

OCR GCSE Computer Science

1.1 Systems Architecture	I can explain the purpose of the CPU			
	I can describe the components of Von Neumann Architecture			
	I can explain the role and operation of main memory and the major components of the CPU (Control Unit, ALU, Bus, Cache)			
	I can explain the stages of the Fetch-Execute Cycle			
	I can explain the effect of clock speed, number of cores, cache size and type on the performance of the CPU			
	I can explain the purpose of an embedded system and give examples			
1.2 Memory	I can explain the difference in purpose between RAM and ROM			
	I can explain a computer's need for virtual memory			
	I can describe flash memory			
1.3 Storage	I can explain the need for secondary storage			
	I can calculate data capacity requirements			
	I can explain the operation of and advantages and disadvantages of how the following storage devices: Optical, Magnetic, Solid State			
	I can analyse the advantages and disadvantages of the above storage devices for a given scenario/application			
1.4 Wired and Wireless Networks	I can describe the following types of networks: PAN, LAN and WAN			
	I can explain the factors that affect the performance of a network			
	I can explain the roles of computers in: client-server network, peer-to-peer network			
	I can explain the concepts: Domain Name Server, Hosting, The Cloud			
	I can explain the concept of virtual networks			
1.5 Network	I can describe a star and mesh network topology			
	I can explain how Wifi uses: frequency and channels			
	I can explain how Wifi uses: encryption			
	I can explain IP addressing			
	I can explain MAC addressing			
	I can explain the purpose and use of the following protocols:			
	Ethernet			
	Wifi			
	TCP/IP			
	UDP			
	HTTP			
	HTTPS			
	FTP			
	POP			
	IMAP			
SMTP				
I can describe the 4 layer TCP/IP model				
I can explain how packet switching is used to help transmit data				
1.6 System Security	I can describe different forms of attack on a system/network			
	I can describe the main threats posed to networks			
	I can describe the main types of utility systems software			
	I can describe the roles and methods of the following types of backup: full, incremental			

1.7 Systems Software	I can explain the purpose and functionality of systems software			
	I can explain the purpose, features and functions of operating systems			
	I can describe the main types of utility systems software			
	I can describe the roles and methods of the following types of backup: full, incremental			
1.8 Ethical, Legal, Cultural and Environmental Concerns	I can explain the following legislations:			
	The Data Protection Act 1998			
	Computer Misuse Act 1990			
	Copyright Designs and Patents Act 1988			
	Creative Commons Licensing			
	Freedom of Information Act 2000			
	I can compare Open source and Proprietary Software			
	Given a scenario, I can explain how key stakeholders are affected by technology			
2.1 Algorithms	I can write an extended answer discussing the ethical, legal, cultural, environment and privacy issues of a scenario or type of technology			
	I can explain the terms: Abstraction, decomposition and algorithmic thinking			
	I can compare and contrast binary and linear search algorithms			
	I can compare and contrast bubble, merge and insertion sort algorithms			
	I can produce an algorithm in Pseudocode or a Flow Chart that successfully solves a problem			
2.2 Programming Techniques	I can interpret, correct or complete an algorithm			
	I can identify when to use the following data types: Integer, Boolean, Real, Charater and String			
	I can declare variables and constants with meaningful identifier names			
	I can use local and global variables appropriately			
	I can use selection when programming			
	I can create a subroutine (procedures and functions)			
	I can use parameters to pass data within a program			
	I can use definite and indefinite iteration			
	I can use nested selection and nested iteration			
	I can use arithmetic operations in a programming language			
	I can use relational operations in a programming language			
	I can use Boolean operations in a programming language			
	I can use Boolean operations in a programming language			
	I can create an array/list in a programming language (up to a 2d array)			
	I can create a record in a programming language			
	I can input data from a file to a program			
	I can output data from a program to a file (write and append)			
	I can use string handling operations in a programming language			
I can use a random number generator in a programming language				
2.3 Producing Robust Programs	I can use SQL to search for data			
	I can include the following in my programming: Input sanitisation/validation, Plan for contingencies, anticipate misuse, authentication			
	I understand how comments and indentation improve the maintainability of a program			
	While using suitable test data I can apply the following types of testing: iterative, final/terminal			

2.4 Computational Logic	I can explain why data is represented in computer systems in binary form			
	I can create/amend/complete simple logic circuits/statements using the operations AND, OR and NOT			
	I can describe the main types of utility systems software			
	I can complete a trace table to determine the purpose of an algorithm			
2.5 Translators and Facilities of Languages	I can explain the characteristics and purpose of high and low level languages			
	I can explain the purpose of translators			
	I can describe the characteristics of: an assembler, a compiler and interpreter			
	I can describe the common tools of an IDE			
2.6 Data Representation	I know and can convert the units of information from bit to Petabyte			
	I understand and can convert between binary, hexadecimal and decimal			
	I can add two 8 bit binary integers and explain overflow errors that may occur			
	I can explain the term check digit			
	I can explain the advantages and disadvantages of using different character sets to represent data			
	I can explain how bitmap images are represented in binary by explaining the terms pixel, resolution and colour depth			
	I can calculate a bitmap image file size based on number of pixels and colour depth			
	I can explain what metadata is			
	I can explain how sample rate and sample resolution represent sound digitally			
	I can calculate the size of a sound file based on the sample rate and sample resolution			
	I can explain the need for data compression and methods of compressing data (lossless and lossy)			