Year	Programme of Study	Key Vocabulary	Key Facts	Diagrams	Important People
1	Understand what algorithms are	criteria, instructions, computer program, direction keys, forwards, backwards, left, right, algorithm, coding and controls.	An algorithm is a process or set of rules to be followed in calculations or other problem-solving operations, especially by a computer.	Algorithm flowchart	Bill Gates
	Create and debug simple programs	Direction keys, forwards, backwards, left, right, algorithm, coding, programs, computer programs, inputs and controls	Computer programs, like algorithms, are comprised of sets of rules or instructions, but they differ in that they need to be written in a precise language a computer can 'understand'. Debug means to identify and remove errors from computer hardware or software.	.	Bll Gates
	Use logical reasoning to predict the behaviour of simple programs	Computer science, direction keys, forwards, backwards, left, right, algorithm, coding, programs, computer programs, inputs and controls	An algorithm is a set of instructions to achieve a goal, algorithms can be carried out by humans and computers, there may be more than one algorithm for a task, but efficient algorithms are best		Bill Gates
	Use technology purposefully to create, organise, store, manipulate and retrieve digital content	Information, technology, data, pictograms.	Distinguish between the hard disk (or solid state storage) inside the computer itself, the school's network server, USB disks or memory cards, and online storage via the internet.		
	Recognise common uses of information technology beyond school	Digital literacy, information, technology and computers	Digital technology is a part of all our lives. For example, a digital alarm clock, microwave, digital TV, iPad.		

	Use technology safely and respectfully	Online safety, public, private, digital footprint, personal information, settings, honest, genuine, privacy, security and password.	Clear understanding of what to do if they have concerns about inappropriate online behaviour.		
2	Understand what algorithms are	Computer science, direction keys, algorithm, coding, computer programs, inputs and controls	An algorithm is a process or set of rules to be followed in calculations or other problem-solving operations, especially by a computer.	Algorithm flowchart	Bill Gates
	Create and debug simple programs	Computer science, direction keys, algorithm, coding, computer programs, inputs, digital devices, debug and controls	Computer programs, like algorithms, are comprised of sets of rules or instructions, but they differ in that they need to be written in a precise language a computer can 'understand'. Debug means to identify and remove errors from computer hardware or software.	Program flowchart and diagram	Bill Gates
	Use logical reasoning to predict the behaviour of simple programs	Computer science, direction keys, algorithm, coding, computer programs, inputs, digital devices, reasoning, debug and controls	An algorithm is a set of instructions to achieve a goal, algorithms can be carried out by humans and computers, there may be more than one algorithm for a task, but efficient algorithms are best		Bill Gates
	Use technology purposefully to create, organise, store, manipulate and retrieve digital content	Information technology, organise, data , digital content and spreadsheets.	Distinguish between the hard disk (or solid state storage) inside the computer itself, the school's network server, USB disks or memory cards, and online storage via the internet.		
	Recognise common uses of information technology beyond school	Internet, searching, internet search and search engine.	Digital technology is a part of all our lives. For example, a digital alarm clock, microwave, digital TV, iPad.		

	Use technology safely and respectfully	Online safety, public, private, digital footprint, personal information, settings, honest, genuine, privacy, security, unreliable, ownership and password.	Clear understanding of what to do if they have concerns about inappropriate online behaviour.		
	Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.	Coding, algorithm, action, output, control, event, program, variable, command and debug.	A program is a specific set of ordered operations for a computer to perform. Debug means to identify and remove errors from computer hardware or software.	Algorithm flowchart, program flowchart and diagram	Bill Gates, Alan Turing.
	Use sequence, selection and repetition in programs; work with variables and various forms of input and output.	Computer science, coding, sequence, algorithm, action, output, control, event, program, variable, command and debug.	A program is a specific set of ordered operations for a computer to perform. Input can take a variety of forms, from commands you enter from the keyboard to data from another computer or device. A device that feeds data into a computer, such as a keyboard or mouse, is called an input device. Data generated by a computer is referred to as output. … The most commonly used output device is the computer's monitor, which displays data on a screen. Devices such as the printer and computer speakers are some other common output devices.	.	Bill Gates, Mark Zuckerberg, Alan Turing.
	Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.	Reasoning, error, computer science, coding, sequence, algorithm, action, output, control, event, program, variable, command and debug.	Thinking through programs and algorithms helps develop pupils' abilities to think logically and algorithmically, which leads to planned debugging of code rather than just a trial-and-error approach.		Bill Gates, Mark Zuckerberg, Alan Turing.

