

# CS251, Spring 2022

## Assignment 2: Question 3

**Q3a)** Fill in the next-state table and the output table below with 0s, 1s, and Xs where appropriate (Xs represent “don’t cares”). The first state has been completed for you.

$S_1$	$S_0$	C	D	$S'_1$	$S'_0$
0	0	0	0	0	1
0	0	0	1	1	0
0	0	1	X	1	1
0	1	0	0	0	0
0	1	X	1	0	1
0	1	1	0	1	0
1	0	0	0	1	0
1	0	X	1	1	1
1	0	1	0	0	0
1	1	0	0	1	1
1	1	X	1	0	0
1	1	1	0	0	1

$S_1$	$S_0$	P	Q
0	0	1	1
0	1	1	0
1	0	0	1
1	1	0	0

**Q3b)** Complete the table below tracing the above finite state machine on a particular sequence of input bits for C and D. Note that the next state of one column is the current state for the next column. The first column has been filled in for you. The outputs in each column must be specified for the current state.

Current State	00	01	10	10	11	00
P	1	1	0	0	0	1
Q	1	0	1	1	0	1
C	0	1	0	0	1	1
D	0	0	0	1	1	1
Next State	01	10	10	11	00	11