

3.3.1

a) $(S, aba, \varepsilon) \vdash (S, ba, a) \vdash (S, a, aa) \vdash (S, e, aaa)$

$$(S, aba, \varepsilon) \vdash (S, ba, a) \vdash (S, a, aa) \vdash (F, e, aa)$$

$$(S, aba, \varepsilon) \vdash (F, ba, \varepsilon)$$

b)

• aba: a) Sıkkında $\notin L$ olduğunu gösterdik

• aa:

$$(S, aa, e) \vdash (S, a, a) \vdash (S, e, aa) \notin L$$

$$(S, aa, e) \vdash (S, a, a) \vdash (F, e, a) \notin L$$

$$(S, aa, e) \vdash (F, a, e) \notin L$$

• abb:

$$(S, abb, e) \vdash (S, bb, a) \vdash (S, b, aa) \vdash (S, e, aaa) \notin L$$

$$(S, abb, e) \vdash (F, bb, e) \notin L$$

• baa:

$$(s, baa, e) \vdash (s, aa, a) \vdash (f, a, a) \vdash (f, e, e) \in L$$

• bab:

$$(s, bab, e) \vdash (s, ab, a) \vdash (f, b, a) \vdash (f, e, e) \in L$$

• baaaa:

$$(s, baaaa, e) \vdash (s, aaaa, a) \vdash (s, aaa, aa) \vdash (f, aa, aa) \\ \vdash (f, a, a) \vdash (f, e, e) \in L$$

3.3.2

$$a) M = (\{p, q\}, \Sigma, V, \Delta, p, \{q\})$$

$$\Delta = \{ ((p, e, e), (q, s)), \\ ((q, e, s), (q, e)), \\ ((q, e, s), (q, ss)), \\ ((q, e, s), (q, [s])), \\ ((q, e, s), (q, (s))), \\ ((q, (, ()), (q, e)), \\ ((q,),), (q, e)), \\ (q, [,], (q, e)), \\ (q,],], (q, e)) \}$$

$$\Sigma = \{ (,), [,] \}$$

$$V = \{ s, (,), [,] \}$$

Aşma parantezi okuduğunda ss push ediyor, sonra parantezi okuyor

$$b) M = (\{s, p, q\}, \{a, b\}, \{a\}, \Delta, s, \{p, q\})$$

$$\Delta = \{ ((s, a, e), (s, a)), \\ ((s, e, e), (p, e)), \\ ((p, b, a), (p, e)), \\ ((p, b, a), (q, c)), \\ ((q, b, c), (p, e)) \}$$

$$c) M = (\underbrace{\{q_1, q_2, q_3, q_4\}}_K, \underbrace{\{a, b\}}_\Sigma, \underbrace{\{a, b, c\}}_\Gamma, \Delta, q_1, \{q_1, q_4\})$$

$$\Delta = \{ ((q_1, e, e), (q_2, c)), \\ ((q_2, a, e), (q_2, a)), \\ ((q_2, b, e), (q_2, b)), \\ ((q_2, a, e), (q_3, e)), \\ ((q_2, b, e), (q_3, c)), \\ ((q_2, e, e), (q_3, c)), \\ ((q_3, a, a), (q_3, e)), \\ ((q_3, b, b), (q_3, e)), \\ ((q_3, e, c), (q_4, e)) \}$$

// $|w|$ tek ise, ortadaki sembolü okunur ve pusluğa yok

// $|w|$ çift ise

$$d) M = (\{s\}, \{a, b\}, \{A, B\}, \Delta, s, \{s\})$$

$$\Delta = \{((s, b, e), (s, B)), ((s, b, A), (s, e)),$$

$$((s, a, BB), (s, e)), ((s, a, e), (s, AA)), ((s, a, B), (s, A))\}$$

3.4.1

$$\bullet M = (\{p, q\}, \{c, \cdot\}, \{s, c, \cdot\}, \Delta, p, \{q\})$$

$$\Delta = \{((p, e, e), (q, s)), ((q, e, s), (q, e)),$$

$$((q, e, s), (q, ss)), ((q, e, s), (q, (s))),$$

$$((q, c, c), (q, e)), ((q, \cdot, \cdot), (q, e))\}$$

• $(c)(\cdot)$ girişi için :

$$(p, (c)(\cdot), e) \vdash (q, (c)(\cdot), s) \vdash (q, (c)(\cdot), (s))$$

$$\vdash (q, (c)(\cdot), s) \vdash (q, (c)(\cdot), ss) \vdash (q, (c)(\cdot), (s)s)$$

$$\vdash (q, (c)(\cdot), s)s) \vdash (q, (c)(\cdot), \cdot s) \vdash (q, (c)(\cdot), s)$$

$$\vdash (q, (c)(\cdot), ss) \vdash (q, (c)(\cdot), (s)s) \vdash (q, (c)(\cdot), s)s)$$

$$\vdash (q, (c)(\cdot), \cdot s) \vdash (q, (c)(\cdot), s) \vdash (q, (c)(\cdot), \cdot) \vdash (q, e, e)$$