Year 11 Revision Schedule 2024-25

Subject/Course:	GCSE Computer Science
Student Name:	GCSE Year 11 students

		Topic	Key knowledge/skills/questions	Resources/activities/links
Week 1	**Monday 20 January 2025**	1.1 Systems architecture	The purpose of the CPU • The fetch-execute cycle Common CPU components and their function: • ALU (Arithmetic Logic Unit) • CU (Control Unit) • Cache • Registers Von Neumann architecture: • MAR (Memory Address Register) • MDR (Memory Data Register) • Program Counter • Accumulator How common characteristics of CPUs affect their performance: • Clock speed • Cache size • Number of cores • The purpose and characteristics of embedded systems • Examples of embedded systems	1.1 Lesson PowerPoints in U drive •Craig n Dave videos (hyperlink is to the first one but you should watch all the topics) •Teach ICT sections (hyperlink is to the first one but you should cover all topics) • theory, flashcards, revision quizzes: User name: br27db Password: memory8 •Your completed workbooks and terminology PowerPoint •Seneca
Week 2	**Monday 27 January 2025**	1.2 Memory and Storage	• 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 • The need for secondary storage • Common types of storage:	1.2 Lesson PowerPoints in U drive • Craig n Dave videos (link is to first one complete all in following slides) •Teach ICT sections (link is to first section complete all in following slides – theory, flashcards, revision quizzes) User name: br27db Password: memory8

			○ Optical ○ Magnetic ○ Solid state • Suitable storage devices and storage media for a given application • The advantages and disadvantages of different storage devices and storage media relating to these characteristics: ○ Capacity ○ Speed ○ Portability ○ Durability ○ Reliability ○ Cost • The units of data storage: ○ Bit ○ Nibble (4 bits) ○ Byte (8 bits) ○ Kilobyte (1,000 bytes or 1 KB) ○ Megabyte (1,000 KB) ○ Gigabyte (1,000 MB) ○ Terabyte (1,000 GB) ○ Petabyte (1,000 TB) • How data needs to be converted into a binary format to be processed by a computer • Data capacity and calculation of data capacity requirements **Numbers** • How to convert positive denary whole numbers to binary numbers (up to and including 8 bits) and vice versa • How to add two binary integers together (up to and including 8 bits) and explain overflow errors which may occur • How to convert positive denary whole numbers into 2-digit hexadecimal numbers and vice versa • How to convert binary integers to their hexadecimal equivalents and vice versa • Binary shifts **Characters** • The use of binary codes to represent characters	•Your completed workbooks and terminology PowerPoint •Seneca

			• The term 'character set' • The relationship between the number of bits per character in a character set, and the number of characters which can be represented, e.g.: o ASCII o Unicode **Images** • How an image is represented as a series of pixels, represented in binary • Metadata • The effect of colour depth and resolution on: o The quality of the image o The size of an image file **Sound** • How sound can be sampled and stored in digital form • The effect of sample rate, duration and bit depth on: o The playback quality o The size of a sound file • The need for compression • Types of compression: o Lossy o Lossless	
Week 3	**Monday 27 January 2025**	1.3 Computer networks, connections and protocols	• Types of network: o LAN (Local Area Network) o WAN (Wide Area Network) • Factors that affect the performance of networks • The different roles of computers in a client-server and a peer-to-peer network • The hardware needed to connect stand-alone computers into a Local Area Network: o Wireless access points o Routers o Switches o NIC (Network Interface Controller/Card) o Transmission media • The Internet as a worldwide collection of computer networks: o DNS (Domain Name Server)	•1.3 Lesson PowerPoints in U drive •Craig n Dave videos (hyperlink is to the first one but you should watch all of them) •Teach ICT sections (hyperlink is to the first one but you should cover all topics) theory, flashcards, revision quizzes: User name: br27db Password: memory8 •Your completed workbooks and terminology PowerPoint •Seneca

