

CS5000: Assignment 10

Due: Nov. 14, 2008 by 11:59pm

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General Guidelines

- This assignment requires coding and should be submitted through Eagle.

Problem 1: 15 points

Write a program that compiles L -programs into the Godel numbers of their source codes. Call your program *LCompiler*. *LCompiler* takes two arguments: the first argument is a path to a text file with an L -program to compile and the second argument is a path to a text file where the compiled L -program, i.e., the Godel number of its source code, will be saved.

For example, suppose you have saved an L -program given below in `program1.txt`:

```
[B] Y <- Y
    Y <- Y
    Y <- Y + 1
```

The Godel number of this program is 199. Thus, the Godel number of its source code is $199 + 1 = 200 = 2^3 \times 3^0 \times 5^2 = [3, 0, 2]$.

Suppose that you have written *LCompiler* in C/C++. Here is a possible command-line interaction:

```
> LCompiler program1.txt compiled_program1.txt
Compilation successful
```

The result of the above interaction is that the file `compiled_program1.txt` now contains `[3, 0, 2]`.

Assume that the source code of the input L -program contains no macros.

Test your *LCompiler* on the two programs below.

1. Program 1

```
[A] Y <- Y - 1  
IF Y != 0 GOTO A
```

2. Program 2

```
[A] X <- X - 1  
IF X != 0 GOTO A
```

What to Submit for Problem 1

- Write your program either in C/C++ or Java.
- Submit your source code (project) and the numbers computed by your program for Program 1 and Program 2.