Homework Four

Team TWB
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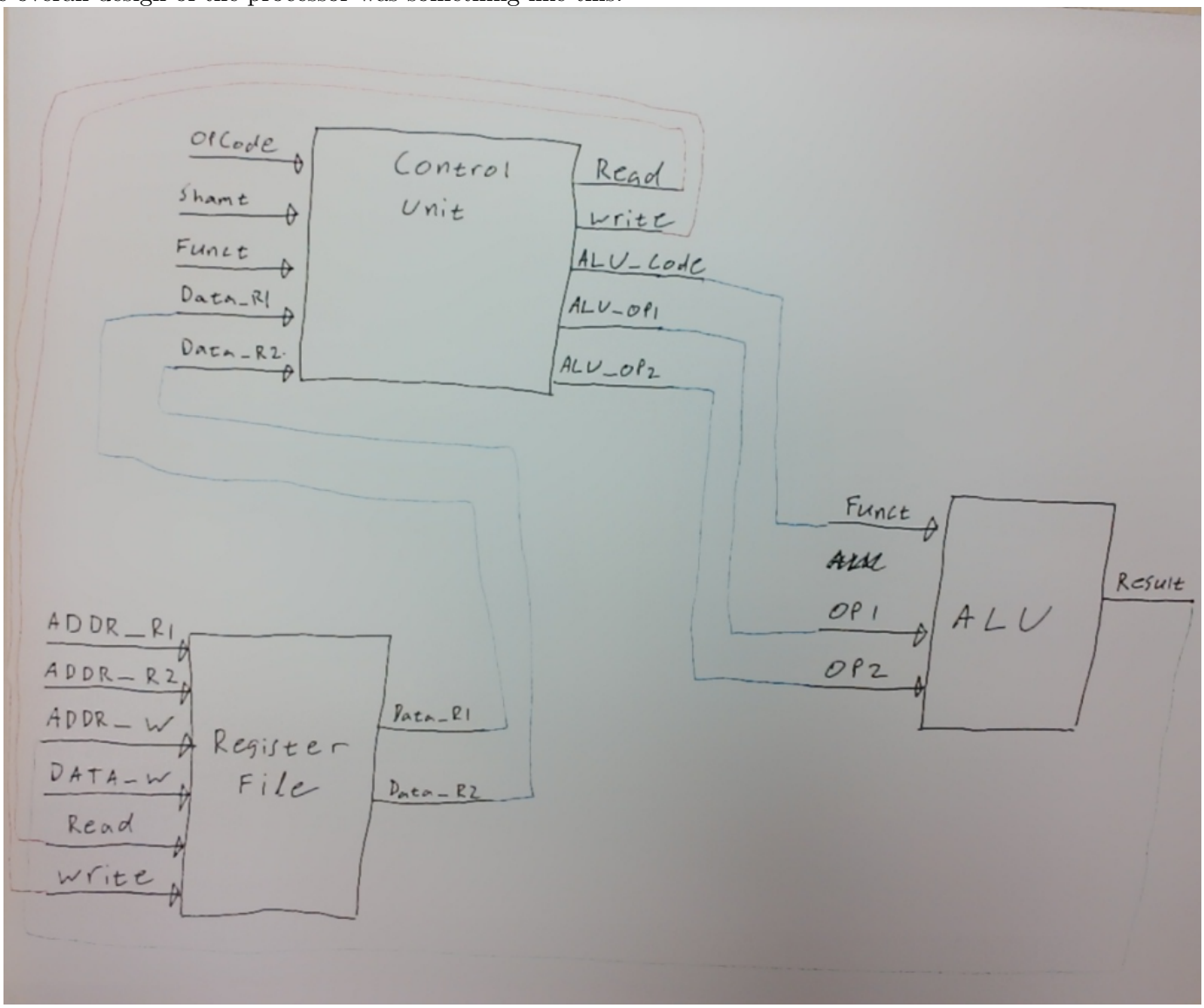
1 Design

The overall design of the processor was something like this:



