2000 Paper 11 Question 7

Operating System Functions

Why is it important for an operating system to schedule disc requests? [4 marks]

Briefly describe each of the SSTF, SCAN and C-SCAN disc scheduling algorithms. Which problem with SSTF does SCAN seek to overcome? Which problem with SCAN does C-SCAN seek to overcome? [5 marks]

Consider a Winchester-style hard disc with 100 cylinders, 4 double-sided platters and 25 sectors per track. The following is the (time-ordered) sequence of requests for disc sectors:

  { 3518, 1846, 8924, 6672, 1590, 4126, 107, 9750, 158, 6621, 446, 11 }

The disc arm is currently at cylinder 10, moving towards 100. For each of SSTF, SCAN and C-SCAN, give the order in which the above requests would be serviced. [3 marks]

Which factors do the above disc arm scheduling algorithms ignore? How could these be taken into account? [4 marks]

Discuss ways in which an operating system can construct logical volumes which are (a) more reliable and (b) higher performance than the underlying hardware. [4 marks]