COSC1112/1114: Operating Systems Principles

Tutorial 08 (week 09)

1. **None of the disk-scheduling disciplines, except FCFS, is truly fair (starvation may occur).**
   a) **Explain why this assertion is true.**
   b) **Describe a way to modify algorithms such as SCAN to ensure fairness.**
   c) **Explain why fairness is an important goal in a time-sharing system.**
   d) **Give three or more examples of circumstances in which it is important that the operating system be *unfair* in serving I/O requests.**

2. **Explain why SSDs often use a FCFS disk scheduling algorithm.**

3. **Describe some advantages and disadvantages of using SSDs as a caching tier and as a disk drive replacement compared to a system with just magnetic disks.**

4. **Discuss the reasons why the operating system might require accurate information on how blocks are stored on a disk. How could the operating system improve file system performance with this knowledge?**

5. **Consider a RAID Level 5 organization comprising five disks, with the parity for sets of four blocks on four disks stored on the fifth disk. How many blocks are accessed in order to perform the following?**
   a) **A write of one block of data**
   b) **A write of seven continuous blocks of data**

6. **Compare the throughput achieved by a RAID Level 5 organization with that achieved by a RAID Level 1 organization for the following:**
   a) **Read operations on single blocks (i.e., multiple non-contiguous)**
   b) **Read operations on multiple contiguous blocks**