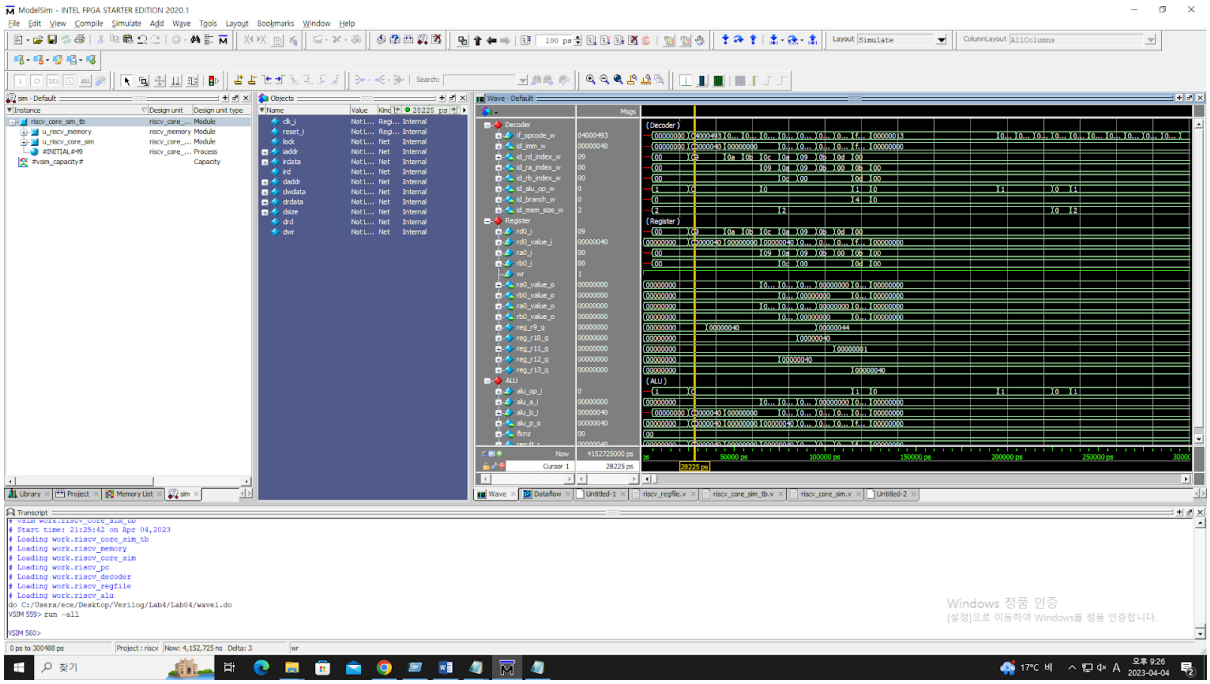
HW#04: Load, Store Instructions, RICS-V Core

