

1. Apresente os conjuntos First e Follow da Gramática.

Primeiramente, é necessário que a gramática esteja livre de recursão à esquerda e seja fatorada à esquerda:

1, 2: $P ::= KL \mid bKLe$

3, 4, 5: $K ::= cK \mid TV \mid V$

6: $T ::= tT'$

7, 8: $T' ::= T \mid \varepsilon$

9: $V ::= vV'$

10, 11: $V' ::= V \mid \varepsilon$

12: $L ::= J$

13, 14: $J ::= aJ' \mid eJ'$

15, 16: $J' ::= cJ' \mid \varepsilon$

Agora é possível realizar o cálculo de FIRST e FOLLOW:

$\text{FIRST}(b) = \{b\}$, $\text{FIRST}(e) = \{e\}$, $\text{FIRST}(c) = \{c\}$, $\text{FIRST}(t) = \{t\}$, $\text{FIRST}(v) = \{v\}$, $\text{FIRST}(a) = \{a\}$

$\text{FIRST}(P) = \{b, c, t, v\}$

$\text{FOLLOW}(P) = \{\$ \}$

$\text{FIRST}(K) = \{c, t, v\}$

$\text{FOLLOW}(K) = \{a, e\}$

$\text{FIRST}(T) = \{t\}$

$\text{FOLLOW}(T) = \{v\}$

$\text{FIRST}(T') = \{\varepsilon, t\}$

$\text{FOLLOW}(T') = \{v\}$

$\text{FIRST}(V) = \{v\}$

$\text{FOLLOW}(V) = \{a, e\}$

$\text{FIRST}(V') = \{\varepsilon, v\}$

$\text{FOLLOW}(V') = \{a, e\}$

$\text{FIRST}(L) = \{a, e\}$

$\text{FOLLOW}(L) = \{e, \$ \}$

$\text{FIRST}(J) = \{a, e\}$

$\text{FOLLOW}(J) = \{e, \$ \}$

$\text{FIRST}(J') = \{c, \varepsilon\}$

$\text{FOLLOW}(J') = \{e, \$ \}$

2. Construa a tabela de parsing LL(1).

	b	e	c	t	v	a	\$
P	2	/	1	1	1	/	/
K	/	/	3	4	5	/	/
T	/	/	/	6	/	/	/
T'	/	/	/	7	8	/	/
V	/	/	/	/	9	/	/
V'	/	11	/	/	10	11	/
L	/	12	/	/	/	12	/
J	/	14	/	/	/	13	/
J'	/	16	15	/	/	/	16

3. Apresente a sequência de estados da pilha de execução na análise de uma sentença válida de entrada de pelo menos tamanho 8

$w = bctvvace\$$

1. $P = [\$, P], w = \underline{b}ctvvace\$$
2. $P = [\$, e, L, K, b], w = \underline{b}ctvvace\$$
3. $P = [\$, e, L, K], w = b\underline{c}tvvace\$$
4. $P = [\$, e, L, K, c], w = b\underline{c}tvvace\$$
5. $P = [\$, e, L, K], w = bct\underline{v}vace\$$
6. $P = [\$, e, L, V, T], w = bct\underline{v}vace\$$
7. $P = [\$, e, L, V, T', t], w = bct\underline{v}vace\$$
8. $P = [\$, e, L, V, T'], w = bct\underline{v}vace\$$
9. $P = [\$, e, L, V], w = bct\underline{v}vace\$$
10. $P = [\$, e, L, V', v], w = bct\underline{v}vace\$$
11. $P = [\$, e, L, V'], w = bctv\underline{a}ce\$$
12. $P = [\$, e, L, V], w = bctv\underline{a}ce\$$
13. $P = [\$, e, L, V', v], w = bctv\underline{a}ce\$$
14. $P = [\$, e, L, V'], w = bctvv\underline{a}ce\$$

15. $P = [\$, e, L], w = bctvv\underline{a}ce\$$

16. $P = [\$, e, J], w = bctvv\underline{a}ce\$$

17. $P = [\$, e, J', a], w = bctvv\underline{a}ce\$$

18. $P = [\$, e, J'], w = bctvv\underline{a}ce\$$

19. $P = [\$, e, J', c], w = bctvv\underline{a}ce\$$

20. $P = [\$, e, J'], w = bctvv\underline{a}ce\$$

21. $P = [\$, e], w = bctvv\underline{a}ce\$$

22. $P = [\$], w = bctvv\underline{a}ce\$$

O autômato de pilha aceita a entrada w.