

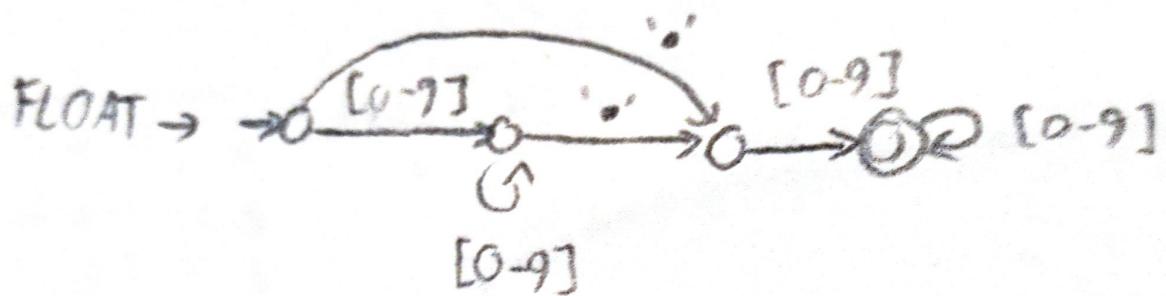
① a) $ID \rightarrow [a-zA-Z][a-zA-Z0-9]^*$

FLOAT $\rightarrow [0-9]^*.[0-9]^+|[0-9]^+[.0-9]^*$

NUM $\rightarrow [0-9]^+$

OCTAL $\rightarrow 0[0-7]^+$

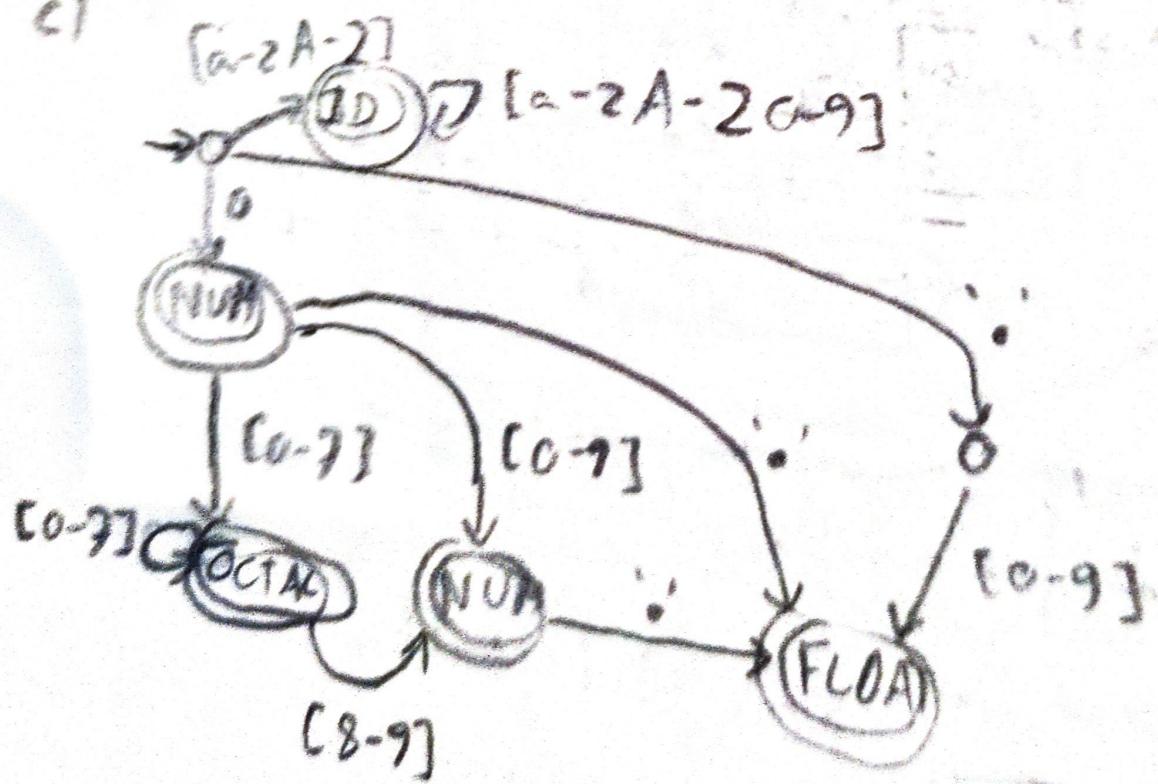
b) $ID \rightarrow \xrightarrow{[a-zA-Z]} \textcircled{ID} [a-zA-Z0-9]^*$



