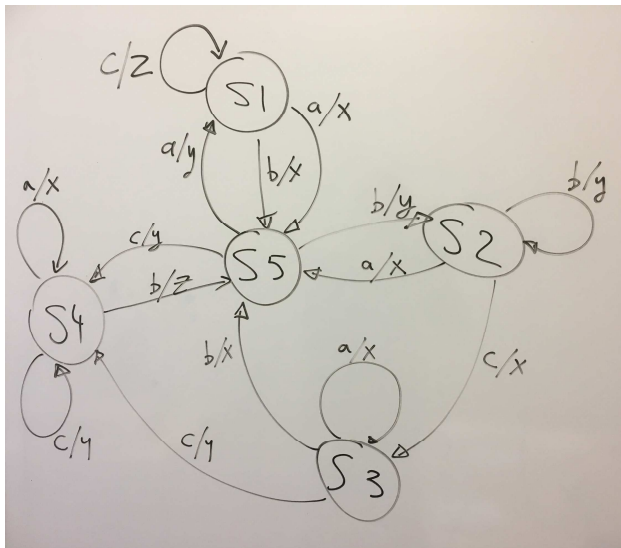


Protocol Testing – Exercises

Test Generation – W, UIO, CTL

1- Consider this below illustrated FSM.

a. Find the W set and the (P)UIO sequence for all states.



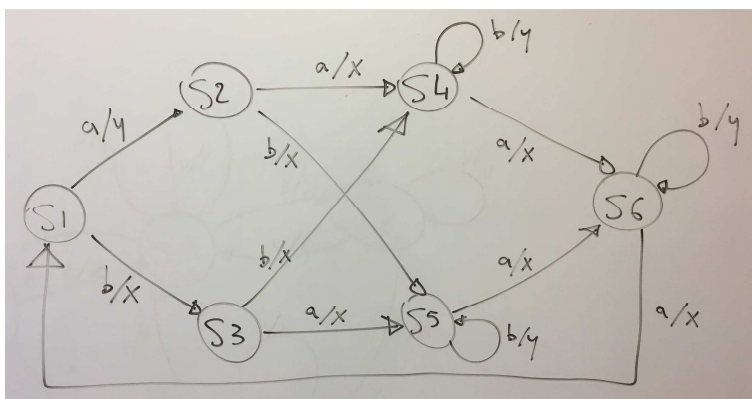
Input={a,b}

Output={x,y,z}

Initial state : S1

b. From the previous question and the strategy of your choice, determine a TS for (S2, b/y, S2).

2- Consider this below illustrated FSM.



Input={a,b}

Output={x,y,z}

Initial state : S1

a. Find the W set and the (P)UIO sequence for all states.

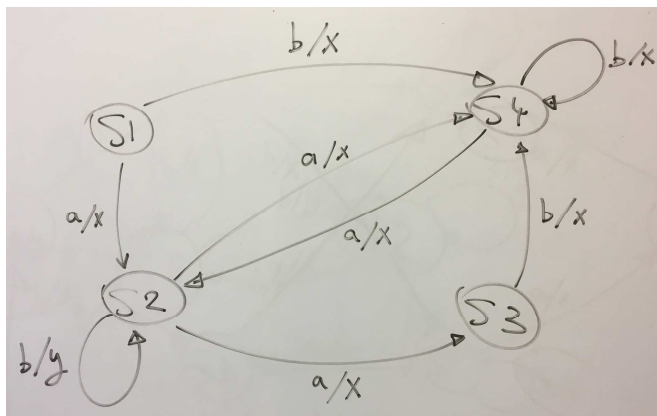
b. From the previous question and the strategy of your choice, determine a TS for (S1, a/y, S2).

3- Testing Architecture:

A company X that developed an application on a smartphone, asks to another company Y to test it. X provides to Y an URL with a port, login/pwd to access that application.

In your opinion, what testing architecture would you put in place to test this application? Justify and detail it.

4- Consider this below illustrated FSM.



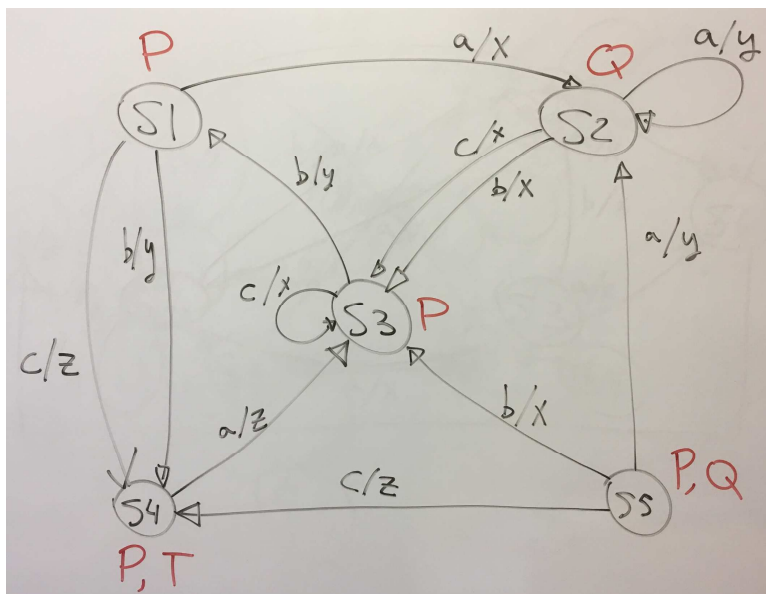
Input={a,b}

Output={x,y,z}

Initial state : S1

- Determine a DS (if it does not exist, use a W approach) for this state machine.
- Using that DS, write a TS for (S2,b/y,S2).
- After the execution of such a TS, the Test System answers: *NULL, y, y, x, x*. What would be the testing verdict?

5- Consider this below illustrated FSM.



Input={a,b}

Output={x,y,z}

Initial state : S1

- a. Determine the (P)UIO of all states.
- b. Using the previous question, write a TS for $(S3, b/y, S1)$ and $(S5, a/y, S2)$.
- c. The red labels are atomic propositions used for labelling functions in Kripke models. Based on that state machine and the atomic propositions, write 3 properties in CTL of type: safety, equity, liveness (vivacity).
- d. Determine if these properties are true or false in the models. Please justify!
 - i. EGP
 - ii. AGP
 - iii. $EF(P \wedge Q)$
 - iv. $AG(P \Rightarrow AFT)$
 - v. $EG(P \Rightarrow AFT)$
 - vi. $EF(T \Rightarrow EXT)$
 - vii. $AF(Q \Rightarrow AXQ)$