

# CS375 WK7

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Figure 1: Q01: FA

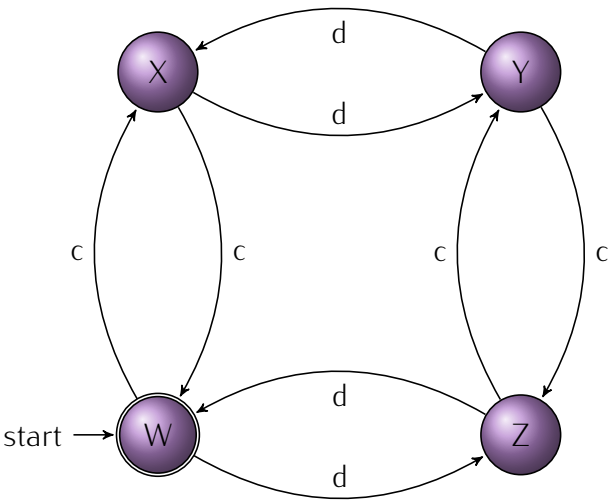


Figure 2: Q01: PDA

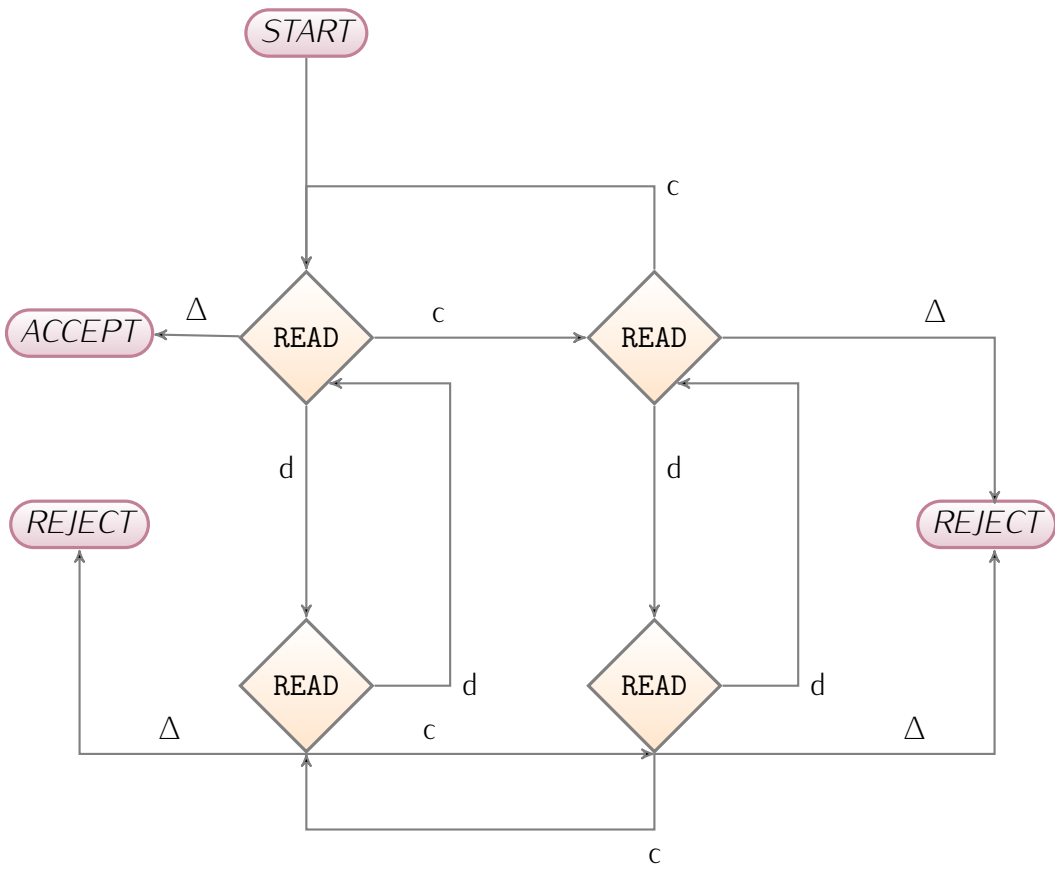


Figure 3: Q02: FA

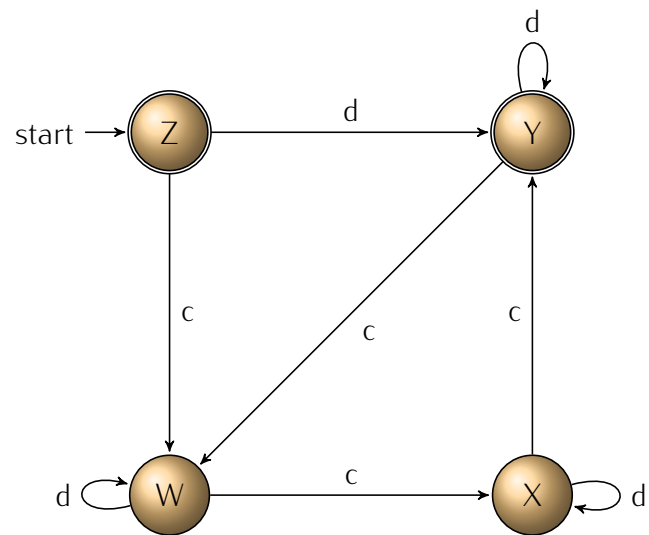


Figure 4: Q02: PDA

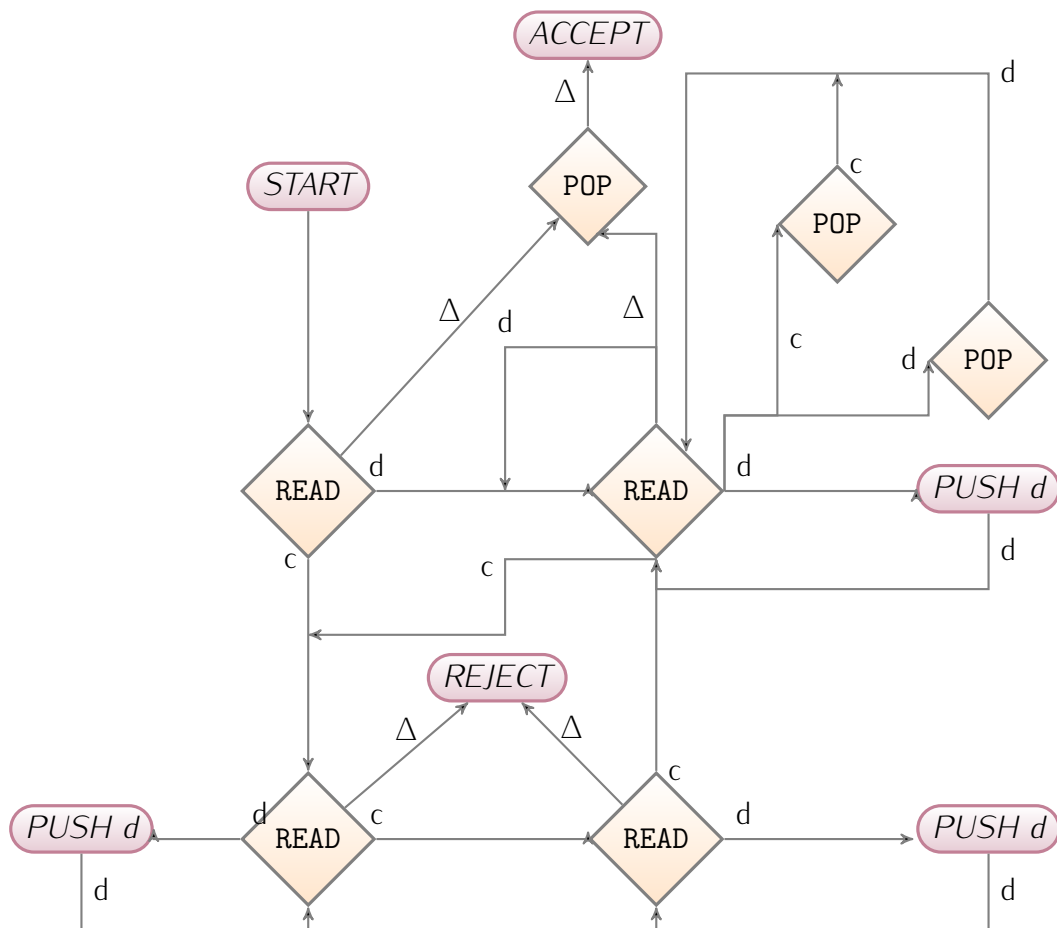


Figure 5: Q03a: Conversion Form

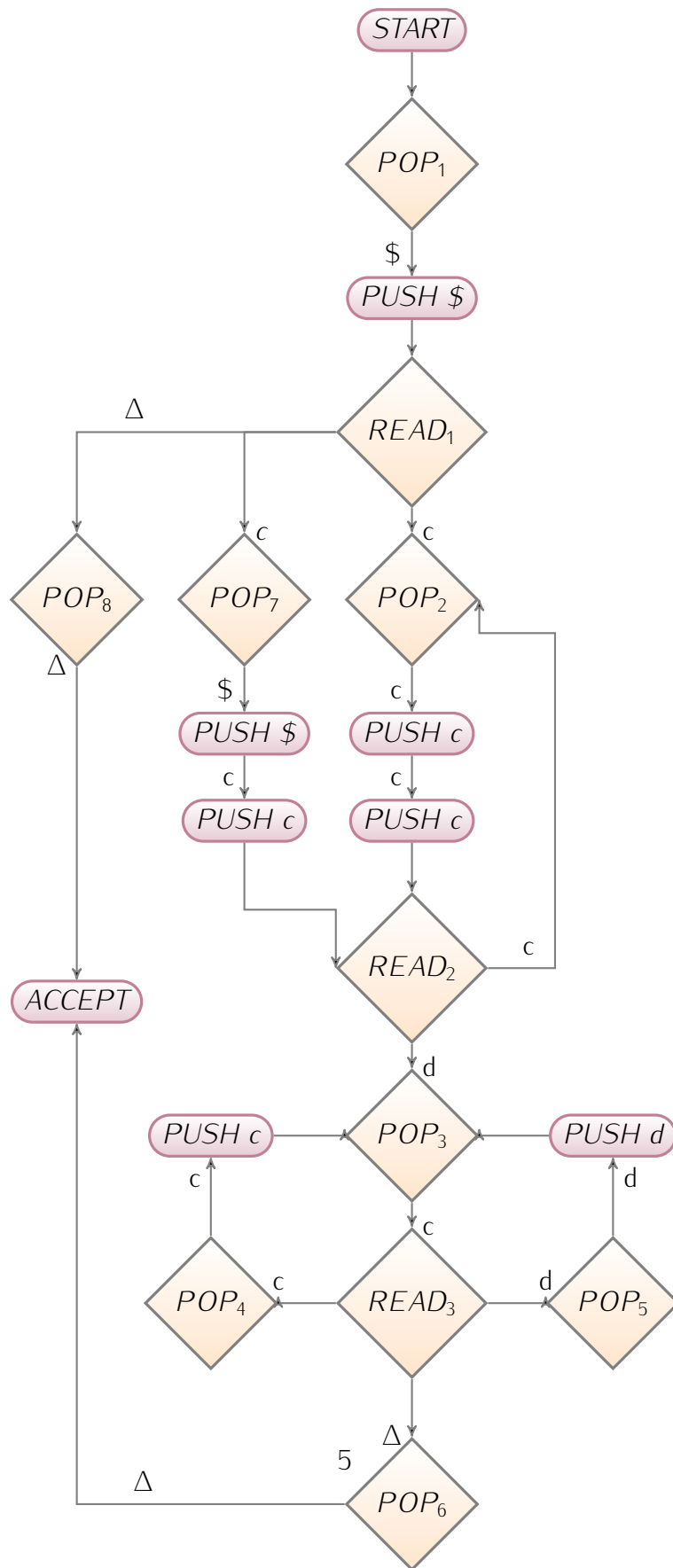


Figure 6: Q03.a Summary Table

FROM Where	To Where	READ What	POP What	PUSH What	ROW Number
START	$READ_1$	$\Lambda$	\$	\$	1
$READ_1$	ACCEPT	$\Lambda$	$\Lambda$	-	2
$READ_1$	$READ_2$	c	\$	c\$	3
$READ_1$	$READ_2$	c	c	cc	4
$READ_2$	$READ_2$	c	c	cc	5
$READ_2$	$READ_3$	d	c	-	6
$READ_3$	$READ_3$	c	cc	c	7
$READ_3$	$READ_3$	d	dc	d	7
$READ_3$	ACCEPT	$\Lambda$	$\Lambda$	-	8

Figure 7: Q03.b

STATE	STACK	TAPE
Start	$\Delta$	<a href="#">ccccdaaa</a>
$Read_1$	$\Delta$	<a href="#">cccaaaaa</a>
Push	c $\Delta$	<a href="#">ccccdaaa</a>
$Read_2$	c $\Delta$	<a href="#">cccdaaaa</a>
