Revision Guide for A-Level Computer Science Unit 1.2.1 (SLR 04)

1.2.1 System Software

Candidates need to have an understanding of why an operating system is required, along with the different tasks it performs within a computer system (e.g. resource management, file management, interrupt handling, security, providing a platform for software to run, providing a user interface and providing utilities).	Before Revision☆☆☆☆☆ After Revision☆☆☆☆☆
Candidates need to understand how operating systems manage memory. They need to understand the need for, purpose and function of paging to divide memory into usable fixed-size pages and how this aids in the transfer of memory for example virtual memory.	Before Revision☆☆☆☆☆ After Revision☆☆☆☆☆
Candidates need to understand what is meant by segmentation and how memory is divided into segments to allow access to memory.	Before Revision☆☆☆☆☆ After Revision☆☆☆☆☆
Candidates need to understand what is meant by virtual memory and why this is needed in a computer system.	Before Revision☆☆☆☆☆ After Revision☆☆☆☆☆
Candidates need to understand how paging is used in virtual memory, and the benefits and drawbacks of having and using virtual memory in a computer system.	Before Revision☆☆☆☆☆ After Revision☆☆☆☆☆
Candidates need to understand the purpose of interrupts within a computer system, why an interrupt might be generated and what happens within the CPU and memory in order to call an interrupt service routine.	Before Revision☆☆☆☆☆ After Revision☆☆☆☆☆
Candidates need to understand the need for scheduling of tasks by an operating system and the benefits that scheduling brings. Candidates need to understand that there are different scheduling algorithms, with each having benefits and drawbacks for tasks with specific characteristics.	Before Revision☆☆☆☆☆ After Revision☆☆☆☆☆
Candidates need to understand how the following scheduling algorithms work; round robin, first come first served, multi-level feedback queue, shortest job first and shortest remaining time.	Before Revision☆☆☆☆☆ After Revision☆☆☆☆☆
Candidates need to understand the different (and often overlapping) classifications of operating systems (distributed, embedded, multi-tasking, multi-user and real time), including the key features of each. They should be able to recommend (and justify) a type of operating system for a given scenario.	Before Revision☆☆☆☆☆ After Revision☆☆☆☆☆
Candidates need to understand the role of the BIOS in a computer system, and the steps that the BIOS goes through to start a computer. Candidates need to understand what is meant by 'device drivers' and why they are needed for communication between hardware and the operating system.	Before Revision☆☆☆☆☆ After Revision☆☆☆☆☆
Candidates should be able to describe what is meant by a virtual machine, how they can be used to execute intermediate code, how they can be used to run a software driven machine inside a physical machine and the benefits and drawbacks of each approach.	Before Revision☆☆☆☆☆ After Revision☆☆☆☆☆

Slideshow (Shared area)	PG Online Textbook	Teach-ICT	CraignDave (Youtube)
Slides 1 to 87 **Read ☐** **Starter Activities ☐**	Section 2: Chapters 7 & 8 Pages 29 to 38 **Read ☐** **Questions ☐** **Exercises P34 ☐**	1.2.1 System Software – Purpose of an operating system **Theory ☐** **Lesson Tasks ☐** 1.2.1 System Software – Memory management **Theory ☐** **Lesson Tasks ☐** 1.2.1 System Software – Interrupts and polling **Theory ☐** **Lesson Tasks ☐** 1.2.1 System Software – Scheduling **Theory ☐** **Lesson Tasks ☐** 1.2.1 System Software – Types of operating system **Theory ☐** **Lesson Tasks ☐** 1.2.1 System Software – BIOS **Theory ☐** **Lesson Tasks ☐** 1.2.1 System Software – Device driver **Theory ☐** **Lesson Tasks ☐** 1.2.1 System Software – Virtual machines **Theory ☐** **Lesson Tasks ☐**	OCR A'Level Need for operating systems **Watched ☐** **Cornell Notes ☐** OCR A'Level Paging, segmentation and virtual memory **Watched ☐** **Cornell Notes ☐** OCR A'Level Interrupts **Watched ☐** **Cornell Notes ☐** OCR OCR A'Level Scheduling **Watched ☐** **Cornell Notes ☐** OCR A'Level Types of operating system **Watched ☐** **Cornell Notes ☐** OCR A'Level BIOS **Watched ☐** **Cornell Notes ☐** OCR A'Level Device drivers **Watched ☐** **Cornell Notes ☐** OCR A'Level Virtual machines **Watched ☐** **Cornell Notes ☐**