Exercise 4

IR and Code Generation

Due: January 17

Programming Assignment

Fill in the missing parts to obtain a full functioning IR and code generation. For the IR part, you need to handle function declarations, and implement a run time protection mechanism against the following hazardous operations: (1) dereferencing a field of an unallocated object. (2) accessing an array outside of its bounds. When the program identifies one of these behaviors, it should print a relevant error message and abort immediately. For the code generation part you will need to implement two things: (1) allocation of arrays, records and classes. (2) calling simple functions and class member functions

Details

Implement the following functions:
(1) `IR_transFuncDec`
(2) `IR_transVarExp`
(3) `MIPS_ASM_ALLOCATE_RECORD_IMPLEMENTATION`
(4) `MIPS_ASM_ALLOCATE_ARRAY_IMPLEMENTATION`
(5) `MIPS_ASM_CodeGeneration_Call`
Don't forget to support class member functions call as well.

Submission Guidelines

Open an account on GitHub. Then, visit the academic discount page to enable the free creation of private repositories. One team member should create a new private repository called COMPILATION, and then invite other team members and me as collaborators. My username is OrenGitHub. Please make sure the uppermost folder (COMPILATION) contains a text file "IDS.text" with the IDs of all team members (one ID per line). Inside COMPILATION create a sub directory EX4 which will contain your source code and makefile. Your program should be called compiler, and accept two input file names:

```
compiler <Input.StarKist.txt> <Output.PseudoMIPS.txt>
```