DIGITAL CIRCUITS LAB

EXP-7 Mealyfsm

In this lab, we used dataflow & behavioural modeling.

October 3,2024

~Dev Arora
23B1271

Pen-Paper Design:

In this experiment, you will design a string detector using a Mealy type FSM which outputs '1' when input sequence of letters given thus far contains the following sub-sequences:
must1
lion2
ring3
in a string of letters.

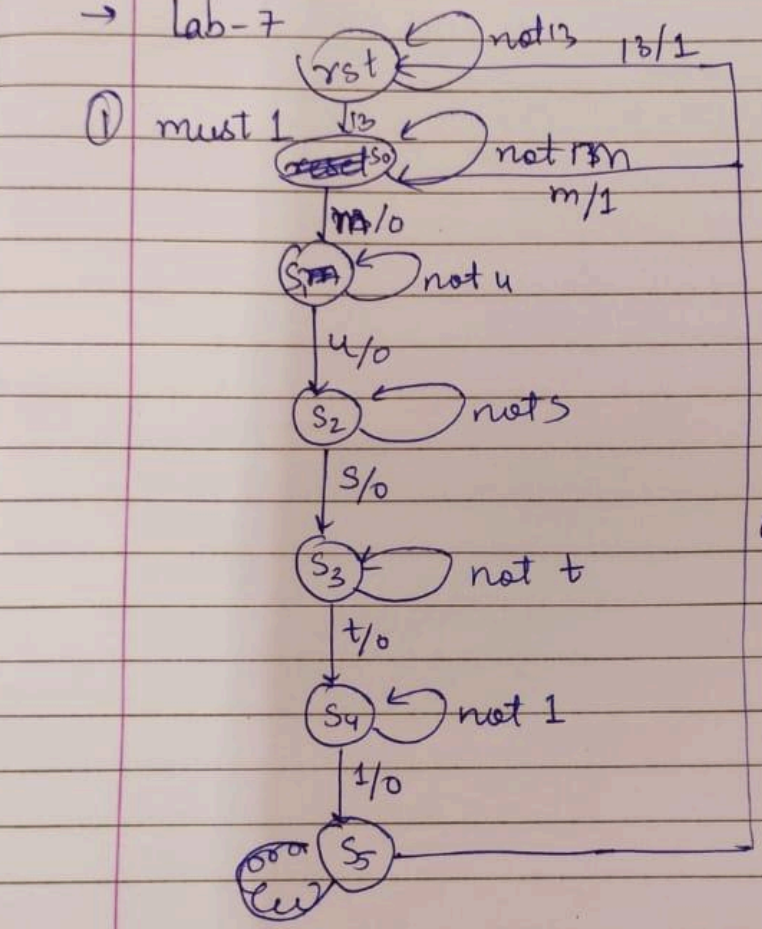
For this experiment, letter 'a' is encoded as "00001", 'b' is encoded as "00010" and so on until 'z' is encoded as "11010" and the numbers 0 is encoded as "11011", 1 is encoded as "11100" until 4 is encoded as "11111".

For example suppose the input string is: ***Multiple0123 string0123 detection0123***
This string contains the subsequence "must1" "lion2" and "ring3".
Thus, the input and output sequences when lined up will look like:

Multiple0123 string0123 detection0123
00000000000000000000101000000000000010

Note: Consider characters in this problem as case insensitive.