3	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.	Network, internet, communication, email, technology and attachments.	Computer networks, including the internet, are made up of computers connected together. The computers include machines that pass on data that's not intended for them (called 'routers', 'gateways', 'hubs' or 'switches', depending on particular roles), and 'servers' (always-on machines looking after emails, web pages and files that other computers might ask for from time to time). The connections between the computers in a network may consist of radio orsatellite signals, copper wires or fibre-optic cables.	Computer networks diagram	Steve Jobs
	Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.	Search engine, google, data, digital content and results.	Effective use of search engines relies on specifying the right keyword, skimming and scanning the results to see which seems most relevant, and distinguishing between the main results and adverts presented as sponsored results.		Larry Page and Sergey Brin
	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.	Software, devices, program, system, digital content, spreadsheets, database, branching database, simulation, patterns, predictions and graph.	A databse is a structured set of data held in a computer, especially one that is accessible in various ways.		

	Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	Online safety, public, private, digital footprint, personal information, personal boundaries, suspicious, phishing, scam, trustworthy, authentic, encrypted,hacker, scammer, bullying, bystander, upstander, block settings, honest, genuine, privacy, security, unreliable, ownership and password.	Digital footprint: the data automatically generated when using the internet and other communication services		
	Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.	Design, graphics, instructions, function, coding, algorithm, action, output, control, event, program, variable, command and debug.	A program is a specific set of ordered operations for a computer to perform. Debug means to identify and remove errors from computer hardware or software.	Algorithm flowchart, programme flowchart and diagram.	Ada Lovelace, Bill Gates, Alan Turing. and Mark Zuckerberg
	Use sequence, selection and repetition in programs; work with variables and various forms of input and output.	Computer science, design, graphics, instructions, function, coding, algorithm, action, output, control, event, program, variable, command and debug.	A program is a specific set of ordered operations for a computer to perform. Input can take a variety of forms, from commands you enter from the keyboard to data from another computer or device. A device that feeds data into a computer, such as a keyboard or mouse, is called an input device. Data generated by a computer is referred to as output. ... The most commonly used output device is the computer's monitor, which displays data on a screen. Devices such as the printer and computer speakers are some other common output devices.		Alan Turing, Bill Gates, Mark Zuckerberg.

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	Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.	Logo, build feature, reasoning, error, computer science, coding, sequence, algorithm, action, output, control, event, program, variable, command and debug.	Thinking through programs and algorithms helps develop pupils' abilities to think logically and algorithmically, which leads to planned debugging of code rather than just a trial-and-error approach.		Alan Turing, Bill Gates, Mark Zuckerberg.
	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.	Hardware, function, webpage, credibility, desktop, network, internet, communication, email, technology and attachments.	Computer networks, including the internet, are made up of computers connected together. The computers include machines that pass on data that's not intended for them (called 'routers', 'gateways', 'hubs' or 'switches', depending on particular roles), and 'servers' (always-on machines looking after emails, web pages and files that other computers might ask for from time to time). The connections between the computers in a network may consist of radio orsatellite signals, copper wires or fibre-optic cables.	Computer networks diagram	Steve Jobs
	Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.	Search queries, webpage, credibilty, search engine, google, data, digital content and results.	Effective use of search engines relies on specifying the right keyword, skimming and scanning the results to see which seems most relevant, and distinguishing between the main results and adverts presented as sponsored results.		Larry Page and Sergey Brin

