

Subject Overview Subject name – Year 10

During the year students will build upon the understanding that they have gained from Year 10. Students will develop an understanding of algorithms and their use in program design. Students will develop their programming knowledge using the Python programming language and learn how to make their programs robust. Students will apply Boolean logic to different programs and investigate the different programming languages and IDE's.

	Half Term 1	Half Term 2	Half Term 3	Half Term 4	Half Term 5	Half Term 6
Knowledge & Skills	Unit 1.1 1.1 - Systems Architecture (4 Lessons) Understand the components that make up a computer system To explain how a processor will interpret instructions Unit 1.2 1.2 - Memory and Storage (4 Lessons) How do computer systems store data The key methods used to store data Able to calculate file sizes of image and text files Assessment 1 • Systems Architecture • Memory and Storage	Unit 1.2 Memory and Storage (4 Lessons) Produce images based on binary data Understand how images and sound are encoded Calculation of Binary Values Calculation of HEX Values Understanding of Binary Shift The use of ASCII text Unit 1.3 Computer networks, connections and protocols (3 Lessons) Hardware and techniques used to network computers. The different techniques used to create networks. Hardware and techniques used to network computers. Topologies	Unit 1.4 Network Security (6 Lessons) Threats associated with computer networks and how these threats can be prevented Understanding of the common forms of attacks on a computer system. Understand the common prevention methods that can be used to prevent different attacks. Assessment 2 • Systems Architecture • Memory and Storage • Computer networks, connections and protocols • Network Security	Unit 1.4 Network Security (3 Lessons) Threats associated with computer networks and how these threats can be prevented. Unit 1.5 Systems Software (3 Lessons) Operating systems and System software including Defragmentation and Firewalls. Understanding of the use of software Be able to identify different software	Unit 1.6 Ethical, legal, cultural and environmental impacts of digital technology (6 Lessons) Ethical, Environmental, legal and cultural issues relating to the use of technology Assessment 3 • Systems Architecture • Memory and Storage • Computer networks, connections and protocols • Network Security • Systems Software • Ethical, legal, cultural and environmental impacts of digital technology	Unit 1.6 Ethical, legal, cultural and environmental impacts of digital technology (3 Lessons) Ethical, Environmental, legal and cultural issues relating to the use of technology How to answer a neight mark question Unit 2.1 Algorithms (4 Lessons) Five basic algorithms for searching and sorting data. Use of Pseudocode and flowcharts to represent algorithms Be able to demonstrate each of the five algorithms Understand the concepts of Abstraction, Decomposition
	See next page for "Beyond The Curriculum"					

Beyond The Curriculum	Places to Visit: National Museum of Computing (Bletchley Park): Science museums with computing exhibits Websites to Explore: HowStuffWorks - Computer section Tech publications (e.g., Tom's Hardware, AnandTech) YouTube channels Wider Reading / Periodicals: "Code: The Hidden Language of Computer Hardware and Software" by Charles Petzold Magazines like 'PC Pro' or 'Custom PC' Societies: The British Computer Society (BCS) Enrichment Clubs / Competitions / Trips: Coping Club – IT2	Places to Visit: Local IT repair shops/computer manufacturers Science museums with computing exhibits Websites to Explore: CPU-Z (software) Tech publications (e.g., Tom's Hardware, AnandTech) YouTube channels Wider Reading / Periodicals: Articles on the history of computing Magazines like 'PC Pro' or 'Custom PC' Enrichment Clubs / Competitions / Trips: Coping Club – IT2	Places to Visit: Cybersecurity conferences/events (if appropriate) Websites to Explore: Cisco Packet Tracer (software) Cloudflare/Akamai blogs National Cyber Security Centre (NCSC) "Have I Been Pwned?" Wider Reading / Periodicals: "Future Crimes" by Marc Goodman Articles on recent cyberattacks/data breaches Magazines like 'PenTest Magazine' or 'IT Pro' Societies: ISC2 (International Information System Security Certification Consortium) Enrichment Clubs / Competitions / Trips: Coping Club – IT2	Places to Visit: School IT department Websites to Explore: Wireshark (software): "The Code Book" by Simon Singh Magazines like 'PenTest Enrichment Clubs / Competitions / Trips: Coping Club – IT2	Places to Visit: Data centres (if accessible): Photography studios/Graphic design firms Music studios Websites to Explore: Online binary/hexadecimal converters: Various image/audio file format explanations. Cloud storage provider websites (e.g., Google Drive) Data visualisation tools: Wider Reading / Periodicals: "Data and Goliath: The Hidden Battles to Collect Your Data and Control Your World" by Bruce Schneier Articles on big data and data mining Technical blogs/articles on file compression algorithm Societies: DataKind UK Enrichment Clubs / Competitions / Trips: Coping Club – IT2	Places to Visit: Photography studios/Graphic design firms Music studios Websites to Explore: Online binary/hexadecimal converters Various image/audio file format explanations Data visualisation tools: Wider Reading / Periodicals: "Data and Goliath: The Hidden Battles to Collect Your Data and Control Your World" by Bruce Schneier: Articles on big data and data mining Technical blogs/articles on file compression algorithms Societies: DataKind UK Enrichment Clubs / Competitions / Trips: Coping Club – IT2
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