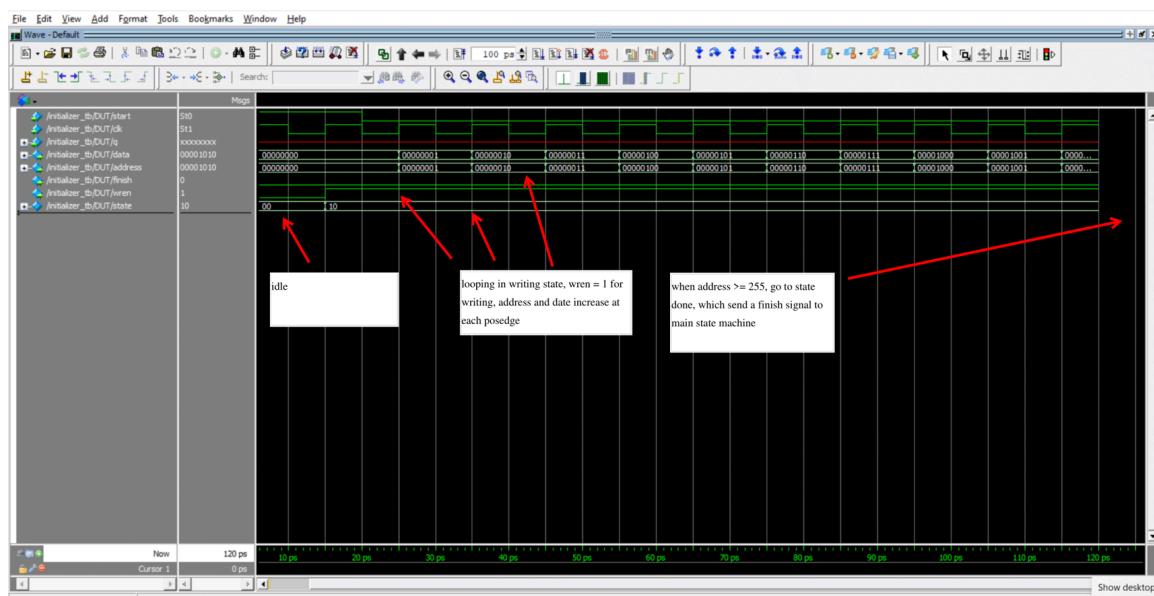


1. CPEN311\_Lab4\CPEN311\_Lab4\template\_de1soc

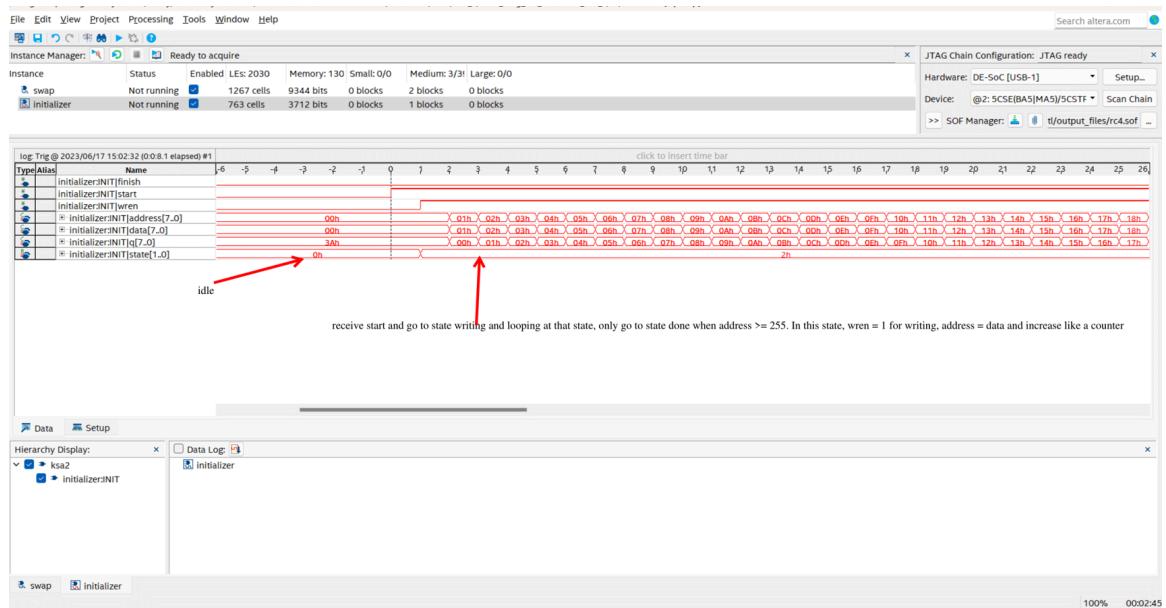
2. Everything works!

3.

