



Long-Term Plan – YEAR 10 – GCSE COMPUTER SCIENCE – AQA - 8525

		Term 1a	Term 1b	Term 2a	Term 2b	Term 3a	Term 3b
Year 10	Topics to be covered:	3.4 Computer Systems 3.2 Programming	3.4 Computer Systems 3.2 Programming 3.1 Algorithms	3.3 Fundamentals of Data Representation 3.1 Algorithms	3.1 Algorithms 3.2 Programming	3.2 Programming 3.4 Computer Systems	3.5 Fundamentals of Computer Networks 3.2 Programming
	Skills to be developed:	<ul style="list-style-type: none"> • Explain the terms Hardware and software • Describe System Architecture • Explain how to improve the performance of the CPU • Describe primary memory • Describe different Secondary Storage • Explain advantages and disadvantages of Cloud Storage • Explain Embedded Systems • Be able to identify and explain Data Types • Understand and apply basic programming concepts in python including; Input/ Output, Sequencing, Selection, Arithmetic 	<ul style="list-style-type: none"> • Classify different software • Describe how Operating Systems work. • Understand low-level and high level languages • Explain how different Translators operate • Boolean Logic • Complete simple Truth Tables for Logic gate diagrams • Create Simple Python Programs • Use Count Controlled Iteration • Use Condition Controlled Iteration • Understand how lists work and use in simple programs 	<ul style="list-style-type: none"> • Converting Number Bases • Binary Addition • Binary Shift multiplication and division • Describe ASCII and Unicode character sets • Convert images into binary strings and vice-versa. • Calculate file sizes for images and sound • Interpret and create Huffman Trees • Use RLE –to compress character strings • Create Simple Trace Tables 	<ul style="list-style-type: none"> • Explain Algorithm, Decomposition and Abstraction • Explain purpose and efficiency of simple algorithms • Complete Trace Tables for given algorithms • Sort and search lists • Understand and demonstrate, Sequencing, Selection, Iteration and String Handling concepts • Use random number generation code • Apply appropriate Data structures • Use efficient structured programming such as subroutines 	<ul style="list-style-type: none"> • Describe robust and secure programming techniques • Create Validation Routines • Create Simple authentication routines • Use suitable Test data • Fix Syntax and logical errors • Revisit 3.4 computer system topics 	<ul style="list-style-type: none"> • What is a computer network? • Explain different network types • Discuss the advantages and disadvantages of Wired and wireless networks • Draw and explain LAN Topologies • Describe Network Protocols • Understand and explain Network Security measures • Describe the 4 layer TCP/ IP model

	Operators, Relational Operators, Boolean Operations	• Complete trace tables for simple algorithms				
Key assessments taking	<i>SENECA, Exam questions, Edpuzzle, smart revise</i>	<i>SENECA, Exam questions, Edpuzzle, smart revise</i>	<i>SENECA, Exam questions, Edpuzzle, smart revise</i>	<i>Completion of set programming scenarios to develop skills</i>	<i>SENECA, Exam questions, Edpuzzle, smart revise</i>	<i>SENECA, Exam questions, Edpuzzle, smart revise</i>
Key vocab	Hardware , Software, Truth Tables, AND/ NOT/ OR/ XOR Gates, System software/ Utility software, Application Software, Operating Systems, ALU - Arithmetic Logic Unit, Control Unit, Clock, System Bus, Main Memory, RAM, Cache, Registers, ROM, volatile, non-volatile, solid state, optical, magnetic Low-level language, High – Level Language, Machine Code, Interpreter, Compiler, Assembler Programming Vocabulary Integer, Real, Boolean, Character, String, variable declaration, constant declaration, assignment, iteration, count controlled (definite) iteration, condition controlled (indefinite iteration), selection, nested selection, real division, integer division (DIV), remainder revision (MOD), arrays and lists	Decimal (base 10), Binary (Base 2), Hexadecimal (HEX) – (Base 16), Bit, nibble, byte, kilobyte, megabyte, gigabyte, petabyte, binary shift, Character sets, ASCII – 128 characters, Extended ASCII, Unicode, Images, Pixels, Image Resolution, Colour depth, Sampling Rate, Sampling Resolution, Data Compression, Huffman Trees, RLE – Run length Encoding	Algorithm, Decomposition, Abstraction, linear search, binary search, merge sort, bubble sort, sequencing, selection, iteration, trace tables, length (string), position, index, substring, concatenation, subroutines, identifiers, parameters, return, local variables, global variables,	Validation, Range Check, Type Check, Length Check, Presence Check, Format Check, Authentication, Username and password, Biometrics, Pin Number, User Access Levels, test data; normal, boundary, erroneous, syntax error, logical error	Computer Network, Personal Area Network – PAN, Local Area Network – LAN, Wide Area Network – WAN, Network Topology, Star, BUS, Protocol, Ethernet, Wi-Fi – (WLAN, TCP, IP, UDP, HTTP, HTTPS, FTP, IMAP or POP, SMTP, Authentication, Encryption, Firewall, Mac Address Filtering, Application Layer, Transport Layer, Network/ Internet Layer, Link layer	
<p>Opportunities for retrieval practice:</p> <ul style="list-style-type: none"> • Completion of more advanced tasks that build on previous learning • Key vocabulary – Memrise/ Flash Cards • Online Quizzes – Kahoot/ Quizzizz • Completion of online questions – Seneca learning/ Smart Revise • Questioning and use of key vocabulary • Building in opportunities to revisiting previous learning 						

