

2007 Paper 9 Question 1

Advanced Systems Topics

- (a) Microkernel operating systems aim to address perceived modularity and reliability issues in traditional “monolithic” operating systems.
- (i) Describe the typical architecture of a microkernel operating system such as Mach 3.0, including its use of address spaces, processor privilege levels and communication channels compared with a traditional operating system structure. [6 marks]
 - (ii) How does this structure affect the system performance? [4 marks]
- (b) Virtual machine monitors existed before microkernels and have experienced a recent resurgence of interest; using examples, describe some of the motivations for a virtual machine monitor approach. [4 marks]
- (c) Compare and contrast the means used to support pre-existing applications in the microkernel and virtual machine worlds. [6 marks]