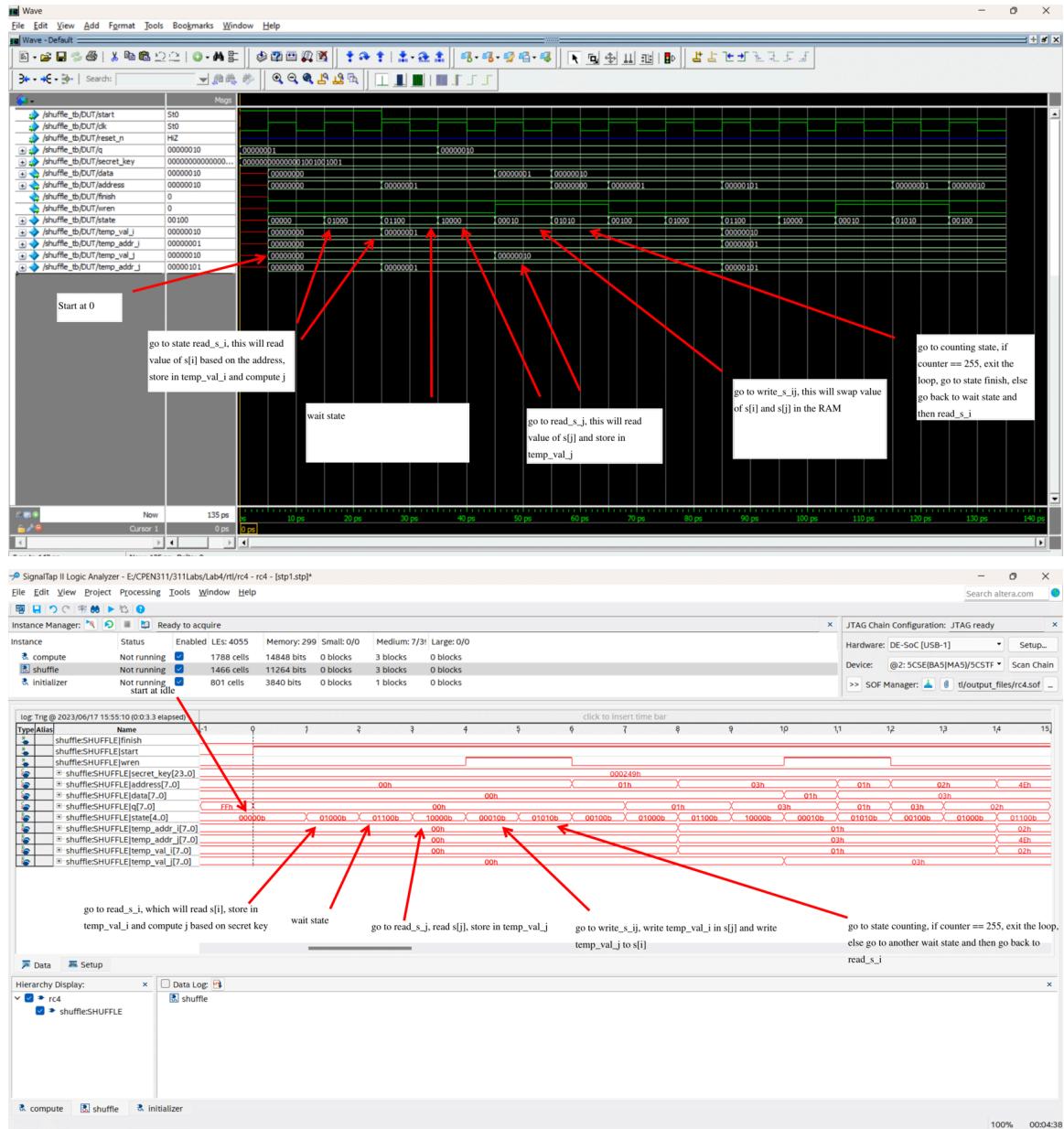
### Task 1 (initializing it):



