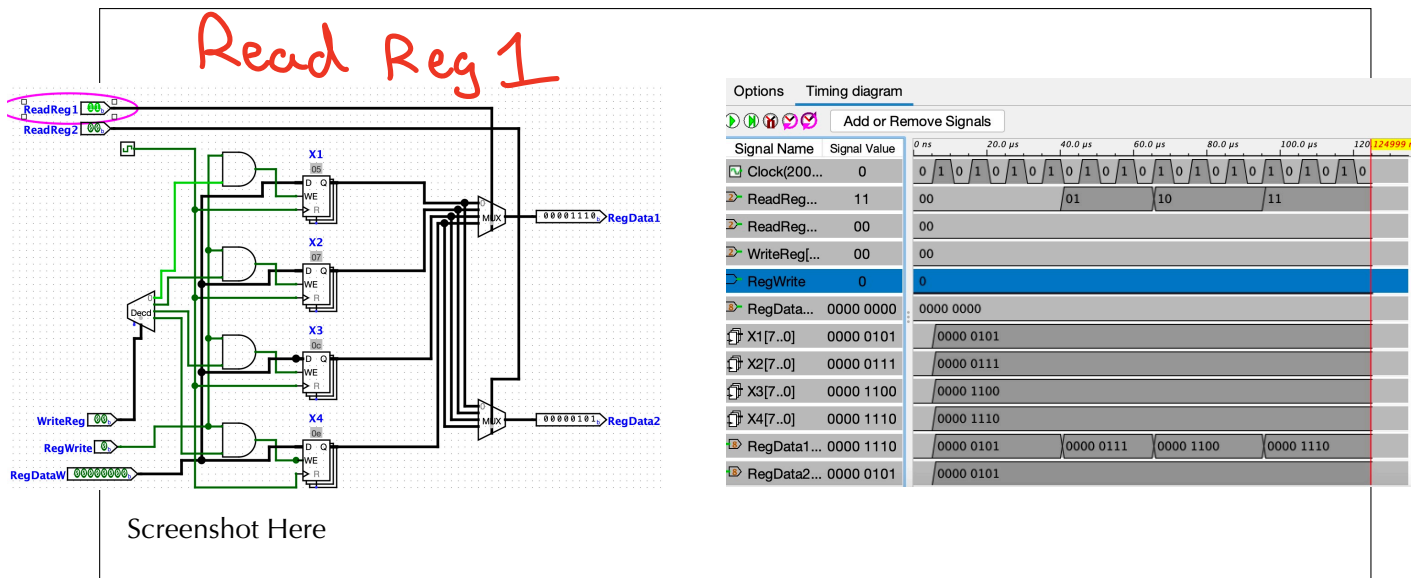


First name	Anna
Last name	Hawk
Collaborator	N/A
Pledge	I Pledge my honor that I have abided by the Stevens Honor System.

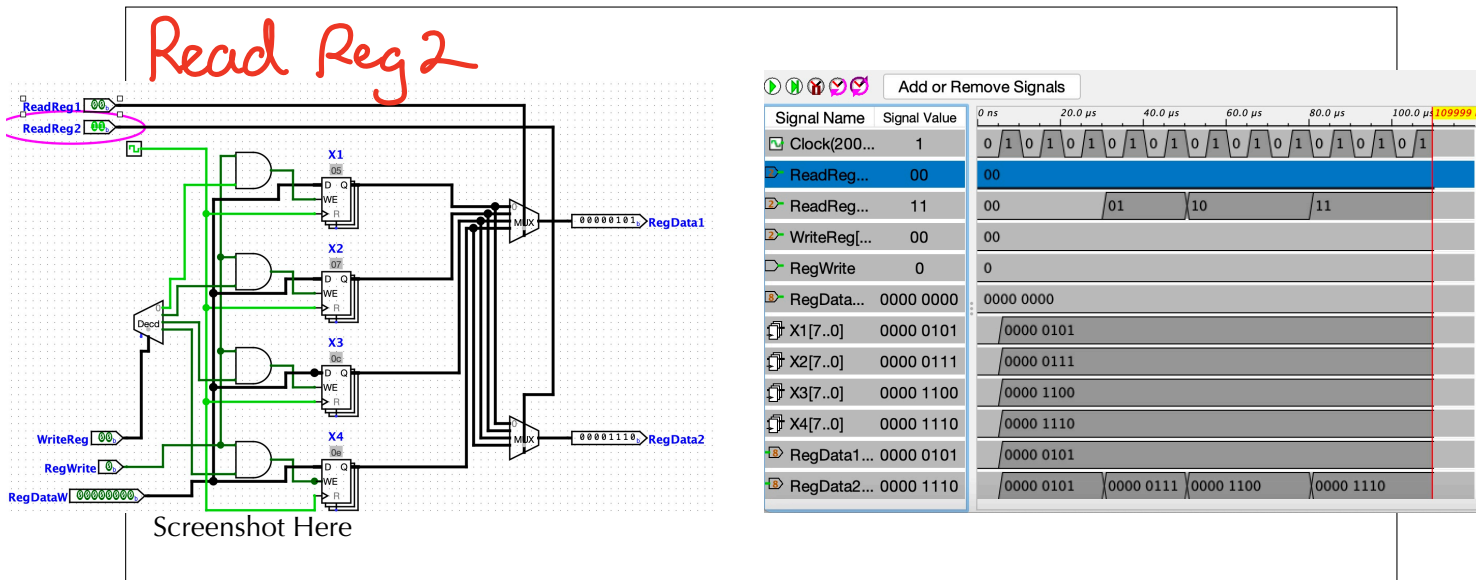
1 Reading a Register File

In this part, we will test if reading register file works for all four registers.

