Documentation

1. **Symbol Table Description**

- The **Record** class contains the following attributes:
    - private String name : identifier's name
    - private String type : integer, floating point number, function, or class
    - private String varKind: if variable, whether it's a normal variable or a parameter
    - private String structure: variable, function, or class
    - private String varStructure: simple or array
    - private ArrayList<Integer> dimension: if variable is an array, store its dimensions
    - private int address: address of corresponding element in memory
    - private ArrayList<String> params: if function, stores each parameter
    - private Table local: if function or class, pointer to local symbol table describing the symbols local to the function or class
- The **Table** class contains the following attributes:
    - private ArrayList<Records> records
- Notes: When record is created, we check if it is already defined in the current table via the insert() function. if already defined, error is recorded. More specifically, upon variable creation, the type of the variable is checked to see if it exists. If it does not exist, error is recorded.

2. **Augmented Grammar**

(create global scope table)
Prog -> ClassDeclList progBody
ClassDeclList -> ClassDecl ClassDeclList | EPSILON
ClassDecl -> Class id { ClassMemberDeclList } *(insert class record, create class table)* ;
ClassMemberDecl -> Type id ClassMemberDecl2 *(insert record)*
ClassMemberDecl2 -> *(create variable)* ArraySizeList *(insert variable)* ;
       | *(create function, create function table)* (FParams) FuncBody *(insert function) (destroy table)* ;
ClassMemberDeclList -> ClassMemberDecl ClassMemberDeclList | EPSILON
FuncDefList -> FuncDef FuncDefList | EPSILON
ProgBody -> Program FuncBody *(insert program)* ; FuncDefList
FuncHead -> Type id (FParams)
FuncDef -> *(create table)* FuncHead FuncBody *(insert function) (destroy table)* ;
FuncBody -> { FuncBodyMemberList }
FuncBodyMember -> *(create variable)* int id ArraySizeList ; *(insert variable)*
    | *(create variable)* float id arraySizeList *(insert variable)* ;
    | id FuncBodyMember2 | Statement2
FuncBodyMember2 -> *(create variable)* id ArraySizeList ; *(insert variable)* | IndiceList
(destroy table)