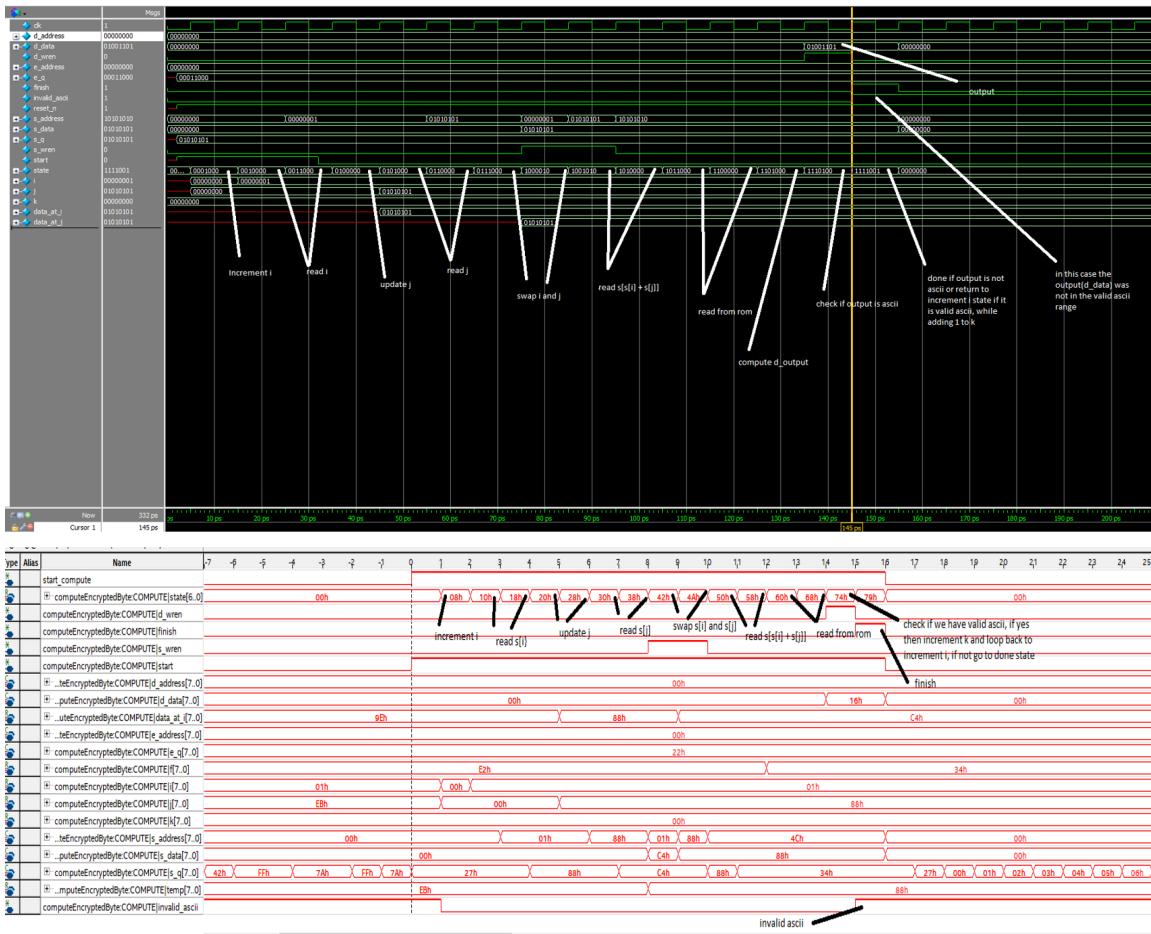
note : when wren is high, we know we can update the data within the memory, so we always have to keep it off when we are not writing it.



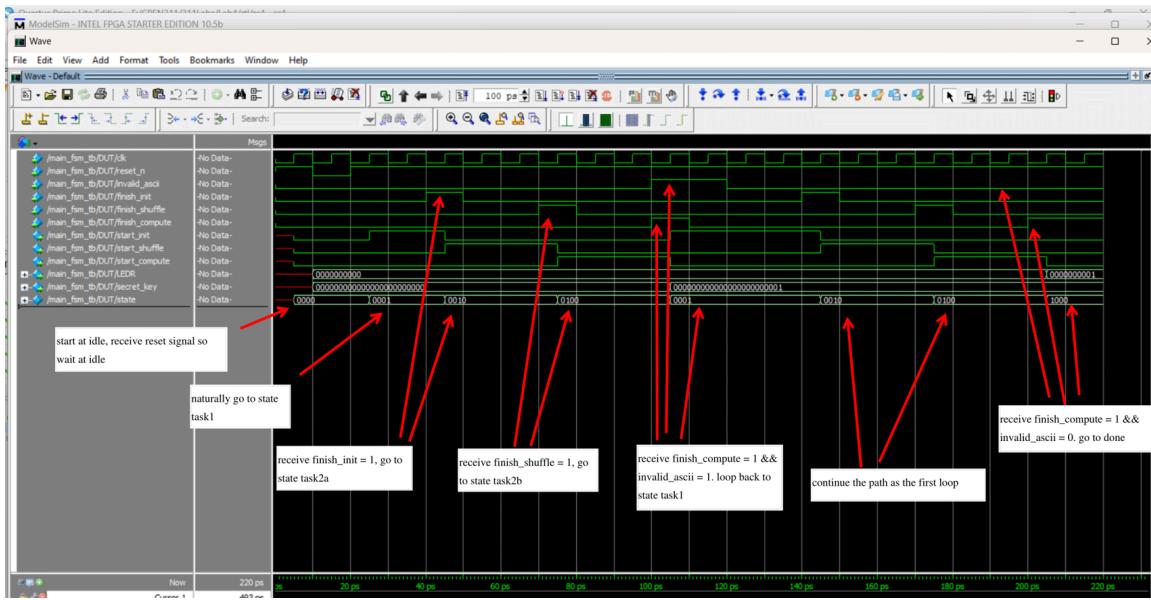
## Shuffle.fsm (Task 2a implementation):

