Year 6			
Skills	**National Curriculum**	**Key knowledge**	**Key vocabulary**
Computer systems and networks	**Computer systems and networks**	**Computer systems and networks**	**Computer systems and networks**
Learning about the history of computers and how they have evolved over time. (CS) Using past experiences to help solve new problems. (CS) Writing increasingly complex algorithms for a purpose. (CS) Debugging quickly and effectively to make a program more efficient. (CS) Remixing existing code to explore a problem. (CS) Changing a program to personalise it. (CS) Evaluating code to understand its purpose. (CS) Predicting code and adapting it to a chosen purpose. (CS) Using search and word processing skills to create a presentation. (IT) Understanding how search engines work. (IT) Understanding the importance of secure passwords and how to create them. (DL) Using search engines safely and effectively. (DL)	understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration. (DL/IT) Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content. (DL/IT) Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information. (CS/IT) Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. (DL)	To understand the importance of having a secure password and what "brute force hacking" is. To know that the first computers were created at Bletchley Park to crack the Enigma code to help the war effort in World War 2. To know about some of the historical figures that contributed to technological advances in computing. To understand what techniques are required to create a presentation using appropriate software.	Acrostic code Hacking Caesar cipher Chip and pin system Cipher code Date shift cipher Nth Letter Cipher Password Pig Latin Pigpen cipher Secure Technological advancement
Programming	**Programming**	**Programming**	**Programming**
Decomposing a program into an algorithm. (CS) Writing increasingly complex algorithms for a purpose. (CS) Debugging quickly and effectively to make a program more efficient. (CS) Remixing existing code to explore a problem. (CS) Using and adapting nested loops. (CS) Programming using the language Python. (CS) Changing a program to personalise it. (CS) Evaluating code to understand its purpose. (CS) Using logical thinking to explore software independently, iterating ideas and testing continuously. (IT)	Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. (CS) Use sequence, selection, and repetition in programs; work with variables and various forms of input and output. (CS) Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs. (CS) Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information. (CS/IT)	To know that there are text-based programming languages such as Logo and Python. To know that nested loops are loops inside of loops. To understand the use of random numbers and remix Python code.	Algorithm Code Command Design Import Indentation Input Instructions Loop Output Remix Repeat
Creating media	**Creating media**	**Creating media**	**Creating media**
Learning about the history of computers and how they have evolved over time. (CS) Using the understanding of historic computers to design a computer of the future. (CS) Using search and word processing skills to create a presentation. (IT) Planning, recording and editing a radio play. (IT)	Understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration. (DL/IT) Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals,	To know that radio plays are plays where the audience can only hear the action so sound effects are important. To know that sound clips can be recorded using sound recording software. To know that sound clips can be edited and trimmed.	Byte Devices File FX Gigabyte Graphics Hard drive Hardware Kilobytes Megabyte Memory storage Operating system Overlay

Creating and editing sound recordings for a specific purpose. (IT)	including collecting, analysing, evaluating and presenting data and information. (CS/IT)		Processor Radio play RAM Reverb ROM Script Terrabytes Trackpad
Data handling (1 and 2)	**Data handling (1 and 2)**	**Data handling (1 and 2)**	**Data handling (1 and 2)**
Understanding and identifying barcodes, QR codes and RFID. (CS) 1 Identifying devices and applications that can scan or read barcodes, QR codes and RFID. (CS) 1 Understanding how corruption can happen within data during transfer. (CS) 2 Understanding that computer networks provide multiple services. (CS) 2 Using search and word processing skills to create a presentation. (IT) 2 Understanding how barcodes, QR codes and RFID work. (IT) 1 Gathering and analysing data in real time. (IT) 1 Creating formulas and sorting data within spreadsheets. (IT) 1 and 2 Learning about the Internet of Things and how it has led to 'big data'. (IT) 2 Learning how 'big data' can be used to solve a problem or improve efficiency. (IT) 1 and 2	Understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration. (DL/IT) 1 Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information. (CS/IT) 1 Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. (DL) 1	To know that data contained within barcodes and QR codes can be used by computers. To know that infrared waves are a way of transmitting data. To know that Radio Frequency Identification (RFID) is a more private way of transmitting data. To know that data is often encrypted so that even if it is stolen it is not useful to the thief. To know that data can become corrupted within a network but this is less likely to happen if it is sent in 'packets'. To know that devices or that are not updated are most vulnerable to hackers. To know the difference between mobile data and WiFi.	Algorithms Barcode Binary Boolean Contactless Data Encrypted Infrared MagicBand Privacy Proximity QR code QR scanner Radio waves RFID Signal Systems/data Analyst Transmission Wireless Big Data Bluetooth Corrupted GPS Improve Infrared SIM Simulation Smart city Smart school Stop motion Threat Wi-Fi
Skills showcase	**Skills showcase**	**Skills showcase**	**Skills showcase**
Using past experiences to help solve new problems. (CS) Writing increasingly complex algorithms for a purpose. (CS) Debugging quickly and effectively to make a program more efficient. (CS) Remixing existing code to explore a problem. (CS) Changing a program to personalise it. (CS) Evaluating code to understand its purpose. (CS) Predicting code and adapting it to a chosen purpose. (CS) Using logical thinking to explore software independently, iterating ideas and testing continuously. (IT) Creating and editing videos, adding multiple elements: music, voiceover, sound, text and transitions. (IT) Using design software Tinker CAD to design a product. (IT) Creating a website with embedded links and multiple pages. (IT) Understanding how search engines work. (IT)	Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. (CS) Use sequence, selection, and repetition in programs; work with variables and various forms of input and output. (CS) Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs. (CS) Understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration. (DL/IT) Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content. (DL/IT) Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information. (CS/IT) Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. (DL)	To know what designing an electronic product involves. To know which programming software/ language is best to achieve a purpose. To know the building blocks of computational thinking e.g. sequence, selection, repetition, variables and inputs and outputs.	Adapt Algorithm Bugs Coding Debugging Design Edit Electronic Evaluate Information Inputs Loops Output Program Repetition Screenshot Search engine Sequence Snippets Software variables Website

Using search engines safely and effectively. (DL)			