

Year 11

Computer Science Test

6 November 2019

- 1) What is an operating system? (1)  
The OS is the manager of the computer.
- 2) Write brief notes on the following kinds of operating systems:
- a) Batch
    - Executing a sequence of non-interactive jobs sequentially.
    - Today such programs are executed in the background.
    - Uses JCL (Job Control Language) e.g. to indicate the files that must be inputted with the job.
  - b) Multi-tasking
    - Several applications simultaneously loaded and used in memory.
    - Processor switches between applications.
    - A very common OS
    - Also called time-sharing OS.
  - c) Real-time (6)
    - Immediate replies (time-limit set between input and output)
    - Two types:
      - Hard real-time (critical): time limit has to be respected e.g. nuclear plant, autopilot etc.
      - Soft real-time (non-critical): time limit can be eased e.g. airline reservations
- 3)
- a) How does the round-robin scheduling work? (2)  
Scheduler chooses programs one after the other giving them a time-slice each to use the processor. Repeat again and again until all programs are executed.
  - b) Name one other kind of scheduling. (1)  
First come first served, priority scheduling etc
- 4) What do we mean by memory management? (1)  
The OS is responsible to decide where the programs (or the parts being executed) should reside inside the RAM.

- 5) One type of computer misuse is theft of private information
- a) Name two other kinds of computer misuse. (2)  
**Unauthorised access and virus.**
- b) For each misuse mentioned above name one measure to combat it. (2)  
**Passwords and antivirus software**
- 6) Name two kinds of user interfaces. (2)  
**Command-driven interface and Graphical user interface.**
- 7)
- a) What is the difference between a direct and a sequential file? (2)  
**In a direct (random) file the records can be called from any position e.g. the record from the 70<sup>th</sup> position is called directly. In a sequential file this cannot be done. To read the 70<sup>th</sup> record the system would have to start reading from record one, then record two etc until it arrives at the 70<sup>th</sup> record.**
- b) Name one way one could turn a sequential file into a direct file. (1)  
**By creating an index that holds the position of each record. This however cannot be done if the medium is also sequential e.g. tape.**
- 8) One of the most common access rights on files is 'read'. Name another two. (2)  
**Write and execute.**
- 9) What is a firewall? (1)  
**A firewall is a program or a hardware device (or both) designed to prevent unauthorized access to or from a private network.**