

Topic 16: System Software

EAL keyword sheet - Cambridge International AS & A Level Computer Science 9618. Write the word in your own language in the last column.

Keyword	Meaning	Example sentence	In my language
operating system	Software that manages the computer's resources.	<i>The OS shares the CPU between programs.</i>	
kernel	The core part of the OS that controls the hardware.	<i>The kernel runs in privileged mode.</i>	
multi-tasking	Running several processes at the same time, by sharing the CPU.	<i>Multi-tasking allows listening to music while typing.</i>	
process	A program that is being run.	<i>Each process has its own memory.</i>	
process states	Running, ready and blocked.	<i>A process is blocked while waiting for input.</i>	
PCB (process control block)	A record that stores information about a process.	<i>The PCB stores the program counter.</i>	
scheduler	The OS part that decides which process uses the CPU next.	<i>The scheduler picks the next process.</i>	
round robin	A scheduling method that gives each process a time slice in turn.	<i>Round robin treats processes fairly.</i>	
first come first served (FCFS)	Processes run in the order they arrive.	<i>FCFS is simple but can be slow.</i>	
shortest job first (SJF)	The process with the shortest time is run first.	<i>SJF reduces average waiting time.</i>	
shortest remaining time first (SRTF)	The process with the least time left is chosen.	<i>SRTF can pre-empt a running process.</i>	
priority scheduling	Processes with higher priority run first.	<i>Priority scheduling can cause starvation.</i>	
pre-emptive	The OS can stop a running process to run another.	<i>Round robin is pre-emptive.</i>	
time slice	A short period of CPU time given to a process.	<i>Each process gets a 10 ms time slice.</i>	
context switch	Saving one process's state and loading another's.	<i>A context switch takes time.</i>	
interrupt	A signal that tells the CPU to stop and handle an event.	<i>An interrupt ends the time slice.</i>	

Keyword	Meaning	Example sentence	In my language
virtual memory	Using secondary storage as an extension of RAM.	<i>Virtual memory prevents running out of memory.</i>	
paging	Dividing memory into fixed-size blocks called pages.	<i>Paging avoids external fragmentation.</i>	
segmentation	Dividing memory into variable-size logical blocks.	<i>A program may have code and data segments.</i>	
page fault	When a needed page is not in RAM.	<i>A page fault makes the OS load the page.</i>	
thrashing	Too much swapping of pages, which slows the system down.	<i>Thrashing happens when RAM is too small.</i>	
compiler	Translates the whole source code to machine code.	<i>A compiler produces an executable.</i>	
interpreter	Translates and runs source code line by line.	<i>An interpreter is slower to run.</i>	
lexical analysis	Breaking the code into tokens.	<i>Lexical analysis removes comments.</i>	
syntax analysis	Checking that the tokens follow the grammar.	<i>Syntax analysis reports a syntax error.</i>	
code generation	Producing machine code.	<i>Code generation follows syntax analysis.</i>	
optimisation	Improving the code so it runs faster or uses less memory.	<i>The compiler performs optimisation.</i>	
syntax diagram	A diagram that shows the rules of a language.	<i>A syntax diagram shows what a valid number looks like.</i>	
BNF	Backus-Naur form: a way to write the rules of a language.	<i><digit> ::= 0 1 2</i>	
Reverse Polish Notation (RPN)	A way to write expressions with the operator after the operands.	<i>3 4 + means 3 + 4.</i>	