

Login name _____

Quiz 1
CSE 131B
Winter 2003

Name _____

Signature _____

Student ID _____

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

- A – as (assembler)
- B – exe/a.out (executable image)
- C – cpp (C preprocessor)
- D – loader
- E – ld (Linkage Editor)
- F – ccomp (C compiler)

gcc file.c -> _____ -> _____ -> _____ -> _____ -> _____ -> _____ -> program execution

2. Consider the following psuedocode:

```
x : integer;           -- global

procedure set_x ( n : integer )
    x := n;

procedure print_x()
    output( x );       -- print the value of x

procedure one()
    set_x( 1 );
    print_x();

procedure two()
    x : integer;
    set_x( 2 );
    print_x();

set_x( 0 );
one();
print_x();
two();
print_x();
```

What does the program output if the language uses static scoping?

What does the program output if the language uses dynamic scoping?

(over)

3. Given the following C program, answer the questions using 1 – 4 that best describes the variable in question. If the variable/name is a pointer, then in this context the object it is bound to is the object it refers/points to.

```

int * foo( int x );

int a;
static int b = 420;

int main( void ) {
    static int c;
    int d = 5;
    int *e;

    e = foo( d );
    <<----- B
}

int * foo( int x ) {
    int f = 911;
    int *g;
    int *h;
    static int *i;

    g = (int *) malloc( sizeof( int ) );
    h = g;
    i = (int *) malloc( sizeof( int ) );
    free( g );
    <<----- A
    return( &f );
}

```

- 1 – Variable in scope / object it is bound to is alive
- 2 – Variable in scope / object it is bound to is not alive
- 3 – Variable is not in scope / object it is bound to is alive
- 4 – Variable is not in scope / object it is bound to is not alive

At the location marked A, the variable/name c _____

At the location marked A, the variable/name h _____

At the location marked B, the variable/name f _____

At the location marked B, the variable/name e _____

At the location marked B, the variable/name i _____

At the location marked A, the variable/name b _____

At the location marked A, which variable/name would be considered a dangling reference _____

At the location marked B, which variable/name would be considered a dangling reference _____

Where in the C Runtime Environment are the following variables/functions allocated:

a _____ b _____ x _____ i _____

d _____ foo() _____ where i is pointing _____

Is there a memory leak at the location marked B? _____ Why or why not?