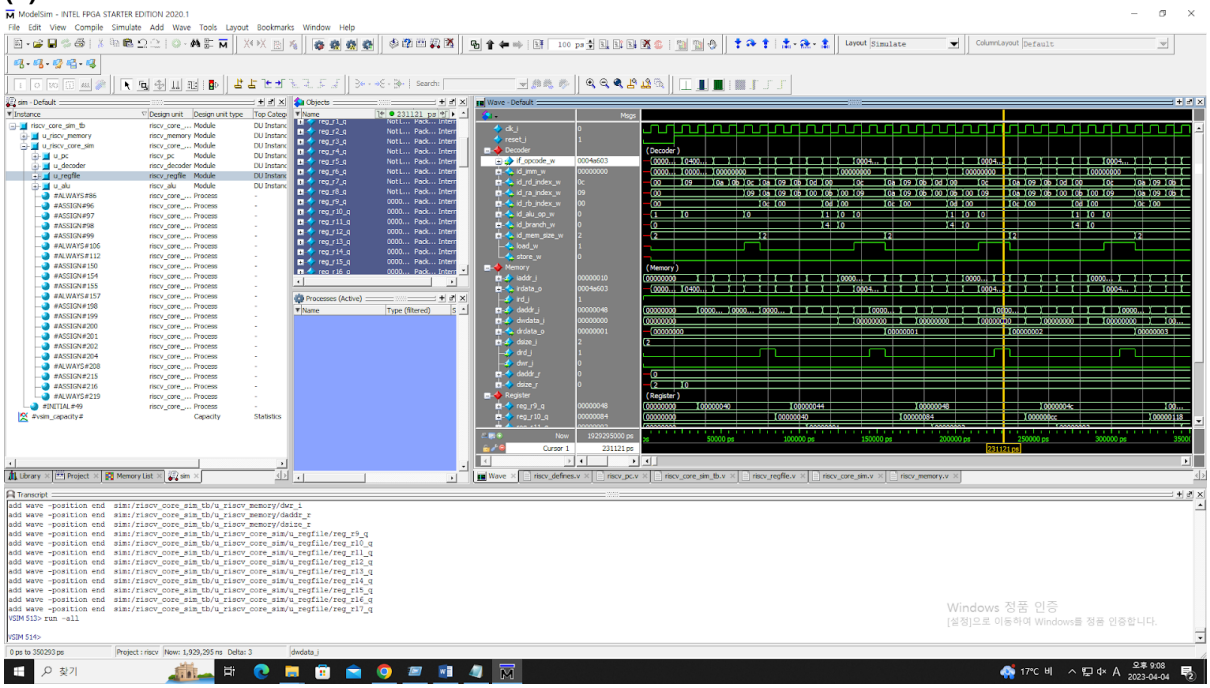
SATYAM (2023-81784) **Codes are added as file named “Code”.**

