BSD UNIX

Exercises

C.1 Does FreeBSD give scheduling priority to I/O- or CPU-bound processes? For what reason does it differentiate between these categories, and why is one given priority over the other? How does it know which of these categories fits a given process?

C.2 Early UNIX systems used swapping for memory management, but FreeBSD uses paging and swapping. Discuss the advantages and disadvantages of the two memory methods.

C.3 Describe the modifications to a file system that FreeBSD makes when a process requests the creation of a new file */tmp/foo* and writes to that file sequentially until the file size reaches 20 KB.

C.4 Directory blocks in FreeBSD are written synchronously when they are changed. Consider what would happen if they were written asynchronously. Describe the state of the file system if a crash occurred after all the files in a directory were deleted but before the directory entry was updated on disk.

C.5 Describe the process to recreate the free list after a crash in 4.1BSD.

C.6 What effects on system performance would the following changes to FreeBSD have? Explain your answers.

a. Clustering disk I/O into larger chunks

b. Implementing and using shared memory to pass data between processes, rather than using RPC or sockets

c. Using the ISO seven-layer networking model, rather than the ARM model

C.7 What socket type should be used to implement an intercomputer file-transfer program? What type should be used for a program that periodically tests to see whether another computer is up on the network? Explain your answer.