Review Questions – I/O Structure, Protection and Security
(Chapters 12, 16, and 17)
Operating Systems SFWRENG 3SH3 Term 2, Winter 2023

Prof. Neerja Mhaskar

1. Consider the following I/O scenarios on a single-user PC:

   a. A mouse used with a graphical user interface.
   b. A tape drive on a multitasking operating system (with no device pre allocation available)
   c. A disk drive containing user files
   d. A graphics card with direct bus connection, accessible through memory mapped I/O.

   For each of these scenarios, would you design the operating system to use buffering, spooling, caching, or a combination? Would you use polled I/O or interrupt driven I/O? Give reasons for your choices.

2. What is the difference between symmetric and asymmetric encryption algorithms?

3. What is the difference between protection and security?

4. Consider the RSA encryption algorithm. Given p = 5, q = 11, k_e= 3, k_d= 27, compute the following:

   a. What are the public and private keys used?
   b. Given message m = 9. Compute the ciphertext ‘C’ using the encryption algorithm.
   c. Compute the message from the ciphertext ‘C’ using the decryption algorithm.