CSC 460 Language Translation
Parser

Write the parser. The main program will call a start or init function that opens the files, prepares the files for processing, and initializes the program variables. The main program will then call system goal and finally it will call the finish or wrap up function to finish processes and close the files. In addition to the listing file, which now will include semantic errors, have the program print the token being matched and what the token actually was to the output file. When the statement is completed print what the statement was to the output file. Additionally, when the semicolon is encountered print the buffer. Append temp, an empty file at this time, to the end of output file. As with the scanner, create the listing file with source program line numbers. When a lexical or syntax error occurs, print the appropriate message to the listing file. Keep track of the lexical and syntax errors and print the totals at the end of the listing file.

1. <program> → **BEGIN** <statement list> **END**
2. <statement list> → <statement> {<statement list>}
3. <statement> → **ID** := <expression>**;**
4. <statement> → **READ (** <id list> **);**
5. <statement> → **WRITE (** <expr list> **);**
6. <statement> → **IF (** <condition> **) THEN** <StatementList> <IFTail>
7. <IFTail> → **ELSE** <StatementList> **ENDIF**
8. <IFTail> → **ENDIF**
9. <statement> → **WHILE (** <condition> **)** {<StatementList>} **ENDWHILE**
10. <id list> → **ID** {**,**<id list> }
11. <expr list> → <expression> {**,** <expr list>}
12. <expression> → <term> {<add op> <term>}
13. <term> → <factor> {<mult op> <factor>}
14. <factor> → **(** <expression> **)**
15. <factor> → **-** <factor>
16. <factor> → ID
17. <factor> → INTLITERAL
18. <add op> → **+**
19. <add op> → **-**
20. <mult op> → ***
21. <mult op> → /
22. <condition> → <addition> {<rel op> <addition>}
23. <addition> → <multiplication> {<add op> <multiplication>}
24. <multiplication> → <unary> { <mult op> <unary>}
25. <unary> → **!** <unary>
26. <unary> → **-** <unary>
27. <unary> → <lprimary>
28. <lprimary> → INTLITERAL
29. <lprimary> → ID
30. <lprimary → **(** <condition>**)**
31. <lprimary> → **FALSEOP**
32. <lprimary>→ **TRUEOP**
33. <lprimary> → **NULLOP**
34. <RelOp> → **<**
35. <RelOp> → **<=**
36. <RelOp> → **>**
37. <RelOp> → **>=**
38. <RelOP> → **=**
39. <RelOp> → **<>**
40. <system goal> → <program> **SCANEOF**