Long-Term Plan – YEAR 11 – GCSE COMPUTER SCIENCE – AQA - 8525

		Term 1a	Term 1b	Term 2a	Term 2b	Term 3a	Term 3b	
Year 11	Topics to be covered:	3.6 Cyber Security	3.8 Ethical , legal and Environmental impacts of digital technology on wider society, including issues of privacy 3.4 Computer Systems	3.3 Fundamentals of Data Representation 3.2 Data Structures 3.1 Relational Databases and SQL	3.1 Algorithms REVISION	REVISION		
	Skills to be developed:	<ul style="list-style-type: none"> • Define Cyber Security • Explain Cyber Security Threats • Explain the concept of Penetration Testing • Describe several Social Engineering Techniques • Describe the types Malicious Code and the methods of preventing Cyber Security Threats 	<ul style="list-style-type: none"> • Describe the Data Protections Laws • Understand the issues of Government accessing private data of ordinary citizens • Understand and explain the ethical, legal and environmental impact of the follow: Cyber security Mobile technologies Wireless networking Cloud storage Hacking Wearable technologies Revisit Computer System Concepts Computer based implants Driverless cars 	<ul style="list-style-type: none"> • Convert Binary to Decimal and HEX • Binary Arithmetic – Add and multiply binary numbers • Understand and demonstrate Database Concepts • Describe the feature of a Relational Databases • Understand Structured Query Language and create queries to extract data from a maximum of 2 tables 	<ul style="list-style-type: none"> • Complete Trace Tables for given algorithms • Create Simple Algorithms for a given problem • Develop techniques to Search and Sort data structures • Write simple validation and authentication routines for set problems 	<ul style="list-style-type: none"> • Exam Practice • Revisit and revise 		
	Key assessments	<i>SENECA, Exampro questions, Edpuzzle, smart revise tasks</i>	<i>SENECA, Exam pro questions, Edpuzzle, smart revise tasks</i>	<i>SENECA, Exam questions, Edpuzzle, smart revise</i>	<i>Complete Challenges Exam questions</i>			
	Key vocab	Cyber security, Malicious Code (Malware), Weak and default passwords, Misconfigured Access	GDPR – 2018, Computer Misuse Act 1990, Computer Design And Patents Act 1988, Cookies, Hacking, E-	Lists, records, Flat File Database, Relational Database, table, field, record, primary key,	Bubble sort, merge sort, linear search, binary search, validation, authentication, section,			

	Rights, Removable Media (USB pens/ SD cards), Unpatched/ Outdated software Penetration Testing, Black Box Testing, White Box Testing, Social engineering, Blagging (pretexting), Phishing, Pharming, Shouldering (or shoulder surfing), Malware, Computer Virus, Trojan, Spyware, Adware, Biometrics, Passwords, authentication, CAPTCHA, email confirmations, software updates	Waste, Artificial Intelligence, Wearables	foreign key, query, SQL, SELECT, FROM, WHERE , ORDER, ASCNDING, DESCENDING, DELETE	condition controlled iteration, algorithm, trace table, list, index		
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Opportunities for retrieval practice:

- Completion of more advanced tasks that build on previous learning
- Key vocabulary – Memrise/ Flash Cards
- Online Quizzes – Kahoot/ Quizzizz
- Completion of online questions – Seneca learning/ Smart Revise
- Questioning and use of key vocabulary
- Building in opportunities to revisiting previous learning