NUM $\rightarrow \xrightarrow{[0-9]} \textcircled{ID} [0-9]$

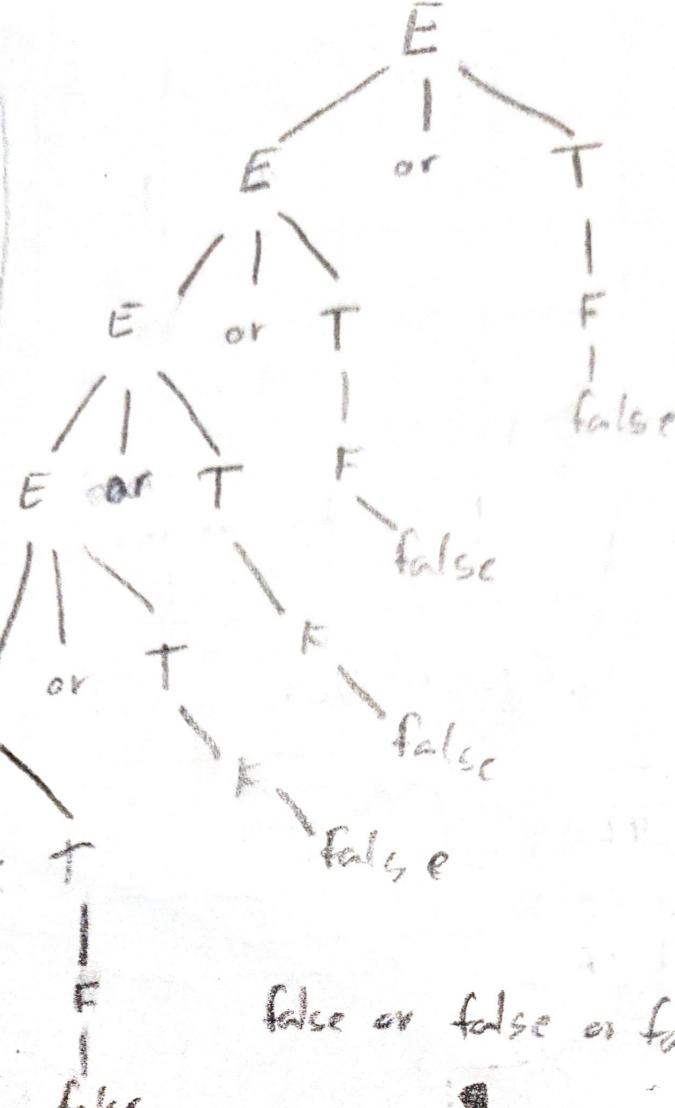
OCTAL $\rightarrow \xrightarrow{0} \xrightarrow{[0-7]} \textcircled{ID} [0-7]$

c)



② a)

- 1- $E \rightarrow E \text{ or } T$
- 2- $T \rightarrow T \text{ and } F$
- 3- $F \rightarrow \text{true}$
- 4- $F \rightarrow \text{false}$
- 5- $I(E)$



false or false or false or false or false or false or false

(como só é preciso de calcular os Follows)

- b)
- 1- $\text{First}(E) = \text{First}(T) = \{ \text{true}, \text{false}, \{ \}$
 - 2- $\text{First}(T) = \text{First}(F) = \{ \text{true}, \text{false}, \{ \}$
 - 3- $\text{First}(F) = \{ \text{true}, \text{false}, \{ \}$

	or	and	{	true	false	\$
E	1, 2	1, 2	1, 2			
T	3, 4	3, 4	3, 4			
F	2	5	6			

c) A gramática não é LL(1) porque há conflitos em uma ou mais entradas da parse table

- 1- $E \rightarrow TE'$ Remove left recursion

- 2- $E' \rightarrow \text{or } TE'$
- 3- $- \text{or } E$
- 4- $T \rightarrow FT'$
- 5- $T' \rightarrow \text{and } F$
- 6- $T \rightarrow \epsilon$
- 7- $F \rightarrow \text{true}$
- 8- $F \rightarrow \text{false}$
- 9- $I(G)$

	Nullable	First	Follow
E	0	t, f, {	2, b
E'	1	or, E	2, b
T	0	t, f, {	or, 1, \$
T'	1	and, F	or, 1, \$
F	0	t, f, {	and, or,), \$

$$\text{First}(F) = \{ t, f, \{ \}$$

$$\text{First}(T') = \{ \text{and}, F \}$$

$$\text{First}(T) = \text{First}(FF)$$

$$\text{First}(E') = \{ \text{or}, E \}$$

$$\text{First}(E) = \{ \text{true}, \text{false} \}$$

$$\text{Follow}(E) = \{ \}, \$ \}$$

$$\text{Follow}(E') = \text{Follow}(E) - \{ \text{true}, \text{false} \}$$

$$\text{Follow}(T) = \text{First}(E') \setminus E \cup \text{Follow}(E')$$

$$\text{Follow}(T') = \text{First}(T) \setminus E \cup \text{Follow}(T')$$

$$\text{Follow}(F) = \text{First}(T') \setminus E \cup \text{Follow}(T') = \{ \text{and}, \text{or},), \$, \}$$

