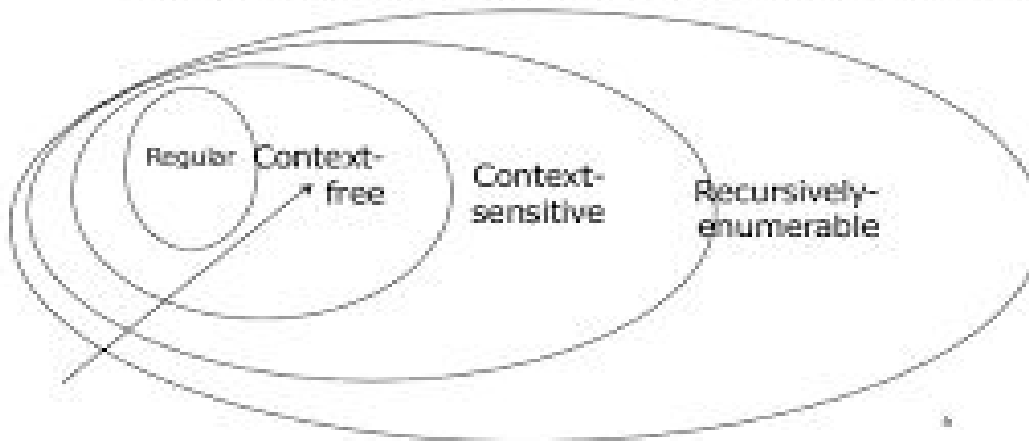


CFG :- Highlight

The Chomsky Hierachy



- A containment hierarchy of classes of formal languages



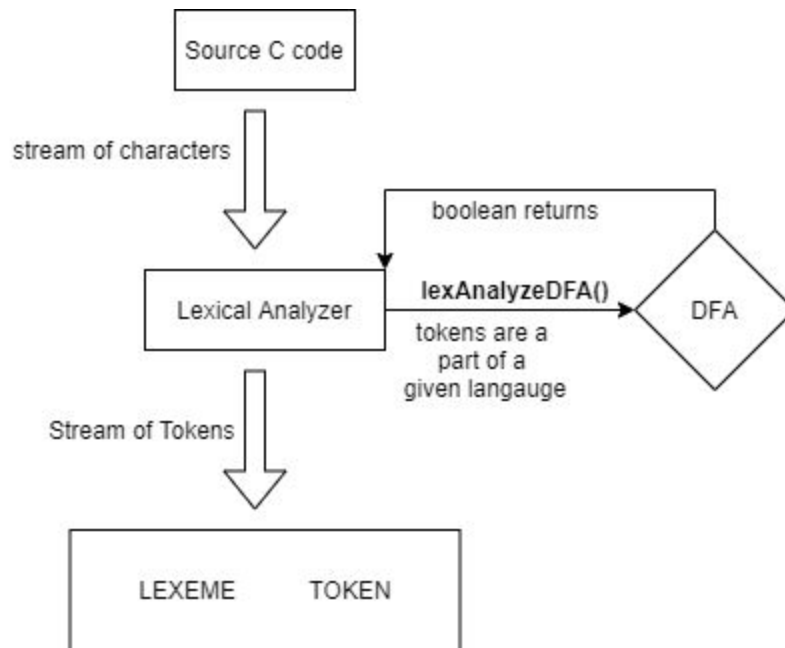
- A Context-free grammar is notably used for describing grammar.
- It is more powerful than finite automata, i.e. Regular Expression but still cannot define all possible languages.
- It is useful for nested structures.

CFG :- Grammar

```
<program> -> <rtype> main ( ) { <dec_list> <stmt_list> }  
<rtype> -> int | void  
<dec_list> -> <con_type> <dtype> <id_list>  
<con_type> -> const | eps  
<dtype> -> int | float | char | string | void  
<id_list> -> id <id_list'>  
<id_list'> -> , id <id_list'> | eps  
<stmt_list> -> <stmt> <stmt_list'>  
<stmt_list'> -> <stmt> <stmt_list'> | eps  
<stmt> -> <assign> | <if_stmt> | <for_stmt> | <while_stmt>  
<assign> -> id = <exp>  
<exp> -> <term exp'>  
<exp'> -> + <term exp'> | - <term exp'> | eps  
<term> -> <factor> <term'>  
<term'> -> * <factor> <term'> | / <factor> <term'> | eps  
<factor> -> id | integer | ( <exp> )  
<for_stmt> -> for ( id = <exp> ; <cndtn> ; id = <exp> ) { <stmt_list> }  
<cndtn> -> <exp> <relop> <exp>
```

