CS132 HW1

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Oct 2016

Grammar

Production1: $Goal \rightarrow Expr1$ \$
Production2: $Expr1 \rightarrow Expr2\ Expr1'$
Production3: $Expr1' \rightarrow Expr2''\ Expr1' \mid \epsilon$
Production4: $Expr2 \rightarrow Expr3''\ Expr2'$
Production5: $Expr2' \rightarrow +\ Expr3 \mid -\ Expr3' \mid \epsilon$
Production6: $Expr2'' \rightarrow Expr4\ Expr2'$
Production7: $Expr3 \rightarrow --\ Expr3'' \mid Expr4$
Production8: $Expr3' \rightarrow ++\ Expr3'' \mid Expr4$
Production9: $Expr3'' \rightarrow ++\ Expr3'' \mid --\ Expr3'' \mid \epsilon$
Production10: $Expr4 \rightarrow Expr5\ Expr4'$
Production11: $Expr4' \rightarrow ++\ Expr4' \mid --\ Expr4' \mid \epsilon$
Production12: $Expr5 \rightarrow$ F $\mid Expr5 \mid Num \mid (Expr1)$

First and Follow Table

	Nullable	FIRST	FOLLOW
Goal	No	++, - -, F, Num, (	$
Expr1	No	++, - -, F, Num, (	$,)
Expr1'	Yes	F, Num, (	$,)
Expr2	No	++, - -, F, Num, (	$,), F, Num, (
Expr2'	Yes	+, -	$,), F, Num, (
Expr2"	No	+, -	$,), F, Num, (
Expr3	No	- -, F, Num, (	+, -, $,), F, Num, (
Expr3'	No	++, F, Num, (	+, -, $,), F, Num, (
Expr3"	No	++, - -, F, Num, (	+, -, $,), F, Num, (
Expr4	No	F, Num, (	+, -, $,), F, Num, (
Expr4'	Yes	++, - -	+, -, $,), F, Num, (
Expr5	No	F, Num, (	++, - -, +, -, $,), F, Num, (

Predictive Table

	Num	+	-	(	)	F	++	- -	$
Goal	1	error	error	1	error	1	1	1	error
Expr1	2	error	error	2	error	2	2	2	error
Expr1'	3	-	-	3	-	3	-	-	-
Expr2	4	error	error	4	error	4	4	4	error
Expr2'	-	5	5	-	-	-	-	-	-
Expr2"	6	error	error	6	error	6	error	error	error
Expr3	7	error	error	7	error	error	error	7	error
Expr3'	8	error	error	8	error	error	8	error	error
Expr3"	9	error	error	9	error	9	9	9	error
Expr4	10	error	error	10	error	10	error	error	error
Expr4'	-	-	-	-	-	-	11	11	-
Expr5	12	error	error	12	error	12	error	error	error

My language is LL(1) because it follow two rules:
There is only one production in each cell in the predictive table and there is no intersected set for $Expr1$'s FIRST and FOLLOW, $Expr2$'s FIRST and FOLLOW and $Expr4$'s FIRST and FOLLOW. Therefore, it is LL(1) language.