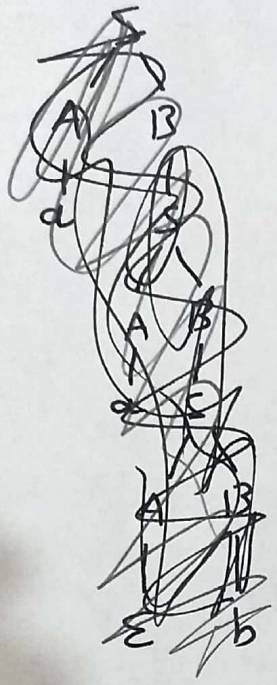
Qutaiba ALASHQAR, 2029oo 36 . 03.06.2023, otorman

CFG

1.) $S \to AB \mid \varepsilon$, aabbbbb

$A \to aB$

$B \to Sb$

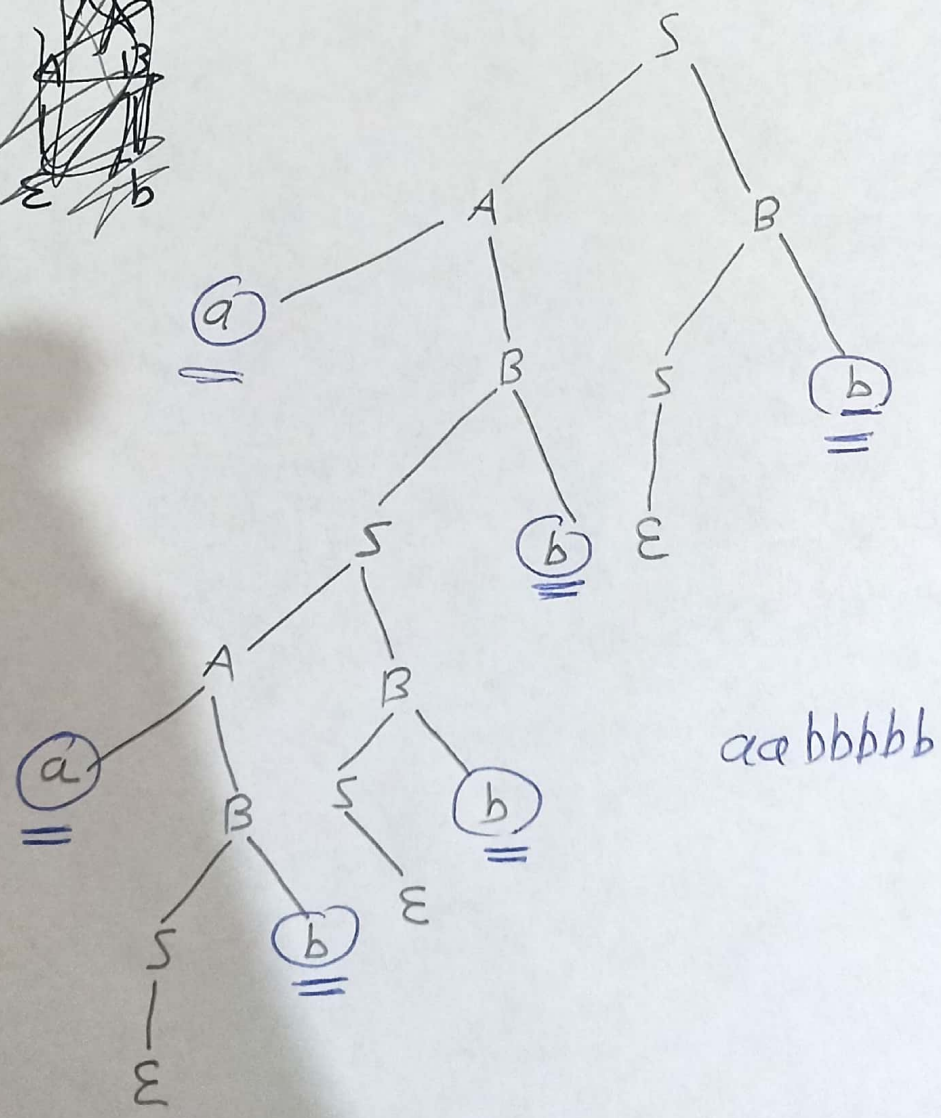


$S \to AB$, $S \to aBSb$, $S \to aSbEb$,

$S \to aABbEb$, $S \to aaBSbbEb$,

$S \to aaSbSbbE$, $S \to aaEbEbbEb$,

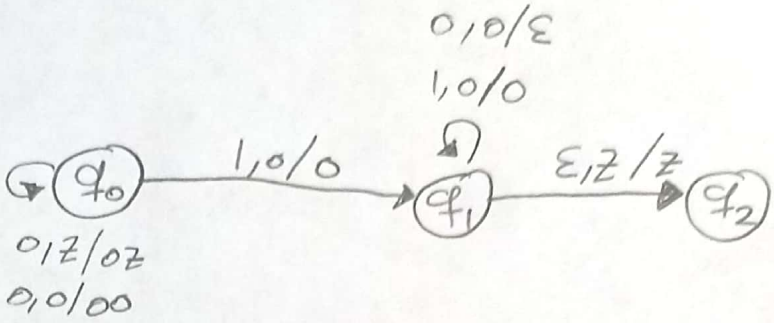
$S \to aabbbb$



aabbbbb

2.) PDA, 001111100

$\delta(q_0, 0, z) = (q_0, 0z)$
$\delta(q_0, 0, 0) = (q_0, 00)$
$\delta(q_0, 1, 0) = (q_1, 0)$
$\delta(q_1, 1, 0) = (q_1, 0)$
~~$\delta(q_1, 1, 0) = (q_1, 0)$~~
$\delta(q_1, 0, 0) = (q_1, \varepsilon)$
$\delta(q_1, \varepsilon, z) = (q_2, z)$



$(q_0, 001111100, z)$
↓
$(q_0, 01111100, 0z)$
↓
$(q_0, 1111100, 00z)$
↓
$(q_1, 111100, 00z)$
↓
$(q_1, 11100, 00z)$
↓
$(q_1, 1100, 00z)$
↓
$(q_1, 100, 00z)$
↓
$(q_1, 00, 00z)$
↓
$(q_1, 0, 0z)$
↓
$(q_1, \varepsilon, z) \longrightarrow (q_2, \varepsilon, z)$

doğru Zamek 001111100 kabul ediyor.

