NO.
DATE

CSE 303 HW 5

1. $\{0^n 1^n 2^n \mid n \geq 0\}$

Algorithm: i. Mark unread 0 with X and move right
ii. Move to the right until first unread 1, mark with Y
iii. Move to the right until first unread 2, mark with Z
iv. Move left until X, and move right
v. If input is 0, repeat from i. If input is Y, go all the way right until B. Then accept and stop.

Table:

Curr State.	Next Tape Symbol: 0	1	2	X	Y	Z	B
q_0	(q_1, X, R)				(q_4, Y, R)		
q_1	$(q_1, 0, R)$	(q_2, Y, R)			(q_1, Y, R)		
q_2		$(q_2, 1, R)$	(q_3, Z, L)			(q_2, Z, R)	
q_3	$(q_3, 0, L)$	$(q_3, 1, L)$		(q_0, X, R)	(q_3, Y, L)	(q_3, Z, L)	
q_4					(q_4, Y, R)	(q_4, Z, R)	(q_5, B, R)
$*q_5$							

2. $\{0^n 1^{2n} 0^n \mid n \geq 0\}$

Algorithm: i. Mark unread 0 with X and move right
ii. Move to the right until first unread 1, mark with Y, move right
iii. Mark second 2 with Y, move right
iv. Move to the right until 0, replace with Z
v. Move left until X, move right
vi. If input is 0, repeat from i. Else, move right until B and accept and stop.

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Table:

Curr. State	Next Table Symbol: 0	1	X	Y	Z	B
q_0	(q_1, X, R)			(q_5, Y, R)		
q_1	$(q_1, 0, R)$	(q_2, Y, R)		(q_1, Y, R)		
q_2		(q_3, Y, R)				
q_3	(q_4, Z, L)	$(q_3, 1, R)$			(q_3, Z, R)	
q_4	$(q_4, 0, L)$	$(q_4, 1, L)$	(q_0, X, R)	(q_4, Y, L)	(q_4, Z, L)	
q_5				(q_5, Y, R)	(q_5, Z, R)	(q_6, B, R)
* q_6						

3. $\{ww^R \mid$ where $w \in (0+1)^*$ and w^R is reverse of $w\}$

Algorithm:

i. If input is 0, mark with X and move right until B or X (q_2), move left

ii. If input is 1, mark with X and move right until B or X (q_5), move left

iii. (q_2) if input is 0, mark with X and move left until X, move right

iv. (q_5) if input is 2, mark with X and move left until X, move right

v. repeat from i or ii if input is 0 or 1. If input is X, move right until B and accept and stop

Table:

Curr. State	Next table Symbol: 0	1	X	B
q_0	(q_1, X, R)	(q_4, X, R)	(q_7, X, R)	
q_1	$(q_1, 0, R)$	$(q_1, 1, R)$	(q_2, X, L)	(q_2, B, L)
q_2	(q_3, X, L)			
q_3	$(q_3, 0, L)$	$(q_3, 1, L)$	(q_0, X, R)	
q_4	$(q_4, 0, R)$	$(q_4, 1, R)$	(q_5, X, L)	(q_5, B, L)
q_5		(q_6, X, L)		
q_6	$(q_6, 0, L)$	$(q_6, 1, L)$	(q_0, X, R)	
q_7			(q_7, X, R)	(q_8, B, R)
* q_8				