	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.	Software, animation, format, devices, program, system, digital content, spreadsheets, database, branching database, simulation, patterns, predictions and graph.	A databse is a structured set of data held in a computer, especially one that is accessible in various ways.		
	Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	Online safety, public, private, digital footprint, personal information, personal boundaries, suspicious, phishing, scam, trustworthy, authentic, encrypted,hacker, scammer, bullying, bystander, upstander, block settings, honest, genuine, privacy, security, unreliable, ownership and password.	Digital footprint: the data automatically generated when using the internet and other communication services		
	Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.	Design, analyse, playability, graphics, instructions, function, coding, algorithm, action, output, control, event, program, variable, command and debug.	Simulation means the imitation of a situation or process. Decomposition in computer science, also known as factoring, is breaking a complex problem or system into parts that are easier to conceive, understand, program, and maintain. Abstraction is a technique for arranging complexity of computer systems.		Ada Lovelace, Bill Gates, Alan Turing, Mark Zuckerberg

	Use sequence, selection and repetition in programs; work with variables and various forms of input and output.	Computer science, design, instructions, function coding, sequence, graphics, coding, algorithm, action, output, control, event, program, variable, command and input.	Simulation means the imitation of a situation or process. Decomposition in computer science, also known as factoring, is breaking a complex problem or system into parts that are easier to conceive, understand, program, and maintain. Abstraction is a technique for arranging complexity of computer systems.		Bill Gates, Mark Zuckerberg, Alan Turing and James Gosling
	Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.	Reasoning, physical system, error, computer science, coding, sequence, algorithm, action, output, control, event, program, variable, command and debug.	Simulation means the imitation of a situation or process. Decomposition in computer science, also known as factoring, is breaking a complex problem or system into parts that are easier to conceive, understand, program, and maintain. Abstraction is a technique for arranging complexity of computer systems.		Bill Gates, Mark Zuckerberg, Alan Turing.

5	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.	World Wide Web, collaboration, hardware, function, webpage, credibility, desktop, network, internet, communication, email, technology and attachments.	Computer networks, including the internet, are made up of computers connected together. The computers include machines that pass on data that's not intended for them (called 'routers', 'gateways', 'hubs' or 'switches', depending on particular roles), and 'servers' (always-on machines looking after emails, web pages and files that other computers might ask for from time to time). The connections between the computers in a network may consist of radio orsatellite signals, copper wires or fibre optic cables. Information stored on computers and information travelling over networks must be digitised (i.e. represented as numerical data).	Computer networks diagram	Steve Jobs, Tim Berners-Lee
	Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.	Information, concept maps, nodes, stage, connections, search queries, webpage, credibilty, search engine, google, data, digital content and results.	Effective use of search engines relies on specifying the right keyword, skimming and scanning the results to see which seems most relevant, and distinguishing between the main results and adverts presented as sponsored results. It may also involve using other features of the search engine, including searching for phrases rather than keywords, or limiting searches to a particular time frame, language, reading level or website.		Larry Page and Sergey Brin

	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.	Software, modelling, theme, animation, format, devices, program, system, digital content, spreadsheets, database, branching database, simulation, patterns, predictions and graph.	Concept maps are a tool for organising and representing knowledge. They form a web of ideas which are all interconnected. Nodes represent concepts or ideas. Connections represent a relationship or link between two nodes or ideas.		
	Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	Online safety, public, private, digital footprint, personal information, personal boundaries, suspicious, phishing, scam, trustworthy, authentic, encrypted,hacker, scammer, bullying, bystander, upstander, block settings, honest, genuine, privacy, security, unreliable, ownership, spear phishing, verifiable, firewall, malware, two-step verification, harassment and password.	A digital footprint is the information about a particular person that exists on the Internet as a result of their online activity. It builds the online reputation, or impression depending on the things you do online.		
	Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.	Design, text adventure, launch command, analyse, playability, graphics, instructions, function, coding, algorithm, action, output, control, event, program, variable, command and debug.	Simulation means the imitation of a situation or process. Decomposition in computer science, also known as factoring, is breaking a complex problem or system into parts that are easier to conceive, understand, program, and maintain. Abstraction is a technique for arranging complexity of computer systems.		Ada Lovelace, Bill Gates, Mark Zuckerberg, Larry Page, Alan Turing and Sergey Brin

