it without error. In a shift register case, it can store data then be able to shift the data to the left or right. For serial inputs, the input is inputted in then uses a clock to start shifting everything for the output. For parallel input, it uses the presets and resets to manually set the register to a new set of data regardless of clock cycles. In this lab, we also used a debouncer to simulate a clock. We used a debouncer instead of the switches due to the inaccuracy of the switches. The switches have a high chance of contacting many times when flipped. This causes many positive edge triggers to occur which will give the wrong result then switch back, causing multiple clock cycles. To remedy this we use a debouncer which is like a SR latch which allows us to have high and low voltages without anything else. For the chips SN5474 and SN7474, they both are Dual D-Type Positive-Edge-Triggered Flip-Flops with Preset and Clear options. The only difference is that one is civilian and one is military grade so there are different temperature resistances. On Top of that there are different pinouts for both.

Deliverables

Last 2 PS number (Decimal): 6 4
Last 2 PS number (Binary): 0110 0100

Step	**Input**	**Registers**	**Decimal**
0	N/A	0000 0000	0
1	0	0000 0000	0
2	0	0000 0000	0
3	1	1000 0000	128
4	0	0100 0000	64
5	0	0010 0000	32
6	1	1001 0000	144

7	1	1100 1000	200
8	0	0110 0100	100

Discussion

In this lab we learned about how registers worked and about shifting them. We also learned more in depth on use cases of flip flops, in this lab D flip flops. Shift registers, but overall registers overall seem really cool as it's a form of data storage. Overall this lab was pretty fun and simple.