Progression of Computing Knowledge and Skills

Strand: Computer Science





EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
Hardware						
*Learning how to	Learning how to	 Understanding what 	Understanding what	Learning about the	Learning that external	 Learning about the
operate a camera to	explore and tinker	a computer is and that	the different	purpose of routers	devices can be	history of computers
take photographs of	with hardware to find	it's made up of	components of a		programmed by a	and how they have
meaningful creations	out how it works	different components	computer do and how		separate computer	evolved over time
or moments		 Recognising that 	they work together			
	 Understanding that 	buttons cause effects			 Learning the 	 Using the
 Learning how to 	computers and devices	and that technology	• Drawing		difference between	understanding of
explore and tinker	around us use inputs	follows instructions	comparisons across		ROM and RAM	historic computers to

develop familiarity and introduce relevant vocabularyidentifying some of theseidentifying some of theseidentifying some of theseidentifying some of theseidentifying some of theseidentifying some of thow to a relocated on the keyboard · Learning how to operate a camera erange of technology is used in places such as homes and schoolsidentifying some of to operate a camera· Learning how we know that technology is used in places such as homes and schools· Learning how to erande at technology is used in places such as homes and schools· Learning how to computers· Computers server does· Learning what a server does· Recognising that arage of technology is used in places such as homes and schools· Learning what a mouse is and developing basic mouse skills such as mouse skills such as mouse skills such as mouse is and developing basic· WEAR 1YEAR 2YEAR 3YEAR 4YEAR 5YEAR 5	develop familiarity and introduce relevant	and outputs,		different types of			design a computer of
introduce relevant vocabularytheseknow that technology is doing what we want it to do via its output.• Learning what a server doessize of RAM affects the processing of data • Understanding the fetch, decode, execute cycle• Understanding and identifying barcodes, QR codes and RFID • Identifying devices and applications that camera• Learning what a range of technology is used in places such as homes and schools• Learning hoots with tablets or computers• Learning what a server does• Learning what a server does• Learning what a server does• Learning what a keyboard is and how to locate relevant keys • Learning what a mouse siand developing basic mouse siand edveloping basic mouse siand edveloping basic mouse dils such as moving and clickingYEAR 1YEAR 2YEAR 3YEAR 4YEAR 5YEAR 6	introduce relevant	identifying some of	 Learning how we 	computers		 Recognising how the 	the future
vocabulary. Learning what we want it to do via its output Learning what a it to do via its output Learning what a server doesprocessing of data . Understanding and identifying barcodes, QR codes and RFID . Identifying devices and applications that arage of technology is used in places such as homes and schools. Learning what a who to operate a camera. Using greater control when taking photos when taking photos or computers. Learning what a server does. Understanding the fetch, decode, execute cycle. Identifying devices and applications that can scan or read barcodes, QR codes and RFID. Learning what a mouse sind schools. Learning what a mouse sind and how to locate relevant keys . Learning what a mouse is and devicing basic mouse sills such as moving and clicking. YEAR 1YEAR 2YEAR 3YEAR 4YEAR 5YEAR 6		these	know that technology			size of RAM affects the	
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• Learning how to operate a camera are located on the keyboard i Learning how to operate a camera• Using greater control when taking photos with tablets or computers• Understanding the fetch, decode, execute cycle• Understanding the fetch, decode, execute cycle• OR codes and RFID• Learning what a keyboard is and how to locate relevant keys • Learning what a mouse is and developing basic mouse sitils such as moving and clicking• Understanding the fetch, decode, execute computers• OR codes and RFID when taking photos with tablets or computers• Orders and applications that can scan or read basics of touch typing to locate relevant keys • Learning what a mouse sis and developing basic mouse sitils such as moving and clicking• Understanding the fetch, decode, execute (order and the basics of touch typing)• Orders and RFID when taking photos with tablets or computers • Developing confidence with the keyboard is and how to locate relevant keys • Learning what a mouse sis and developing basic mouse sitils such as moving and clicking• Developing confidence with the keyboard is and the basics of touch typing• Developing confidence with the keyboard is and the basics of touch typing• Acknowledging that corruption can happen within data during transfer (for example when downloading, installing, copying and updating files)• QR codes and RFID • Acknowledging that corruption can happen within data during transfer (for example when downloading, installing, copying and updating files)EVFSYEAR 1YEAR 2YEAR 3YEAR 4YEAR 5YEAR 6			it to do via its output.	server does			identifying barcodes,
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ObservationDeveloping confidence with the keyboard is and how to locate relevant keysDeveloping confidence with the keyboard and the basics of touch typingDeveloping confidence with the keyboard and the basics of touch typingDeveloping touch typingDeveloping touch typingEYFSYEAR 1YEAR 2YEAR 3YEAR 4YEAR 5YEAR 6<	used in places such as	Camera	computers				harcodes OR codes
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• Learning what a keyboard is and how to locate relevant keys • Learning what a mouse is and developing basic moving and clickingkeyboard and the basics of touch typingImage: Second sec			confidence with the				
keyboard is and how to locate relevant keys • Learning what a mouse is and developing basic moving and clickingbasics of touch typingbasics of touch typingcorruption can happen within data during transfer (for example when downloading, installing, copying and updating files)EYFSYEAR 1YEAR 2YEAR 3YEAR 4YEAR 5YEAR 6	 Learning what a 		keyboard and the				 Acknowledging that
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• Learning what a mouse is and developing basic mouse skills such as moving and clickingImage: Skills such as m	to locate relevant keys						within data during
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developing basic mouse skills such as moving and clicking updating files) EYFS YEAR 1 YEAR 2 YEAR 3 YEAR 4 YEAR 5 YEAR 6	mouse is and						installing, copying and
mouse skills such as moving and clicking YEAR 1 YEAR 2 YEAR 3 YEAR 4 YEAR 5 YEAR 6	developing basic						updating files)
EYFS YEAR 1 YEAR 2 YEAR 3 YEAR 4 YEAR 5 YEAR 6	mouse skills such as						
EYFS YEAR 1 YEAR 2 YEAR 3 YEAR 4 YEAR 5 YEAR 6	moving and clicking						
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EYFSYEAR 1YEAR 2YEAR 3YEAR 4YEAR 5YEAR 6							
	EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
Network and Data Representation	Network and Dat	a Representation					
Understanding Learning what a Consolidating Learning the Understanding		Understanding		Learning what a	Consolidating	Learning the	Understanding
what the internet is network is and its understanding of the vocabulary that computer		what the internet is		network is and its	understanding of the	vocabulary	that computer
purpose key components of a lassociated with networks provide				purpose	key components of a	associated with	networks provide
network data: data and multiple services				P	network	data: data and	multiple services
Identifying the key				• Identifying the key		transmit	
components within Understanding				components within	• Understanding		
a network including that websites &				a network including	that websites &	• Learning how the	
whether they are videos are files that data for digital				whether they are	videos are files that	data for digital	
wired or wireless are shared from one limages can be				wired or wireless	are shared from one	images can he	
computer to another compressed					computer to another	compressed	
Becognising links			1	1		compressed	1
hetween networks				Recognising links			
and the internet role of packets computers transfer				Recognising links between networks	• Learning about the	Recognising that	
				Recognising links between networks and the internet	• Learning about the	Recognising that computers transfer	

