Computer Architecture

Microprogramming assignment 1.

1. Download the .CIRC file of the 8 bit 1-bus architecture Logisim simulation, and the accompanying excel sheet.
2. Use the excel sheet to generate the **horizontal microprogram words** to load one of the registers, square that number and write it to a second register. Then STOP.
3. Submit the .CIRC file to me via e-mail. In the subject field of the e-mail, please type your <last name>_<initial>_<last 4 digits of your ID>, then in the body of the email type your full name, full ID, course and section. Finally attach the file for testing.
4. Due as early as possible, by class time, the week of 11/7/2016.

Teaching points:

- Familiarity with the microprogramming technique for the construction of a CPU control unit.
- Use of the hexadecimal number system for presenting what is essentially binary information.
- The provision of sufficient safety time both before and after a clock pulse.
- Debugging a sequence.
- Turning a bus around

When your system is working, try running it at 4.1KHz, and you may gain some insight into how quickly these micro operations can be executed – real machines run at Giga-hertz!

Really put some effort into these microprogramming exercises and if I see that effort, we can consider that they may replace a mid-term. That is because the midterm questions would be concerned with this exact set of activities, and parallels such an examination.

Note that the FINAL will be cumulative with questions on the CPU, main memory and the I/O system.

Do not get too frustrated if your sequence doesn't work first time. Like regular programs, development often involves removing errors! It's a natural, iterative process.

Checklist: After each run → reset simulation & enable ticks

Good luck, Simon Ben-Avi.