

SEMANTIC ANALYZER

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Files added :

1. inherit.java
2. error.java
3. classInfo.java
4. listOfClasses.java

1. inherit.java -

- Redefinition of previously defined class is checked.
- Non inheritable classes are checked
- Existence of parent classes is checked
- Creates an inheritance graph for the given classes.
- Detection of cycle is done using BFS in class inherit.

2. error.java -

- class is created to get the line number and details of error in class.

3. classInfo -

- class to store name, parent, attribute list and function list of a class

4. listOfClasses

- First the existing classes and their functions are added in the table. Existing classes are Object, IO, String, Int, Bool.
- When a new class arrives, following things are done-
 - Checked for duplicate attributes or method names in that class
 - Checked for same attribute already defined in parent class
 - Check that same function is already defined in parent class, child class should follow the same function definition.
 - Finally all the attributes and methods of parent class are copied in the child class.

Semantic analysis:

Function overloading is used to calculate various expressions, constants, etc.

Assignment –

- Declaration of variable is checked in the scopetable to assign values.

Dispatch -

- Class of calling object is checked and noted (error if has no_type ie void).
- If its value is statically defined then its preceding classes are checked for the calling function
- Each method is checked for number of arguments and their respective types.

Condition and Loop -

- Error occurs when predicate value does not return Bool type.

Let -

- expression is evaluated first and scope is entered.
- value of expression calculated is bound to the corresponding object.

Case -

- expression in predicate is evaluated first and its type is noted.
- value is bound to id if its type confirms the type of predicate.

New -

- Classtable is checked for the presence of class used with new.

Arithmetic Operations-

- Expressions on both side of operator is evaluated.
- Then type of the expression is checked to be int.