Problem 1 (10p): Load, Store

(a) Waveform -



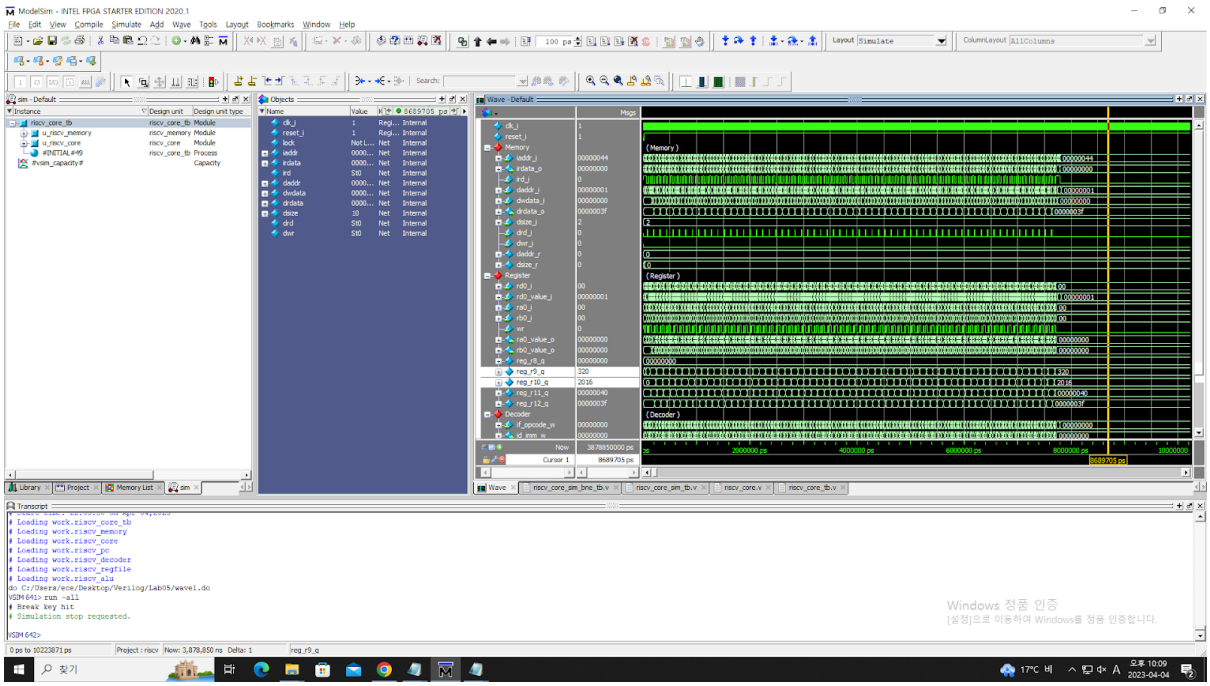
(b) Waveform -



Problem 2 (15p): RISC-V

(a) Baseline core

Waveform -

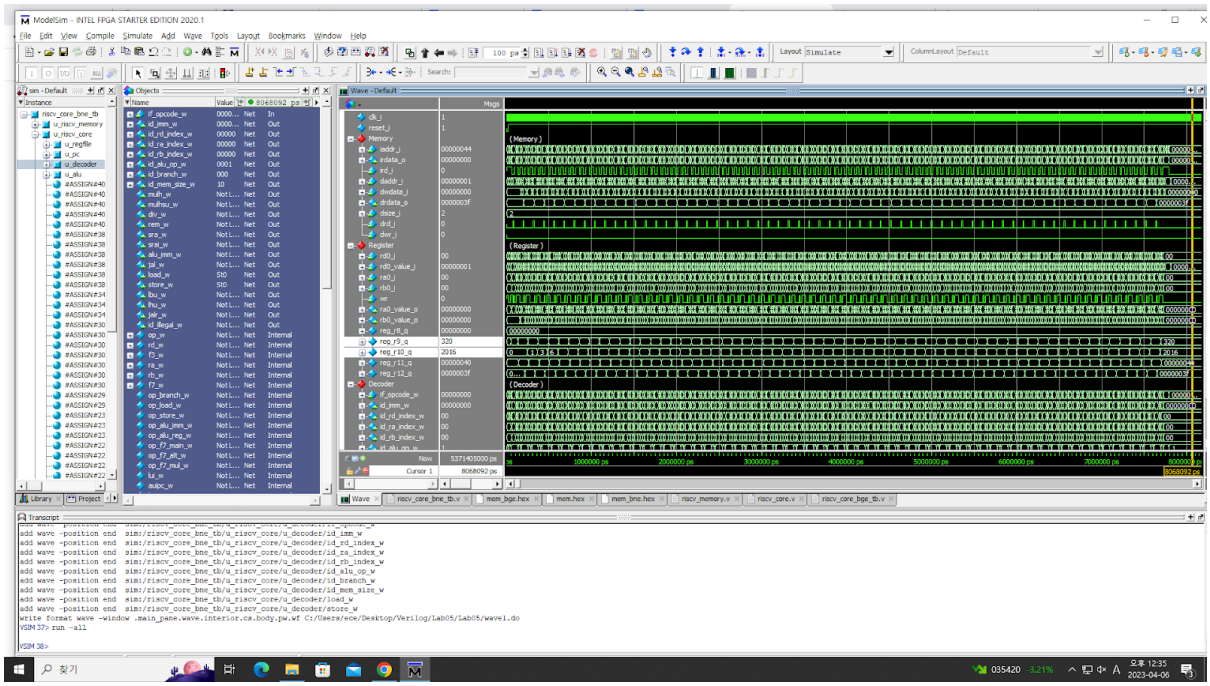


The value of r9 is 320 because initial value of r9 is set to be 64 and 4 is added to it for 64 times (because loop is run 64 times because of x11 and x13 values). Therefore r9 equal to 64 + 4*64 = 320.