→ Lab-7



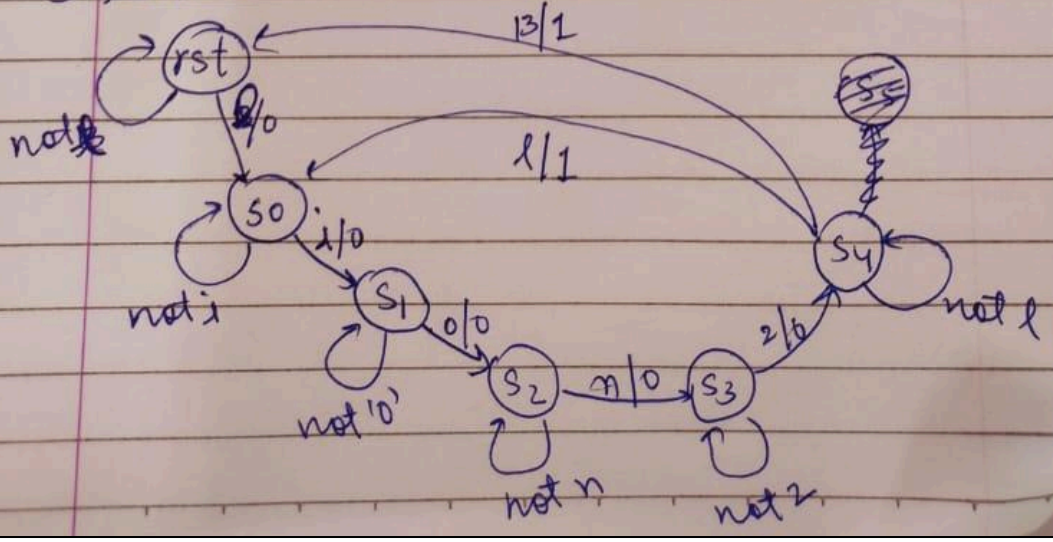
m = 13
u = 21
s = 19
t = 20
1 = 28

l = 12
i = 9
o = 15
n = 14
2 = 29

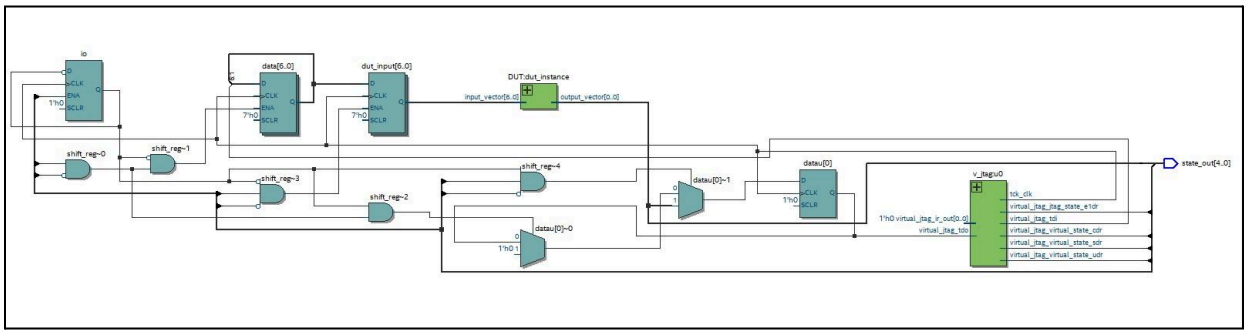
r = 18
i = 9
n = 14
9 = 7
3 = 30

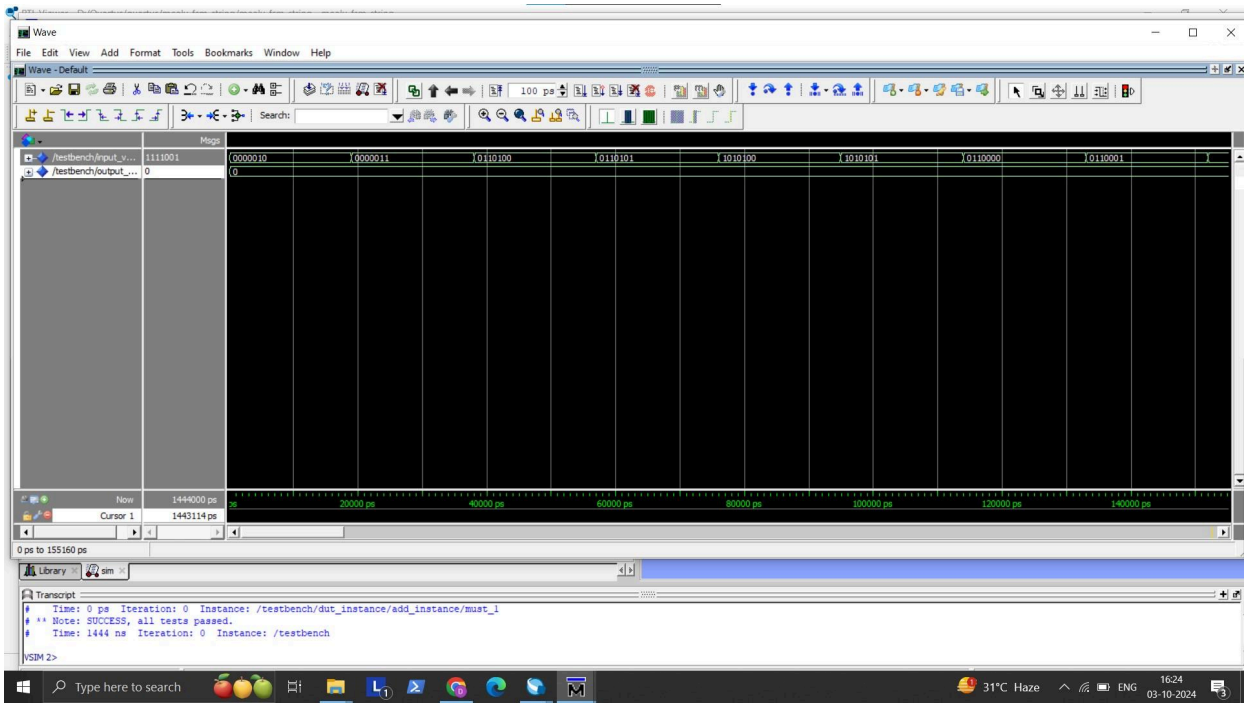
State diagram

② lion 2

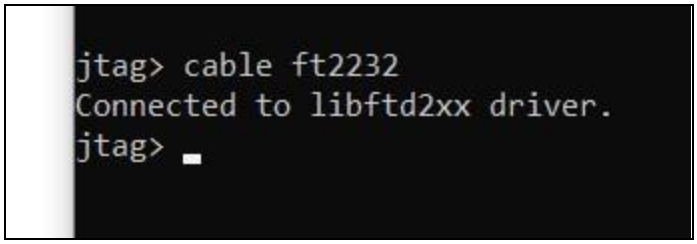


Netlists & Simulation Wave:





Testing Terminal:




```
jtag> detect
IR length: 10
Chain length: 1
Device Id: 00000011000110000100000011011101 (0x00000000031840DD)
