CS4121 SomeLife Compiler Project 2: Implementing Arrays, Conditionals and Iteration
Due Date: Friday, March 22, 2013 at *5pm*

Purpose

The purpose of this project is to gain experience in giving meaning to a programming language by generating Mips for a subset of SomeLife. Specifically, you will be generating assembly for if-statements, while-loops and integer arrays.

Project Summary

In this project, you will add actions to the compiler developed in the previous project that will do the following

1. Generate assembly to test the results of an expression controlling an if-statement or while-loop.
2. Generate assembly to branch through an if-then-else statement as determined by the controlling expression
3. Generate assembly to branch back to the beginning of and out of a while-loop as determined by the controlling expression.
4. Reserve space for an array of integers.
5. Generate address arithmetic for an array reference.

Follow the methods given in class for generating code for if-statements, while-loops and arrays.

Requirements

Write all of your code in C or C++ . It will be tested on the Rekhi CS lab machines and MUST work there. You will receive no special consideration for programs which "work" elsewhere, but not work on the lab machines.

Input. I have provided my solution to Project 1 as a Makefile project in `SomeLifeProject2-Makefile.tgz`. Sample input is provided in the directory `SomeLifeProject2/input`. I will go over my code for those who wish to use it. To run your compiler, use the command

```
SomeLifeProject2 <file>.sl
```

which will output to `<file>.s`.

To run the assembly, you can download the Mars simulator from http://courses.missouristate.edu/KenVollmar/MARS/.

Submission. Your code should be well-documented. You will submit all of your files, by tarring up the working directory using the command

```
tar -czf SomeLifeProject2.tgz SomeLifeProject2
```

Submit the file `SomeLifeProject2.tgz` via Canvas. Make sure you do 'make clean' of your working directory before executing the tar command. This will remove all of the '.o' files and make your tar file much smaller.