OCR GCSE Component 01 Personalised Learning Checklist					
Component 01			R	A	G
1.1 Systems Architecture	1.1.1 Architecture of the CPU	I can explain the purpose of the CPU			
		I can describe the components of Von Neumann Architecture (MAR, MDR, Program Counter, Accumulator)			
		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			
	1.1.2 CPU Performance	I can explain the effect of clock speed, number of cores, cache size and type on the performance of the CPU			
	1.1.3 Embedded Systems	I can explain the purpose of an embedded system and give examples			
1.2 Memory and Storage	1.2.1 Primary Storage (Memory)	I can explain the need for primary storage			
		I can explain the difference between and purpose of RAM and ROM			
		I can explain a computer's need for virtual memory			
		I can describe flash memory			
	1.2.2 Secondary 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 the following storage devices: Optical, Magnetic, Solid Sate			
		I can compare storage devices in terms of the following characteristics: Capacity, Speed, Portability, Durability, Reliability, Cost			
		I can analyse the advantages and disadvantages of the above storage devices for a given scenario/application			
	1.2.3 Units	I know and can convert the units of information from bit to Petabyte			
		I understand how data needs to be converted into a binary format to be processed by a computer			
		I can calculate the storage capacity for a given set of files that can include: text files, image files, sound files			
	1.2.4 Data Storage	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 understand the effect of and can carry out binary shifts, both left and right			
		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			
	1.2.5 Compression	I can explain the need for data compression and methods of compressing data (lossless and lossy), whilst giving the advantages and disadvantages			

1.3 Computer Networks, Connections and Protocols	**1.3.1 Networks and Topologies**	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 hardware needed to connect stand-alone computers into a LAN, which includes: WAP, Router, Switch, NIC, Transmission media			
		I can explain the concepts: Domain Name Server, Hosting, The Cloud, Web Servers and Clients			
		I can describe a star and mesh network topology including the advantages and disadvantages			
	1.3.2 Wired and Wireless Networks, Protocols and Layers	I can explain and compare the different modes of connection that include: Wired (Ethernet) and Wireless (Wi-Fi and Bluetooth)			
		I can explain how encryption is used in the transmission of data			
		I can explain IP addressing and the format of an IP address (IPv4 and IPv6)			
		I can explain MAC addressing and its use within a network			
		I can explain that standards allow hardware/software to interact across different manufacturers/producers			
		I can explain the principle of a (communication) protocol as a set of rules for transferring data			
		I can explain the purpose and use of the following protocols: TCP/IP, HTTP, HTTPS, FTP, POP, IMAP, SMTP			
		I can describe the layers are used in protocols, and the benefits of using layers; I understand the 4 layer TCP/IP model			
1.4 Network Security	**1.4.1 Threats to Computer Systems and Networks**	I can describe different forms of attack: Malware, Social Engineering, Brute-Force, Denial of Service, Data Interception and Theft, SQL Injection			
		I can describe how the attack is used and the purpose of the attack			
	1.4.2 Identifying and Preventing Vulnerabilities	I can describe the common prevention methods: Penetration Testing, Anti-Malware, Firewalls, User-Access Levels, Passwords, Encryption, Physical Security			
		I can describe how to limit the threats, methods to remove vulnerabilities and how it limits the attack			
1.5 Systems Software	**1.5.1 Operating Systems**	I can explain the purpose and functionality of operating systems			
		I can explain the role of: User Interface, Memory Management & Multitasking, Peripheral Management and Drivers, User Management, File Management			
	1.5.2 Utility Software	I can explain the purpose and functionality of utility software			
		I can explain the role of: Encryption Software, Defragmentation, Data Compression			
1.6 Ethical, Legal, Cultural and Environmental Impacts of Digital Technology	**1.6 Ethical, Legal, Cultural and Environmental Impact**	I can explain the impacts of digital technology on wider society including Ethical, Legal, Cultural, Environmental and Privacy Issues			
		I can discuss the impacts of the above factors in a given scenario, including how key stakeholders are affected			
		I can describe the following legislation: The Data Protection Act 2018, Computer Misuse Act 1990, Copyright Designs & Patents Act 1988, Software Licences			
		I can explain the purpose of each piece of legislation relevant to Computer Science and the specific actions it allows or prohibits			
		I can explain the features of open source and proprietary software			
		and can compare and recommend a type of licence for a given scenario, including benefits and drawbacks			