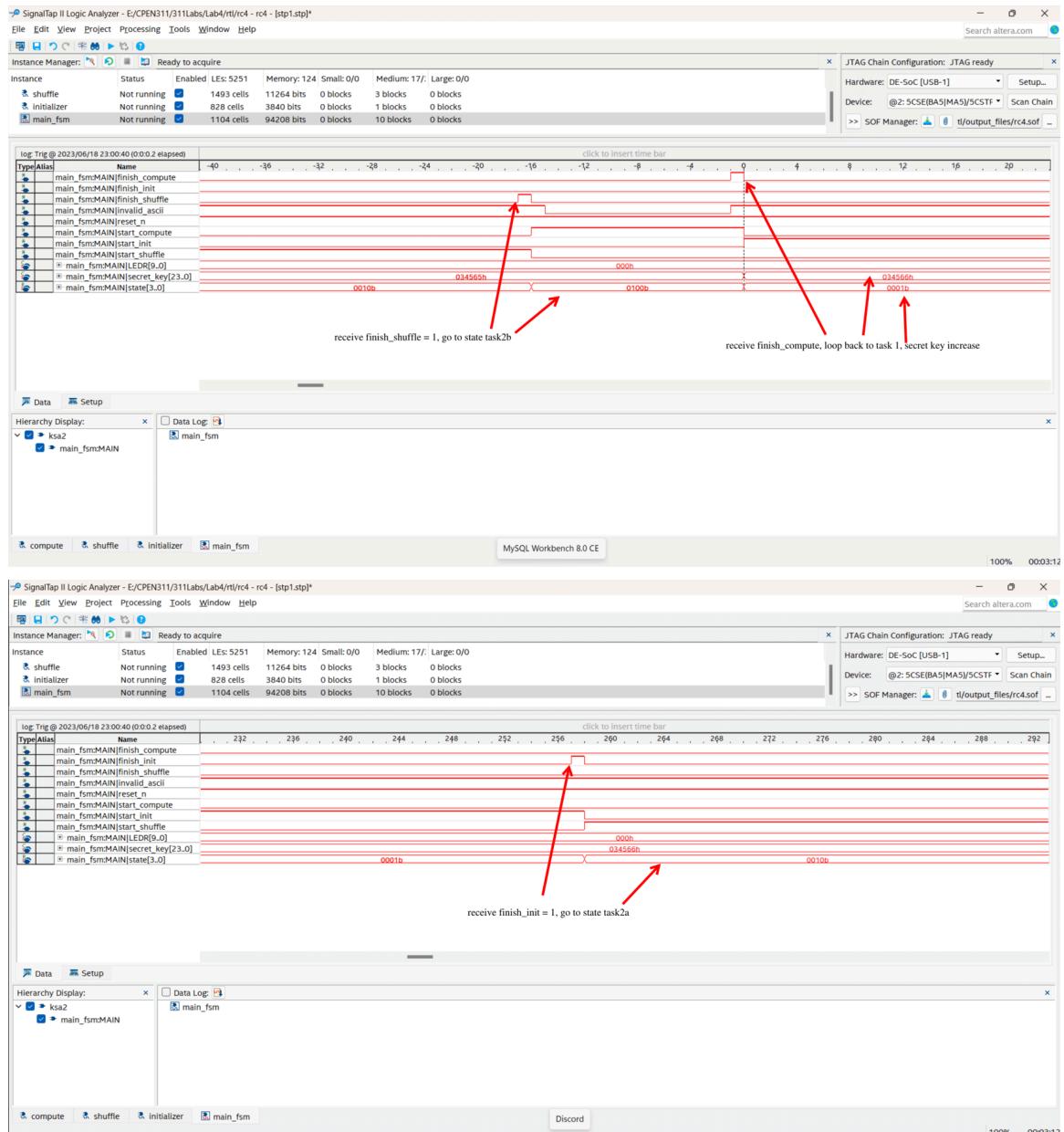


## computeEncryptedByte.fsm (Task 2b implementation):



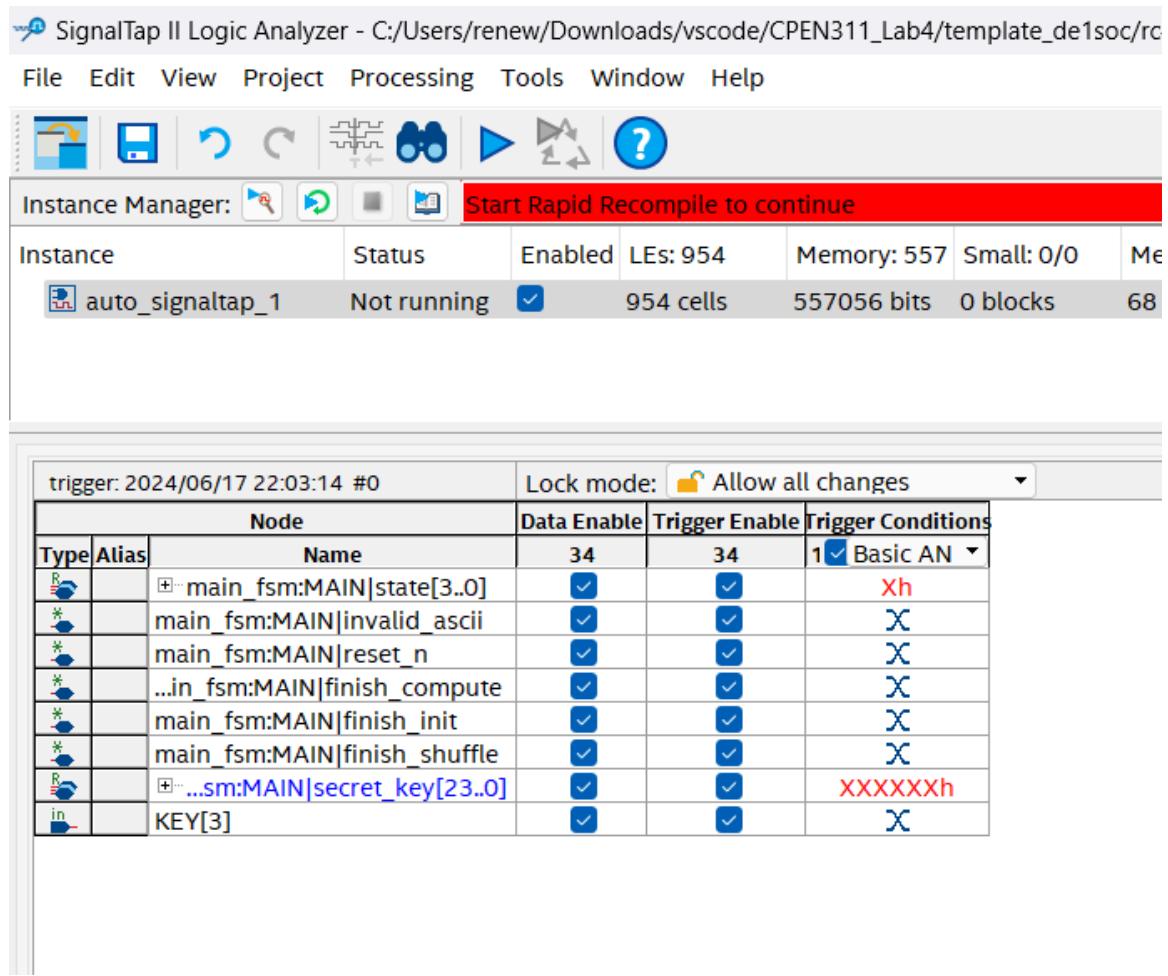
**Main\_fsm (controls over everything which includes task1, task2a, task2b) and makes a