And r10 values are all the values given to it from the memory. It's initial was 0 and loop is run 64 times to sum all the numbers from the memory which comes out to be equal to 2016.

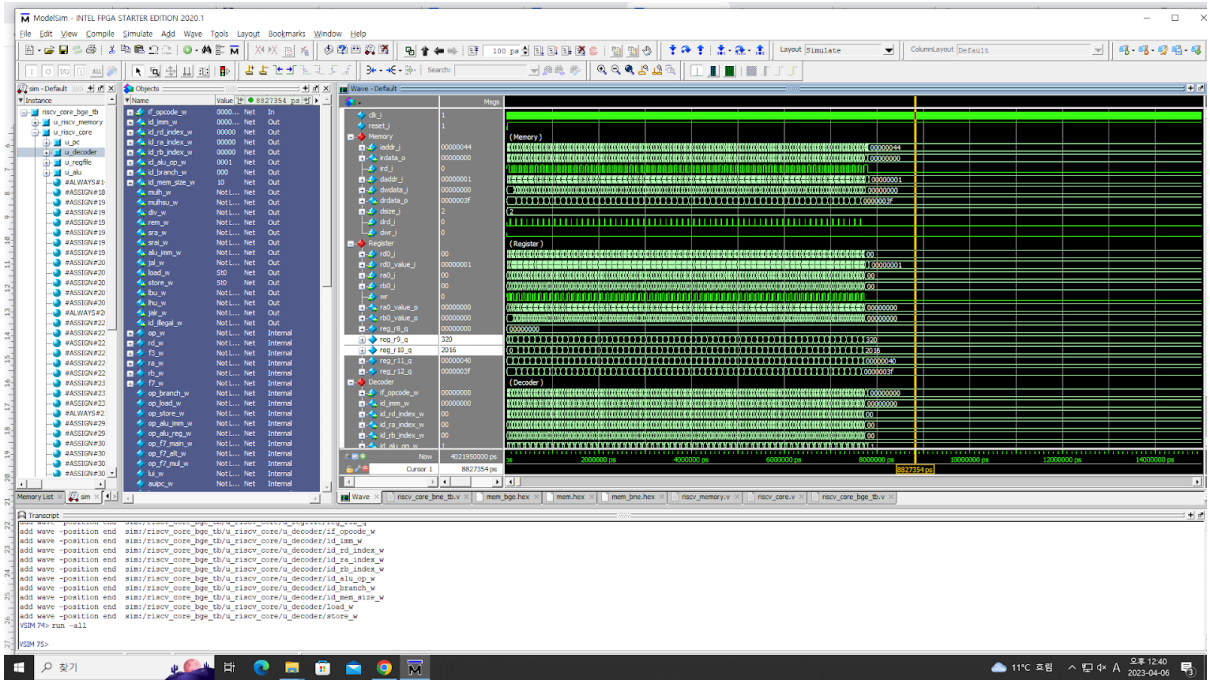
(b) Branch-Not-Equal (BNE)