			○ Hosting ○ The Cloud ○ Web servers and clients ○ Star and Mesh network topologies • Modes of connection: 1. Wired ▪ Ethernet 2. Wireless ▪ Wi-Fi ▪ Bluetooth • Encryption • IP addressing and MAC addressing • Standards • Common protocols including: ○ TCP/IP (Transmission Control Protocol/Internet Protocol) ○ HTTP (Hyper Text Transfer Protocol) ○ HTTPS (Hyper Text Transfer Protocol Secure) ○ FTP (File Transfer Protocol) ○ POP (Post Office Protocol) ○ IMAP (Internet Message Access Protocol) ○ SMTP (Simple Mail Transfer Protocol) ○ The concept of layers	
	Monday 3 February 2025	1.4 Network Security	▪ Forms of attack: ○ Malware ○ Social engineering, e.g. phishing, people as the 'weak point' ○ Brute-force attacks ○ Denial of service attacks ○ Data interception and theft ○ The concept of SQL injection • Common prevention methods: ○ Penetration testing ○ Anti-malware software ○ Firewalls ○ User access levels ○ Passwords ○ Encryption • Physical security	1.4 Lesson PowerPoints in U drive •Craig n Dave videos (hyperlink is to the first one but you should watch all of them) •Teach ICT sections (hyperlink is to the first one but you should cover all topics) •theory, flashcards, revision quizzes: User name: br27db Password: memory8 •Your completed workbooks and terminology PowerPoint •Seneca

Week 4	**Monday 10 February**	1.5 Systems Software	• The purpose and functionality of operating systems: o User interface o Memory management and multitasking o Peripheral management and drivers o User management • File management The purpose and functionality of utility software • Utility system software: o Encryption software o Defragmentation o Data compression •	•1.5 Lesson PowerPoints in U drive •Craig n Dave videos (hyperlink is to the first one but you should watch all of them) •Teach ICT sections (hyperlink is to the first one but you should cover all topics) •theory, flashcards, revision quizzes: User name: br27db Password: memory8 •Your completed workbooks and terminology PowerPoint •Seneca
Week 5	**Half Term Monday 17 February**	Practice past exam paper	Computer systems • Computational thinking, algorithms and programming	Work through the past paper and then use the mark scheme to go through the answers.
Week 6	**Monday 24 February**	1.6 Ethical, legal, cultural and environmental impacts of digital technology	• Impacts of digital technology on wider society including: o Ethical issues o Legal issues o Cultural issues o Environmental issues o Privacy issues • Legislation relevant to Computer Science: • The Data Protection Act 2018 • Computer Misuse Act 1990 • Copyright Designs and Patents Act 1988 • Software licences (i.e. open source and proprietary)	•1.6 Lesson PowerPoints in U drive •Craig n Dave videos (hyperlink is to the first one but you should watch all of them) •Teach ICT sections (hyperlink is to the first one but you should cover all topics) •–theory, flashcards, revision quizzes: User name: br27db Password: memory8 •Your completed workbooks and terminology PowerPoint •Seneca
Week 7	**Monday 3 March**	2.1 Algorithms	computational thinking: • abstraction • Decomposition • algorithmic thinking • Identify the inputs, processes, and outputs for a problem • Structure diagrams • Create, interpret, correct, complete, and refine algorithms using: o Pseudocode	•2.1 Lesson PowerPoints in U drive •Craig n Dave videos (hyperlink is to the first one but you should watch all of them) •Teach ICT sections • theory, flashcards, revision quizzes: User name: br27db Password: memory8 •Your completed workbooks and terminology PowerPoint •Seneca

