CS 2110 Timed Lab 1

Due Date and Time

Day: Monday, February 17th

Time: Before the end of lab (4:25pm/5:55pm)

Policy

Submission

TURN IN THIS ASSIGNMENT ELECTRONICALLY USING T-SQUARE. SUBMISSIONS WHICH ARE LATE WILL NOT BE ACCEPTED. EMAIL SUBMISSIONS WILL NOT BE ACCEPTED UNDER ANY CIRCUMSTANCES! IN ADDITION IF YOU FORGET TO HIT THE SUBMIT BUTTON YOU WILL GET A ZERO.

Questions

If you are unsure of what questions mean, the TA's will clarify them to the best of their ability. We will not be able to answer any questions about how to reach a solution to the timed lab lab questions. You should know how by now!

What's Allowed

- The assignment files
- Your Previous homework submission
- Your mind
- Blank paper for scratch work

What's Not Allowed

- The Internet (except the T-Square Assignment page to submit)
- Any resource on T-Square that is not given in the assignment.
- Notes on paper or saved on your computer.
- Dropbox (If your harddrive crashes we will let you retake it).
- Textbook
- Email
- IM
- Contact in any form with any other person besides TAs
- If you have any questions on what you may not use then assume you can't use it and ask a TA.

Other Restrictions

1. You may not leave the classroom until we have verified that you have submitted the lab. If you leave the classroom without submitting you will receive a zero.
2. **YOU MUST SUBMIT BY THE END OF YOUR LAB PERIOD**. Bear in mind that the clock on your computer may be a few minutes slow. You are supposed to have a full class period to work, and we are letting you use the 10 minutes between classes to make sure you have submitted your work. **WE WILL NOT ACCEPT LATE SUBMISSIONS**, be they 1 second or 1 hour late.
3. The timed lab has been configured to accept one submission. If you accidentally submit or submit the wrong version flag one of the TAs and we will reopen submission for you.

Violations

Failure to follow these rules will be in violation of the Georgia Tech Honor Code. **AND YOU WILL RECIEVE A ZERO** and you will be reported to Bill and the Office of Student Integrity.

We take cheating and using of unauthorized resources **VERY SERIOUSLY** and you will be in serious trouble if you are caught.

Remember

1. We allow you to use your homework assignment.
2. Please don’t get stressed out during a timed lab. You have plenty of time however use your time effectively
3. Remember don’t get stressed partial credit will be given for things you have done correctly. Do the best you can!
4. If you don’t know something at least **TRY** do not just walk out of the lab or submit an empty file Partial credit!
5. Remember what you can and can’t use if you don’t know then don’t use it and ask a TA if you can use it. If we catch you with unauthorized resources we will give you a zero, so better to be safe than sorry.

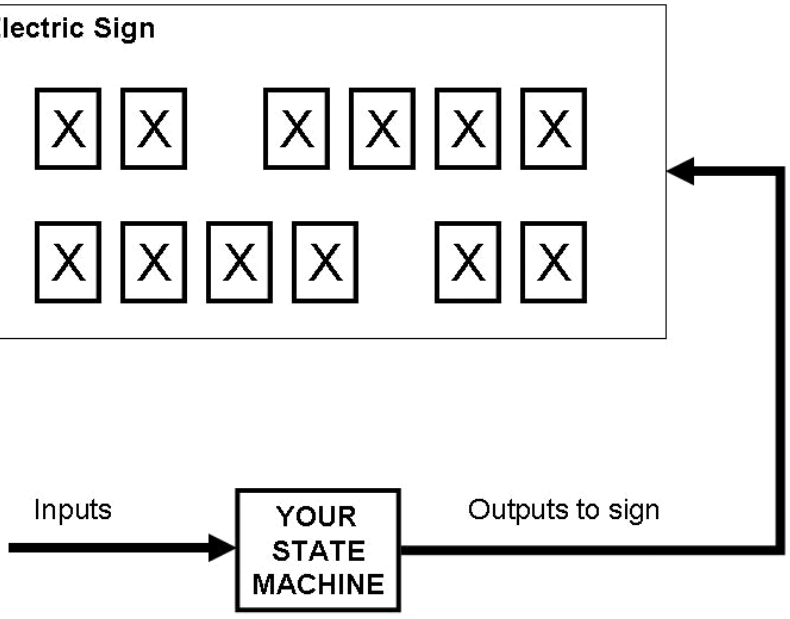
The assignment

You will build a finite state machine from a state transition diagram we provide you in this file to control a particular display device.

Details

You are to build a finite state machine to control an “electronic sign”. We have provided the electronic sign for you. It is in a file called “timedlab1.circ”. Open the file timedlab1.circ in Logisim and make all modifications there. This and timedlab1lib.circ be the file you turn in to us.

The overall system looks like this:



Your state machine will be a subcircuit that operates the electric sign!

Specifications

Your state machine will take in two inputs:

1. A “RESET” input which you may use to clear out your flip-flops or register.
2. A “NICE” input which will determine what message variant is displayed.
3. A “CLK” input which represents the clock (Note that this will hook up to the clock in the main circuit).

