

2.4 The service and functions provided by an operating system can be divided into two main categories. Briefly describes the two categories and discuss how they differ.

ANS:

One class of services provided by an operating system is to enforce protection between different processes running concurrently in the system. Processes are allowed to access only those memory locations that are associated with their address spaces. Also, processes are not allowed to corrupt files associated with other users. A process is also not allowed to access devices directly without operating system intervention. The second class of services provided by an operating system is to provide new functionality that is not supported directly by the underlying hardware. Virtual memory and file systems are two such examples of new services provided by an operating system.

答案可參考第八版課本 P.50~51, 第七版 P.39 ~ 41

2.10 What is the main advantage of the layered approach to system design? What are the disadvantages of using the layered approach?

ANS:

As in all cases of modular design, designing an operating system in a modular way has several advantages. The system is easier to debug and modify because changes affect only limited sections of the system rather than touching all sections of the operating system. Information is kept only where it is needed and is accessible only within a defined and restricted area, so any bugs affecting that data must be limited to a specific module or layer.

Disadvantages 請參考第八版課本 P.73, 第七版 P.59

2.21 Why do some systems store the operating system in firmware, while others store it on disk?

ANS:

For certain devices, such as handheld PDAs and cellular telephones, a disk with a file system may be not be available for the device. In this situation, the operating system must be stored in firmware.

答案可參考第八版課本 P.90, 第七版 P.68