<relop> -> < | >

Lexical Analyzer :- Architecture

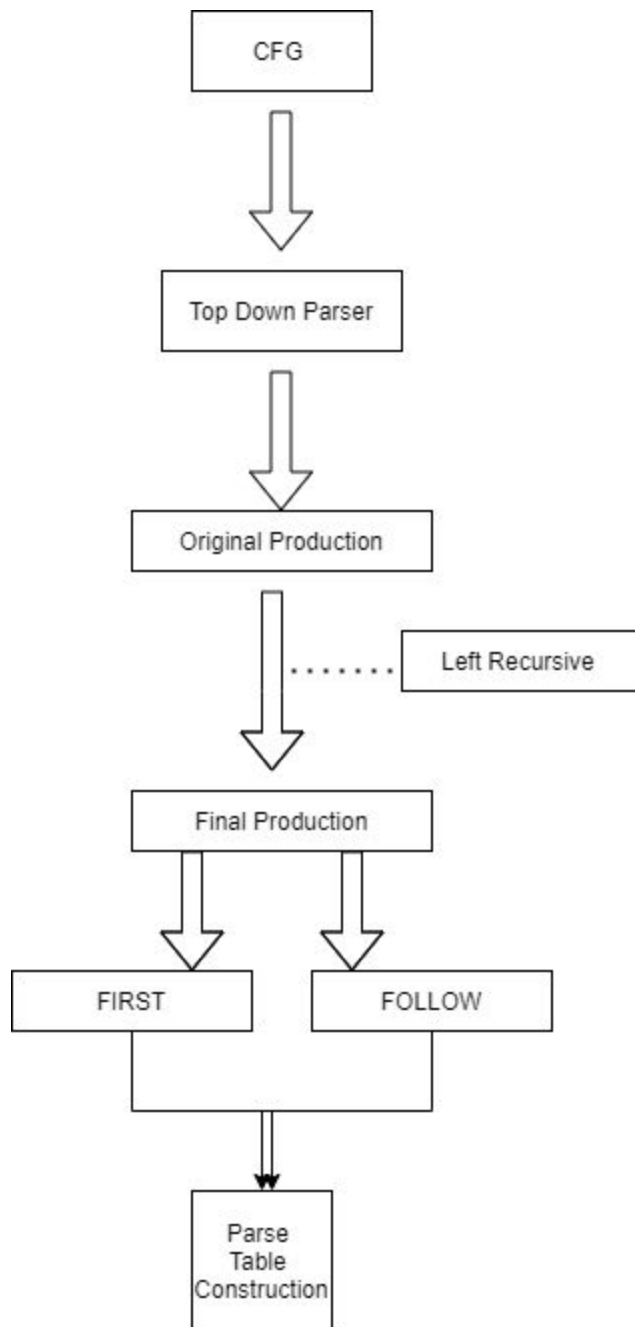


Lexical Analyzer :- Output

Enter a txt file for lexical analysis: test1.c

LEXEME	TOKENS
int	Keyword
main	Identifier
(Symbol
)	Symbol
{	Symbol
string	Keyword
ch1	Identifier
ch2	Identifier
str	Identifier
;	Symbol
float	Keyword
var	Identifier
s	Identifier
;	Symbol
const	Keyword
float	Keyword
k	Identifier
=	Operator
1.1	Float
;	Symbol
ch1	Identifier
=	Operator
"compiler"	String Literal
;	Symbol
ch2	Identifier
=	Operator
"design"	String Literal
;	Symbol
var	Identifier
=	Operator
10.1	Float
;	Symbol
s	Identifier
=	Operator
0.0	Float
;	Symbol
s	Identifier
=	Operator
s	Identifier
+	Operator
k	Identifier
;	Symbol
str	Identifier
=	Operator

Top Down Parser :- Architecture



- Top Down parsing is the parsing strategy where one looks at the highest level of the parse tree and works down the parse tree by rewriting the rules of the formal grammar.
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