# Lab 4: Computer Organization and Data Path Design - Individual Report

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The parts I did alone was the design of the car blinker system implemented with the decoder and with the ROM. I started out with the Free State Diagram for the required design. Next, I designed the decoder with basic logic gates. In terms of the counter, I received help from another member to design the incrementer, but I implemented the decrementer. I also did the logism design for problem 2 -- this includes spending time with peer teachers and TA's to clarify the requirements and diagram present in the lab manual. I had implemented the required busses, control lines, and as well as each component in the overall circuit, including the circuits that make up the I/O subsystem.

The advantage perceived in tackling this group assignment is the delegation of work. With three problems within the lab, and each problems having subproblems, the work can be properly distributed so that not one person would be doing the entire project. A disadvantage would be that several people can have different designs and insist that their design was optimal and superior than the rest. This could lead to individualism in a group-based project, which can lag the production of the overall design. Another disadvantage is that since there is a delegation of workload, one might not master or understand the design of components such as adders, subtractors, comparators, and/or shifters as much as another group member. The understanding of the individual topics within the lab is spread throughout the members.

The most superior design was the design of the busses, ROM, RAM, and I/O System in problem 2. With the limited clarification of the diagram in the lab manual, the design in problem 2 required a deeper understanding of how each individual components worked within the microprocessor. However, the design could be much improved by simplifying the control lines with either MUXes or decoders, so that a control line of no more than 3 input bits would be used instead of 6. A deeper understanding of the widgets in logisim could also simplify many of the aspects of the design.