

## **TUGAS 12 TEORI BAHASA DAN OTOMATA**

*Diajukan untuk memenuhi salah satu nilai mata kuliah Teori Bahasa dan Otomata*

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**PROGRAM STUDI TEKNIK INFORMATIKA**

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Penyelesaian :

1) a a b

$V_{ij} = V_{ik} - v_{ik}v_{jk}$

$j \rightarrow i$

	1	2	3
1	A, c	A, c	B
2	B	S, c	
3	B		

$\rightarrow j = 2, i = 1, 2, k = 1$

Baris 2  $V_{12} = V_{11} - V_{21}$

$= A, c - A, c = A, A, A, c, c, c$

$= \emptyset, \emptyset, \emptyset, B$

$V_{22} = V_{21} - V_{31}$

$= A, c - B = A, B, A, c$

$= S, c, \emptyset$

$V_{13} = V_{11} - V_{31}$

$= A, c - A, c = A, A, A, c, c, c$

$= \emptyset, \emptyset, \emptyset, B$

2. > 'a a b a b'

		a	a	b	a	b
		1	2	3	4	5
1		A, C	A, C	B	A, C	B
2		B	S, C	A, S	S, C	
3		B, A	<del>B, A</del>	S, <del>C</del>		
4		S, A, C	B			
5		S, C				

$$V_{ij} = V_{ik} - V_{jk}$$

$$\rightarrow j = 2; i = 1, 2, 3, 4; k = 1$$

baris ke 2

$$V_{12} = \cancel{V_{11}} - V_{21}$$

$$= AC - AC = AA, AC, CA, CC =$$

$$= \emptyset \quad \emptyset \quad \emptyset \quad \underline{B}$$

$$V_{22} = V_{21} - V_{31}$$

$$= AC - B = AB, CB$$

$$= S, C, \emptyset$$

2. > 'a a b a b'

		a	a	b	a	b
		1	2	3	4	5
1	A, C	A, C	B	A, C	B	
2	B	S, C	A, S	S, C		
3	B, A	<del>B, A</del>	S, C			
4	S, A, C	B				
5	S, C					

$$V_{ij} = V_{ik} - V_{jk}$$

$$\rightarrow j = 2; i = 1, 2, 3, 4; k = 1$$

baris ke 2

$$V_{12} = \cancel{V_{11}} - V_{21}$$

$$= AC - AC = AA, AC, CA, CC =$$

$$= \emptyset \quad \emptyset \quad \emptyset \quad \underline{B}$$

$$V_{22} = V_{21} - V_{31}$$

$$= AC - B = AB, CB$$

$$= S, C, \emptyset$$



$$\begin{aligned}
 V_{22} &= V_{31} - V_{41} \\
 &= B - AC = BA - Be \\
 &= A, S
 \end{aligned}$$

$$\begin{aligned}
 V_{42} &= V_{41} - V_{51} \\
 &= A, C - B = AB - CB \\
 &= S, C, \emptyset
 \end{aligned}$$

Baris 3

$$\begin{aligned}
 &\xrightarrow{k_1} j=3, i=1, 2, 3 \quad k=1, 2 \\
 V_{13} &= V_{11} - V_{22} \\
 &= AC, A, C = AA, AC, CA, CC \\
 &= \emptyset, \emptyset, \emptyset, B
 \end{aligned}$$

$$\begin{aligned}
 &\xrightarrow{k_2} \\
 &= V_{12} - V_{31} \\
 &= B - AS, = BA, BS \\
 &= A, \emptyset
 \end{aligned}$$

$$\begin{aligned}
 &\xrightarrow{k_1} \\
 V_{23} &= V_{21} - V_{32} \\
 &= AC, AS = AA, AS, CA, CS \\
 &= \emptyset, \emptyset, \emptyset, \emptyset
 \end{aligned}$$

$$\begin{aligned}
 &\xrightarrow{k_2} \\
 &= V_{22} - V_{41} \\
 &= S, C, AC = SA, SC, CA, CC \\
 &= \emptyset, \emptyset, \emptyset, B
 \end{aligned}$$

k<sub>1</sub>

$$\begin{aligned} V_{33} &= V_{31} - V_{12} \\ &= B, SC = BS, BC \\ &= \emptyset, S \end{aligned}$$

k<sub>2</sub>

$$\begin{aligned} &= V_{32} - V_{51} \\ &= AS, B = AB, SB \\ &= SG, \emptyset \end{aligned}$$

bang ke 4

$$J = u, i = 1, 2, k = 1, 2, 3$$

k<sub>1</sub>

$$\begin{aligned} V_{14} &= V_{11} - V_{23} \\ &= A, C - B = AB, CB \\ &= SC, \emptyset \end{aligned}$$

k<sub>2</sub>

$$\begin{aligned} &= V_{12} - V_{32} \\ &= B - AS = BA, BS \\ &= A, \emptyset \end{aligned}$$

