Context Free Grammar for Tiny Programming Language

**1: Program→ Function Program | MainFunction**

**2: Function→ FunctionDecl FunctionBody**

**3: FunctionDecl→ Decl1Var “(“ ParametersDecl “)“**

**4: Decl1Var→ DataType identifier**

**5: DataType→ int | float | string**

**6: ParametersDecl→** **Parameters | ε**

**7: Parameters→ Parameters “,” Decl1Var |Decl1Var**

**7.1: Parameters→ Decl1Var Parameters′**

**7.2: Parameters′→ “,” Decl1Var Parameters′ | ε**

**8: FunctionBody → “{“ ManyStatements ReturnStatement “}“**

**9: ManyStatements→ StatementForFunctionBody ManyStatements | ε**

**10: StatementForFunctionBody→ IfStatement | WriteStatement | ReadStatement   
| AssignmentStatement | FunctionCallStatement  
| RepeatStatement | DeclarationStatement**

**11: IfStatement→ if ConditionStatement then StatementsForIf Ifff**

**12:ConditionStatement→ ConditionStatement BooleanOperator Condition| Condition**

**12.1:ConditionStatement→ Condition ConditionStatement′**

**12.2:ConditionStatement′→ BooleanOperator Condition ConditionStatement′| ε**

**13:Condition→ identifier ConditionOperator Term**

**14: ConditionOperator → < | > | <> | =**

**15: Term → FunctionCall | number | identifier**

**15: FunctionCall → identifier “(“ ManyIdentifiers “)“**

**16: FunctionCallStatement → FunctionCall “;”**

**16: ManyIdentifiers → Identifiers | ε**

**17: Identifiers → Identifiers “,” identifier | identifier**

**17.1: Identifiers → identifier Identifiers′**

**17.2: Identifiers′ → “,” identifier Identifiers′ | ε**

**18: BooleanOperator → && | ||**

**19: StatmentsForIf→ Statement StatmentsForIf | Statement**

**19.1: StatmentsForIf→ Statement StatmentsForIf′**

**19.2: StatmentsForIf′→ StatmentsForIf | ε**

**20:Statement → IfStatement | WriteStatement | ReadStatement   
| AssignmentStatement | FunctionCallStatement  
| RepeatStatement | DeclarationStatement | ReturnStatement**

**21: Ifff → ElseIfStatement | ElseStatement | end**

**22: ElseIfStatement→ elseif ConditionStatement then StatmentsForIf Ifff**

**23: ElseStatement→ else StatmentsForIf end**

**24: WriteStatement→ write Something “;”**

**25: Something → Expression | endl**

**26: Expression → Equation | constantstring**

**27: Equation → Equation ArthimiticOperator HelperTerm | HelperTerm**

**27.1: Equation → HelperTerm Equation′**

**27.2: Equation′ → ArthimiticOperator HelperTerm Equation′ | ε**

**28: HelperTerm → Term | HelperEquation**

**29: HelperEquation → “(“ ManyTerms“)“**

**30: ManyTerms → ManyTerms ArthimiticOperator Term| Term**

**30.1: ManyTerms → Term ManyTerms′**

**30.2: ManyTerms′ → ArthimiticOperator Term ManyTerms′ | ε**

**31: ArthimiticOperator → + | - | \* | /**

**32: ReadStatement → read identifier “;”**

**33: ReturnStatement → return Expression “;”**

**34: AssignmentStatement → identifier “:=” Expression “;”**

**35: RepeatStatement → repeat StatmentsForIf until ConditionStatement**

**36:DeclarationStatement → DataType ManyIdentifiersDecl “;”**

**37: ManyIdentifiersDecl → ManyIdentifiersDecl “,” identifier AssignmentInDecl | identifier AssignmentInDecl**

**37.1: ManyIdentifiersDecl → identifier AssignmentInDecl ManyIdentifiersDecl′**

**37.2: ManyIdentifiersDecl′ → “,” identifier AssignmentInDecl ManyIdentifiersDecl′| ε**

**38: AssignmentInDecl → “:=” Expression| ε**

**39: MainFunction→ DataType main “(” “)” FunctionBody**