System Programming

(1) Why the MS-DOS is likely to suffer virus (病毒) attack ? (10%)

(2) Suppose on an 8088-based MS/DOS, you write a program with 1.2 M bytes which exceeds the size of the PC's physical memory, How would you overcome the problem ? (10%)

(3) Please show the quadruple forms of the following C statement. (12%)

```
while (a > 0)
  { b = c + d * a;
    a--;
  };
```

(4) What is a macro ? Does the concept of macro only be used in assembly languages ? In designing a macro processor, should we know the hardware structure of the CPU ? Please give explanations for your answers. (15%)

(5) What are activation records in compiling systems ? In general, when and where will an activation record be constructed ? (15%)

(6) What are system calls ? What are the differences between a system call and a normal procedure call ? (12%)

(7) In addition to 'read' and 'write' system calls, why most operating systems provide 'open' and 'close' system calls ? Without 'open' and 'close', what would be the differences ? (16%)

(8) For a general linker, what are its input and output ? What are its main functions ? (10%)

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