ePAL - Text Searching

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November 21, 2012

Outline

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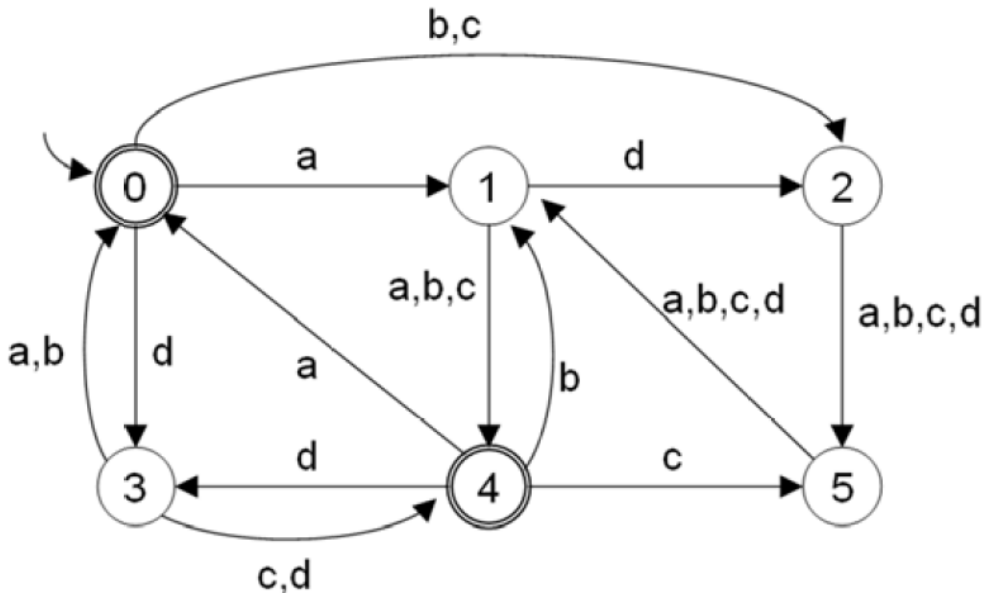
Example 1

Automaton A_1 is given by its transition table. Draw its transition diagram.

	a	b	c	
0	0	1	3	
1	2	2	5	F
2	3	0	2	
3	3	4	1	F
4	1	4	4	
5	5	0	5	

Example 2

Automaton A_2 is given by its transition diagram. Draw its transition table.



Example 3

Make a decision if automaton A_1 accepts the following words

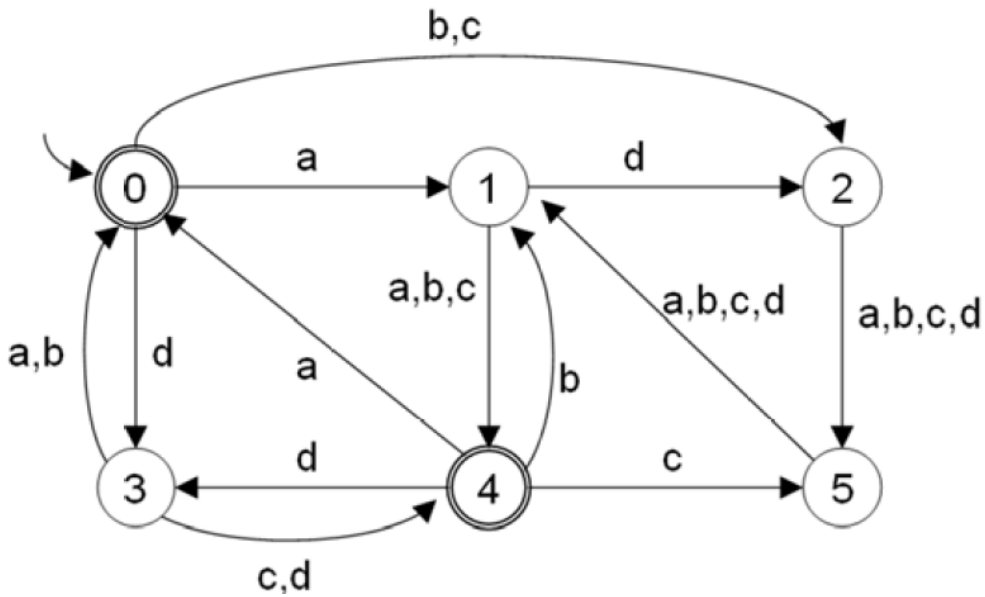
1. *adddca*
2. *bbcca*
3. *bbccaba*

	a	b	c	
0	0	1	3	
1	2	2	5	F
2	3	0	2	
3	3	4	1	F
4	1	4	4	
5	5	0	5	

Example 4

Make a decision if automaton A_2 accepts the following words

1. *adddca*
2. *bbcca*
3. *bbccaba*



Example 5

Draw a state diagram of an automaton that accepts just all words over alphabet $\{0, 1\}$ which

1. contain subsequence 01,
2. do not contain subsequence 01,
3. contain a single character 1 and an arbitrary number of characters 0,
4. begin and end with symbol 1,
5. represent binary represenations of numbers $0, 1, 2, 3, 4, 5, 6, 7$ in their all 1-, 2- 3- digits sequences.