- (1) First of all, manually set up register values. Click on the grey box in each register, and type two digits of hexadecimal to set the data stored in that register. You can pick any value you like, but the four registers should not have any equal values;
- (2) Open timing diagram from the menu bar, and start simulation. You should be able to see the clock ticking;
- (3) Change the value of ReadReg1 from 00b to 11b. For each of the value, you should be able to see the change on RegData1. After changing all four values, take a screenshot of **both** the timing diagram and the circuit. The diagram should show that the value of RegData1 has been changed four times. They also should change immediately after the change of ReadReg1;



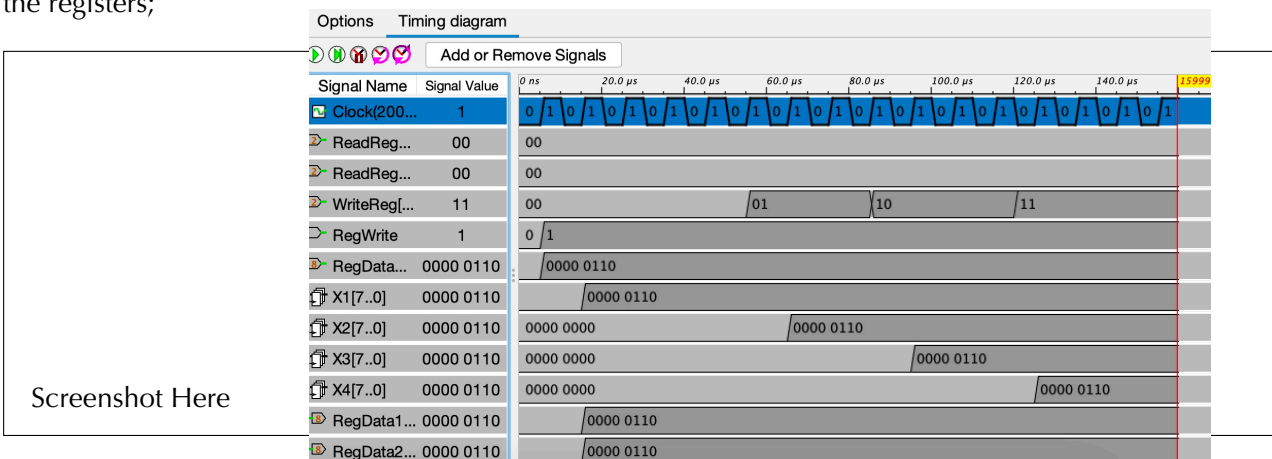
- (4) Repeat the above step for ReadReg2.



2 Writing a Register File

In this part, we will test if writing register file works for all four registers.

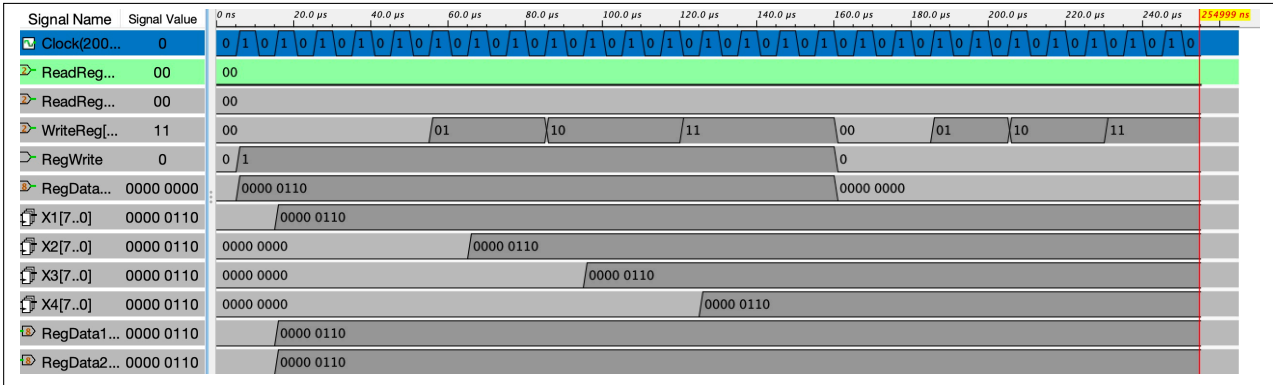
- (1) First of all, reset the circuit (Menu bar ► Simulate ► Reset simulation). **Make sure** all four registers now have values of 0 ;
- (2) Set control signal `RegWrite` to 1 , and change `RegDataW` to any non-zero number you like;
- (3) Open timing diagram from the menu bar, and start simulation. You should be able to see the clock ticking;
- (4) Change the value of `WriteReg` from 00b to 11b . **Be careful:** because writing register is sequential, and so the data will only be updated at rising edge, make sure you wait long enough to change `WriteReg` ;
- (5) At the end, you should be able to see all four registers have been updated to the same value. Please provide a screenshot below. **Note:** it has to be timing diagram showing the values – not the grey boxes in the registers;



- (6) Now, **pause** the simulation, and change `RegDataW` to 0 , and set control signal `RegWrite` to 0 . Set `WriteReg` back to 00b ;
- (7) Restart the simulation, and again change the value of `WriteReg` from 00b to 11b . Also be aware of

the timing of these changes;

- (8) At the end, you should not observe any value change of all four registers. Please provide a screenshot of the timing diagram below:



The End 🙌