k<sub>3</sub>

$$\begin{aligned} &= V_{13} - V_{41} \\ &= B, A - AC = BA, BC, AA, AC \\ &= A, S, \emptyset, \emptyset \end{aligned}$$

k<sub>1</sub>

$$\begin{aligned} V_{21} &= V_{21} - V_{33} \\ &= AC - SC = AS, AC, CS, CC \\ &= \emptyset, \emptyset, \emptyset, B. \end{aligned}$$

k<sub>2</sub>

$$\begin{aligned} &= V_{22} - V_{42} \\ &= SC - SC = SS, SC, CS, CC \\ &= \emptyset, \emptyset, \emptyset, B \end{aligned}$$

k<sub>3</sub>

$$\begin{aligned} &= V_{13} - V_{51} \\ &= B - B = BB \\ &= \emptyset \end{aligned}$$

Bangs ke 5

$$j = 5 \quad i = 1 \quad l = 1, 2, 3, 4$$

l<sub>01</sub>

$$\begin{aligned} &= V_{11} - V_{21} \\ &= AC - B = AB, CB \\ &= SC, \emptyset \end{aligned}$$

l<sub>02</sub>

$$\begin{aligned} &= V_{12} - V_{33} \\ &= B - SC = BS, BC \\ &= \emptyset, S \end{aligned}$$



k<sub>3</sub>

$$V_{13} - V_{42}$$

$$= B \cap S = BS, BC, AS, AC$$

$$= \emptyset, S, \emptyset, \emptyset$$

k<sub>4</sub>

$$V_{14} - V_{51}$$

$$= S, A, C - B = SB, AB, CB$$

$$= \emptyset, S, C, \emptyset =$$

maka string "abab" di terima karena  
pada can terakhir  $V_{15}$  Terdatat S.



No. \_\_\_\_\_

Date: \_\_\_\_\_

☐ 3 Dik: data☐☐ 3 Dik: TBBK☐ $S \rightarrow AB \mid BC$ ☐ $A \rightarrow BA \mid a$ ☐ $B \rightarrow CC \mid b$ ☐ $C \rightarrow AB \mid a$ ☒

A.C    A.C    B    A.C    B    A.C

☐

a    a    b    a    b    a

☐

1    2    3    4    5    6

☐ 1

A.C    A.C    B    A.C    B    A.C

☐ 2

B    S.C    A.S    S.C    A.S

☐ 3B    B    S.C     $\emptyset$ ☐ 4S.C.A    ~~B.A.S~~    B.B☐ 5

S.C    S.C.A

☐ 6

B.A.S

☐☐☐ $V_{12} : V_{11} - V_{21} = A.C - A.C = AA, AC, CA, CC$ ☐ $= \emptyset, \emptyset, \emptyset, B$ ☐ $V_{22} : V_{21} - V_{31} = A.C - B = AB, CB$ ☐ $= S.C$ ☐ $V_{32} : V_{31} - V_{41} = B - A.C = BA, BC$ ☐ $= A.S$ ☐ $V_{42} : V_{41} - V_{51} = A.C - B = AB, CB$ ☐ $= S.C$ ☐ $V_{52} : V_{51} - V_{61} = B - A.C = BA, BC$ ☐ $= A.S$ ☐ $V_{13} : k_1$ ☐ $: V_{11} - V_{22}$ ☐ $: A.C - S.C$ ☐ $: A.S, AC, CS, CC > B$  $k_2$  $= V_{12} - V_{31}$  $= B - B$  $= BB = \emptyset$ 

BQW

No. \_\_\_\_\_

Date: \_\_\_\_\_

<input type="checkbox"/>	$V_{23} = k_1$	$k_2$
<input type="checkbox"/>	$= V_{21} - V_{32}$	$= V_{22} - V_{41}$
<input type="checkbox"/>	$= A, C - A, S$	$= S, C - A, C$
<input type="checkbox"/>	$= AA, AS, CA, CS = \emptyset$	$= SA, SC, CA, CC$
<input type="checkbox"/>		$= B$

<input type="checkbox"/>	$V_{33} = k_1$	$k_2$
<input type="checkbox"/>	$= V_{31} - V_{42}$	$= V_{32} - V_{51}$
<input type="checkbox"/>	$= B - S, C$	$= A, S - B$
<input type="checkbox"/>	$= BS, BC = S$	$= AB, SB = S, C$

<input type="checkbox"/>	$V_{43} = k_1$	$k_2$
<input type="checkbox"/>	$= V_{41} - V_{52}$	$= V_{42} - V_{51}$
<input type="checkbox"/>	$= A, C - A, S$	$= S, C - B$
<input type="checkbox"/>	$= AA, AS, CA, CS = \emptyset$	$= SB, CB = \emptyset$

