

# TINY Language Phase 2

## Team Members

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## 1. Terminals:

1. identifier	2. plusOp +
3. Number	4. orOp
5. functionName	6. andOp &&
7. Reserved Words	8. assignmentOp :=
9. semicolon ;	10. greaterThanOp >
11. Comma ,	12. lessThanOp <
13. divideOp /	14. equalOp =
15. multiplyOp *	16. notEqualOp <>
17. minusOp -	18. Epsilon $\epsilon$
19. LParanthesis (	20. RParanthesis )
21. LCurlBracket {	22. RCurlBracket }
23. stringLine	24. commentLine

## 2. Production Rules:

Number	Rule
1	Function_call $\rightarrow$ <b>identifier</b> ( Arguments   $\epsilon$ )
2	Function_Dec $\rightarrow$ DataType <b>functionName</b> ( Parameters)
3	Parameters $\rightarrow$ Parameters , Parameter   Parameter Parameters $\rightarrow$ Parameter Parameters' Parameters' $\rightarrow$ , Parameter Parameters'   $\epsilon$
4	Parameter $\rightarrow$ DataType <b>identifier</b>   $\epsilon$
5	Function_Body $\rightarrow$ { Statements Return_Statement }
6	Statements $\rightarrow$ Statements Statement   Statement Statements $\rightarrow$ Statement Statements' Statements' $\rightarrow$ Statement Statements'   $\epsilon$
7	Function_statement $\rightarrow$ Function_Dec Function_Body   $\epsilon$
8	Program $\rightarrow$ Function_statements Main_Function
9	Statement $\rightarrow$ Write_statement   Read_statement   Assignment_statement   Declaration_statement   If_statement   Repeat_statement   Function_call
10	Main_Function $\rightarrow$ DataType <b>main()</b> Function_Body
11	Repeat_statement $\rightarrow$ <b>repeat</b> Statements <b>until</b> Condition_statement
12	Return_statement $\rightarrow$ <b>return</b> Expression ;

13	$\text{Ret\_statement} \rightarrow \text{Return\_statement} \mid \epsilon$
14	$\text{Else\_if\_statement} \rightarrow \text{elseif Condition\_statement then Statements Ret\_statement Else\_statement} \mid \epsilon$
15	$\text{Else\_statement} \rightarrow \text{else Statements} \mid \epsilon$
16	$\text{If\_statement} \rightarrow \text{if Condition\_statement then Statements Ret\_statement Else\_if\_statement Else\_statement end}$
17	$\text{DataType} \rightarrow \text{int} \mid \text{float} \mid \text{string}$
18	$\text{Condition\_statement} \rightarrow \text{Condition\_statement BooleanOp Condition} \mid \text{Condition}$ $\text{Condition\_statement} \rightarrow \text{Condition Condition\_statement}'$ $\text{Condition\_statement}' \rightarrow \text{BooleanOp Condition}$ $\text{Condition\_statement}' \mid \epsilon$
19	$\text{Condition} \rightarrow \text{identifier ConditionOp Term}$
20	$\text{ConditionOp} \rightarrow \text{notEqualOp} \mid \text{equalOp} \mid \text{lessThanOp} \mid \text{greaterThanOp}$
21	$\text{BooleanOp} \rightarrow \text{andOp} \mid \text{orOp}$
22	$\text{ArithmeticOp} \rightarrow \text{plusOp} \mid \text{minusOp} \mid \text{multiplyOp} \mid \text{divideOp}$
23	$\text{Assignment\_statement} \rightarrow \text{identifier assignmentOp Expression ;}$
24	$\text{Declaration\_statement} \rightarrow \text{DataType Identifier\_list ;}$
25	$\text{Identifier\_list} \rightarrow \text{Identifier\_list , Id} \mid \text{Id}$ $\text{Identifier\_list} \rightarrow \text{Id Identifier\_list}'$ $\text{Identifier\_list}' \rightarrow \text{ , Id Identifier\_list}' \mid \epsilon$

26	$\text{Id} \rightarrow \text{identifier} \mid \text{identifier assignmentOp Expression}$ $\text{Id} \rightarrow \text{identifier Id}'$ $\text{Id}' \rightarrow \text{assignmentOp Expression} \mid \epsilon$
27	$\text{Expression} \rightarrow \text{string} \mid \text{Term} \mid \text{Equation}$
28	$\text{Write\_statement} \rightarrow \text{write Expression ;} \mid \text{write endl ;}$ $\text{Write\_statement} \rightarrow \text{write Write\_statement}'$ $\text{Write\_statement}' \rightarrow \text{Expression ;} \mid \text{endl ;}$
29	$\text{Read\_statement} \rightarrow \text{read identifier ;}$
30	$\text{Term} \rightarrow \text{number} \mid \text{identifier} \mid \text{Function\_call}$
31	$\text{Equation} \rightarrow \text{Equation ArithmeticOp Equation} \mid \text{Term} \mid (\text{Equation})$ $\text{Equation} \rightarrow \text{Term Equation}' \mid (\text{Equation}) \text{Equation}'$ $\text{Equation}' \rightarrow \text{ArithmeticOp Equation Equation}' \mid \epsilon$
32	$\text{Function\_statements} \rightarrow \text{Function\_statements Function\_statement} \mid \text{Function\_statement}$ $\text{Function\_statements} \rightarrow \text{Function\_statement Function\_statements}'$ $\text{Function\_statements}' \rightarrow \text{Function\_statement Function\_statements}' \mid \epsilon$
33	$\text{Arguments} \rightarrow \text{Arguments, Argument} \mid \text{Argument}$ $\text{Arguments} \rightarrow \text{Argument Arguments}'$ $\text{Arguments}' \rightarrow \text{, Argument Arguments}' \mid \epsilon$
34	$\text{Argument} \rightarrow \text{identifier} \mid \text{Number}$