loop for task2b for task3 to find the correct key**





After going to task2a, it will test if the key is valid, if not it goes back to task1 with a incremented secret\_key.

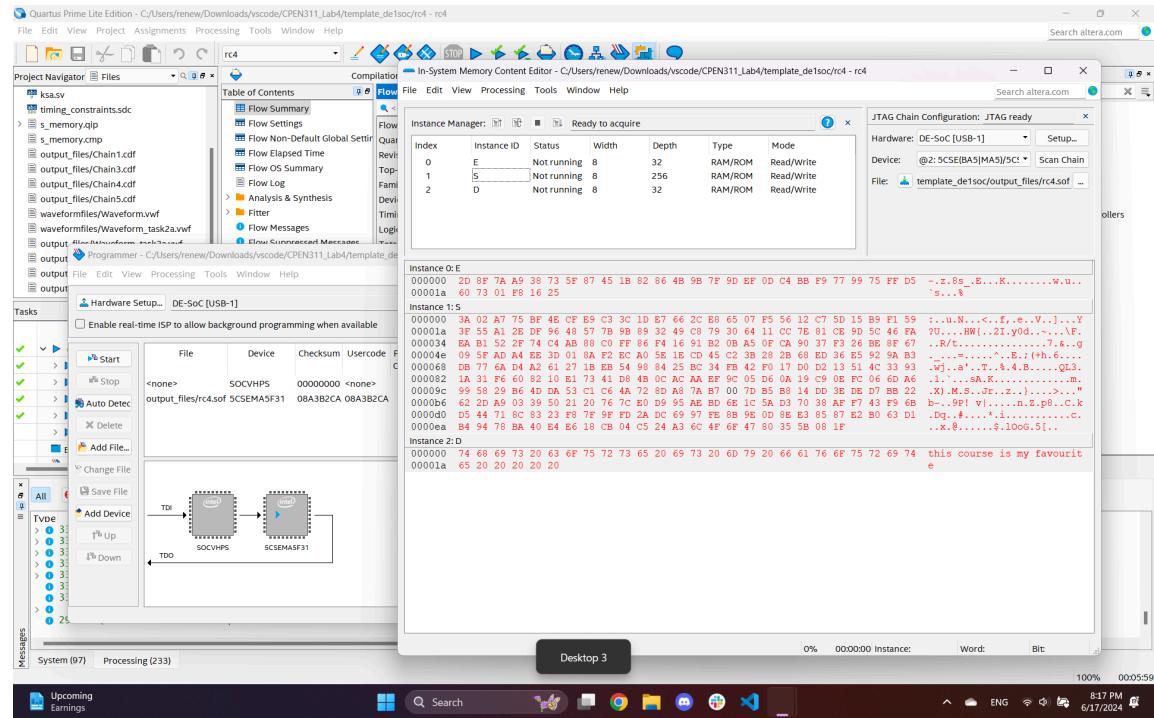
Set up:



