

16. System Software

Starter Quiz · 课前小测

A-Level Computer Science

Name: _____ Score: _____

1. Multi-tasking lets several programs appear to run at once by:

- ☐ switching the CPU quickly between processes
- ☐ using several monitors
- ☐ deleting idle programs
- ☐ compressing the programs

2. A benefit of virtual memory is that it:

- ☐ lets the total memory used exceed the physical RAM, and isolates processes
- ☐ makes the CPU run faster
- ☐ removes the need for a disk
- ☐ encrypts all data

3. An interpreter:

- ☐ translates and runs the program one statement at a time, with no executable produced
- ☐ always produces a stand-alone executable
- ☐ reports all errors before running
- ☐ is faster at run time than compiled code

4. In BNF, a terminal symbol is:

- ☐ literal text that appears in the program
- ☐ the name of another rule
- ☐ always recursive
- ☐ a syntax error

5. Spooling helps the system because:

- ☐ print jobs queue on disk, so the CPU never waits for the slow printer
- ☐ it encrypts print jobs
- ☐ it speeds up the CPU clock
- ☐ it deletes old documents

6. What does giving each process a virtual address space achieve? Select **all** that apply.

- ☐ each process sees a simple private contiguous range of addresses
- ☐ processes are protected from each other's memory

- ☐ the memory in use can exceed the physical RAM installed
- ☐ programs run faster than they would in physical memory

Tick every correct option.

7. An interpreter can execute a program without producing a translated version of it.

- ☐ True
- ☐ False

8. Which techniques help an OS get the most from its resources? Select **all** that apply.

- ☐ multi-tasking, switching the processor rapidly between processes
- ☐ spooling output to a disk queue so the processor never waits for a printer
- ☐ caching recently used data in fast memory
- ☐ deleting processes that have been waiting too long

Tick every correct option.

9. Using those rules, which strings are valid identifiers? Select **all** that apply.

- ☐ count2
- ☐ x
- ☐ 2count
- ☐ my_var

Tick every correct option.

10. Round-robin scheduling gives each ready process a fixed time slice, then moves it to the back of the queue — making it fair and responsive.

- ☐ True
- ☐ False

1. switching the CPU quickly between processes

The OS rapidly switches the single CPU between processes so they all seem to progress together.

2. lets the total memory used exceed the physical RAM, and isolates processes

Virtual memory gives each process a private space and lets the working set exceed installed RAM by using disk.

3. translates and runs the program one statement at a time, with no executable produced

It works line by line, reporting errors as it reaches them; nothing is saved as an executable, and it is generally slower.

4. literal text that appears in the program

Terminals are literal tokens; non-terminals are names of other production rules.

5. print jobs queue on disk, so the CPU never waits for the slow printer

Spooling buffers print jobs to disk so the fast CPU is not held up by the slow printer.

6. each process sees a simple private contiguous range of addresses; processes are protected from each other's memory; the memory in use can exceed the physical RAM installed

Virtual memory buys simplicity, isolation and capacity. It costs speed, since part of the memory is really on disk.

7. True

The translation exists only in memory, statement by statement, and is discarded. That is why the interpreter must be present every time the program runs.

8. multi-tasking, switching the processor rapidly between processes; spooling output to a disk queue so the processor never waits for a printer; caching recently used data in fast memory

Sharing time, queueing for slow devices and keeping hot data close. Killing waiting processes would lose the user's work, not improve utilisation.

9. count2; x

A single letter is an identifier by the first alternative. 2count cannot start with a digit, and _ is not a terminal in any rule here.

10. True

Equal time slices in turn stop any one process hogging the CPU, so interactive programs stay responsive.