

CSC441 Compiler Construction - Quiz 2

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Quiz

Consider following grammar and select left factored form in the given options which should be the most appropriate answer *

$$\begin{aligned} Z &\rightarrow X a e c \mid X a e d \mid f \\ X &\rightarrow a \mid b \end{aligned}$$

$$\begin{aligned} Z &\rightarrow X a Z' \mid f \\ Z' &\rightarrow e Z'' \\ Z'' &\rightarrow c \mid d \\ X &\rightarrow a \mid b \end{aligned}$$

☐ Option 1

$$\begin{aligned} Z &\rightarrow X a e W \mid f \\ W &\rightarrow c \mid d \\ X &\rightarrow a \mid b \end{aligned}$$

☒ Option 2

$$\begin{aligned} Z &\rightarrow X Z' \mid f \\ Z' &\rightarrow a e Z'' \\ Z'' &\rightarrow c \mid d \\ X &\rightarrow a \mid b \end{aligned}$$

☐ Option 3

$$\begin{aligned} Z &\rightarrow a a e Z' \mid b a e Z' \mid f \\ Z' &\rightarrow c \mid d \end{aligned}$$

☐ Option 4



Consider following Predictive parsing table, Would it be possible for predictive parsing algorithm to complete its iteration and match \$ with \$ for following string "ibtae". *

	a	b	i	e	t	\$
S	$S \rightarrow a$		$S \rightarrow iEtSS'$			
S'				$S' \rightarrow eS$ $S' \rightarrow \epsilon$		$S' \rightarrow \epsilon$
E		$E \rightarrow b$				

☐ Yes

☒ No

Grammar with the LL(1) property is called ____ *

☐ • Context free grammar

☐ • Regular grammar

☐ • Irregular grammar

☒ • Predictive grammar



Left-factoring takes care of FIRST/FIRST conflicts. *

- ☒ true
- ☐ False

Given grammar is can be made LL(1) if *

$$\begin{aligned} A &\rightarrow Ba \mid b \\ B &\rightarrow eCd \mid e \\ C &\rightarrow Df \mid g \\ D &\rightarrow Df \mid Aa \mid Cg \end{aligned}$$

- ☐ left factoring is added in it
- ☒ all the options are correct
- ☐ Left recursion removed from it
- ☐ we convert it to Right recursive grammer



Is it possible to parse the sentence “while id<id do ++ id” using the table and CFG given below *

1. $\text{prog} \rightarrow \text{stmt}$
2. $\text{stmt} \rightarrow \text{if expr then block}$
3. $\text{stmt} \rightarrow \text{while expr do block}$
4. $\text{stmt} \rightarrow \text{expr ;}$
5. $\text{expr} \rightarrow \text{term} \Rightarrow \text{id}$
6. $\text{expr} \rightarrow \text{isZero? term}$
7. $\text{expr} \rightarrow \text{not expr}$
8. $\text{expr} \rightarrow ++ \text{id}$
9. $\text{expr} \rightarrow -- \text{id}$
10. $\text{term} \rightarrow \text{id}$
11. $\text{term} \rightarrow \text{const}$
12. $\text{block} \rightarrow \text{stmt}$
13. $\text{block} \rightarrow \{ \text{stmts} \}$
14. $\text{stmts} \rightarrow \text{stmt stmts}$
15. $\text{stmts} \rightarrow \epsilon$

	if	while	id	const	isZero?	not	++	--	{	then	do	;	=>	}	\$
prog	1	1	1	1	1	1	1	1							
stmt	2	3	4	4	4	4	4	4							
expr			5	5	6	7	8	9							
term			10	11											
block	12	12	12	12	12	12	12	12	13						
stmts	14	14	14	14	14	14	14	14						15	

- ☐ true
- ☒ false



Consider the following grammar, Where “old, and, men, women “ are terminals and “NP, N, Adj, Conj” are non-terminals. it is not suitable for LL(1) parsing because *

```
NP → Adj NP
NP → NP Conj NP
NP → Adj N
NP → N
Adj → old
Conj → and
N → men | women
```

- ☐ • It has null productions
- ☒ • It has left recursion
- ☐ • It is left factored
- ☐ • It has right recursion

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