Milestone 2: Task (1)

The Production Rules:

Statements → Assignment_Statement | Declaration_Statement | Write_Statement | Read_Statement | If_Statement | Repeat_Statement | Function_Call

---

6. **Function_Call** → Identifiers (Identifiers (id | ε) | ε)

id → id ,Identifiers | ,Identifiers | ε

id → ,Identifiers id' | id'

id' → ,Identifiers id' | ε

---

10. **Expression** → String | Term | Equation

9. **Equation** → Equation Arithmatic_Operator Term | Term

7. **Term** → Number | Identifiers | Function_Call | (Equation)

Equation →Term Eq

Eq → Arithmatic_Operator Term Eq | ε

---

8. **Arithmatic_Operator** → PlusOp | MinusOp | MultiplyOp | DivideOp

11. **Assignment_Statement** → Identifiers := Exp

Exp → Exp Expression| Expression

Exp → Expression Exp'

Exp' → Expression Exp' | ε

---

12. **Datatype** → Int | Float | String

---

13. **Declaration_Statement** → Datatype Identifiers assign ;

assign → assign (,Identifiers | ,Assignment_Statement) | (,Identifiers | ,Assignment_Statement) | ε

assign → (,Identifiers | ,Assignment_Statement) assign' | assign'

assign' → (,Identifiers | ,Assignment_Statement) assign' | ε

---

14. **Write_Statement** → write (Expression | endl) ;

---

15. **Read_Statement** → read Identifiers ;

---

16. **Return_Statement** → return Expression ;

---

17. **Condition_Operator** → LessThanOp | GreaterThanOp | EqualOp | NotEqualOp

18. **Condition** → Identifiers Condition_Operator Term

---

19. **Boolean_Operator** → AndOp | OrOp

---

20. **Condition_Statement** → Condition Cond

Cond → Cond (Boolean_Operator Condition) | (Boolean_Operator Condition) | ε

Cond → (Boolean_Operator Condition) Cond' | Cond'

Cond' → (Boolean_Operator Condition) Cond' | ε

---

21. **If_Statement** → if Condition_Statement then State Else_If_Statement | Else_Statement | end

State → State Statements | Statements

State → Statements State'

State' → Statements State' | ε

---

22. **Else_If_Statement** → elseif Condition_Statement then State

Else_If_Statement | Else_Statement | end

---

23. **Else_Statement** → else State end

---

24. **Repeat_Statement** → repeat State until Condition_Statement

25. **FunctionName** → Identifiers

---

26. **Parameter** → Datatype Identifiers

---

27. **Function_Declaration** → Datatype FunctionName (Parameter (par | ε) | ε)

par → par ,Parameter | ,Parameter | ε

par → ,Parameter par' | par'

par' → ,Parameter par' | ε

---

28. **Function_Body** → { State Return_Statement }

---

29. **Function_Statement** → Function_Declaration Function_Body

---

30. **Main_Function** → Datatype main() Function_Body

---

31. **Program** → func Main_Function

func → func Function_Statement | Function_Statement | ε

func → Function_Statement func' | func'

func' → Function_Statement func' | ε

The Terminals:

1. **Number :=** [0-9]**+ (\.**[0-9]**+)?**

---

2. **String :=** **"(**[a-z] **|** [A-Z] **|** [0-9] **| ~[** " **])+"**

---

5. **Identifier :=** [a-z] **|** [A-Z] **(**[a-z] **|** [A-Z] **|** [0-9]**)***

Int, Float, Read, Write, Repeat, Until, If, ElseIf, Else, Then, Return, Endl, Main, End, RCurly, LCurly, OrOp, AndOp, GreaterThanOp, LessThanOp, EqualOp, Comma, Semicolon, RParanthesis, LParanthesis, DivideOp, MultiplyOp, MinusOp, PlusOp, Dot, Colon, NotEqualOp