

Login name _____

Quiz 1

Name _____

CSE 131B

Signature _____

Spring 2007

Student ID _____

Compilation/Compiler Overview, Names/Scopes/Bindings

1. Give the order of the phases of compilation in a typical C compiler as discussed in class

A – Parser (Semantic analysis)

B – Target language file (for ex., assembly)

C – Source language file (for example, C)

D – Scanner (Lexical analysis)

E – Code generation (for ex., assembly)

F – Parser (syntax analysis)

G – Intermediate Representation(s)

_____ -> _____ -> _____ -> _____ -> _____ -> _____ -> _____

Machine-independent improvements typically can occur before, during, and/or after which phase? _____

Machine-specific code improvements typically can occur before, during, and/or after which phase? _____

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

```
Stmt ::=      Designator T_ASSIGN Expr T_SEMI
           {: System.out.println("E"); :}
       ;
```

```
Expr ::=      Expr MulOp {: System.out.println("D"); :} Designator
           |      Designator {: System.out.println("C"); :}
           ;
```

```
MulOp ::=     T_STAR {: System.out.println("B"); :}
           ;
```

```
Designator ::= T_ID {: System.out.println("A"); :}
              ;
```

What is the output on the screen when the follow statement is given as input:

a := b * c;

(over)

3. Specify the sizes of the various data types listed for the following Compiler Models

	LP-64	ILP-32
int	_____	_____
long	_____	_____
long long	_____	_____
pointer	_____	_____

4. Which major parts/areas of the C run time environment does binding occur dynamically at run time?

Which major parts/areas of the C run time environment does binding occur statically at compile time?

5. State one disadvantage of the compiler implementing OOP references (like Java reference) as handles.

6. Which phase(s) of a typical compiler is considered part of the back end of the compiler?

Which phase(s) of a typical compiler is considered part of the front end of the compiler?

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

- A – Segmentation Fault (Core Dump) / General Protection Fault
- B – Assembly file (prog.s)
- C – Object file (prog.o)
- D – Program Execution
- E – cpp (C preprocessor)
- F – as (assembler)
- G – ld (Linkage Editor)
- H – ccomp (C compiler)
- I – loader
- J – Source file (prog.c)
- K – exe/a.out (executable image)

gcc _____ -> _____ -> _____ -> _____ -> _____ -> _____ -> _____ -> _____ -> _____ -> _____ -> _____

8. Is the assembler an interpreter or a translator?