CMPE 230 Systems Programming

Project (due March. 20th)

(This project can be implemented in groups of two students.)

(Use C/C++ or Java language to implement the project)

In this project, you will implement a simple compiler called COMP that generates A86 code for a sequence of expressions and assignment statements that involve +,* and power operations. Expressions will be infix expressions:

Operation	**Meaning**
a + b	Addition
a * b	Multiplication
pow(a,n)	Power, a^n

You can assume all values and results of operations will be 32 bit values. An example of COMP usage is given below:

COMP compiler

Suppose the file **example.co** contains:

```
x1 = 1abcd
y = 16
x = x1*y*pow(2,0)
y = (x+1)*3
x
y
```

```
%comp example.co
 example.asm was generated.
%a86 example.asm
%example
1abcd0
503673
```

Please note the following:

- You can assume all numbers are non-negative integers.
- You can assume that an undefined variable has value 0.
- All constants are written in hexadecimal format. The leading digit of a hexadecimal constant is always a numeric digit, (for example: hexadecimal number abcd is written as 0abcd).
- All variables and expressions are 32 bit.
- You can have paranthesized expressions. Pow operation can accept expressions.

Grading

Your project will be graded according to the following criteria:

Documentation (written document describing how you implemented your project)	12%
Comments in your code	8%
Implementation and tests	80%

Late Submission

If the project is submitted late, the following penalties will be applied:

- 0 < hours late <= 24 : 25%
- 24 < hours late <= 48 : 50%
- 48 < hours late <= 72 : 75%
- hours late > 72 : 100%