Computer Systems Week 5 Lab

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Assignment Planning

Component Requirements

For this assignment, I believe that the following components will be required for the following stages:

Stage one	This should only require a JK flip flop with connections that allow for turning on the circuit and toggling it
Stage two	For this stage a simple stack circuit should suffice for both storing and displaying the state of the volume
Stage three	Two bi-directional mod 10 counters should allow for the storing of values to display on two hex displays
Stage four	This might be tough to implement, but using and gates to control whether we allow signal through to the outputs may be the best solution. This said, it might not be the best or most elegant solution.
Stage five	In theory, this should be fairly trivial. Using simple registers for each of the individual circuits should allow for us to store the state of all the components. When restoring, there will need to be some logic that allows for the instant setting of states, which may be difficult depending on how previous stages have been completed

As well as the above components, I feel that a simple latch for buttons would be helpful for some circuits where holding a button is not a reasonable way to give inputs to a circuit.

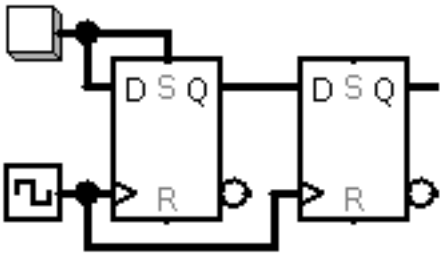

Figure 1: A simple latch for a button to remember the state for the next clock cycle

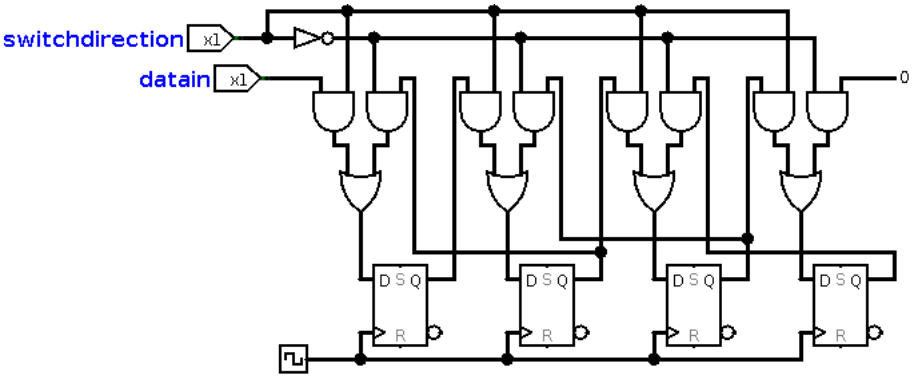

Figure 2: A stack that can be used for the volume control circuit

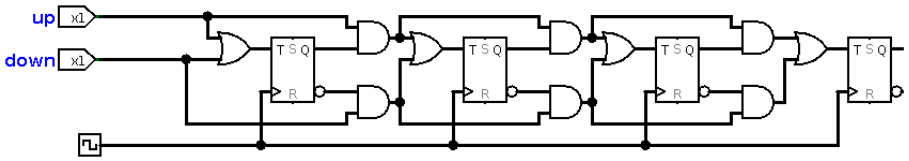

Figure 3: A bi-directional counter that can form the basis of our track counter system