

Gramática LL1 da Linguagem GF
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Obs.: (i) não-terminais cujos nomes terminam com os termos *fat* ou *r* indicam que se fez necessário realizar uma fatoração ou eliminar uma recursão (à esquerda) para manter a gramática no padrão de um analisador LL(1); e (ii) a gramática original se encontra disponível em <https://bit.ly/2PyKoG>.

PROGRAM = FUNCTIONS MAINFUNC

PROGRAM = DECL 'endLine' GLDECL FUNCTIONS MAINFUNC

GLDECL = DECL 'endLine' GLDECL

GLDECL = ϵ

FUNCTIONS = 'funDecl' 'id' PARAMS RETURNTYPE BLOCK FUNCTIONS

FUNCTIONS = ϵ

MAINFUNC = 'main' 'paramBeg' 'paramEnd' TYPE BLOCK

PARAMS = 'paramBeg' PARAMSfat

PARAMSfat = 'paramEnd'

PARAMSfat = LISTPARAMS 'paramEnd'

LISTPARAMS = TYPE NAME LISTPARAMSr

LISTPARAMSr = 'commaSep' LISTPARAMS

LISTPARAMSr = ϵ

TYPE = 'typeInt'

TYPE = 'typeFloat'

TYPE = 'typeBool'

TYPE = 'typeChar'

TYPE = 'typeString'

TYPE = 'typeEmpty'

TYPE = 'typeNull'

RETURNTYPE = TYPE RETURNTYPEfat

RETURNTYPEfat = 'arrayBeg' 'arrayEnd'

RETURNTYPEfat = ϵ

NAME = 'id' NAMEfat
NAMEfat = 'arrayBeg' EXPR 'arrayEnd'
NAMEfat = ϵ
NAMEfat = 'arrayBeg' EXPR 'arrayEnd'
NAMEfat2 = EXPR 'arrayEnd'
NAMEfat2 = 'arrayEnd'

BLOCK = 'blockBeg' CMDS 'blockEnd'

CMDS = CMD CMDS
CMDS = ϵ

CMD = DECL 'endLine'
CMD = id CMDfat
CMD = PRINT 'endLine'
CMD = READ 'endLine'
CMD = IFELSE
CMD = WHILE
CMD = REPEAT
CMD = RETURN 'endLine'
CMDfat = 'arrayBeg' EXPR 'arrayEnd' ASSG 'endLine'
CMDfat = ASSG 'endLine'
CMDfat = FUNCCALL 'endLine'
CMDfat = ϵ

DECL = 'varDecl' TYPE NAME

ASSG = 'opAssign' VALUE

VALUE = ARRAY
VALUE = EXPR

ARRAY = 'arrayBeg' ELEMENTS 'arrayEnd'

ELEMENTS = EXPR ELEMENTSr
ELEMENTSr = 'commaSep' ELEMENTS
ELEMENTSr = ϵ

CONSTANT = 'constNumInt'
CONSTANT = 'constNumFloat'
CONSTANT = 'constBool'

CONSTANT = 'constChar'
CONSTANT = 'constString'

FUNCCALL = 'paramBeg' LISTPARAMSCALL 'paramEnd'

LISTPARAMSCALL = PARAMITEM LISTPARAMSCALLr
LISTPARAMSCALLr = 'commaSep' LISTPARAMSCALL
LISTPARAMSCALLr = ϵ

PARAMITEM = CONSTANT
PARAMITEM = NAME PARAMITEMfat
PARAMITEM = ϵ
PARAMITEMfat = FUNCCALL
PARAMITEMfat = ϵ

PRINT = 'cmdPrint' 'paramBeg' MESSAGE 'paramEnd'
READ = 'cmdRead' 'paramBeg' NAME 'paramEnd'

MESSAGE = 'constString' MESSAGEr
MESSAGE = NAME MESSAGEr
MESSAGEr = 'opConcat' MESSAGE
MESSAGEr = ϵ

IFELSE = IF ELIF ELSE

IF = 'cmdIf' 'paramBeg' EXPR 'paramEnd' BLOCK

ELIF = 'cmdElif' 'paramBeg' EXPR 'paramEnd' BLOCK ELIF
ELIF = ϵ

ELSE = 'cmdElse' BLOCK
ELSE = ϵ

WHILE = 'cmdWhile' 'paramBeg' EXPR 'paramEnd' BLOCK

REPEAT = 'cmdRepeat' 'id' 'cmdIn' 'paramBeg' EXPR 'commaSep'
EXPR REPEATfat 'paramEnd' BLOCK
REPEATfat = 'commaSep' EXPR
REPEATfat = ϵ

RETURN = 'cmdReturn' RETURNfat
RETURNfat = CONSTANT

RETURNfat = NAME

EXPR = EXPROR

EXPROR = EXPRAND EXPRORr

EXPRORr = 'opOr' EXPRAND EXPRORr

EXPRORr = ϵ

EXPRAND = EXPREQUALS EXPRANDr

EXPRANDr = 'opAnd' EXPREQUALS EXPRANDr

EXPRANDr = ϵ

EXPREQUALS = EXPRREL EXPREQUALSr

EXPREQUALSr = 'opEquals' EXPRREL EXPREQUALSr

EXPREQUALSr = ϵ

EXPRREL = EXPRADD EXPRRELr

EXPRRELr = 'opRel' EXPRADD EXPRRELr

EXPRRELr = ϵ

EXPRADD = EXPRAMULT EXPRADDR

EXPRADDR = 'opAditiv' EXPRAMULT EXPRADDR

EXPRADDR = ϵ

EXPRAMULT = EXPRUN EXPRAMULTr

EXPRAMULTr = 'opMult' EXPRUN EXPRAMULTr

EXPRAMULTr = ϵ

EXPRUN = 'opUnaryNeg' EXPRUN

EXPRUN = EXPRPARAM

EXPRPARAM = 'paramBeg' EXPR 'paramEnd'

EXPRPARAM = EXPRVALUES

EXPRVALUES = 'constNumInt'

EXPRVALUES = 'constNumFloat'

EXPRVALUES = 'constBool'

EXPRVALUES = 'constChar'

EXPRVALUES = 'constString'

EXPRVALUES = 'id' EXPRVALUESfat

EXPRVALUESfat = 'arrayBeg' EXPR 'arrayEnd'

EXPRVALUESfat = FUNCCALL

EXPRVALUESfat = ϵ

