

Austin Swatek: 232-2v Project Work Log

Milestone 1

Monday, Oct 5, 2020: 2 hours

Writing design document and figuring out processor specifics: stack-based, addressing, registers

Tuesday, Oct 6, 2020: 2 hours

Writing sample programs in assembly
Converting said assembly to machine code

M2 task assignment:

1st meeting: break instructions into small steps and move data from one register to another, determine single-cycle or multi-cycle
Luke & Austin: RTL Description of each instruction
Jinhao & Yiju: A list of generic components specifications needed for RTL

Milestone 2

2nd meeting: debug and test the processor through Xilinx ISE and fix existed problems

Wednesday, Oct 14, 2020: 1.5 hours

Reviewing Luke's RTL descriptions
Creating Executive Summary

M3 task assignment: Create design diagram

Begin Xilinx work
Begin Xilinx testing

Milestone 3

Sunday, Oct 18, 2020: 2.5 hours

Verifying RTL
Created initial datapath design

Tuesday, Oct 20, 2020: 1.5 hours

Created ALU with unique operations

Created ALU testing program

Wednesday, Oct 21, 2020: 2 hours

Came up with integration plan

Refine datapath, unit specification

M4 task assignment:

Things for Milestone 4

- Continue implementing necessary components and adding unit tests
 - Jinhao - sign-extender
 - Austin - adder
 - Jinhao - left-shifter
 - Luke - register
 - Someone - memory blocks
- Start on integration testing plans
 - Group Meetings (might split out individual work later)
- Implement Control
 - Luke

Milestone 4

Sunday, Oct 25, 2020: 2 hours with team

Integration of the stack register and ALU. This makes it possible to push/pop to/from the stack. Testing of integration and refining the integration based on the results of tests was done to make sure it worked properly, and will continue to work properly as other components are integrated.

Monday, Oct 26, 2020: 1.5 hours

Began working on integrating the PC and updating the PC.

Determining inputs and outputs for each component to integrate. Did not finish Verilog integration. Did not create tests.

Tuesday, Oct 27, 2020: 1.5 hours with team

Started anew with integration of PC and PC updating. Decided to use Spartan 3E's integrated FD16RE: 16-bit data register during integration. Simple testing was done to check PC changes correctly.

Milestone 5

Friday, Oct 30, 2020: 0.75 hours

finishing integration tests. fixing push and pop, checking mem

Saturday, Oct 31, 2020: 3 hours with Luke

Checking and fixing final implementation of processor: updating control bits and signals to proper values.

Verified that rel-prime works, also tested a simple for-loop and other basic tests.

Attempted to put on Spartan board, but we were not successful.

Sunday, Nov 1, 2020: 1 hour

Luke was trying to help Jinhao and I fix issues with running the completed processor on our computers, since there was an issue with a component using a hard-coded path from when Luke integrated it.

Tuesday, Nov 3, 2020: 0.75 hours with Luke

Writing all of the system tests in the design document.

Deciding what other things need to be tested, if at all.

Figuring out if there are other instructions that should be added or could be added.

Milestone 6

Tuesday, Nov 10, 2020: 1.5 hours

Preparing presentation document. Started basic details, spent time figuring out what to include in it when looking at the requirements for it. Format is almost finalized.

Wednesday, Nov 11, 2020: 2 hours

Ironing out presentation layout and content. Still deciding on small details to include/remove, thinking about challenges during the project and things we would like to improve/change if we were to continue working on it. W

Upcoming week:

Finishing the presentation, then running through it with Luke and Jinhao. After mock presentation, can touch-up/finalize the details.

Begin cleaning up the final design document so it is ready for submission on Monday.