Lab 06 - Sequential Circuits

The purpose of this lab is to reinforce and practice the design process of the last lab. We want to build an FSM machine that has more than 4 states which will thus require more than 2 flip flops. We learn about the more capable flip flop - the D flip flop. The D flip flop has only one control input to store in its one-bit memory. Though the disadvantage of the lab is that we lose the ability to toggle the value. This lab also broadens our knowledge of logisim.
We build an FSM which takes a value X and changes from 0-4 3 bit binary dits and then reverts back to zero. We further made a truth table to translate the FSM states to flip flop and showing next-state calculations. We further build K-Maps to get a simple boolean expression. These Expressions are then made into the NextState sub-circuit in logisim and then connected to three D flip flops.
At the end of this lab, we're able to make FSM's and truth tables to translate FSM states to flip flop states and then further to next-state calculations. We're also able to make the truth table outputs into K-Maps to get simple boolean expressions and use them to design out circuits in logisim. A better understanding of working with logisim is also achieved.