

**Important Note:** We worked together continuously from Friday to Monday to finish the project. Therefore, we've done the same things together.

### **Friday:**

December 8, 6:56 pm:

- Created user input validation to make sure that the user enters the instructions in the right formats using the available registers from r0-r8. Also ensured that the offsets and immediates are 6-bit signed constants ranging from -32 to 31.
- Created a function that takes in the user's input and adds all the instructions inputted into a list. It then splits the instruction within the list of instructions into a list of the "instruction components" as in ["load", "r3", "0", "r5"] in order to use the registers, offsets, and immediately later on.
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December 8, 7:16 pm:

- Created dictionaries of all the available reservation stations we have that match the station to its components (name, busy, op, Vj, Vk, Qj, Qk, A).
- Created a function to check if the instruction is ready to be issued or not according to the 'Busy' field in its respective reservation station.

### **Saturday:**

December 9, 2:40 am:

- Created the function to issue instructions and tested issuing on a small test program.
- Created a function to check if the function can be executed or not based on the readiness of its source registers.

December 9, 6:36 pm:

- Added an Immediate field in the reservation stations.
- Created a function to execute the instructions.
- Created a function that brings together the execution and the issuing in order to test our program.

December 9, 8:02 pm:

- Created a function to write the instructions after they have finished executing.
- Created functions to free up the reservation stations and remove the units in the register stat table which indicate that a source register of one instruction is busy after writing has been done.

December 9, 8:58 pm:

- Noticed a bug in the function that frees up the reservation stations and fixed it

**Sunday:**

December 10, 12:10 am:

- Handled the fact that r0 should not be changed

December 10, 1:45 am:

- Added memory and initialized it.
- Created a function to take address and data in from the user with the appropriate validation needed regarding the memory address
- Fixed a faulty implementation, which resulted in the program writing and issuing instructions in the same cycle.

December 10, 6:52 pm:

- Added global booleans/flags to handle the issuing and writing of call, return, and branch and to stall accordingly.
- Added counters to keep track of the number of branches and number of branches taken to calculate the branch misprediction percentage
- Handled exceptions that came up when we tested more thoroughly
- Implemented how the program should act when a branch is taken or when we have a call or return (jumping and stop issuing (call/ret) or executing(branch) )

**Monday:**

December 11, 9:54 am:

- Tested the code with a more complicated test program and fixed a minor bug

December 11, 10:51 am:

- Added functions to print our output in the form of tables. It prints the contents of the tracing table, reservation stations, registers stat table, and register contents per cycle.

December 11, 5:57 pm:

- Fixed implementation misunderstandings we had in our code.

December 11, 10:54pm:

- Discovered and fixed an issue with WAW dependencies