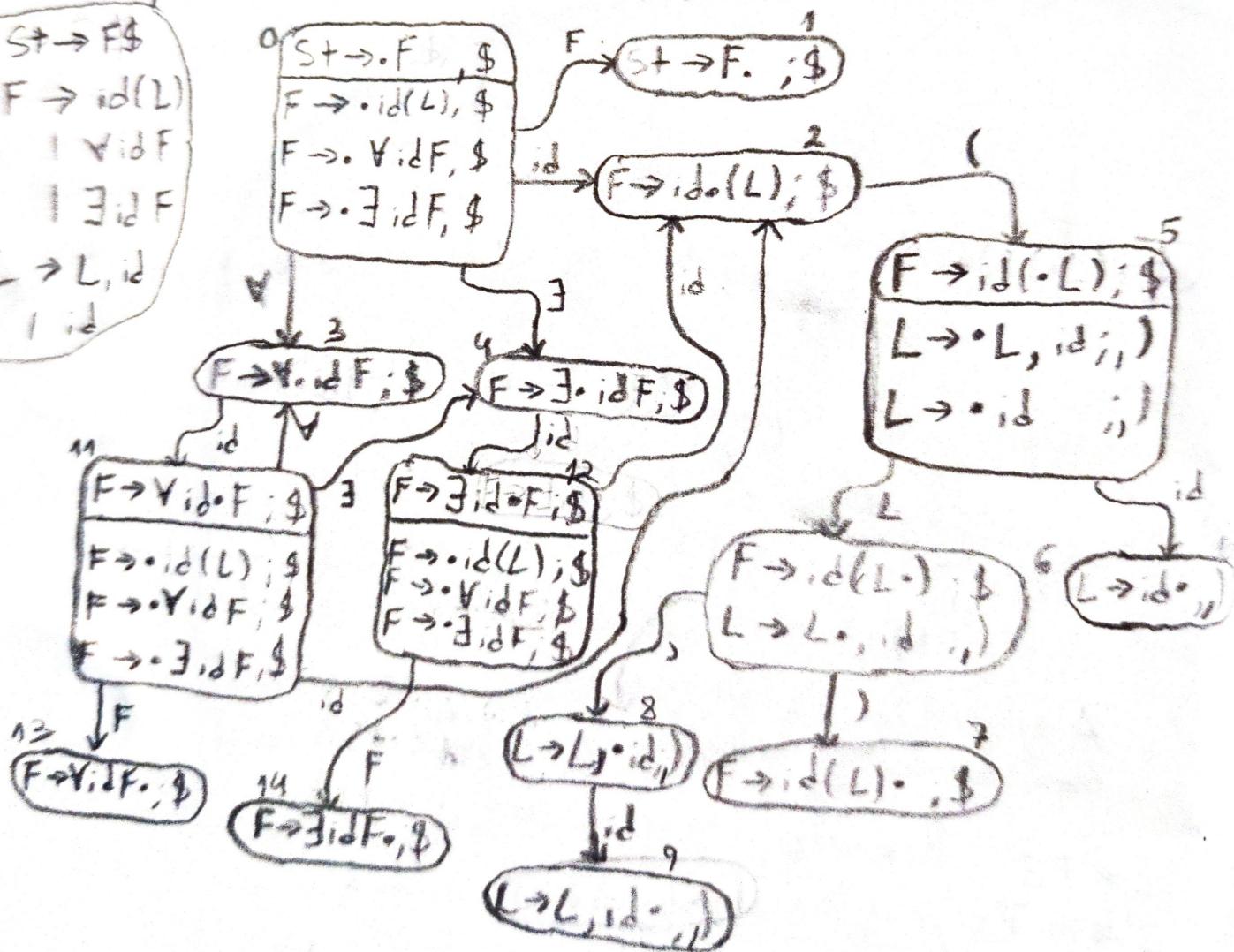
	and	or	()	true	false	5
E			1		1	1	
E'		1		3			3
T			4		4	4	
T'	5	6	6				6
F		9		7	8		

A gramática é L(1) porque não há conflitos na first-table

③

$$\text{First}(F) = \{ \text{id}, \text{V}, \exists \}, \text{First}(L) = \{ \text{id} \}$$

- 1. $S \rightarrow F \$$
- 2. $F \rightarrow \text{id}(L)$
- 3. $\text{id} \vee \text{id} F$
- 4. $\text{id} \exists \text{id} F$
- 5. $L \rightarrow L, \text{id}$
- 6. $\text{id} \text{id}$