			• Learning how data is transferred	• Understanding that computer networks provide multiple services, such as the World Wide Web, and opportunities for communication and collaboration	understanding simple binary addition • Relating binary signals (Boolean) to the simple character-based language, ASCII • Learning that messages can be sent by binary code, reading binary up to 8 characters and carrying out binary calculations • Understanding how bit patterns represent images as pixels	
EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
Computational T	hinking					
Using logical reasoning to read simple instructions and predict the outcome	 Learning that decomposition means breaking a problem down into smaller parts Using decomposition to solve unplugged challenges Using logical reasoning to predict the behaviour of simple programs 	 Articulating what decomposition is Decomposing a game to predict the algorithms used to create it Using decomposition to decompose a story into smaller parts Learning what abstraction is 	Using decomposition to explain the parts of a laptop computer • Using decomposition to explore the code behind an animation • Using repetition in programs • Understanding that computers follow instructions	Solving unplugged problems by decomposing them into smaller parts • Using decomposition to understand the purpose of a script of code • Using decomposition to help solve problems • Identifying patterns through unplugged activities	 Decomposing animations into a series of images • Decomposing a program without support Decomposing a story to be able to plan a program to tell a story Predicting how software will work based on previous experience 	Decomposing a program into an algorithm • Using past experiences to help solve new problems • Writing increasingly complex algorithms for a purpose

	 Developing the skills associated with sequencing in unplugged activities Learning that an algorithm is a set of step by step instructions used to carry out a task, in a specific order 	 Learning that there are different levels of abstraction Explaining what an algorithm is Following an algorithm Creating a clear and precise algorithm 	 Using an algorithm to explain the roles of different parts of a computer Using logical reasoning to explain how simple algorithms work Explaining the purpose of an 	 Using past experiences to help solve new problems Using abstraction to identify the important parts when completing both plugged and unplugged activities Creating algorithms 	• Writing more complex algorithms for a purpose	
	 Follow a basic set of instructions Assembling instructions into a simple algorithm 	 Learning that computers use algorithms to make predictions Learning that programs execute by following precise instructions Incorporating loops within algorithms 	algorithm Forming algorithms independently 	for a specific purpose		
EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
Programming						
Following instructions as part of practical activities and games and learning to debug when things go wrong • Learning to give simple instructions • Learning that an algorithm is a set of instructions to carry out a task, in a specific order	 Programming a Bee- bot/Virtual Bee-bot to follow a planned route Learning to debug instructions when things go wrong Developing a howto video to explain how the Bee-bot works. 	Using logical thinking to explore software, predicting, testing and explaining what it does • Using an algorithm to write a basic computer program • Learning what loops are	 Using logical thinking to explore more complex software; predicting, testing and explaining what it does Incorporating loops to make code more efficient Remixing existing code 	Understanding that websites can be altered by exploring the code beneath the site • Coding a simple game • Using abstraction and pattern recognition to modify code	 Programming an animation Iterating and developing their programming as they work Beginning to use nested loops (loops within loops) Debugging their own code 	 Debugging quickly and effectively to make a program more efficient Remixing existing code to explore a problem Using and adapting nested loops Programming using the language Python

	 Learning to debug an 	 Incorporating loops 	 Using a more 	 Incorporating 		
 Experimenting with 	algorithm in an	to make code more	systematic approach	variables to make code	 Writing code to 	 Changing a program
programming a Bee-	unplugged scenario	efficient	to debugging code,	more efficient	create a desired effect	to personalise it
bot/Bluebot and			justifying what is			
learning how to give			wrong and how it can	 Remixing existing 	 Using a range of 	 Evaluating code to
simple commands			be corrected	code	programming	understand its
					commands	purpose
 Learning to debug 				 Using a more 		
instructions, with the				systematic approach	 Using repetition 	 Predicting code and
help of an adult, when				to debugging code,	within a program	adapting it to a chosen
things go wrong				justifying what is		purpose
				wrong and how it can	 Amending code 	
				be corrected	within a live scenario	 Altering a website's
						code to create changes