



COMSATS University Islamabad, Wah Campus

Department of: COMPUTER SCIENCE

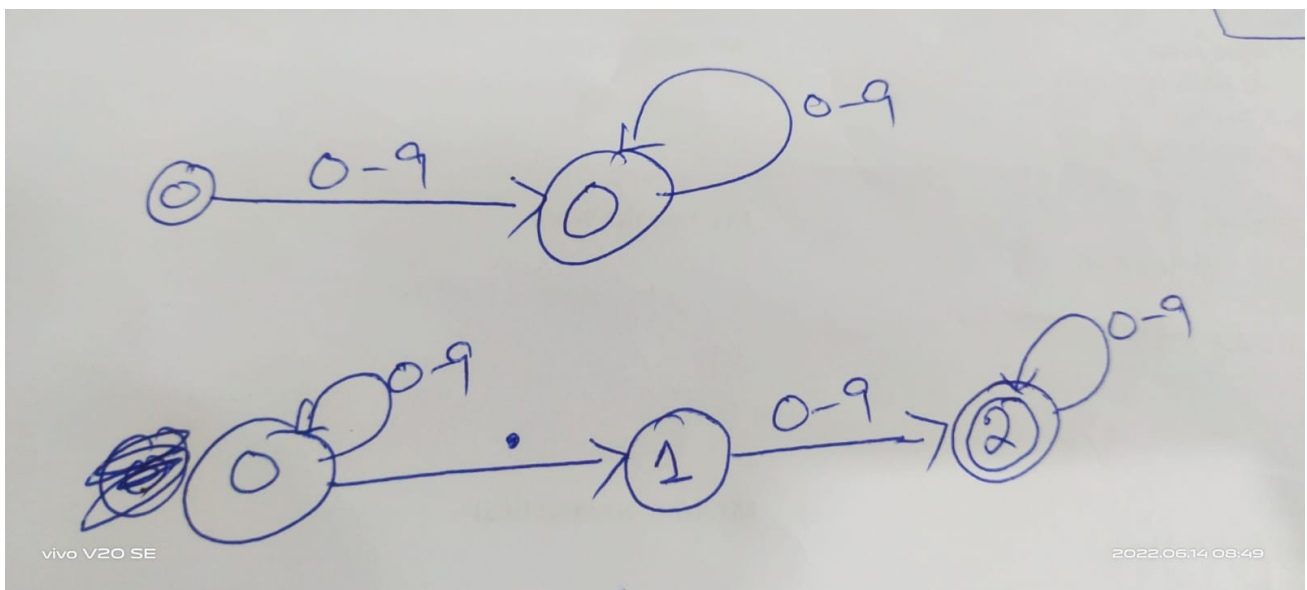
Class/Program: BS(A) Due Date: 21 June 2022 15:10
Subject: Compiler Construction (Lab) Instructor: Muhammad Nadeem

Note: copying will lead to ZERO Marks will be given on effort base.

Q. Consider the following grammar.

$E \rightarrow T$ print{" E-T is reduced"}
 $E \rightarrow E + T$ print{"E + T is reduce"}
 $T \rightarrow F$ print{"F is reduce"}
 $T \rightarrow T * F$ print{" T*F reduce"}
 $F \rightarrow a$ print{ "a is reduce , value is" a.val}
 $F \rightarrow b$ print{ "b is reduce , value is" bs.val}
 $F \rightarrow (E)$

consider 'a' as integer and 'b' as float number. Following are the NFA for integer and float number.



Following are the table for integer and float NFA.

Present State	[0-9]
0	1
1	1

For float

Present State	[0-9]	.
0	0	1
1	2	-
2	2	-

Following is LALR parsing table for this grammar.

LR table										
State	ACTION							GOTO		
	+	*	a	b	()	\$	E	T	F
0			s3	s4	s5				1	2
1	acc	s6				acc	acc			
2	r2	r2				r2	r2			
3	r4	r4				r4	r4			
4	r5	r5				r5	r5			
5			s3	s4	s5			7	1	2
6			s3	s4	s5					8
7	s10					s9				
8	r3	r3				r3	r3			
9	r6	r6				r6	r6			
10			s3	s4	s5				11	2
11	r1	s6				r1				

→ You are required to do following tasks.

1. Save all these tables in files , you can name as per your choice and can also use any pattern for table.
2. You need to read input from input.txt and identify tokens. (For example for input **35 + 45.5** tokens will be **a+b**.)

3. You need to parse identified tokens using LALR-1 parser. And each action should be printed (either it is shift, reduce etc).
4. You also need to execute corresponding semantic rules against each reduction.

Note:-

1. You need to submit code on portal with in due time.

2. Any code copied online or from fellow will be marked zero. That means you will get F grade in subject if you do not follow instructions.