	Use sequence, selection and repetition in programs; work with variables and various forms of input and output.	Computer science, text adventure, launch command, design, instructions, function coding, sequence, graphics, coding, algorithm, action, output, control, event, program, variable, command and input.	Simulation means the imitation of a situation or process. Decomposition in computer science, also known as factoring, is breaking a complex problem or system into parts that are easier to conceive, understand, program, and maintain. Abstraction is a technique for arranging complexity of computer systems.		Bill Gates, Mark Zuckerberg, Alan Turing and James Gosling
	Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.	Reasoning, flowcharts, physical system, error, computer science, coding, sequence, algorithm, action, output, control, event, program, variable, command and debug.	Simulation means the imitation of a situation or process. Decomposition in computer science, also known as factoring, is breaking a complex problem or system into parts that are easier to conceive, understand, program, and maintain. Abstraction is a technique for arranging complexity of computer systems.		Bill Gates, Mark Zuckerberg, Alan Turing.

| 6 | 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. | Blogging, blog, audience, World Wide Web, collaboration, hardware, function, webpage, credibility, desktop, network, internet, communication, email, technology and attachments. | Computer networks, including the internet, are made up of computers connected together. The computers include machines that pass on data that's not intended for them (called 'routers', 'gateways', 'hubs' or 'switches', depending on particular roles), and 'servers' (always-on machines looking after emails, web pages and files that other computers might ask for from time to time). The connections between the computers in a network may consist of radio orsatellite signals, copper wires or fibre optic cables. Information stored on computers and information travelling over networks must be digitised (i.e. represented as numerical data). The internet is all the cables, fibre, routers, switches etc. that connects computers together, or networks of computers to one another. The World Wide Web is about connections between documents. The World Wide Web is just one of the services which uses the internet to be able to communicate. A group of devices which are connected to one another using network cables is basically a wired local network. A key part of a network is a router, which allows the computer to connect to the internet. The router also has a separate port called the wide area network (WAN) port, which is also known as the internet port. This is often a different colour from the LAN | Computer networks diagram | Steve Jobs, Tim Berners-Lee |

Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.	Research, digital footprint, concept maps, nodes, stage, connections, search queries, webpage, credibilty, search engine, digital content and results.	Effective use of search engines relies on specifying the right keyword, skimming and scanning the results to see which seems most relevant, and distinguishing between the main results and adverts presented as sponsored results. It may also involve using other features of the search engine, including searching for phrases rather than keywords, or limiting searches to a particular time frame, language, reading level or website.	Larry Page and Sergey Brin
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.	Software, formulae, data, format, devices, program, system, digital content, spreadsheets, database, branching database, simulation, patterns, predictions and graph.	Blogs are regularly updated websites and web pages. Usually written in an informal style, blogs contain 'blog posts' which can be used to document life events, give information about hobbies and interests or share knowledge on specific subjects. Nodes represent concepts or ideas. Connections represent a relationship or link between two nodes or ideas.	

| | | Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. | Online safety, public, private, digital footprint, personal information, personal boundaries, suspicious, phishing, scam, trustworthy, authentic, encrypted,hacker, scammer, bullying, bystander, upstander, block settings, honest, genuine, privacy, security, unreliable, ownership, spear phishing, verifiable, firewall, malware, two-step verification, harassment and password. | A digital footprint is the information about a particular person that exists on the Internet as a result of their online activity. It builds the online reputation, or impression depending on the things you do online. | | |