Year 5			
Skills	**National Curriculum**	**Key knowledge**	**Key vocabulary**
Computer systems and networks	**Computer systems and networks**	**Computer systems and networks**	**Computer systems and networks**
Developing searching skills to help find relevant information on the internet. (IT) Learning how to use search engines effectively to find information, focussing on keyword searches and evaluating search returns. (IT) Learn about different forms of communication that have developed with the use of technology. (IT) Recognising that information on the Internet might not be true or correct and learning ways of checking validity. (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) 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 how search engines work. To understand that anyone can create a website and therefore we should take steps to check the validity of websites. To know that web crawlers are computer programs that crawl through the internet. To understand what copyright is. To know the difference between ROM and RAM.	Algorithm Appropriate Copyright Credit Data leak Index Information Network Privacy Search engine TASK Web crawler Website
Programming (1 and 2)	**Programming (1 and 2)**	**Programming (1 and 2)**	**Programming (1 and 2)**
Decomposing a program without support. (CS) 2 Predicting how software will work based on previous experience. (CS) 1 and 2 Writing more complex algorithms for a purpose. (CS) 1 and 2 Programming an animation. (CS) 2 Iterating and developing their programming as they work. (CS) 1 and 2 Confidently using loops in their programming. (CS) 1 and 2 Using a more systematic approach to debugging code, justifying what is wrong and how it can be corrected. (CS) 1 and 2 Writing code to create a desired effect. (CS) 1 and 2 Using a range of programming commands. (CS) 1 and 2 Using repetition within a program. (CS) 1 and 2 Amending code within a live scenario. (CS) 1 Using logical thinking to explore software more independently, making predictions based on their previous experience. (IT) 1 and 2 Using a software programme (Sonic Pi/Scratch) to create music. (IT) 1 Identify ways to improve and edit programs, videos, images etc. (IT) 1 and 2	Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. (CS) 1 and 2 Use sequence, selection, and repetition in programs; work with variables and various forms of input and output. (CS) 1 and 2 Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs. (CS) 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 and 2	To understand that a variable is a value that can change (depending on conditions) and know that you can create them in Scratch. To know what a conditional statement is in programming. To understand that variables can help you to create a quiz on Scratch. To know that combining computational thinking skills (sequence, abstraction, decomposition etc) can help you to solve a problem. To understand that pattern recognition means identifying patterns to help them work out how the code works. To understand that algorithms can be used for a number of purposes e.g. animation, games design etc.	Beat Bugs Coding Command Debug Decompose Error Instructions Loop Output Predict Programming Typing Algorithm Animation blocks Bluetooth Code block Designing Download Input Micro:bit, Pedometer USB Variables Wifi
Creating media	**Creating media**	**Creating media**	**Creating media**
Decomposing animations into a series of images. (CS) Decomposing a story to be able to plan a program to tell a story. (CS) Using video editing software to animate. (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)	To understand that stop motion animation is an animation filmed one frame at a time using models, and with tiny changes between each photograph. To know that decomposition of an idea is important when creating stop-motion animations.	Animation Animator Background Decomposition Design Edit Evaluate Frame Moving images Still image Thaumatrope, Zoetrope

		To know that editing is an important feature of making and improving a stop motion animation.	
Data handling	**Data handling**	**Data handling**	**Data handling**
Learning that external devices can be programmed by a separate computer. (CS) Recognising how the size of RAM affects the processing of data. (CS) Learning the vocabulary associated with data: data and transmit. (CS) Recognising that computers transfer data in binary and understanding simple binary addition. (CS) Relating binary signals (Boolean) to the simple character-based language, ASCII. (CS) Learning that messages can be sent by binary code, reading binary up to eight characters and carrying out binary calculations. (CS) Understanding how data is collected in remote or dangerous places. (IT) Understanding how data might be used to tell us about a location. (IT) Learn about different forms of communication that have developed with the use of technology. (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, including collecting, analysing, evaluating and presenting data and information. (CS/IT)	To know that Mars Rover is a motor vehicle that collects data from space by taking photos and examining samples of rock. To know what numbers using binary code look like and be able to identify how messages can be sent in this format. To understand that RAM is Random Access Memory and acts as the computer's working memory. To know what simple operations can be used to calculate bit patterns.	8-bit binary ASCII Binary code Boolean Byte CPU Data Transmission Hexadecimal Input Internet Numerical data Output Radio signal RAM Sequence Signal Simulation Technology Transmit
Skills showcase	**Skills showcase**	**Skills showcase**	**Skills showcase**
Learning the difference between ROM and RAM. (CS) Recognising how the size of RAM affects the processing of data. (CS) Understanding the fetch, decode, execute cycle. (CS) Learning how the data for digital images can be compressed. (CS) Recognising that computers transfer data in binary and understanding simple binary addition. (CS) Understanding how bit patterns represent images as pixels. (CS) Using logical thinking to explore software more independently, making predictions based on their previous experience. (IT) Independently learning how to use 3D design software package Tinker CAD. (IT) Learn about different forms of communication that have developed with the use of technology. (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)	To understand that bit patterns represent images as pixels. To understand that the data for digital images can be compressed. To understand that the data for digital images can be compressed. To understand various techniques that will improve the design of a 3D object (using CAD software).	Algorithm Binary image CAD Compression CPU Data Decode Execute ID card Input JPEG Memory Online community Operating system Output Pixels RAM RGB ROM