

BNF Grammar for C-Minus

Appendix A of Louden

Keywords: **else if int return void while**

Special symbols: **+ - * / < <= > >= == != = ; , () [] { } /* */**

{letter} = [A-Za-z]

{digit} = [0-9]

ID = {letter}+

NUM = {digit}+

Comments: **/* ... */**

1. *program* \Rightarrow *declaration-list*
2. *declaration-list* \Rightarrow *declaration-list declaration* | *declaration*
3. *declaration* \Rightarrow *var-declaration* | *fun-declaration*
4. *var-declaration* \Rightarrow *type-specifier ID* ; | *type-specifier ID* [*NUM*] ;
5. *type-specifier* \Rightarrow **int** | **void**
6. *fun-declaration* \Rightarrow *type-specifier ID* (*params*) *compound-stmt*
7. *params* \Rightarrow *param-list* | **void**
8. *param-list* \Rightarrow *param-list* , *param* | *param*
9. *param* \Rightarrow *type-specifier ID* | *type-specifier ID* []
10. *compound-stmt* \Rightarrow { *local-declarations statement-list* }
11. *local-declarations* \Rightarrow *local-declarations var-declaration* | *empty*
12. *statement-list* \Rightarrow *statement-list statement* | *empty*
13. *statement* \Rightarrow *expression-stmt* | *compound-stmt* | *selection-stmt* | *iteration-stmt* | *return-stmt*
14. *expression-stmt* \Rightarrow *expression* ; | ;
15. *selection-stmt* \Rightarrow **if** (*expression*) *statement* | **if** (*expression*) *statement* **else** *statement*
16. *iteration-stmt* \Rightarrow **while** (*expression*) *statement*
17. *return-stmt* \Rightarrow **return** ; | **return** *expression* ;
18. *expression* \Rightarrow *var = expression* | *simple-expression*
19. *var* \Rightarrow **ID** | **ID** [*expression*]
20. *simple-expression* \Rightarrow *additive-expression relop additive-expression* | *additive-expression*
21. *relop* \Rightarrow **<=** | **<** | **>** | **>=** | **==** | **!=**
22. *additive-expression* \Rightarrow *additive-expression addop term* | *term*
23. *addop* \Rightarrow **+** | **-**
24. *term* \Rightarrow *term mulop factor* | *factor*
25. *mulop* \Rightarrow ***** | **/**
26. *factor* \Rightarrow (*expression*) | *var* | *call* | **NUM**
27. *call* \Rightarrow **ID** (*args*)
28. *args* \Rightarrow *arg-list* | *empty*
29. *arg-list* \Rightarrow *arg-list* , *expression* | *expression*