Order of delivery →	8.0 - Esafety	8.1 – Operating Systems	8.2 – Command Line	8.3 - Binary	8.4 – Instruction set design	8.5 - Sorted	8.6 – Intro to Python
Key Questions	What are the advantages and disadvantages of using email? How do you know if a website is genuine / trusted? What is malware? What is pharming? What is ransomware? What is hacking? Why do hackers hack?	What is an operating system? What names of operating systems do you know? What is a GUI? What is the difference between open source / prop software? How do differents users find different things hard? How might we present our recommendations to a user?	What tasks come under the heading file management? What is a file extension?What certain command line commands do? How did people interact with file before GUIs? When might it be better to use CMD Line/GUI?	What is the difference between a base 10 and base 2 number system? How do you add binary numbers together? What is a binary shift? What is an overflow error? What is hexadecimal?	What different things can a computer sense? How many different commands are used in a given route? What does efficient mean? What might cause a route to be more efficient than another? What other commands could a robot be given? How many different commands would be needed to get the robot through the maze and back? How would I solve this problem in scratch? How can we reduce the number of commands to make a program more efficient? How do computers count? What is ASCII and UNICODE?	Why do sort data? What sort of data do we sort? Do you know any ways to sort data? What is bubble sort? What is selection sort?	What do you remember doing in Python? How do you print things on screen? How do you take an input into a program? What is a variable? What maths operators can you use in programming? How do we make choices in programs? What happens if you have more than 2 outcomes?
Knowledge	Email safety/usage, Hacking/Malware/Pharming/ Viruses	To know what GUI stands for. To know which OS are open source/prop. To know a range of devices to communicate with others. To know a range of OSs that are available. How to present work effectively in a formal format.	To know how to create folders, rename a file, move files, zip a file, copy files and delete a file. To know which file extensions are associated with a type of file. To know the 8 most common commands used in the command line. To know ad/dis of a GUI and CMD line.	To know the difference between a base 2/10 number system (including place values, etc). To understand how binary additon works. How to convert denary/hex/binary	To kow different ways that a computer can sense inputs (e.g. light, proximity, etc). To understand what a command is/does? To know that more commands increases the instruction set size/memory requirements. To know instructions both paper based and via Scratch to move the robot through the maze. To understand how a variable can be used to count.	To understand the need for sorting data. To understand what is meant by ascending and desending order. To understand what bubble sort is and how it works. To understand what selection sort is and how it works.	To know how to print a message on screen (PRINT). To know how to use an input statement. To know why variables are used.To know the maths operators on the keyboard. To understand how IF ELSE statements work. To understand how ELIF works.
Skills	Identify +ve/-ve uses of email. Idetify if websites can be trusted. Understand risks and how to reduce them. To know/recognise signs of a malware infection.	To be able to indentify GUI components and similarities and differences between different GUIs. To be able to identify which OS's work on multiple devices (laptops, tablets, etc). To be able to identify a suitable device and OS for a given scenario. Tyo be able wordprocess and suitably format a report for a given scenario.	To demonstrate the different ways you can create folders, rename a file, move files, zip a file, copy files and delete a file.Present their work in a suitable way taking into accound audience and purpose. To be able to match the right file extension to a given file type. To match the commands to a given scenario. To write out a command for a given scenario. To recommend a command line or GUI interface for a given scenario.	Convert 8 bit binary to denary and vice versa. Adding 4 and 8 bit binary numbers. Covert between hex/binary/denary. Produce a poster ofr Year 6 students to explain how number systems work.	To be able to identify inputs in a given location (e.g. security lights, robots, etc). To identify the number/different types of commands in a given route. To compare two instruction sets and work out which used the least space/fewest different commands. To create program/algorithm to solve the maze problem (in Scratch). To know how to use procedures to make the program more efficient. Create a program with a counter used. To be able modify an existing program to meet new criteria (3 bit instructions). To know how to format and print work approriately.	To identify what would be sorted in a given scenario (e.g. emails by date/sender). To sort data into a given order (as/des). To identify what sorting has occurred and why? To carry out a bubble sort on given data. To carry out a selection sort on given data. To produce a poster which explains how bubble sort works to a younger audience.	To provide examples of how to print statements on screen. To provide examples of using input statements. To demonstrate they can use the correct maths operators in their programs. To be able to create a program which includes the use of selection. To be able to create a program which includes the use of selection including ELIF.