Push	cc $\Delta$	<a href="#">ccccdaaa</a>
$Read_2$	cc $\Delta$	<a href="#">cccdaaaa</a>
Push	ccc $\Delta$	<a href="#">ccccdaaa</a>
$Read_2$	ccc $\Delta$	<a href="#">cccdaaaa</a>
Pop	cc $\Delta$	<a href="#">ccccdaaa</a>
$Read_3$	cc $\Delta$	<a href="#">ccccdaaa</a>
Pop	c $\Delta$	<a href="#">cccdaaaa</a>
$Read_3$	c $\Delta$	<a href="#">ccccdaaa</a>
Pop	$\Delta$	<a href="#">ccccdaaa</a>
$Read_3$	$\Delta$	<a href="#">ccccdaaa</a>
Pop	$\Delta$	<a href="#">ccccdaaa</a>
Accept	$\Delta$	<a href="#">ccccdaaa</a>

Figure 8: Q03.c

STATE	STACK	TAPE
Start	$\Delta$	<span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">a</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">a</span>
$Read_1$	$\Delta$	<span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">a</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">a</span>
Push	$c\Delta$	<span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">a</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">a</span>
$Read_2$	$c\Delta$	<span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">a</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">a</span>
Push	$cc\Delta$	<span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">a</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">a</span>
$Read_2$	$cc\Delta$	<span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">a</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">a</span>
Push	$ccc\Delta$	<span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">a</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">a</span>
$Read_2$	$ccc\Delta$	<span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">a</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">a</span>
Pop	$cc\Delta$	<span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">a</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">a</span>
$Read_3$	$cc\Delta$	<span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">a</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">a</span>
Pop	$c\Delta$	<span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">a</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">a</span>
$Read_3$	$c\Delta$	<span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">a</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">a</span>
Pop	$\Delta$	<span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">a</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">a</span>
$Read_3$	$\Delta$	<span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">a</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">a</span>
Pop	$\Delta$	<span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">a</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">a</span>
Accept	$\Delta$	<span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">a</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">a</span>

