

Login name _____

Quiz 1

Name _____

CSE 131B

Signature _____

Spring 2006

Student ID _____

Compilation/Compiler Overview, Names/Scopes/Bindings

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

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

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

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

```
Expr1 ::=          Expr3 T_ASSIGN Expr2 T_SEMI
          { :
            System.out.println("A");
          : }
          ;

Expr2 ::=          Expr2 AddOp Expr3
          { :
            System.out.println("B");
          : }
          | Expr3
          { :
            System.out.println("C");
          : }
          ;

Expr3 ::=          T_ID
          { :
            System.out.println("D");
          : }
          ;

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

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

a := b + c;

(over)

3. In Phase 0 of the Project, how did you change method access() in SymbolTable.java to implement a LIFO?

4. What implicit optimization can be achieved when using a DAG as an Intermediate Representation in a typical 2-pass compiler?

5. Consider the following Oberon program

```
VAR x: BOOLEAN;  
BEGIN  
  x := 5 + x * 6;  
END.
```

According to the Project spec, how many errors should be reported. _____

Where is the 1st error encountered via the parse using the grammar supplied in the starterCode? Write the expression that would result in this 1st error.

What do you return as the RESULT from the production dealing with this error?

6. In what specific part of the overall compiler/starterCode is operator precedence and associativity dealt with?

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

- | | |
|---|---|
| A – Machine-specific code improvement (optional) | F – Scanner (Lexical analysis) |
| B – Machine-independent code improvement (optional) | G – Code generation (for ex., assembly) |
| C – Parser (Semantic analysis) | H – Parser (syntax analysis) |
| D – Source language file (for example, C) | I – Intermediate Representation |
| E – Target language file (for ex., assembly) | |

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