Vocab	Phishing, Pharming, Malware, Ransomware, Genuine	Operating system, BIOS, Driver, Translator, Hardware, Open Source, Proprietary, Interface, Security, Memory. Utilitiy	Graphical User Interface (GUI) Command line Directory Batch file Shell script Wildcard	Integer Binary Decimal Bit Byte Overflow Hexadecimal Binary Shift	Input, Output, Feedback, Sensors,, Instruction, Efficiency, Encoded, Instruction set, Procedure, Calling Procedures.	Ascending order Descending order Flag Pseudocode Bubble Sort Selection Sort	Python, Input, Output, Selection, Sequence, Iteration, Data Types, File, Syntax error, Logic error, Variables, Operators.
Assessment	N/A	N/A	End of unit assessment cover unit 1 and 2	N/A	End of Unit 3 and 4 Exam	N/A	Summative assessment programming tasks
Link to Progress Path	Students should be taught to understand a range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and privacy; recognise inappropriate content; contact and conduct and know how to report concerns.	understand the hardware and software components that make up computer systems. •Undertake creative projects that involve selecting, using, and combining multiple applications, preferably across a range of devices, to achieve challenging goals, including collecting and analysing data and meeting the needs of known users and how they communicate with one another and with other systems	•Use technology purposefully to create, organise, store, manipulate and retrieve digital content •Understand the hardware and software components that make up networked computer systems, and how they communicate with one another and with other systems	Understand and use binary digits, such as to be able to convert between binary and denary and perform simple binary addition. Create, reuse, revise and repurpose digital artefacts for a given audience, with attention to trustworthiness, design and usability	◻Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts ◻Design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems ◻Develop algorithms that use binary representations of instructions as input ◻Use two or more programming languages, at least one of which is textual, to solve a variety of computational problems; make appropriate use of data structures such as lists, tables or arrays; design and develop modular programs that use procedures or functions ◻Understand how instructions are stored and executed within a computer system; understand how data of various types (including text, sound and pictures) can be represented and manipulated digitally in the form of binary digits	•Understand several key algorithms that reflect computational thinking such as ones for sorting and searching; use logical reasoning to compare the utility of alternative algorithms for the same problem •Use two or more programming languages, at least one of which is textual, to solve a variety of computational problems; make appropriate use of data structures such as lists, tables or arrays; design and develop modular programs that use procedures or functions	•Use two or more programming languages, at least one of which is textual, to solve a variety of computational problems; make appropriate use of data structures such as lists, tables or arrays; design and develop modular programs that use procedures or functions

Learning skills	Share their views and experiences of ICT, considering the range of its uses and its significance to individuals, communities and society. Exploring the ways that ICT can be used to communicate, collaborate and share ideas on a global scale, allowing people to work together in new ways and changing the way in which knowledge is created.	Literacy: Students ask and answer questions. They synthesise and adapt what they learn from their reading and use techniques such as skimming, scanning and annotation effectively. Students will write for a range of purposes including to interpret, evaluate, explain, analyse and explore. SMSC: PSHE/Every Child Matters: The world around us	Literacy: English: Writing for a purpose SMSC: PSHE/Every Child Matters: The world around us	Literacy: English: Writing for a purpose Numeracy: Maths: Binary and decimal SMSC: PSHE/Every Child Matters: The world around us	Literacy: ⬜ English: Formulating command sets Numeracy: The use of numbers as a data type ⬜Maths: Coordinates, algorithms	Literacy: Students ask and answer questions. They synthesise and adapt what they learn from their reading and use techniques such as skimming, scanning and annotation effectively. Students will write for a range of purposes including to interpret, evaluate, explain, analyse and explore. SMSC: PSHE/Every Child Matters: The world around us PLTS: Independent Enquirers, Self-Managers, Reflective Learners Maths: Algebra	Literacy: Students ask and answer questions. They synthesise and adapt what they learn from their reading and use techniques such as skimming, scanning and annotation effectively. Students will write for a range of purposes including to interpret, evaluate, explain, analyse and explore. SMSC: PSHE/Every Child Matters: The world around us PLTS: Independent Enquirers, Self-Managers, Reflective Learners Maths: Algebra working out volume, area, etc