

# CS M51A, Sec. 1, Class Exercises No. 7 - SOLUTIONS

## Exercise 7.15

From the state table we get

$$P_1 = (a, b, c, e)(d, h)(f)(g)$$

To obtain  $P_2$ , we determine the class of  $P_1$  to which the successors of the states belong.

	1 (a, b, c, e)	2 (d, h)	3 (f)	4 (g)
0	3 2 3 2	4 4	3	4
1	1 1 1 1	1 1	1	2

Thus,

$$P_2 = (a, c)(b, e)(d, h)(f)(g)$$

To obtain  $P_3$ , we determine the group of states of  $P_2$  to which the successors of the state belong.

	1 (a, c)	2 (b, e)	3 (d, h)	4 (f)	5 (g)
0	4 4	3 3	5 5	4	5
1	2 2	1 1	1 1	2	3

Therefore,  $P = P_3 = P_2 = (a, c)(b, e)(d, h)(f)(g)$  and the reduced table is

$PS$	$Input$	
	$x = 0$	$x = 1$
$a$	$f, 0$	$b, 0$
$b$	$d, 0$	$a, 0$
$d$	$g, 1$	$a, 0$
$f$	$f, 1$	$b, 1$
$g$	$g, 0$	$d, 1$
	$NS, Output$	