3.) $S \to AB \mid BBB \mid ADK$ / CNF dönüştürmek

$A \to a \mid aa \mid CE \mid \varepsilon$

$B \to A \mid ABB \mid AF \mid b$

$D \to d \mid A \mid c$

$F \to \varepsilon \mid EK$

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① ε-production eleminate / and unit production

$S \to AB \mid BBB \mid ADK \mid A \mid ABB \mid AF \mid b \mid BF \mid F$

$A \to a \mid aa \mid CE$

$B \to a \mid aa \mid CE \mid ABB \mid AF \mid b \mid BB \mid EK$

$D \to d \mid a \mid aa \mid CE \mid c$

$F \to \varepsilon \mid EK$ ⟶ yok edilir

② Eleminate useless one's

$S \to AB \mid BBB \mid A \mid ABB \mid AF \mid b \mid BF \mid F$

$A \to a \mid aa$

$B \to a \mid aa \mid ABB \mid AF \mid b \mid BB$

$D \to d \mid a \mid aa$

$S \to AB \mid BBB \mid A \mid ABB \mid b$

$A \to a \mid aa$

$B \to a \mid aa \mid ABB \mid b \mid BB$

Yeniler $\quad X \to a$

$Y \to BB$

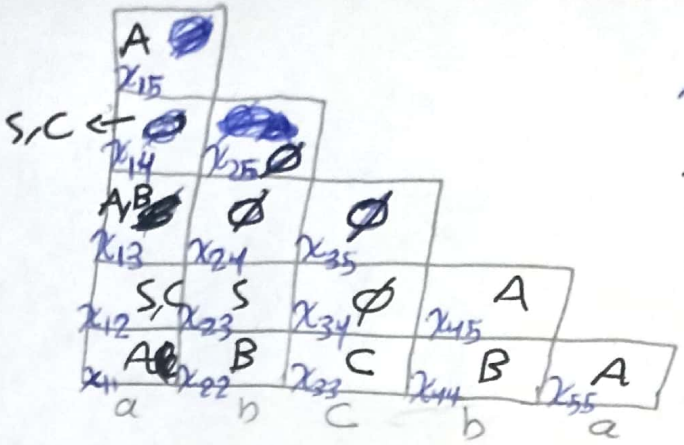
$S \to AB \mid BY \mid A \mid AY \mid b$

