Student ID _____ **Quiz 1** **Name** _____

CSE 131

Signature _____ **Winter 2012** **Login name** _____

Compilation/Compiler Overview, Names/Scopes/Bindings

1. Given the following CUP grammar snippet (assuming all other Lexing and terminals are correct):

```
Expr  ::=   Expr1 {: System.out.println("1"); :} AssignOp Expr {: System.out.println("2"); :}
      |     Expr1 {: System.out.println("3"); :}
      ;

Expr1 ::=   Expr1 AddOp {: System.out.println("4"); :} Des {: System.out.println("5"); :}
      |     Des {: System.out.println("6"); :}
      ;

AddOp ::=   T_PLUS {: System.out.println("7"); :}
      ;

Des   ::=   T_ID {: System.out.println("8"); :}
      ;

AssignOp ::=  T_ASSIGN {: System.out.println("9"); :}
      ;
```

What is the output when parsing the follow expression (you should have 12 lines/letters in your output):

```
x = y + z
```

Output
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

In the above grammar, which has higher precedence: assignment operator or addition operator or do they have the same precedence? _____

In the above grammar, do multiple assignment operators associate from left to right or right to left? _____

In the above grammar, do multiple addition operators associate from left to right or right to left? _____

(over)

2. Give the order of the typical C compilation stages and on to actual execution as discussed in class

1 – prog.exe/a.out (Executable image)
2 – Object file (prog.o)
3 – Loader
4 – as (Assember)
5 – Program Execution
6 – Segmentation Fault (Core Dump) / General Protection Fault
7 – cpp (C preprocessor)
8 – Assembly file (prog.s)
9 – ccomp (C compiler)
10 – Source file (prog.c)
11 – ld (Linkage Editor)

gcc ____ –> ____ –> ____ –> ____ –> ____ –> ____ –> ____ –> ____ –> ____ –> ____ –> ____

Which 3 areas of the C/C++ run time environment are essentially determined at compile time and are part of an executable image (for example, an a.out or .exe file)?

1) _____

2) _____

3) _____

Fill in the blanks.

_____ analysis deals with verifying correct meaning of a program.

_____ analysis deals with verifying correct structure of a program.

A(n) _____ performs thorough analysis and nontrivial transformations on a program in language L1 into an equivalent program in language L2 as in contrast to a(n) _____ which directly performs operations implied by the program.

Check #1:
For the T_LT, T_LTE, T_GT, and T_GTE operators, the operand types must be _____, and the resulting type is _____.

The result of any arithmetic or logical operation is a(n) _____. This means the result is neither _____ nor _____.

Check #0 and rc.cup symbols:
What is the terminal symbol for the global scope resolution operator? Your answer should start with T_

_____