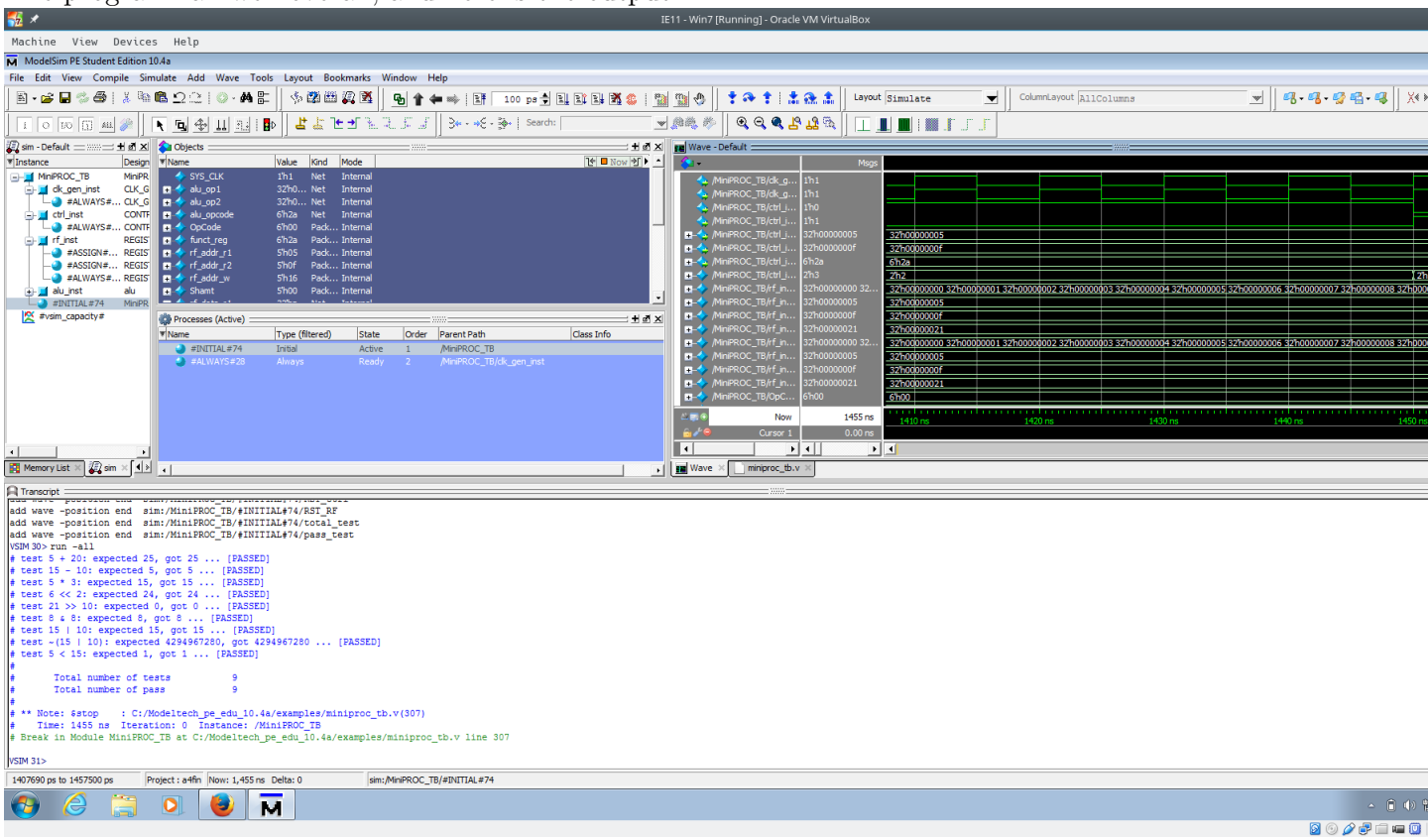
The ALU was almost untouched, but the actual Funct codes needed to be changed in order to match with the rest of the program.

The register file was something that my team didn't finish in the second assignment so we had to finish it in this one. It ended up working fine.

The control unit file was modified in order to include the *decode* and *execute* states. Decode essentially wrote which instruction was going to be executed and send it out over the wire. Execute set the read and write bits in order for proper execution to happen down the data path.

The last thing that was modified was the test bench. The first thing that was included was the instance of a control unit which essentially mapped local variables to the control unit's wires. The rest of the test bench was essentially testing the results of the alu's operations to a programmed values operation and comparing the two results to see if they were the same.

The program ran well overall, and here is the output.



2 Highlights

The biggest take away from the assignment was a better understanding of how the data and control paths help each other and operate together in order to create a working computer. While there would still be much more work needed in order to create a full computer, this was a good overall description of how one might be built.