Your state machine will have 8 states! You must have all 8 states to receive full credit!

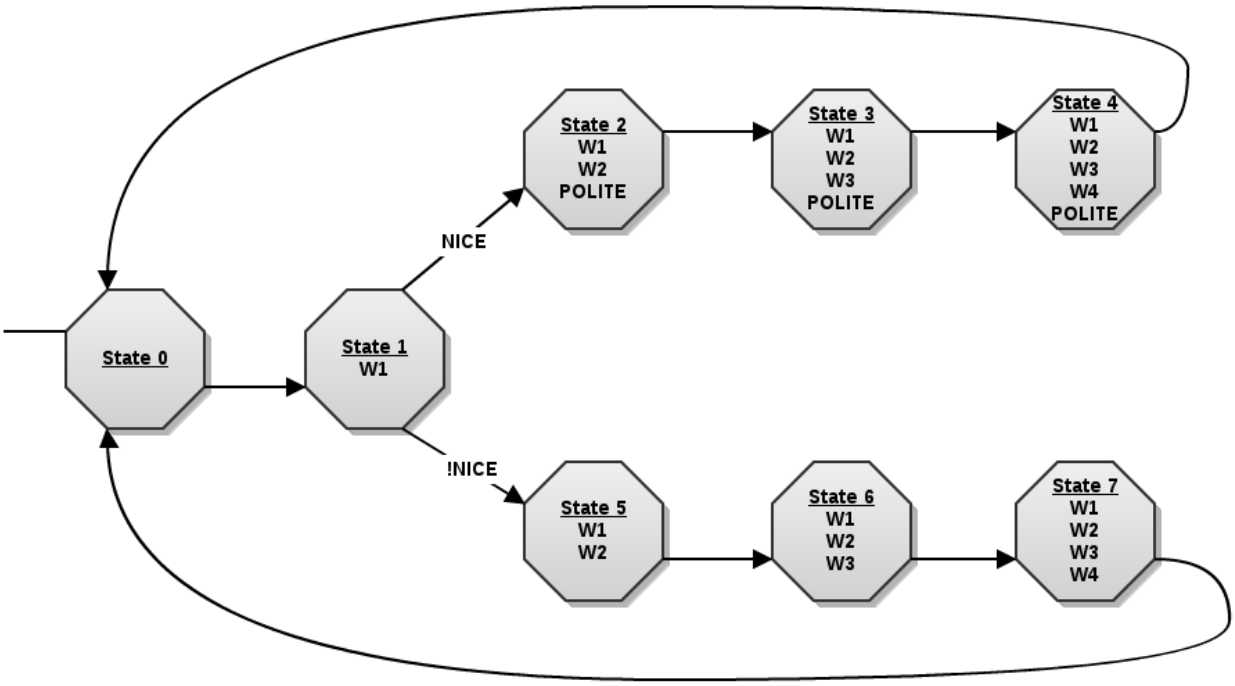
Your state machine will have 5 outputs:

Four connections to control the four words (W1-W4).

An output to the “POLITE” input of W2.

State Transition Diagram

Here is the state transition diagram:



NOTES

- You may build this using either one-hot or encoded state.
- You will move from state to state automatically after every clock cycle. The clock may be sped up or slowed down to make the display “look right”.
- The transitions from state 1 depend on the position of the NICE switch. As the diagram suggests, the condition of the NICE switch does not affect any other state transitions.
- Build your state machine in a subcircuit and then place one in your main circuit and connect it to the W1, W2, W3, W4, and NICE inputs of the sign
- You should not need to change the display, just connect your outputs to the W1, W2, W3, W4, and NICE inputs.
- **You may not connect the “NICE” input directly to the “POLITE” output.**

RESTRICTIONS

- You may only use BASIC GATES (multi input gates are fine), A single register, or the appropriate number of D Flip Flops, wires, tunnels, clock, input pins, and output pins. Anything else is just silly.
- Your state machine must implement all 8 states. No funny business. I am watching you.
- Do not look in the file timedlab1lib.circ. Nothing of value is in this file and it will **NOT** help you get a 250 on this timed lab. So don't bother wasting your time looking here its not going to help.
- Your state machine must be a subcircuit.
- You must connect your state machine to the main circuit that is given to you!
- You may not directly connect the NICE input to the POLITE output. Your solution is automatically wrong if you do this.

Evaluation

You will be graded based on how close you are to the state diagram! And following directions, make sure you follow them all.

Deliverables

1) timedlab1.circ
2) timedlab1lib.circ

Note if your file is not named this you will lose points! You like free points right? Then name the file correctly.

You may submit only the files listed above. We will not accept any internet links we want the files above and only these files!

Check over your submission after you submit it. If you submit the wrong file and leave the lab I will not be happy and we will grade what you submit so please check over what you submitted after you submit it! Check your email afterward to see if you get an email from T-Square

Have fun and good luck