CIS2380 Tutorial OS 7

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1 In an i-node the first 10 disk addresses point to data blocks. With a block size of 1024 bytes, files of up to 10240 bytes can be handled. Address 11 is the first indirect block, containing 256 disk addresses. Files up to 10240 + 256x1024 = 272,384 bytes. Address 12, the second indirect block is similar, so now files of up to 10240 + 256x256x1024 can be handled in this way. How big is this? ( = ) Note that if this is too small, address 13 can be used. 3 indirect blocks give a theoretical storage of 17,247,250,432 bytes, four times the maximum addressing capacity of a 32-bit machine!

2. Save this for when you are logged on to a PC.
In NT Explorer left click on the J drive symbol to select it, then right click it and discover the size of block that a server uses (in Netware Volume Information). What are block sizes on C; E: and A:? Right click on the C: drive icon and then select properties. How big is C:? What file system does it use (not FAT; that was used by older MS-DOS computers)? How about J: drive? Why is the file system different?

3. [2003 Exam Qn]
a) Briefly describe what is meant by a page of user data, and briefly describe the structure of a pagetable.
b) A 32-bit computer allocates 4Gbytes of virtual memory to each process, far in excess of the physical memory available. It uses page tables each with entries for 1024 frames of 4Kbytes.
   (i) Show how a single pagetable might be used to allow programs of up to 4Gbytes to run.
   (ii) Indicate how a double pagetable system might be used.
   (iii) Why is the double pagetable option preferable to a single pagetable?
c) Modern computers utilise pages ranging in size from 512 bytes to 4096 bytes. What are the advantages and disadvantages of using the smallest page size?
d) Explain the methods an Operating System may be used to keep track of free disc space.