Batch 14: Ishan Sharma (2016B2A70773P), Sarthak Sahu (2015B5A70749P), Sanjeev Singla (2017A7PS0152P), Anirudh Garg (2017A7PS0142P)				
Modified LL(1) Grammar				
No	**\<Non Terminal\>**	**Statements**	**Changes made?**	**If yes then why?**
1	program	→ \<moduleDeclarations\>\<otherModules\>\<driverModule\>\<otherModules\>	No	-
2	moduleDeclarations	→ \<moduleDeclaration\>\<moduleDeclarations\> | ε	No	-
3	moduleDeclaration	→ **DECLARE MODULE ID SEMICOL**	No	-
4	otherModules	→ \<module\>\<otherModules\>| ε	No	-
5	driverModule	→ **DRIVERDEF DRIVER PROGRAM DRIVERENDDEF** \<moduleDef\>	Yes	As per mail
6	module	→ **DEF MODULE ID ENDDEF TAKES INPUT SQBO** \<input_plist\> **SQBC SEMICOL** \<ret\>\<moduleDef\>	No	-
7	ret	→ **RETURNS SQBO** \<output_plist\> **SQBC SEMICOL** | ε	No	-
8	input_plist	→ **ID COLON** \<dataType\> \<input_plist_again\>	Yes	Left Recursion
9	input_plist_again	→ **COMMA ID COLON** \<dataType\> \<input_plist_again\> | ε		
10	output_plist	→ **ID COLON** \<type\> \<output_plist_again\>	Yes	Left Recursion
11	output_plist_again	→ **COMMA ID COLON** \<type\> \<output_plist_again\> | ε		
12	dataType	→ **INTEGER | REAL | BOOLEAN | ARRAY SQBO** \<range\> **SQBC OF** \<type\>	No	-
13	type	→ **INTEGER | REAL | BOOLEAN**	No	-
14	moduleDef	→ **START** \<statements\> **END**	No	-
15	statements	→ \<statement\> \<statements\> | ε	No	-
16	statement	→ \<ioStmt\>|\<simpleStmt\>|\<declareStmt\>|\<conditionalStmt\>|\<iterativeStmt\>	No	-
17	ioStmt	→ **GET_VALUE BO ID BC SEMICOL | PRINT BO** \<var\> **BC SEMICOL | PRINT BO** \<booleanConstants\> **BC SEMICOL**	Yes	Bool Constants for print
18	whichId	→ **SQBO ID SQBC** | ε	No	-
19	simpleStmt	→ \<assignmentStmt\> | \<moduleReuseStmt\>	No	-
20	assignmentStmt	→ **ID** \<whichStmt\>	No	-
21	whichStmt	→ \<lvalueIDStmt\> | \<lvalueARRStmt\>	No	-
22	lvalueIDStmt	→ **ASSIGNOP** \<expression\> **SEMICOL**	No	-
23	lvalueARRStmt	→ **SQBO** \<index\> **SQBC ASSIGNOP** \<expression\> **SEMICOL**	No	-
24	index	→ **NUM | ID**	No	-
25	moduleReuseStmt	→ \<optional\> **USE MODULE ID WITH PARAMETERS** \<idList\>**SEMICOL**	No	-
26	optional	→ **SQBO** \<idList\> **SQBC ASSIGNOP** | ε	No	-

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No	<Non Terminal>		Statements	Changes made?	If yes then why?
27	idList	→	**ID** <idList_again>	**Yes**	**Left Recursion**
28	idList_again	→	**COMMA ID** <idList_again> | ε		
29	expression	→	<arithmeticOrBooleanExpr> | <unary>	**Yes**	**Accounting for unary expressions**
30	unary	→	**MINUS BO** <arithmeticExpr> **BC** | **PLUS BO** <arithmeticExpr> **BC** | **MINUS** <var> | **PLUS** <var>	**Yes**	**As per mail**
31	<arithmeticOrBooleanExpr>	→	<recTerm> <arithmeticOrBooleanExpr_again>	**Yes**	**Removing Left Factoring and combined arithmetic and boolean**
32	<arithmeticOrBooleanExpr_again>	→	<logicalOp> <recTerm> <arithmeticOrBooleanExpr_again> | ε		
33	recTerm	→	<arithmeticExpr> <recTerm_again> | <booleanConstants>		
34	recTerm_again	→	<relationalOp> <arithmeticExpr> <recTerm_again> | ε		
35	arithmeticExpr	→	<term> <arithmeticExpr_again>	**Yes**	**Left Recursion and operator precedence**
36	arithmeticExpr_again	→	<prec2_op> <term> <arithmeticExpr_again> | ε		
37	term	→	<factor> <term_again>	**Yes**	**Left Recursion**
38	term_again	→	<prec1_op> <factor> <term_again> | ε		
39	factor	→	**BO** <arithmeticExpr> **BC** | <var>	**No**	**-**
40	var	→	**ID** <whichId> | **NUM** | **RNUM**	**Yes**	**Addition of true and false**
41	booleanConstants	→	**TRUE** | **FALSE**	**Yes**	**Defined Bool Consts**
42	prec2_op	→	**PLUS** | **MINUS**	**Yes**	**Operator Precedence**
43	prec1_op	→	**MUL** | **DIV**		
44	logicalOp	→	**AND** | **OR**	**No**	**-**
45	relationalOp	→	**LT** | **LE** | **GT** | **GE** | **EQ** | **NE**	**No**	**-**
46	declareStmt	→	**DECLARE** <idList> **COLON** <dataType> **SEMICOL**	**No**	**-**
47	conditionalStmt	→	**SWITCH BO ID BC START** <caseStmts> <default> **END**	**No**	**-**
48	caseStmts	→	**CASE** <value> **COLON** <statements> **BREAK SEMICOL** <caseStmts_again>	**Yes**	**Multiple cases**
49	caseStmts_again	→	**CASE** <value> **COLON** <statements> **BREAK SEMICOL** <caseStmts_again> | ε		
50	value	→	**NUM** | <booleanConstants>	**No**	**-**
51	default	→	**DEFAULT COLON** <statements> **BREAK SEMICOL** | ε	**No**	**-**
52	iterativeStmt	→	**FOR BO ID IN** <range> **BC START** <statements> **END** | **WHILE BO** <booleanExpr> **BC START** <statements> **END**	**No**	**-**
53	range	→	**NUM RANGEOP NUM**	**No**	**-**