OCR GCSE COMPUTER SCIENCE - LEARNING JOURNEY
COMPONENT 1

OCR
Oxford Cambridge and RSA

Ethical, legal, cultural and environmental Impact
Impacts of digital technology on wider society
Legislation relevant to Computer Science

System Software
The purpose and functionality of operating systems
The purpose and functionality of Utility Software
Utility Software including Encryption, Defragmentation and Data Compression

Identifying and Preventing Vulnerabilities
Common Prevention Methods
Penetration Testing, Ant-malware software, Firewalls, User Access Levels, Passwords, Encryption, Physical Security

Ethical, Legal, Environmental | System Software | Identifying and Preventing Vulnerabilities

Compression
The need for compression
Lossy and Lossless compression

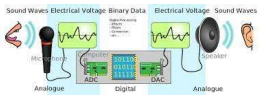
Networks 2
The Internet as a worldwide collection of networks
Encryption
IP and MAC addressing
Standards
Common Protocols (TCPIP)
The concept of Layers

Threats to computer systems and networks
Forms of attack
Malware, social engineering, Brute Force attacks, DOS attacks, Data Interception and Theft, SQL injection

Compression | Networks 2 | Threats to computer systems and networks

YEAR 11
5 hours per fortnight

Sound
How sound can be sampled and stored in digital form
The effect of sample rate, duration and bit depth in the quality and size of a sound file



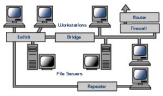
Characters
The use of Binary Codes to represent Characters
The term character set
The relationship between the number of bits and the number of Characters
ASCII and Unicode

Data Storage - Sound | Data Storage - Images | Data Storage - Characters

Images
How an image is represented
Metadata
The effect of colour depth and resolution on the quality and size of the image file

Secondary Storage
The need for Secondary Storage
Common Types of Storage (Optical, Magnetic and Solid State)
Suitable storage for a given application
The advantages and disadvantages of different Storage Types

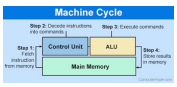
Networks
Types of Networks
Factors which affect the performance of Networks
The hardware needed to connect a network
Client server and Peer to Peer Networks
Star and Mesh Topologies
Wired and Wireless modes of connection



Secondary Storage | Networks 1

Primary Storage / Memory
The need for primary storage ¨ The difference between RAM and ROM ¨ The purpose of ROM in a computer system ¨ The purpose of RAM in a computer system ¨ Virtual memory

Architecture of the CPU
The purpose of the CPU and the fetch execute cycle
Common components and their function (ALU, CU, Cache and Registers)
Von Neumann Architecture and Registers (MAR, MDR, PC, CIR and Acc) .



Primary Storage / Memory | System Architecture

YEAR 10
5 hours per fortnight

Units
How data needs to be converted into a binary format to be processed by a computer

Embedded Systems
The purpose and characteristics of embedded systems
Examples of Embedded Systems.

Embedded Systems

Data Storage - Number | Three Cs of Performance

Units
Bit, Nibble, Byte, Kilobyte, Megabyte, Gigabyte, Terabyte, Petabyte

Data Storage
Binary to positive denary numbers and vice versa
Add two binary integers together (up to eight bits)
Convert positive denary numbers to 2-digit hexadecimal
Convert binary numbers to hexadecimal and vice versa
Binary Shift .

CPU Performance
How common characteristics of CPUs affect their performance
Clock speed, cache size ad number of cores.