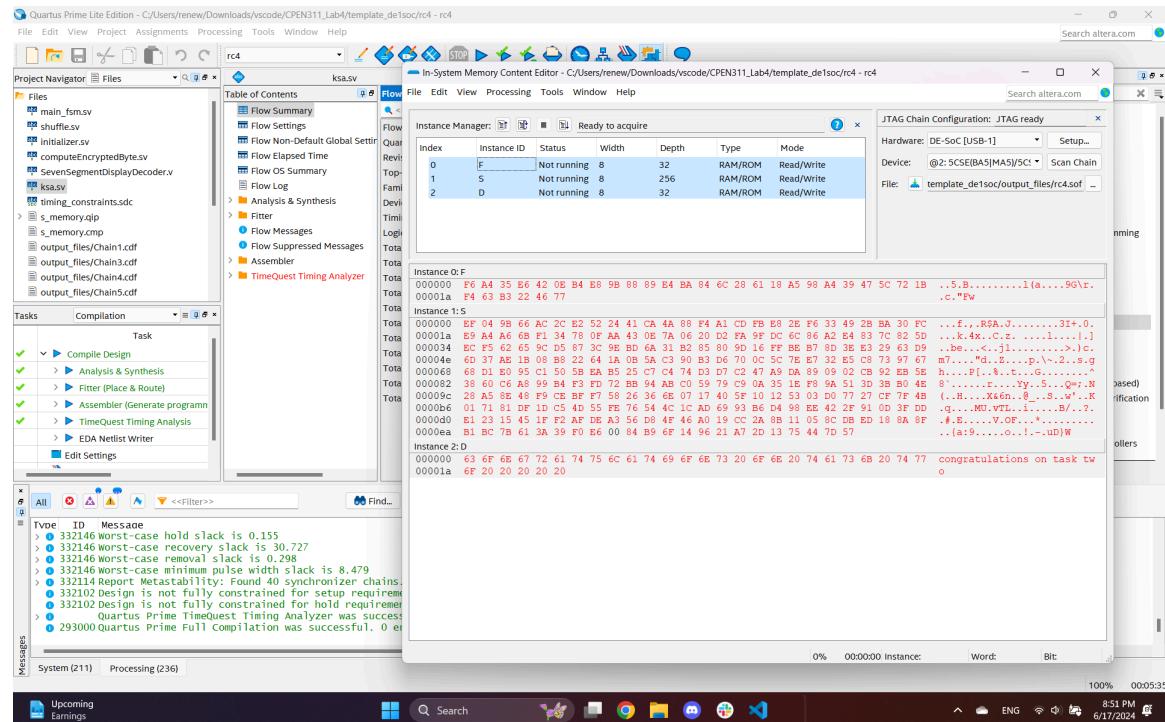
SignalTap:

The following tests at the bottom are used to prove that this works.

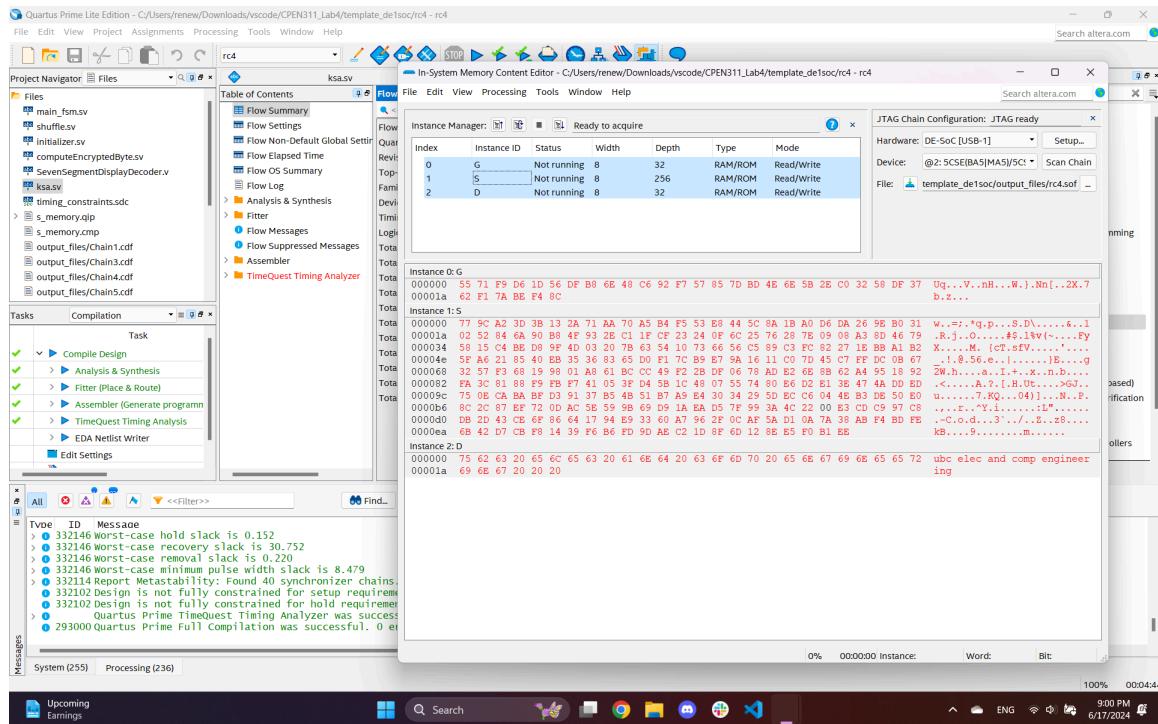
## E\_memory: (first test with task 2b)



