	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topic (s)	Data Representation Computer Systems	Programming Computer Systems	Programming Cyber Security	Programming Cyber Security	Algorithms Impact of Technology	Networks Database & SQL
Topic Objectives	-Explain how numbers, text, images, and sound are represented using binary digits. Perform operations on binary digits. Convert between units of measurement. -Describe the role of the CPU. -Explain the processes of the fetch-decode-execute cycle. Determine the role of main memory and secondary storage. - Construct truth tables for three input logic circuits. - Write a program using assembly language (LMC).	-Determine the need for translators. Use sequence, variables, and input in Python. Design programs using a flowchart. -Use randomisation in programs. Work with arithmetic and logical expressions. Use selection and nested selection in Python. -Use a while loop and a for loop in Python. - Perform validation checks on data entry. Design programs using pseudocode	-Explain the differences between a procedure and a function. Describe scope of variables. Use functions and procedures as part of the structured approach to programming. Test a program for robustness -Define the term 'graphical user interface' (GUI). Perform string handling operations. - Describe the various ways that users and organisations can be affected by cyberattacks.	-Describe the differences between a list and an array. Manipulate a list. -Work with 2D lists Use a record and a dictionary data structure. Access and modify external data files. Complete a complex programming project. - Demonstrate how organisations can prevent cyberattacks.	- Define the terms 'decomposition', 'abstraction', and 'algorithmic thinking'. Use trace tables. -Describe a linear and binary search. Explain the key algorithms for a bubble, merge, and insertion sort. -Determine the ethical, legal, environmental, and cultural impacts of technology.	-Describe network components. Explain connectivity and distinguish between the various types. Describe the four layers of the TCP/IP model. Protect a network from threats. -Describe a database and list its key terms. Determine the difference between a flat file and a relational database. Use structured query language (SQL) to retrieve and update data in a database.
Acquired Knowledge / Skills/Target Vocabulary	Number bases Binary Maths Hexadecimal Text Representation Bitmap Images Vector Images	Sequence Selection Iteration Sub routines Strings Lists	Sequence Selection Iteration Sub routines Strings Cybercrime	Lists Dictionaries Data Files Software Designed Defence	Computational Thinking Searching & Sorting Algorithms Impact of tech	Basic Networks Real World Networks Servers Internet World wide web Network protocols

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	Representation of sound Computer Systems Computer Software CPU Fetch Decode Execute Main Memory Secondary Storage Logic Gates Assembly Language	Dictionaries Data Files Computer Systems Computer Software CPU Fetch Decode Execute Main Memory Secondary Storage Logic Gates Assembly Language	Hackers motivation Automated Cybercrime Non- Automated Cybercrime	Cyber Security Vulnerabilities	General data protection act Copyright Freedom of information act Computer misuse act Cultural impacts Privacy & Surveillance Environmental impact Ethical Impact	Packet switching Network speed Network performance Database Essentials SQL Search, Insert, update, delete
Assessment	Homework per topic End of unit Assessment	Homework per topic End of unit Assessment	Homework per topic End of unit Assessment	Homework per topic End of unit Assessment	Homework per topic End of unit Assessment	Homework per topic End of unit Assessment