Ahsanullah   University of Science & Technology

Department of Computer Science & Engineering

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Submitted To,
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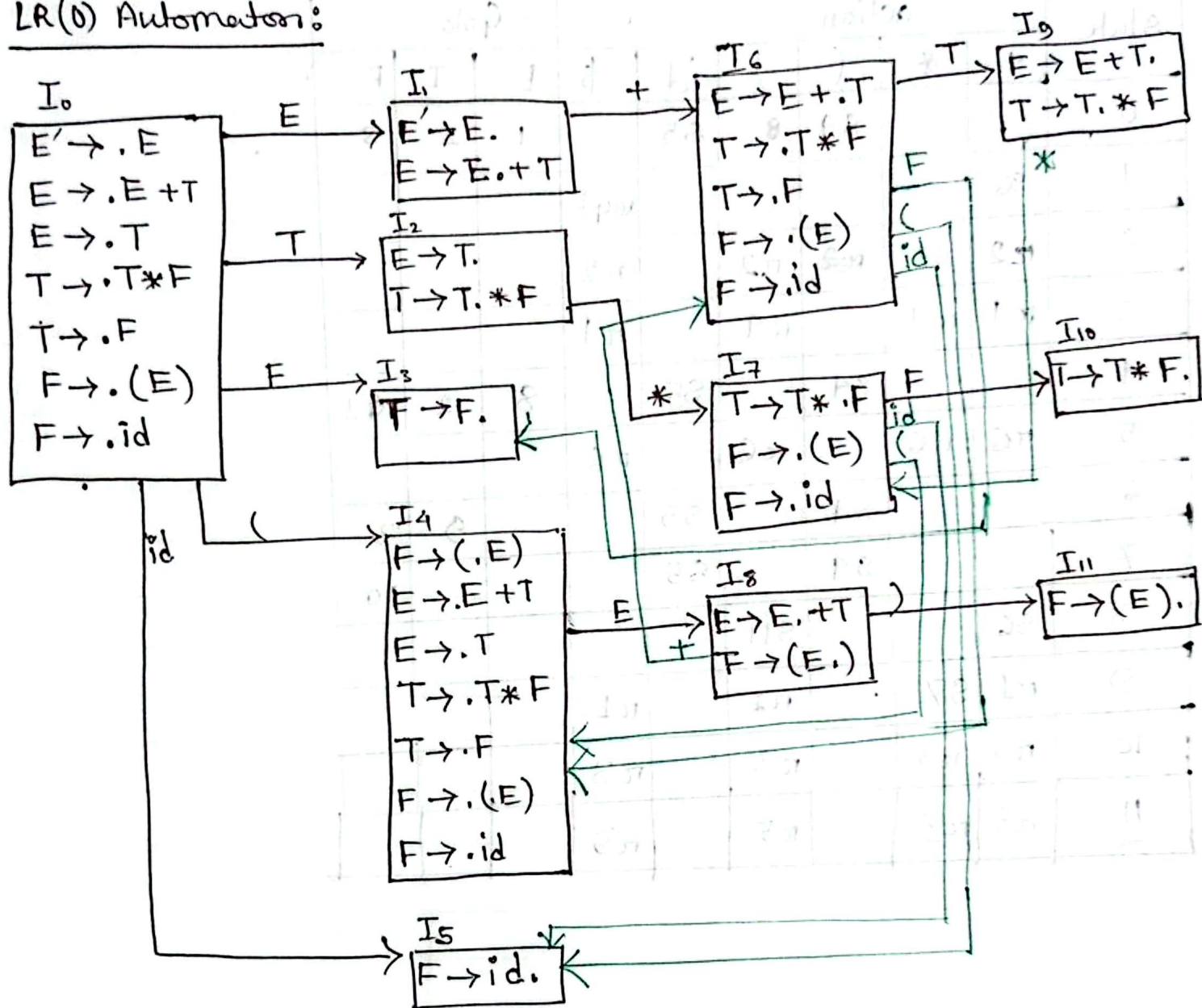**Lecturer, AUST**

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Ans. to the Ques. no. 1

Augmented Grammar:

0. $E' \rightarrow E$
1. $E \rightarrow E + T$
2. $E \rightarrow T$
3. $T \rightarrow T * F$
4. $T \rightarrow F$
5. $F \rightarrow (E)$
6. $F \rightarrow id$

LR(0) Automaton:

I_0
$E' \to .E$
$E \to .E+T$
$E \to .T$
$T \to .T*F$
$T \to .F$
$F \to .(E)$
$F \to .id$

I_1
$E' \to E.$
$E \to E.+T$

I_2
$E \to T.$
$T \to T.*F$

I_3
$T \to F.$

I_4
$F \to (.E)$
$E \to .E+T$
$E \to .T$
$T \to .T*F$
$T \to .F$
$F \to .(E)$
$F \to .id$

I_5
$F \to id.$

I_6
$E \to E+.T$
$T \to .T*F$
$T \to .F$
$F \to .(E)$
$F \to .id$

I_7
$T \to T*.F$
$F \to .(E)$
$F \to .id$

I_8
$E \to E.+T$
$F \to (E.)$

I_9
$E \to E+T.$
$T \to T.*F$

I_{10}
$T \to T*F.$

I_{11}
$F \to (E).$

Transitions labeled: E, T, F, +, *, (, id

Reduced:

$r1 \to E \to E+T$
$r2 \to E \to T$
$r3 \to T \to T*F$
$r4 \to T \to F$
$r5 \to F\not{E} \to (E)$
$r6 \to F \to id$

Parsing Table :-

state	action						Goto		
	+	*	(	)	id	$	E	T	F
0			S4	8	S5		1	2	3
1	S6					accept			
2	r2	S7	r2	r2		r2			
3	r4	r4		r4		r4			
4			S4		S5		8	12	3
5	r6	r6		r6		r6			
6			S4		S5			9	3
7			S4		S5				10
8	S6			S11					
9	r1	S7		r1		r1			
10	r3	r3		r3		r3			
11	r5	r5		r5		r5			

Ans to the ques. no. 2

String : id + id + id * id.

Stack	Symbol	Input	Action
0	$	id + id + id * id $	shift 5.
05	$id	+ id + id * id $	reduced by F→id (r6)
03	$F	+ id + id * id $	reduced by T→F (r4)
02	$T	+ id + id * id $	reduced by E→T (r2)
01	$E	+ id + id * id $	shift 6.
016	$E+	id + id * id$	shift 5
0165	$E + id	+ id * id$	reduced by F→id (r6)
0163	$E +F	+ id * id$	reduced by T→F (r4)
0162	$E+T	+ id* id $	reduced by E→E+T (r1)
01	$E	+ id *id$	shift 6
016	$E+	id *id $	shift 5
0165	$E +id	*id$	reduced by F→id (r6)
0163	$E+ F	*id$	reduced by T→F . (r4)
0162	$E+T	*id$	reduced shift 7
01627	$E+T *	id$	shift 5
016275	$E+T*id	$	reduced by F→id (r6)
016273	$E+T* F	$	reduced by T→T*F (r3)
0162	$E+T	$	reduced by E→E+T (r1)
01	$ E	$	Accept