  Manufacturer: Altera
  Part(0):         10M25SAE144
  Stepping:     1
  Filename:     d:\quartus\quartus\majority_circuit\xen10_files\urjtag_max10\urjtag\data/altera/10m25sae144/10M25SAE144
jtag>
```

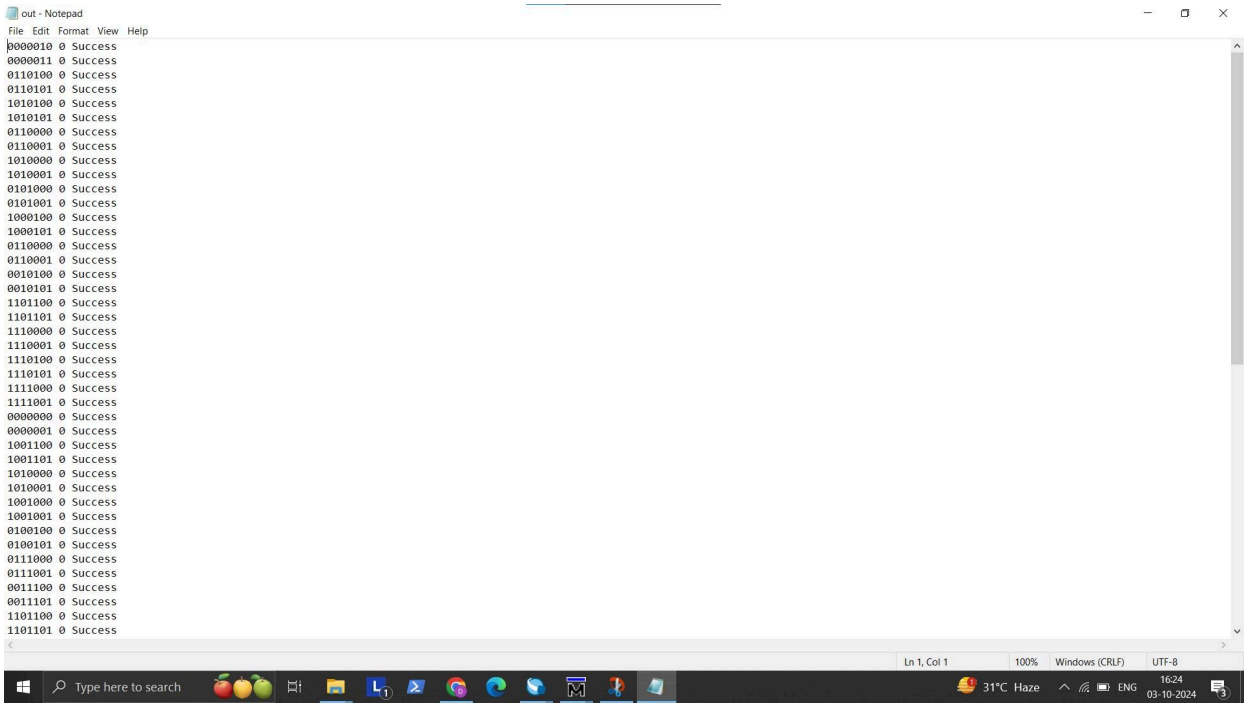
Command Prompt:

Input command: *scan_vjtag.exe TRACEFILE.txt out.txt*

Output:

```
{'type': 6, 'id': 67330064, 'description': b'Dual RS232-HS A', 'serial': b'A'}
```

ScanChain Outputs:



Success in scanchain out file for the mealyfsm lab experiment.