MS2

Task 1:

Tiny Language CFG

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i. Terminals:

1. **number**
2. **stringLine**
3. **reserved_words**
4. **comment_statement**
5. **identifier**
6. **booleanOp**
7. **conditionOp**
8. **assignOp**
9. **semicolon**
10. **dot**
11. **comma**
12. **leftParanthesis**
13. **rightParanthesis**
14. **leftPracket**
15. **rightPracket**
16. **equalOp**
17. **assignmentOp**
18. **lessThanOp**
19. **greaterThanOp**
20. **notEqualOp**
21. **andOp**
22. **orOp**
23. **plusOp**
24. **minusOp**
25. **multiplyOp**
26. **divideOp**

ii. Production Rules:

NUMBER	RULE
1	*Datatype* → **int** | **float** | **string**
2	*Statement* → *Write_statement* | *Read_statement* | *Assignment_statement* | *Declaration_statement* | *If_statement* | *Repeat_statement* | *Function_call*
3	*Statements* → *Statements Statement* | *Statement* *Statements* → *Statement Statements'* *Statements'* → *Statement Statements'* | ε
4	*Function_call* → **identifier (***Identifier_list* | ε**)**
5	*Term* → **number** | **identifier** | *Function_call*
6	*Equation* → *Equation Ops Equation* | **(***Equation***)** | *Term* *Equation* → **(***Equation***)** *Equation'* | *Term Equation'* *Equation'* → *Ops Equation Equation'* | ε
7	*Expression* → **stringLine** | *Term* | *Equation*
8	*Assignment_statement* → **identifier assignmentOp** *Expression* **;**
9	*Declaration_ statement* → *Datatype Identifier_list* **;**
10	*Identifier_list* → *Identifier_list* **,** *Id* | *Id* *Identifier_list* → *Id Identifier_list'* *Identifier_list'* → **,** *Id Identifier_list'* | ε
11	*Id* → **identifier** | **identifier assignmentOp** *Expression*

	Id → **identifier** *Id'* *Id'* → ε | **assignmentOp** *Expression*
12	*Write_statement* → **write** *Expression* **;** | **write endl ;** *Write_statement* → **write** *Write_statement'* *Write_statement'* → *Expression* **;** | **endl ;**
13	*Read_statement* → **read identifier ;**
14	*Return_statement* → **return** *Expression* **;**
15	*Ret_statement* → *Return_statement* | ε
16	*ConditionOp* → **notEqualOp** | **equalOp** | **lessThanOp** | **greaterThanOp**
17	*BooleanOp* → **andOp** | **orOp**
18	*Ops* → **plusOp** |**minusOp** | **multiplyOp** | **devideOp**
19	*Condition* → **identifier** *ConditionOp Term*
20	*Condition_statement* → *Condition_statement BooleanOp Condition* | *Condition* *Condition_statement* → *Condition Condition_statement'* *Condition_statement'* → *BooleanOp Condition Condition_statement'*| ε
21	*If_statement* → **if** *Condition_statement* **then** *Statements Ret_statement Else_if_statement Else_statement* **end**
22	*Else_if_statement* → **elseif** *Condition_statement* **then** *Statements Ret_statement Else_statement* **end** | ε
23	*Else_statement* → **else** *Statements* **end** | ε

24	*Repeat_statement* → **repeat** *Statements* **until** *Condition_statement*
25	*Parameter* → *Datatype* **identifier** | ε
26	*Parameters* → *Parameters*, *Parameter* | *Parameter* *Parameters* → *Parameter Parameters'* *Parameters'* → **,** *Parameter Parameters'* | ε
27	*Function _declaration* → *Datatype* **identifier (***Parameters***)**
28	*Function _body* → **{** *Statements Return_ statement* **}**
29	*Function _ statement* → *Function _declaration Function _body* | ε
30	*Function _ statements* → *Function _ statements Function _ statement* | *Function _ statement* *Function _ statements* → *Function _ statement Function _ statements'* *Function _ statements'* → *Function _ statement Function _ statements'* | ε
31	*Main_function* → *Datatype* **main()** *Function _body*
32	*Program* → *Function _ statements Main_function*