# Project 3
# Implementation of a Code Generator
# Due Sunday, January 10, 2021

1. **Problem:**

In this assignment you are requested to implement a code generator for MIPS processors. Your code generator should generate code only if the program is free of lexical and syntactical errors. You can use the SPIM simulator, which simulates a MIPS processor, to verify the correctness of your code generator. You can download the SPIM simulator and related information from the web site http://www.cs.wisc.edu/~larus/spim.html. You can apply the techniques for intermediate code generation in this assignment.

In this assignment, we will use a word to store an int data. To simplify register allocation, you can maintain a counter of 10 general registers consisting of $t0~$t9 for evaluation. You may assume that 10 registers are enough to evaluate every statement in the program. You should return all the registers you use back after evaluating a statement. The read, write, and exit statements will be implemented by the system calls read_int, print_int, and exit of the SPIM simulator. The code generator reads input from stdin, writes output to stdout, and writes errors to stderr.

In this assignment, you don't have to generate code for logical operators: ||, &&, and !. You may assume that our test cases do not contain these 3 operators.

## 2. Handing in your program

You should provide a make file named "makefile" to build this assignment. See online manual make(1) for more information. The executable file should be named "lotus" namely,

```
gcc -o lotus $(OBJ) -lfl
```

To turn in the assignment, upload a compressed file containing makefile, *.l, *.y *.h, and *.c to eCourse2 site.

## 3. Grading

The grading is based on the correctness of your program. The correctness will be tested by a number of test cases.

To facilitate the grading of teaching assistants, you should test your program on the machine csie1.

It is best to incrementally build your program so that you always have a partially-correct working program. It is also best to construct a shell script to systematically test your program.