1) Consider the following program:

```
procedure Main is
    X, Y, Z : Integer;

procedure Sub1 is
    A, Y, Z : Integer;
    begin -- of Sub1
        .......
    end; -- of Sub1

procedure Sub2 is
    A, B, Z : Integer;
    begin -- of Sub2
        .......
    end; -- of Sub2

procedure Sub3 is
    A, X, W : Integer;
    begin -- of Sub3
        .......
    end; -- of Sub3

begin -- of Main
    .......
end; -- of Main
```

Given the following calling sequences and assuming that dynamic scoping is used, what variables are visible during execution of the last subprogram activated? Include with each visible variable the name of the unit where it is declared.

a) Main calls Sub1; Sub1 calls Sub2; Sub2 calls Sub3.
b) Main calls Sub1; Sub1 calls Sub3.
c) Main calls Sub2; Sub2 calls Sub3; Sub3 calls Sub1.
d) Main calls Sub3; Sub3 calls Sub1.
e) Main calls Sub1; Sub1 calls Sub3; Sub3 calls Sub2.
f) Main calls Sub3; Sub3 calls Sub2; Sub2 calls Sub1.
2) Compare the tombstone and lock-and-key methods of avoiding dangling pointers, from the pointers from the point of view of safety and implementation cost.

3) What significant justification is there for the -> operator in C and C++?

4) What are all of the differences between the enumeration types of C++ and those of Java?