	ACTION				L	F
id	(V)	,	\$	
0	s2		s3	s4		61
1					ACC	
2		s5				
3	s11					
4	s12					
5	s10				g6	
6		s7		s8		
7					r2	
8	s9					
9		r5		r5		
10		r6		r6		
11	s2		s3	s4	g3	
12	s2				g4	
13					r3	
14					r4	

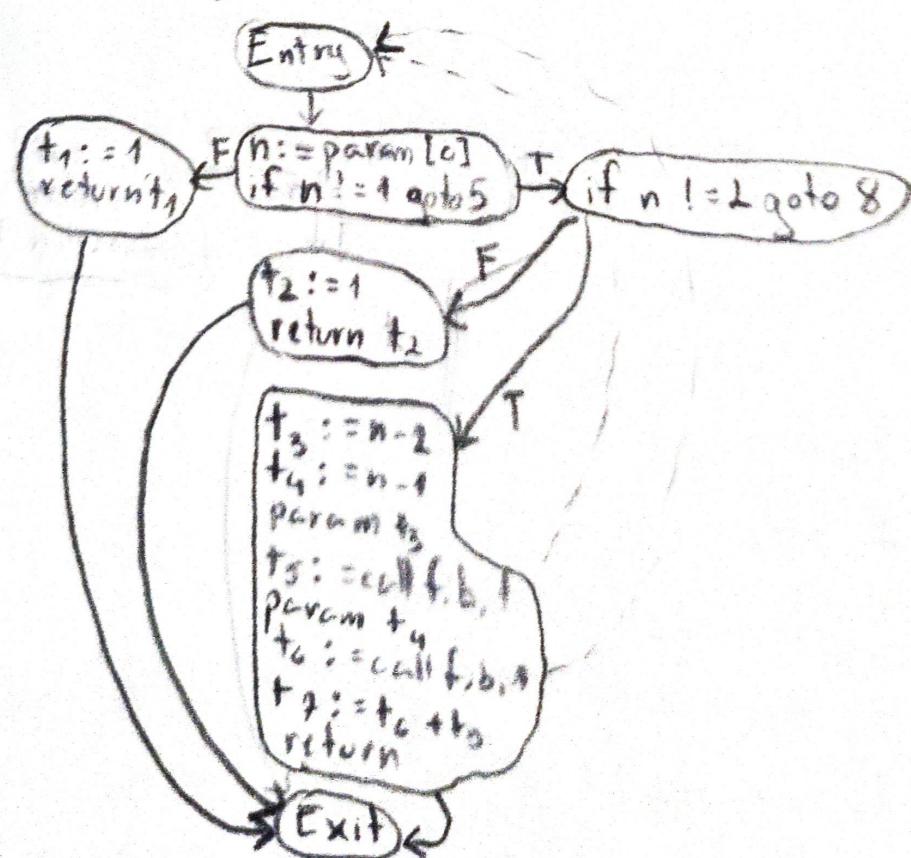
Stack	Current Head	Action
{ }	V id3 id1 id (id) \$	s3
{ V }	id3 id1 id (id) \$	s11
{ V , id1 }	id3 id (id) \$	s9
{ V , id1 , 3 , 4 }	id (id) \$	s12
{ V , id1 , 3 , 4 , id2 }	(id) \$	s2
{ V , id1 , 3 , 4 , id2 }	(id) \$	s5
{ V , id1 , 3 , 4 , id2 , id3 }	(id) \$	
{ V , id1 , 3 , 4 , id2 , id3 }	(id) \$	s10
{ V , id1 , 3 , 4 , id2 , id3 }	(id) \$	
{ V , id1 , 3 , 4 , id2 , id3 }	(id) \$	r6
{ V , id1 , 3 , 4 , id2 , id3 }	(id) \$	s7
{ V , id1 , 3 , 4 , id2 , id3 }	(id) \$	r2
{ V , id1 , 3 , 4 , id2 , F14 }	(id) \$	r4
{ V , id1 , F13 }	(id) \$	r3
{ F13 }	sete	ACC

a) ④ Instrução para chamar a main?

fib:

1 - $t_1 := \text{param}[0]$
2 - if $n \neq 1$ goto 5 ← Também
3 - $t_2 := 1$ ← da para
4 - return t_1 usar labels
5 - if $n \neq 2$ goto 8
6 - $t_2 := 1$
7 - return t_2
8 - $t_3 := n - 2$
9 - $t_4 := n - 1$
10 - param t_3
11 - $t_5 := \text{call fib}, 1$ ← #arguments
12 - param t_4
13 - $t_6 := \text{call fib}, 1$
14 - $t_2 := t_6 + t_5$
15 - return t_2
main:
16 - $t_8 := 4$
17 - param t_5
18 - $t_9 := \text{call fib}, 1$
20 - return t_9

b) Leaders = {1, 3, 5, 6, 8}



c) 4

