

P6

A codeGenerator for b programming language into mips

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Comp Sci 536

How to invoke

```
make
make test
~cs536-1/public/tools/bin/spim -ne
#in spim
load "test.s"
run 0x00400000
```

files details

ast.java: we added `codeGen()` to nodes to generate corresponding MIPS code. We followed the <http://pages.cs.wisc.edu/~aws/courses/cs536/readings/codegen.html#return> to implement the method. Also, we calculate the offset in the modified `nameAnalysis()` for nodes.

Symb.java: we added `offset`, `localSize`, `global`, `statusGlobal` fields to `Symb` class to calculate the offset, global-status, and size of local variable. There are also `paraOffset`, `localVarOffset` for sub-class `Fnsymb`. There is also corresponding setter/getter for this field. Furthermore, the `statusGlobal` is a static field so that every objects of `Symb` can change and check if it's in a function scope or in the global scope. The global status for every node is set as true in `nameAnalysis()` of `programNode` and changed latter corresponding if the var belongs to a func.

P6.java: the main program will parse, do nameAnalyzer, do typeChecker, and codedGenerate. There need to be 2 command-line arguments: the file to be parse and the output file. The output file is the MIPS code for the input file. If any problem happens during any step, the process will be stopped and report error.

test.b: conatins code. There are several functions and a main function. Some global var outsides functions. The main function will contains every statement/expression defined in b language.

test.s the mips code that can be run in spim.