Figure 9: Q03.d

STATE	STACK	TAPE
Start	$\Delta$	<span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">a</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span>
$Read_1$	$\Delta$	<span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">a</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span>
Push	$c\Delta$	<span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">a</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span>
$Read_2$	$c\Delta$	<span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">a</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span>
Push	$cc\Delta$	<span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">a</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span>
$Read_2$	$cc\Delta$	<span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">a</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span>
Push	$ccc\Delta$	<span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">a</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span>
$Read_2$	$ccc\Delta$	<span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">a</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span>
Pop	$cc\Delta$	<span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">a</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span>
$Read_3$	$cc\Delta$	<span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">a</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span>
Pop	$c\Delta$	<span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">a</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span>
$Read_3$	$c\Delta$	<span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">a</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span>
Pop	$\Delta$	<span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">a</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span>
$Read_3$	$\Delta$	<span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">a</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span>
Pop	$\Delta$	<span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">a</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span>
Accept	$\Delta$	<span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">a</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span>

Figure 10: Q03.e

STATE	STACK	TAPE
Start	$\Delta$	<span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">d</span> <span style="border: 1px solid black; padding: 0 2px;">d</span> <span style="border: 1px solid black; padding: 0 2px;">a</span>
$Read_1$	$\Delta$	<span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">d</span> <span style="border: 1px solid black; padding: 0 2px;">d</span> <span style="border: 1px solid black; padding: 0 2px;">a</span>
Push	$c\Delta$	<span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">d</span> <span style="border: 1px solid black; padding: 0 2px;">d</span> <span style="border: 1px solid black; padding: 0 2px;">a</span>
$Read_2$	$c\Delta$	<span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">d</span> <span style="border: 1px solid black; padding: 0 2px;">d</span> <span style="border: 1px solid black; padding: 0 2px;">a</span>
Push	$cc\Delta$	<span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">d</span> <span style="border: 1px solid black; padding: 0 2px;">d</span> <span style="border: 1px solid black; padding: 0 2px;">a</span>
$Read_2$	$cc\Delta$	<span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">d</span> <span style="border: 1px solid black; padding: 0 2px;">d</span> <span style="border: 1px solid black; padding: 0 2px;">a</span>
Push	$ccc\Delta$	<span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">d</span> <span style="border: 1px solid black; padding: 0 2px;">d</span> <span style="border: 1px solid black; padding: 0 2px;">a</span>
$Read_2$	$ccc\Delta$	<span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">d</span> <span style="border: 1px solid black; padding: 0 2px;">d</span> <span style="border: 1px solid black; padding: 0 2px;">a</span>
Push	$cccc\Delta$	<span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">d</span> <span style="border: 1px solid black; padding: 0 2px;">d</span> <span style="border: 1px solid black; padding: 0 2px;">a</span>
$Read_2$	$cccc\Delta$	<span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">d</span> <span style="border: 1px solid black; padding: 0 2px;">d</span> <span style="border: 1px solid black; padding: 0 2px;">a</span>
Pop	$ccc\Delta$	<span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">d</span> <span style="border: 1px solid black; padding: 0 2px;">d</span> <span style="border: 1px solid black; padding: 0 2px;">a</span>
$Read_2$	$ccc\Delta$	<span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">d</span> <span style="border: 1px solid black; padding: 0 2px;">d</span> <span style="border: 1px solid black; padding: 0 2px;">a</span>
Pop	$cc\Delta$	<span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">d</span> <span style="border: 1px solid black; padding: 0 2px;">d</span> <span style="border: 1px solid black; padding: 0 2px;">a</span>
$Read_3$	$cc\Delta$	<span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">d</span> <span style="border: 1px solid black; padding: 0 2px;">d</span> <span style="border: 1px solid black; padding: 0 2px;">a</span>
Pop	$c\Delta$	<span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">d</span> <span style="border: 1px solid black; padding: 0 2px;">d</span> <span style="border: 1px solid black; padding: 0 2px;">a</span>
Reject	$c\Delta$	<span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">c</span> <span style="border: 1px solid black; padding: 0 2px;">d</span> <span style="border: 1px solid black; padding: 0 2px;">d</span> <span style="border: 1px solid black; padding: 0 2px;">a</span>