

HW - #4:-

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4.2:-

4.2.1

- a) The BM machine doesn't satisfy. The maximal set property as the input burst from state-2 to state-0 (b^-) is a subset of input burst from state-2 to state-1 (a^+, b^-)
- b) Doesn't satisfy - state-2 to state-4 (a^+) is a subset of state-2 to state-1 (a^+, b^-)
- c) Doesn't satisfy - state-2 to state-0 (b^-) is a subset of state-2 to state-1 (a^+, b^-)
- d) Doesn't satisfy - state-2 to state-0 (b^-) is a subset of state-2 to state-1 (a^+, b^-).

4.2.2

- a) It is not a BM-machine.
State - 0-1-4-0
→ value in '0' starts with a low, but ends in a high.
- b) It is not a BM-machine
State - 0-1-4-0
→ value in x starts as low in state '0', ends in high.
- c) It is not a BM-machine
State - 0-1-4-0
→ forces 'y' to be low, while it is already low.
- d) It is a legal BM-machine.

4.3)

initial values = $abc = 000$
 $y_2 = 01$

abc

	000	001	011	010	110	111	101	100
s_0	$(s_0, 01)$	$s_2, 00$			$s_1, 10$			
s_1					$(s_1, 10)$		$s_4, 11$	
s_2		$(s_2, 00)$						$s_3, 01$
s_3							$s_4, 11$	$(s_3, 01)$
s_4		$s_5, 01$					$(s_4, 11)$	
s_5	$s_0, 01$	$(s_5, 01)$						

4.4)

- i) The extended Burst machine doesn't satisfy the maximal set property as the compulsory transition (b^+) from the input burst of state 1 to state 3 is a subset of the input burst (a^*, b^+) from state 1 to state 4.
- ii) Satisfies the maximal property; as there is a stable signal d , differentiating the transitions from state 0 to states 1 and 2.
- iii) The XBM doesn't satisfy the maximal property. as transition a^* doesn't have a compulsory ~~at~~ transition in state 0.

4.6)

4.6.1)

- a) It's not safe as it is unbounded
- b) Safe as it is K -bounded, $K=1$
- c) Safe as it is K -bounded, $K=1$
- d) unsafe as it is K -bounded, with $K=2$.

4.6.2)

- a) live
- b) live
- c) live
- d) It's not live as $a+$, $b+$, $a-b$ - are dead.

4.7)

- a) State machine \rightarrow graph (c)
- b) Marked graph \rightarrow graphs (a)
- c) Free-choice net \rightarrow graphs (a) (c)
- d) Extended free choice-net \rightarrow graphs (a) (c) (d)
- e) Asymmetric choice-net \rightarrow graphs (a) (b) (c) (d).

4.8)

(abcde) \rightarrow Tuple

