

1. <program> ==> <otherFunctions> <mainFunction>
2. <mainFunction>==> TK\_MAIN <stmts> TK\_END
3. <otherFunctions>==> <function><otherFunctions> | ∈
4. <function>==>TK\_FUNID <input\_par> <output\_par> TK\_SEM <stmts> TK\_END
5. <input\_par>==>TK\_INPUT TK\_PARAMETER TK\_LIST TK\_SQL <parameter\_list> TK\_SQR
6. <output\_par>==>TK\_OUTPUT TK\_PARAMETER TK\_LIST TK\_SQL <parameter\_list> TK\_SQR| ∈
7. <parameter\_list>==><dataType> TK\_ID <remaining\_list>
8. <dataType>==> <primitiveDatatype> |<constructedDatatype>
9. <primitiveDatatype>==> TK\_INT | TK\_REAL
10. <constructedDatatype>==>TK\_RECORD TK\_RUID | TK\_UNION TK\_RUID | TK\_RUID
11. <remaining\_list>==>TK\_COMMA <parameter\_list> | ∈
12. <stmts>==><typeDefinitions> <declarations> <otherStmts><returnStmt>
13. <typeDefinitions>==> <typeDefinition><typeDefinitions>| <definetypestmt> <typeDefinitions> | ∈
14. <typeDefinition>==>TK\_RECORD TK\_RUID <fieldDefinitions> TK\_ENDRECORD
15. <typeDefinition>==>TK\_UNION TK\_RUID <fieldDefinitions> TK\_ENDUNION
16. <fieldDefinitions>==> <fieldDefinition><fieldDefinition><moreFields>
17. <fieldDefinition>==> TK\_TYPE <dataType> TK\_COLON TK\_FIELDID TK\_SEM
18. <moreFields>==><fieldDefinition><moreFields> | ∈
19. <declarations> ==> <declaration><declarations>|∈
20. <declaration>==> TK\_TYPE <dataType> TK\_COLON TK\_ID <global\_or\_not> TK\_SEM
21. <global\_or\_not>==> TK\_COLON TK\_GLOBAL| ∈
22. <otherStmts>==> <stmt><otherStmts> | ∈
23. <stmt>==> <assignmentStmt> | <iterativeStmt>|<conditionalStmt>|<ioStmt>| <funCallStmt>
24. <assignmentStmt>==><SingleOrRecId> TK\_ASSIGNOP <arithmeticExpression> TK\_SEM
25. <singleOrRecId>==>TK\_ID <B>
26. <B> ==> TK\_DOT TK\_FIELDID <B> | ∈
27. <funCallStmt>==><outputParameters> TK\_CALL TK\_FUNID TK\_WITH TK\_PARAMETERS <inputParameters> TK\_SEM
28. <outputParameters> ==> TK\_SQL <idList> TK\_SQR TK\_ASSIGNOP | ∈
29. <inputParameters>==> TK\_SQL <idList> TK\_SQR
30. <iterativeStmt>==> TK\_WHILE TK\_OP <booleanExpression> TK\_CL <stmt><otherStmts>TK\_ENDWHILE
31. <conditionalStmt>==> TK\_IF TK\_OP <booleanExpression> TK\_CL TK\_THEN <stmt><otherStmts> TK\_ELSE <otherStmts> TK\_ENDIF
32. <conditionalStmt>==> TK\_IF TK\_OP <booleanExpression> TK\_CL TK\_THEN <stmt><otherStmts> TK\_ENDIF
33. <ioStmt>==>TK\_READ TK\_OP <var> TK\_CL TK\_SEM | TK\_WRITE TK\_OP <var> TK\_CL TK\_SEM
34. <arithmeticExpression> ==> <addORsub>
35. <addORsub> ==> <mulORdiv> <ADDSUB> <addORsub> | <mulORdiv>
36. <mulORdiv> ==> <brackets> <MULDIV> <mulORdiv> | <brackets>
37. <brackets> ==> TK\_OP <arithmeticExpression> TK\_CL | <var>
38. <MULDIV> ==> TK\_MUL | TK\_DIV
39. <ADDSUB> ==> TK\_PLUS | TK\_MINUS
40. <booleanExpression>==>TK\_OP <booleanExpression> TK\_CL <logicalOp> TK\_OP <booleanExpression> TK\_CL
41. <booleanExpression>==> <var> <relationalOp> <var>
42. <booleanExpression>==> TK\_NOT TK\_OP <booleanExpression> TK\_CL

- 43. <var>====> <singleOrRecId> | TK\_NUM | TK\_RNUM
- 44. <logicalOp>====>TK\_AND | TK\_OR
- 45. <relationalOp>====> TK\_LT | TK\_LE | TK\_EQ |TK\_GT | TK\_GE | TK\_NE
- 46. <returnStmt>====>TK\_RETURN <optionalReturn> TK\_SEM
- 47. <optionalReturn>====>TK\_SQL <idList> TK\_SQR |  $\epsilon$
- 48. <idList>====> TK\_ID <more\_ids>
- 49. <more\_ids>====> TK\_COMMA <idList> |  $\epsilon$
- 50. <definetypesmt>====>TK\_DEFINETYPE <A> TK\_RUID TK\_AS TK\_RUID
- 51. <A>====>TK\_RECORD | TK\_UNION