Assignment #3

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Section 1: Semantic Rules implemented

1. A new table is created at the beginning of the program for the global scope.

2. A new entry is created in the global table for each class declared in the program. These entries should contain links to local tables for these classes.

3. An entry in the appropriate table is created for each variable defined in the program, i.e. a class' data members or a function's local variables.

4. An entry in the appropriate table is created for each function definition (free functions and member functions). These entries should be links to local tables for these functions.

5. Not fully implemented, as the multiply declared identifiers are declared in the TypeChecking part.

6. All declared member functions should have a corresponding function definition, and inversely. A member function that is declared but not defined constitutes an "no definition for declared member function" semantic error. If a member function is defined but not declared, it constitutes an "definition provided for undeclared member function" semantic error.

7. The content of the symbol tables should be output into a file in order to demonstrate their correctness/completeness.

8. Class and variable identifiers cannot be declared twice in the same scope. In such a case, a "multiply declared class", "multiply declared data member", or multiply declared local variable" semantic error message is issued.

9. Function overloading (i.e. two functions with the same name but with different parameter lists) should be allowed and reported as a semantic warning. This applies to member functions and free functions.

10. Expression part not implemented

11. Any identifier referred to must be defined in the scope where it is used (failure should result in the following error messages: "use of undeclared local variable", "use of undeclared free function", "use of undeclared class").

12.Not fully implemented, cannot determine function parameters due to the fact that expression is not implemented.

13. 14. 15 not implemented

Design:

Overall based on what I've done in Assignment 2. Using the AST generated and implement different Nodes for the Visitor Pattern

Visitor pattern is based on two phases. First is the create the symbol table, the second is to do semantic checkings.

Use of Tools:

Java,

The example code "ASTVisitors"