Waveform -



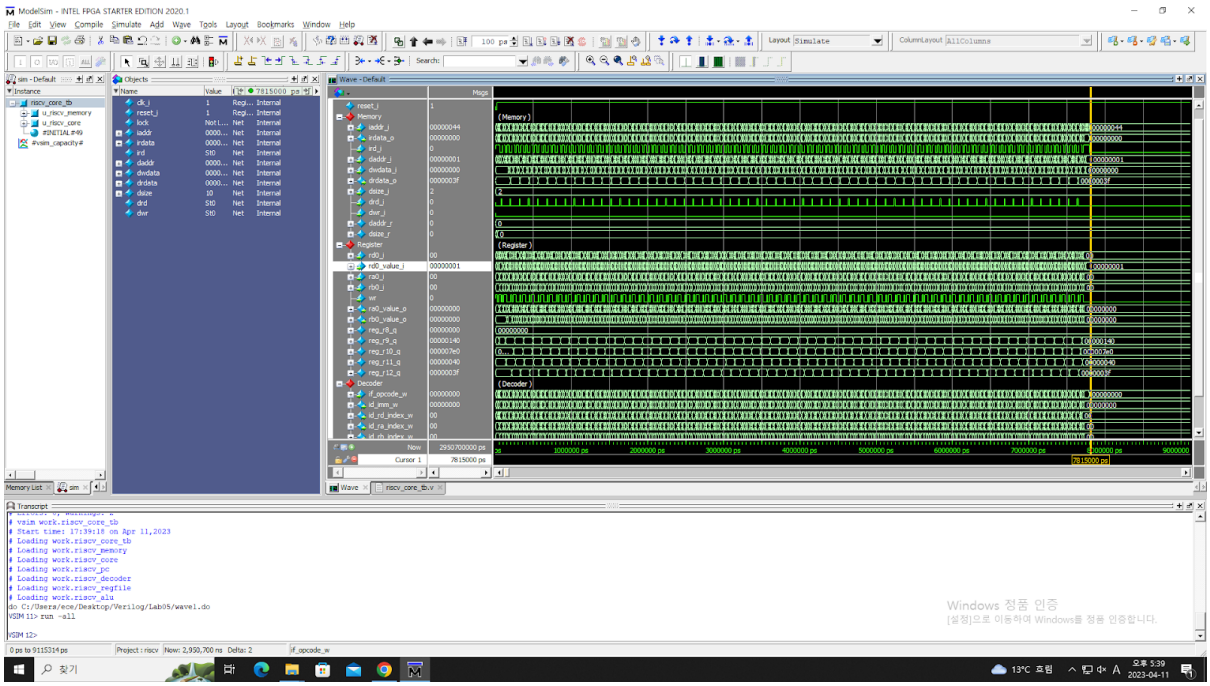
(c) Branch-Greater-or-Equal (BGE)