			○ Flowcharts ○ Reference language/high-level programming language • Identify common errors • Trace tables • Standard searching algorithms: ○ Binary search ○ Linear search • Standard sorting algorithms: ○ Bubble sort ○ Merge sort ○ Insertion sort	
Week 8	**Monday 10 March**	2.2 Programming fundamentals	• The use of variables, constants, operators, inputs, outputs and assignments • The use of the three basic programming constructs used to control the flow of a program: ○ Sequence ○ Selection ○ Iteration (count- and condition-controlled loops) • The common arithmetic operators • The common Boolean operators AND, OR and NOT • The use of data types: ○ Integer ○ Real ○ Boolean ○ Character and string ○ Casting • The use of basic string manipulation • The use of basic file handling operations: ○ Open ○ Read ○ Write ○ Close • The use of records to store data • The use of SQL to search for data • The use of arrays (or equivalent) when solving problems, including both one-dimensional (1D) and two-dimensional arrays (2D) How to use sub programs (functions and procedures) to produce structured code	2.2 Lesson PowerPoints in U drive •Craig n Dave videos (hyperlink is to the first one but you should watch all of them) •Teach ICT sections • theory, flashcards, revision quizzes: User name: br27db Password: memory8 •Your completed workbooks and terminology PowerPoint •Seneca

			• Random number generation	
Week 9	**Monday 17 March**	2.3 Defensive design	• Defensive design considerations: o Anticipating misuse o Authentication • Input validation • Maintainability: o Use of sub programs o Naming conventions o Indentation o Commenting • The purpose of testing • Types of testing: o Iterative o Final/terminal • Identify syntax and logic errors • Selecting and using suitable test data: o Normal o Boundary o Invalid/Erroneous o Refining algorithms	•2.3 Lesson PowerPoints in U drive •Craig n Dave videos (hyperlink is to the first one but you should watch all of them) •Teach ICT sections •theory, flashcards, revision quizzes: User name: br27db Password: memory8 •Your completed workbooks and terminology PowerPoint •Seneca
Week 10	**Monday 24 March**	2.4 Boolean logic	• Simple logic diagrams using the operators AND, OR and NOT • Truth tables • Combining Boolean operators using AND, OR and NOT • Applying logical operators in truth tables to solve problems • Characteristics and purpose of different levels of programming language: o High-level languages o Low-level languages • The purpose of translators • The characteristics of a compiler and an interpreter • Common tools and facilities available in an Integrated Development Environment (IDE): o Editors o Error diagnostics o Run-time environment	2.4 and 2.5 Lesson PowerPoints in U drive •Craig n Dave videos •Teach ICT sections •theory, flashcards, revision quizzes: User name: br27db Password: memory8 •Your completed workbooks and terminology PowerPoint Seneca

			o Translators	
Week 11	**Monday 31 March**	2.5 Programming languages and Integrated Development Environments	• Characteristics and purpose of different levels of programming language: o • High-level languages o • Low-level languages ¨ • The purpose of translators ¨ • The characteristics of a compiler and an interpreter • Common tools and facilities available in an Integrated Development Environment (IDE): • o Editors • o Error diagnostics • o Run-time environment o Translators	2.5 Lesson PowerPoints in U drive •Craig n Dave videos •Teach ICT sections •theory, flashcards, revision quizzes: User name: br27db Password: memory8 •Your completed workbooks and terminology PowerPoint Seneca
Week 12	**Easter Monday 7 April**	Practice past exam paper 1	• Computer systems	Work through the past paper and then use the mark scheme to go through the answers.
Week 13	**Easter Monday 14 April**	Practice past paper 2	• Computational thinking, algorithms and programming	Work through the past paper and then use the mark scheme to go through the answers.
Week 14	**Monday 21 April**	Practice exam techniques	Computer Systems & Computational thinking, algorithms and programming	Past test papers with mark schemes
Week 15	**Monday 28 April**	Practice exam questions for paper 1 for the exam	Computer Systems	End of unit tests with mark schemes Resources on the U drive folder for each Component 1 Past test papers

Week 16	**Monday 5May**	Practice exam questions for paper 2 for the exam	Computational thinking, algorithms and programming	End of unit tests with mark schemes Resources on the U drive folder for each Component 2 Past test papers
Week 17	**Monday 12 May**	15 May – Exam Paper 1 - Computer systems		Use of blank page retrieval, mind map and Flash cards. Use revision guide and note book.
Week 14	**Monday 19 May**	21 May – Exam Paper 2 - Computational thinking, algorithms and programming		Use of blank page retrieval, mind map and Flash cards. Use revision guide and note book.