Level 2: Symbol Table Handling

Extend your parser with semantic processing. At every declaration the declared name must be entered into the symbol table. When a name occurs in a statement it must be looked up in the symbol table and the necessary context conditions must be checked (see Appendix A, section A.4). Do the following steps:

1. Create a new package *MJ.SymTab* (i.e. a package *SymTab* within the package *MJ*).

2. Download the files *Obj.java*, *Struct.java*, *Scope.java* and *Tab.java* into this package and see what they do.

3. Complete the skeleton file *Tab.java* (i.e. the symbol table) according to the slides of the course.

4. Add semantic actions to *Parser.java*. These actions should enter every MicroJava name into the symbol table when it is declared and should retrieve it from the symbol table when it is used. The semantic actions should also open and close scopes appropriately. Try to check also some context conditions from (Appendix A.4, section A.4) (most context conditions can only be checked during code generation).

5. Compile everything and run *TestParser.java* on *sample.mj* again to see if it works. Insert some semantic errors into *sample.mj*. For example, use a few names without declaring them or declare some names twice and see if your compiler detects those errors.

6. In order to check whether you built the symbol table correctly you can call *Tab.dumpScope* whenever you have processed all declarations of a scope in your MicroJava program.