<input type="checkbox"/>	$V_{14} = k_1$	$-k_2$	$k_3$
<input type="checkbox"/>	$= V_{11} - V_{23}$	$= V_{12} - V_{32}$	$= V_{13} - V_{41}$
<input type="checkbox"/>	$= A, C - B$	$= B - A, S$	$= B - A, C$
<input type="checkbox"/>	$= AB, CB$	$= BA, BS$	$= BA, BC$
<input type="checkbox"/>	$= S, C$	$= A$	$= A, S$

<input type="checkbox"/>	$V_{24} = k_1$	$k_2$	$k_3$
<input type="checkbox"/>	$= V_{21} - V_{33}$	$= V_{22} - V_{42}$	$= V_{23} - V_{41}$
<input type="checkbox"/>	$= A, C - S, C$	$= S, C - SC$	$= B - A, C$
<input type="checkbox"/>	$= AS, AC, CS, CC$	$= SS, SC, CS, CC$	$= BA, BC$
<input type="checkbox"/>	$= B$	$= B$	$= A, S$

No. \_\_\_\_\_

Date: \_\_\_\_\_

<input type="checkbox"/>	$V_{34} = k_1$	$k_2$	$k_3$
<input type="checkbox"/>	$= V_{31} - V_{43}$	$= V_{32} - V_{52}$	$= V_{33} - V_{61}$
<input type="checkbox"/>	$= B - \emptyset$	$= A, S - A, S$	$= S, C - A, C$
<input type="checkbox"/>	$= B$	$= AA, AS, SA, SS$	$= SA, SC, CA,$
<input type="checkbox"/>		$= \emptyset$	$= B$
<input type="checkbox"/>			
<input type="checkbox"/>	$V_{15} = k_1$	<del><math>k_2</math></del>	<del><math>k_3</math></del>
<input type="checkbox"/>	$= V_{11} - V_{24}$		
<input type="checkbox"/>	$= A, C - B, A, S$		
<input type="checkbox"/>	$= AB, AA, AS, CB, CA, CS$		
<input type="checkbox"/>	$= S, C$		
<input type="checkbox"/>			
<input type="checkbox"/>	$= k_2$	$= k_3$	$= k_4$
<input type="checkbox"/>	$= V_{12} - V_{33}$	$= V_{13} - V_{42}$	$= V_{14} - V_{51}$
<input type="checkbox"/>	$= B - S, C$	$= B - S, C$	$= S, CA - B$
<input type="checkbox"/>	$= BS, BC = S$	$= BS, BC = S$	$= SB, CB, AB$
<input type="checkbox"/>			$= S, C$
<input type="checkbox"/>			
<input type="checkbox"/>	$V_{25} = k_1$	$= k_2$	
<input type="checkbox"/>	$= V_{21} - V_{34}$	$= V_{22} - V_{43}$	
<input type="checkbox"/>	$= A, C - B, B$	$= S, C - \emptyset$	
<input type="checkbox"/>	$= AB, AB, CB, CB$	$= S, C$	
<input type="checkbox"/>	$= S, S$		
<input type="checkbox"/>			
<input type="checkbox"/>	$= k_3$	$= k_4$	
<input type="checkbox"/>	$= V_{23} - V_{52}$	$= V_{24} - V_{61}$	
<input type="checkbox"/>	$= B - A, S$	$= B, A, S - A, C$	
<input type="checkbox"/>	$= BA, BS$	$= BA, BC, AA, AC, SA,$	
<input type="checkbox"/>	$= A,$	$= A, S,$	
<input type="checkbox"/>			
<input type="checkbox"/>			



No. \_\_\_\_\_

Date: \_\_\_\_\_

$$\begin{aligned}
 & \square - V_{16} = k_1 \\
 & \square = V_{11} - V_{25} \\
 & \square = A, C - S, C, A \\
 & \square = AS, AC, AA, CS, CC, CA \\
 & \square = B
 \end{aligned}$$

$$\begin{aligned}
 & \square = k_2 & \square = k_3 \\
 & \square = V_{12} - V_{34} & \square = V_{13} - V_{43} \\
 & \square = B - B.B & \square = B - \emptyset \\
 & \square = BB, BB & \square = B \\
 & \square = \emptyset
 \end{aligned}$$

$$\begin{aligned}
 & \square = k_4 \\
 & \square = V_{14} - V_{52} \\
 & \square = S, C, A - A, S \\
 & \square = SA, SS, CA, CS, AA, AS \\
 & \square = \emptyset
 \end{aligned}$$

$$\begin{aligned}
 & \square = k_5 \\
 & \square = V_{15} - V_{61} \\
 & \square = B - A, C \\
 & \square = BA, BC \\
 & \square = A, S
 \end{aligned}$$

Panjang string 6 karena baris ke 6 = B, A, S  
 dan mengandung state awal. maka aababa  
 termasuk dalam bahasa tersebut.