

# CS 480: Compiler Design

## PS2: Program 1: Scanner

Due: 06/11/2017

### **Goal: Build Your Scanner**

As we know there are several process stages when a compiler compiles the source code. The stages are 1. Lexical Analysis, 2. Syntax Analysis, 3. Semantic Analysis, 4. IR Generation, 5. IR Optimization 6. Code Generation and 7. Optimization. In the first programming assignment, we are to build a scanner for the lexical analysis.

In this assignment, you are asked to build a scanner using Flex. You can access your unix account on campus. If you do not want to install the packages into your own windows box, you can simply use the virtual machine at <https://c9.io> to use their unix environment without installing packages.

**Important:** Please submit the file on blackboard. Please test-submit your assignment before the deadline to be sure that the script is working for you, even if you are not finished. It is your responsibility to check for problems ahead of time.

**Points** 50

## Problem 1 Scanner

Please follow the tutorial uploaded on blackboard to learn the basics of Flex. For this assignment, your scanner should be able to identify words in input code and their types. You are asked to implement only simple arithmetic operations consisting of identifiers (**should begin with a letter**), number (positive integer), =, +, -, \*, /, and ;. Upon execution, your scanner outputs pairs of word and its type in each line (see a sample input/output below).

Write a Flex input file, compile and test your scanner. Here is an example:

**Sample input:**

```
a = b + c * 10;
```

**Sample output:**

```
a IDENTIFIER
= ASSIGNMENT
b IDENTIFIER
+ PLUS
c IDENTIFIER
* MULTIPLY
10 NUMBER
; SEMICOLON
```