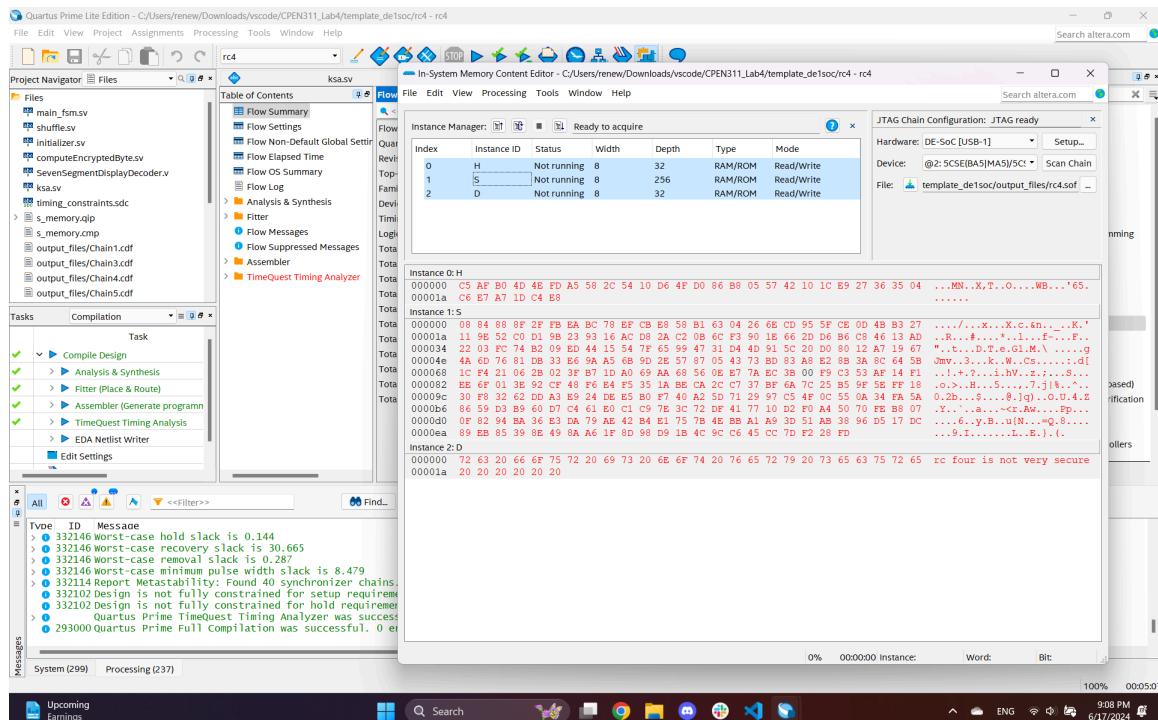
## E\_memory\_2: (msg\_2\_for\_task2b)