Waveform -

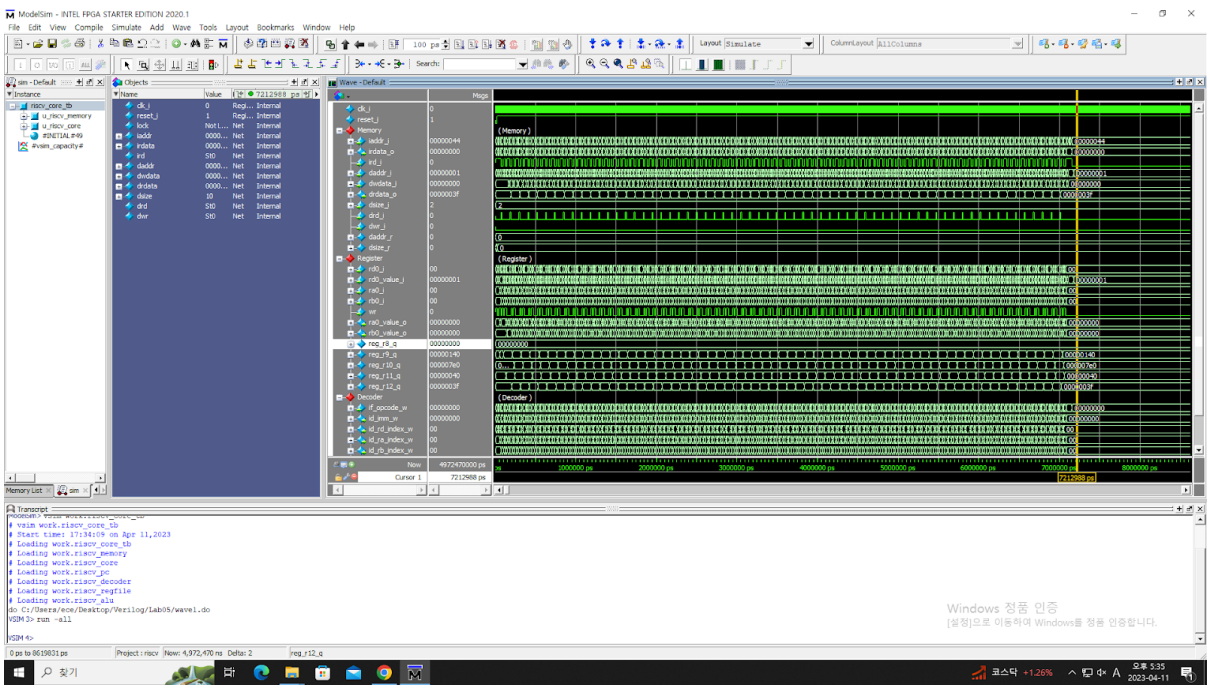


(d) Instruction Reordering

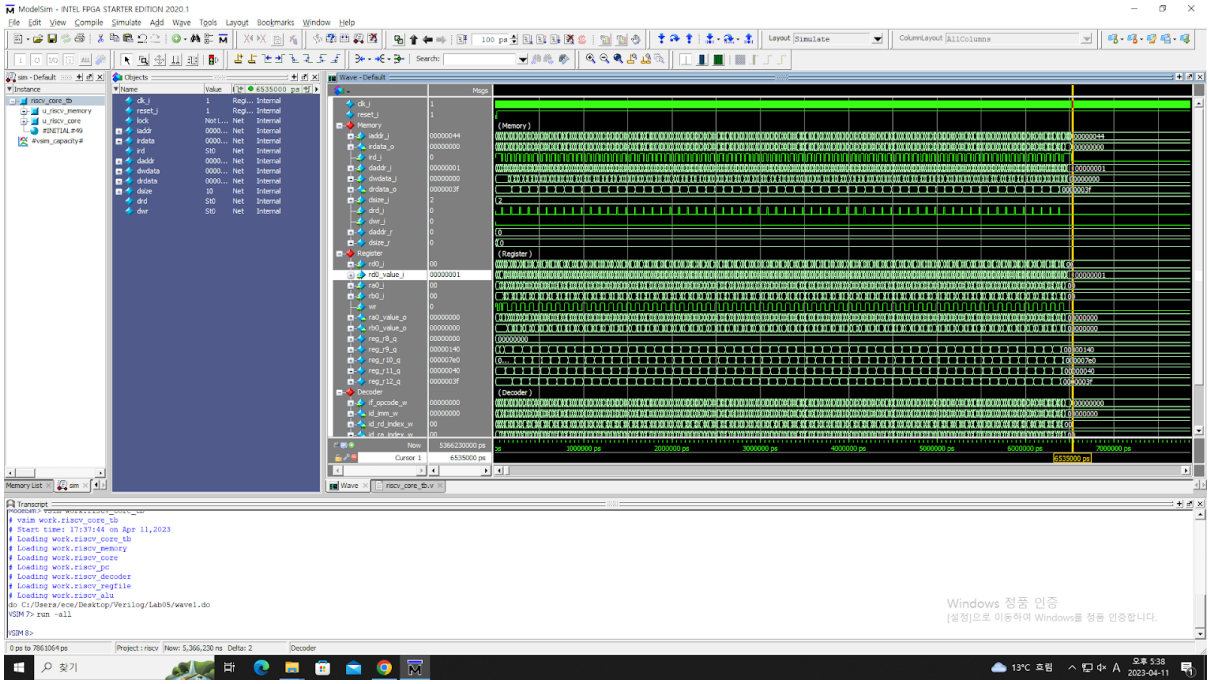
Baseline - 7815000 ps



Opt1 - 7212988 ps



Opt2 - 6535000 ps



The running times of three version is different because the instructions are loaded in different amount of time when we compare register file to memory.