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Example 6

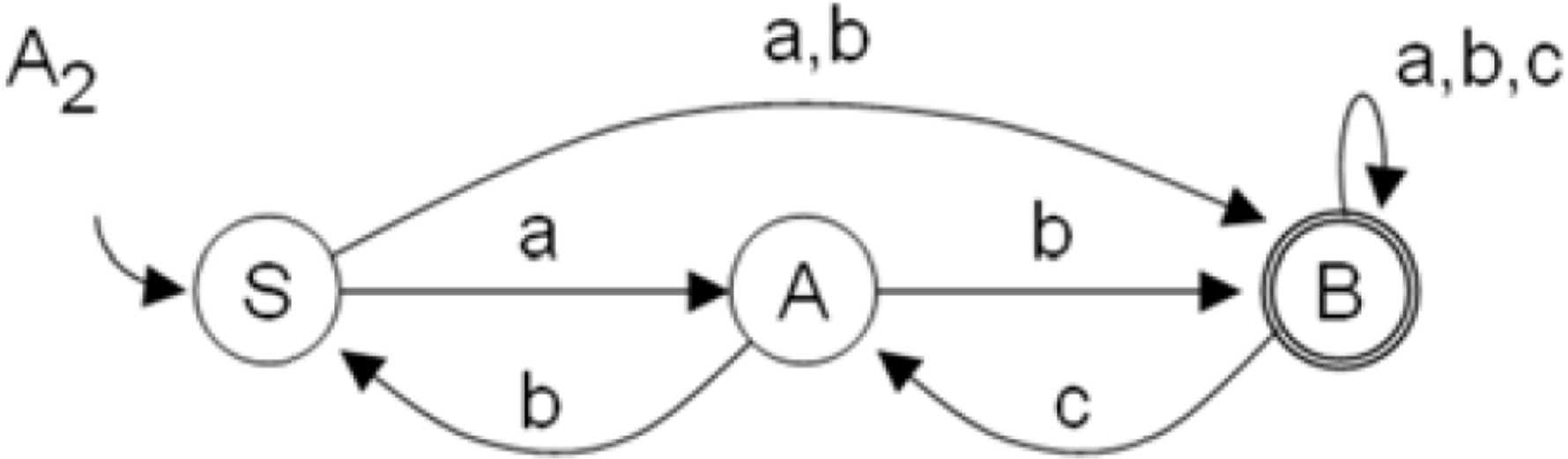
Automaton A_1 is given by its transition table. Determine its equivalent deterministic automaton

A_1

	a	b	c	d	
0	0, 1		2	2	
1		0, 2			F
2	1		1, 2	0, 2	

Example 7

Automaton A_2 is given by its transition table. Determine its equivalent deterministic automaton



Example 8

Create an NFA over alphabet $\{a, b, c\}$ that accepts all words both beginning and ending with chain

1. abc,
2. $acaca$,

Example 9

Create an NFA over alphabet $\{a, b, c\}$ that accepts all words notcontaining chain

1. abc,
2. $acaca$,

Example 10

Write all words of length at most 5 of a language described by the following regular expression over alphabet $\{0, 1\}$

1. $(01|0) \star 0$
2. $0(10|0)\star$

Example 11

Write a regular expression describing a maximum set M of words over alphabet $\{a, b, c\}$ such that

1. each word in M starts and ends with symbol b,
2. each word in M contains just one occurance of symbol c anywhere in the word,
3. no word in M contains synmbol a on an odd position (positions are indexed from 1).

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Example 12

Find all word occurances in text T having Levenshtein distance at most k from pattern P.

$$T = aacacacbaabbbcbbcacc$$

$$P = abbcba$$

$$k = 2$$

Example 13

Find all word occurances in text T having Levenshtein distance at most k from pattern P.

$$T = 0100111010000101011011100$$

$$P = 11100$$

$$k = 2$$

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Example 14

Create a DFA over alphabet A that accepts just words from set M over this alphabet.

$$A = \{a, b, c\}$$

$$M = \{a, b, ba, bc, aaa, bab, ccc, abbc, abcc\}$$

Example 15

Create a DFA over alphabet A that accepts just words from set M over this alphabet.

$$A = \{0, 1\}$$

$$M = \{10, 11, 101, 111, 1011, 1101, 10001, 10011, 10111, 11101, 11111\}$$

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