$A \to a \mid XX$

$B \to a \mid XX \mid AY \mid b \mid BB$

4.) abcba / CYK

- S → AB | BC
- A → BA | CC | a
- B → CC | b
- C → AB | c



① done

② $x_{12} = x_{11} \cdot x_{22} = AB \to S, C$

$x_{23} = BC \to S$

$x_{34} = CB \to \emptyset$

$x_{45} = BA \to A$

③ $x_{13} = x_{11} \cdot x_{23} + x_{12} \cdot x_{33}$

$= AS + SC \to \emptyset$ (AC) $(AC)S + SC = AC, AS + SC$ A,B

$x_{24} = x_{22} \cdot x_{34} + x_{23} \cdot x_{44}$

$B\emptyset + SB \to \emptyset$

$x_{35} = x_{37} \cdot x_{45} + x_{34} x_{55}$

$CA + \emptyset A \to \emptyset$

④ $x_{14} = x_{11} x_{24} + x_{12} x_{34} + x_{13} x_{44}$

$= (A,C) \cdot \emptyset + S\emptyset + \emptyset \to \emptyset$

A S/C + A,B,C

$x_{25} = x_{22} x_{35} + x_{23} x_{45} + x_{24} x_{55}$

$= B\emptyset + SA + \emptyset \to \emptyset$

⑤

$x_{15} = x_{11} x_{25} + x_{12} x_{35} + x_{13} x_{45} + x_{14} x_{55}$

$= (A,C)\emptyset + S\emptyset + \emptyset + \emptyset \to A$

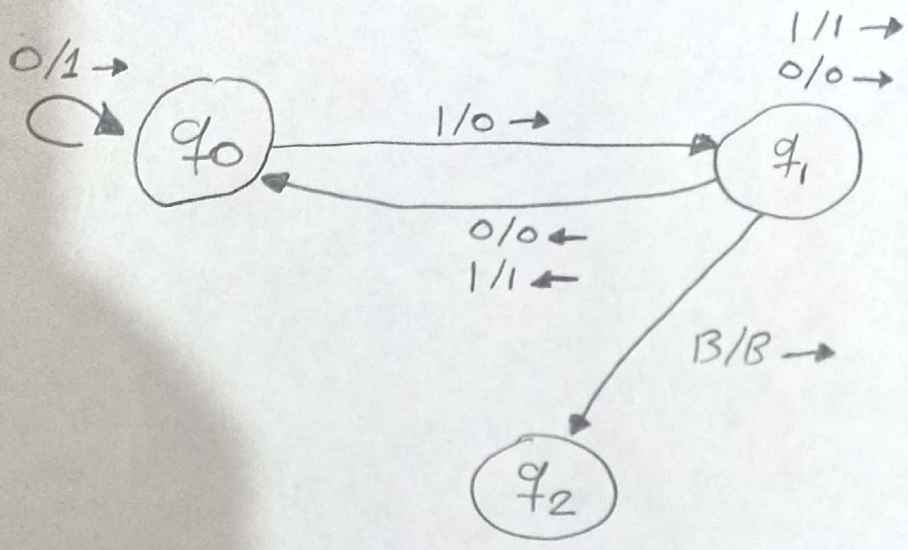
S/C A,B, S/C A

$x_{15} = \emptyset$, 0 Zeichen "abcba" $\in G(1)$

④

5.) TM // 1010

	0	1	B
q_0	$(q_0, 1, R)$	$(q_1, 0, R)$	$\emptyset$
q_1	$(q_1, 0, R), (q_0, 1, L)$	$(q_1, 1, R), (q_0, 1, L)$	(q_2, B, R)
q_2	$\emptyset$	$\emptyset$	$\emptyset$



1010 → input ⇒ 1010B

$q_0 1010 \Rightarrow 0q_1 010 \rightarrow 00q_1 10$

$\rightarrow 001q_1 0 \rightarrow 0010q_1$

$\rightarrow 0010Bq_2$ ⟶ doğru, kabul edilmiyor 1010

TM $\{0^n 1^n, n \geq 1\}$