Communisis DM Software Interview Questions

<u>Instructions</u>

All questions should be attempted and the answers submitted as a well formatted Word Document with written answers in Times New Roman (12pt) and code samples in Courier New (10pt). Code examples are encouraged, especially when explaining concepts such as inheritance, but *must* all be accompanied by good clear descriptive text and / or comments in the code.

The use of books, the internet, news groups etc is permitted, but *must* be stated where used. These questions, along with some more, will form the basis of a technical interview where you will be required to demonstrate that you understand the questions and the answers given.

<u>Questions</u>

Section 1: *Standard C++*

1. Who is Bjarne Stroustrup?

2. On a scale of 0 to 10, where 0 is someone who has never heard of C++ and 10 is Bjarne Stroustrup, how would you rate your C++?

3. Write a simple *Standard C++* program which displays "Hello World" at the command line and starts a new line. Describe how you would modify this program so that it could be built by Microsoft Visual C++ 6.0 without any warnings.

4. What is the difference between a `class` and a `struct`?

5. In the context of C++ what is abstraction?

6. In the context of C++ describe the differences between Abstraction and Encapsulation.

7. In the context of C++ what is Inheritance? Give an example.

8. In the context of C++ what is Polymorphism? Give an example.

9. What is a virtual function?

10. What is a destructor?

11. When would you use a virtual destructor?

12. Does a virtual destructor work the same way as a virtual function?

13. What member functions does the compiler generate for you automatically?

14. How should you write a copy constructor?

15. What does the const keyword do, and where do you use it?

16. What are namespaces, and why are they useful?

Section 2: *SQL*

17. Given the following extract from the Northwind database, write a SQL statement that returns all the names where the 'TitleofCourtesy' is 'Mr', in *descending* surname order.

LastName	FirstName	TitleofCourtesy
Davolio	Nancy	Ms.
Fuller	Andrew	Dr.
Leverling	Janet	Ms.
Peacock	Margaret	Mrs.
Buchanan	Steven	Mr.
Suyama	Michael	Mr.
King	Robert	Mr.
Dodsworth	Laura	Ms.
Callahan	Anne	Ms.

Section 3: *Design Patterns*

18. What is a software design pattern and which book is considered by many to be the seminal patterns book?

Section 4: *COM*

19. What functions are used to start and stop the COM runtime and should it be started and stopped on a per process basis or a per thread basis?

20. Write a class that ensures that COM runtime start function always has a corresponding COM runtime stop function.

Section 5: *Books*

21. What C++ books do you own *and* refer to on a regular basis?