

CFG rules

1)number->T digit E

T -> +|-|epsilon

E-> “.”digit

2)String

String->(“)letter number (“)

3)Reserved Word

Reserved_Word -> int | float | string | read | write | repeat |
until | if | elseif | else | then | return | endl

4)comment

Comment->”/*”letter number”*/*”

5)Identifier

Identifier->Letter Q

Q-> Letter Q|number Q|epsilon

6)Function call

Function_call -> identifier ArgList

ArgList->"(" Arguments ")"

Arguments -> Term Arg

Arg-> "," Term Arg | epsilon

7)Term

Term->number|identifer|Function_call

8)Arthmetic_Op

Arthmetic_Op -> + | / | * | -

9)Equation

Equation->G

G-> "(" L ")" G|Term G| Arthmetic_Op G |epsilon

$L \rightarrow \text{identifier } L \mid \text{number } L \mid \text{Arithmetic_Op } L \mid \text{epsilon}$

10)Expression

$\text{Expression} \rightarrow \text{String} \mid \text{Term} \mid \text{Equation}$

11)Assignment_stat

$\text{Assignment_stat} \rightarrow \text{identifier} \text{ ":=" } \text{Expression}$

12)Datatype (Token)

$\text{Datatype} \rightarrow \text{int} \mid \text{float} \mid \text{string}$

13)Declaration_stat

$\text{Declaration_stat} \rightarrow \text{Datatype } A \text{ " ;"}$

$A \rightarrow \text{identifier } A \mid \text{Assignment_stat } A \mid \text{" , " } A \mid \text{epsilon}$

14)Write_stat

$\text{Write_stat} \rightarrow \text{"write" } M \text{ " ;"}$

$M \rightarrow \text{Expression} \mid \text{endl}$

15)Read_stat

Read_stat->"read" identifier ";"

16)Return_stat

Return_stat->"return" Expression ";"

17) Condition Operator

Condition Operator -> "<" | ">" | "=" | "<>"

Statement-> Function call | Equation | Assignment_stat |
Declaration_stat | Write_stat | Read_stat |
Return_stat | comment | IF_stat | Repeat | Else | Else_if_stat

18)Condition

Condition->identifier Boolean_operator Term

19)Boolean_Op->"&&" | "||"

20)Condition_stat

Condition_stat->Condition Z

Z->Boolean_operator Condition Z | epsilon

21)If_stat

If_stat->"if" Condition_stat "then" Statement U

U->Else_if_stat U | Else_stat | "end"

22)Else_if_stat

Else_if_stat->"elseif" If_stat

23)Else_stat

Else_stat->Statement "end"

24)Repeat_stat

Repeat_stat->"repeat" Statement "until" Condition_stat

25)FunctionName

FunctionName->letter T

T->letter T | number | epsilon

26)Parameter

Parameter->Datatype identifier

27)Function_declaration

Function_declaration->Datatype FunctionName “(“ B “)”

B->Parameter B | “,” Parameter B | epsilon

28)Function_body

Function_body->“{” Statement Return_stat “}”

29)Function_stat

Function_stat-> Function_declaration Function_body

30)Main_function

Main_function->Datatype “main” “()” Function_body

31)Program

Program->K Main_function K

K->Function_stat K | epsilon