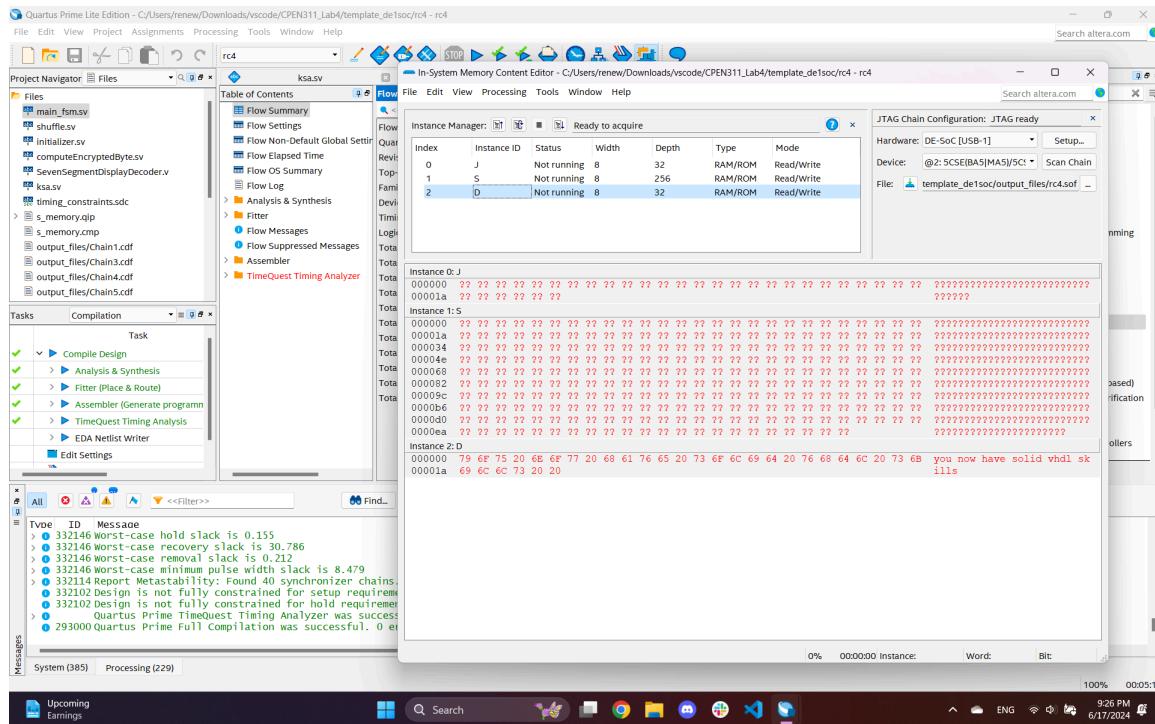
## e\_memory\_3: (msg\_3\_for\_task2b)



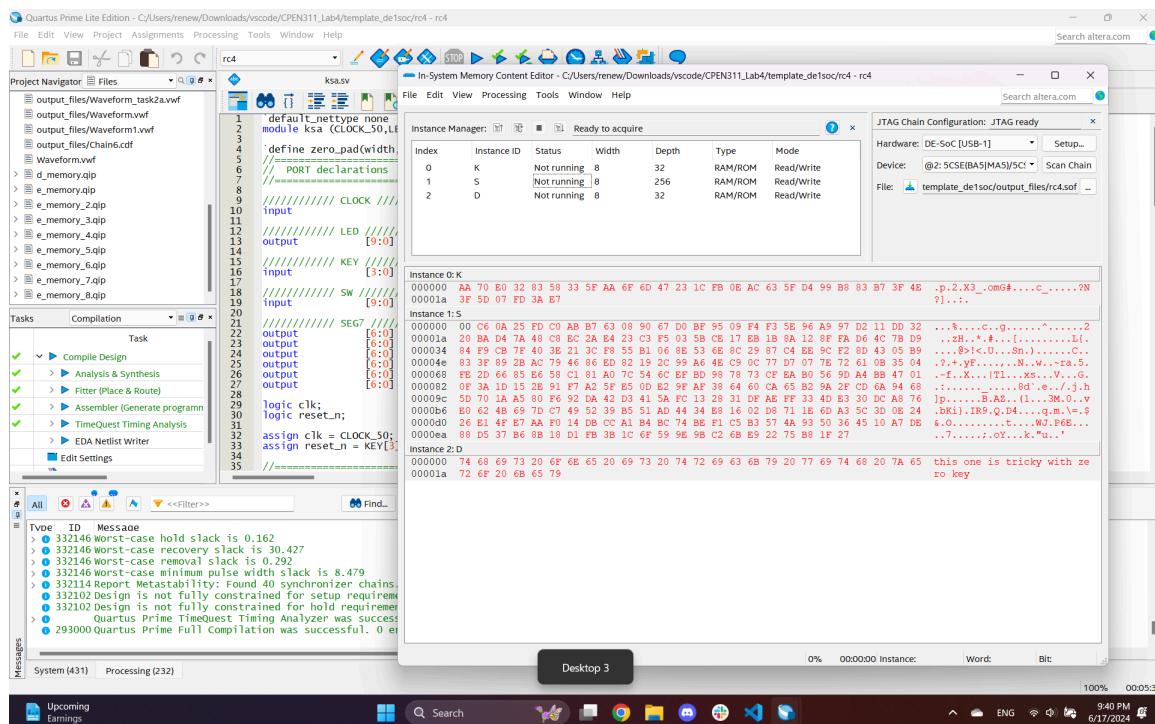
## e\_memory\_4: (msg\_4\_for\_task3)



## e\_memory\_5: (msg\_5\_for\_task3)



## e\_memory\_6: (msg\_6\_for\_task3)



## e\_memory\_7: (msg\_7\_for\_task3)

Enough testing this is enough i aint compiling this for another year

## e\_memory\_8: (msg\_8\_for\_task3)

4. CPEN311\_Lab4\CPEN311\_Lab4\template\_de1soc\WaveFormFiles
5. We spent all night working on this 😞