Gotham Primary Computing Progression Planning

This planning document is used to support the teaching of Computing at Gotham Primary School.

Each area of the National Curriculum is linked to a key learning question, vocabulary and possible evidence of learning. This supports learning within each Year Group and assessment.

Areas of study are revisited in different year groups as children progress through the school. This facilitates children building on prior knowledge and through recapping, building on key skills and vocabulary allowing them to develop their skills base further.

Our evidence progresses through the school, showing the skills children have learned and applied. In order to meet the expectations, pupils must firstly understand the key concepts and be provided with opportunities to apply that knowledge.

National Curriculum Year 1	Key Questions and Vocabulary and Vocabulary	Beginning	Developing	Secure
DIGITAL SKILLS use technology purposefully to create, organise, store, manipulate and retrieve digital content recognise common uses of information technology beyond school	How can we create artwork using a computer? (HP) Vocab: Edit, Image	Images		
		Use a painting program to create a digital image (change colour/size of pen)	• Edit a photo with simple tools eg: drawing on top of it, adding stickers.	
	How can we record sounds and reflect upon our own work? (NH) Vocab: sequence, selection	Film		
				Create a stop frame animation using app/software
		Sound		
		Experiment with long and short sounds	• Create a sequence of sounds (instruments, music software)	*Uses sounds in video, animation and film*
		Evaluating		
		• Know how to play your sounds when finished – is it all finished?	• "Does it lsound right?"	• Have you used the right sounds?
	How can we use a computer to collect information? Vocab: research, internet, information, data ,search	Research		
		Independently use a website or interactive text.	• Search the internet for images to talk about to answer a question in topic (scroll through google images, look at a gallery of images online) "What do the images tell us? "What was the great fire of London like?"	
		Data		
			Use pictograms/ charts as part of lessons with the children	
	How can we use a computer to create and store projects? Vocab: research, internet, information	Presenting		
		• Change text, font, size and colour tools •	• Use a word bank	• Move images in to correct places on app/software
		Saving and Retrieving		
		Open specific software on device	• Save work within the program (such as within login)	

National Curriculum Year 1	Key Questions and Vocabulary	Beginning	Developing	Secure
		Sequencing		

PROGRAMMING SKILLS understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions create and debug simple programs use logical reasoning to predict the behaviour of simple programs	How do we follow instructions to create a sequence? (NH) What is an Algorithm? (HP) Vocab: Algorithm, Debugging, Sequencing, Selection	Follow a given sequence including forwards, turns and backwards. **Predict** the outcome of a set of instructions and test the results.	Use symbols to represent an instruction in the correct order. e.g. ↑→ for forward and turn. Write a **sequence** for others to follow. Know how to clear the code	**Decompose** by breaking the sequence into chunks.
		Repeat Loops (iteration)		
				In pattern spotting, children recognise which elements of the sequence repeats (Get Started with Code lesson 3; Loopy Snake).
		Event Handling		
		Know that when I press GO the sequence will run.	Know that when a key (e.g. space bar) is pressed, the sprite/character will move.	
		Selection (conditional statements)		
		Variables		

National Curriculum Year 2	Key Questions and Vocabulary	Beginning	Developing	Secure
DIGITAL SKILLS use technology purposefully to create, organise, store, manipulate and retrieve digital content recognise common uses of information technology beyond school	Can Technology be used purposefully? Vocab: Information, Internet, Program, Search, Control, Image, Film	Images		
		• Use more advanced tools to edit photos eg: crop, add filters.	Select and use appropriate tools to create digital image (control the pen and then flood fill the shape).	
		Film		
		• film a short film	• Use tools to add effects to video footage	• Use green screen techniques (with support)
		Sound		
			Create a musical composition with music software (see music curriculum)	
		Presenting		
			• Move/Resize images in to correct places on app/software	Edit text including changing the appearance, positioning of text to suit a purpose (eg poster).
		Evaluating		
		• "Does it look right on screen?"	Adapt colours/fonts/sizes of images before printing version 2	• Save work as version 1 and adapt for version 2 before printing
		Research		
			• Search the internet for information to read.	• Answer a question set in topic. Eg "What happened during the great fire of London?"
		Data		
		• Enter data in to a pictogram and use it find answers to simple questions (linked to maths curriculum)		Type data in to a table
		Typing and Mouse Skills		
		• Use space bar only once between words • Use caps lock for a capital	• Copy/Paste text and images by using the icons in the software	• Use cursor/touch to find the letter/word to delete with backspace
		Saving and Retrieving		
			• Save work on the school network (overwrite previous versions).	Open a file on the school network

National Curriculum Year 2	Key Questions and Vocabulary	Beginning	Developing	Secure
PROGRAMMING SKILLS understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions create and debug simple programs use logical reasoning to predict the behaviour of simple programs	Can I use simple algorithms to create my own programs? Vocab: Algorithm, Debugging, Sequencing, Repetition, Selection	Sequencing		
		Understand that a sequence of instructions needs to be clear, precise and unambiguous. Understand that the order in which instructions are given will make a difference to the outcome.	**Sequence** instructions including forwards, back and turns more efficiently.	Understand that the direction and amount of turn is relative to the position of object – on screen or in real life – that is being moved.
		Repeat Loops (iteration)		
		In pattern spotting, children recognise which elements of the sequence repeats (Get Started with Code lesson 3; Loopy Snake).	Use a number to specify movement rather than repeated commands (e.g. in Scratch Junior forward 4 rather than ↑↑↑↑	Understand how to read and interpret a repeat in loop in an algorithm (set of instructions)
		Event Handling		
		Know that when arrow keys are pressed, direction is determined or an event will happen. E.g. S will draw a square, P will put pen down.	*Makes predictions about sequences of instructions/algorithms*	*Evaluates programs that are run and debugs to solve the problem*
		Selection (conditional statements)		
		Variables		

National Curriculum Year 3	Key Questions and Vocabulary	Beginning	Developing	Secure
DIGITAL SKILLS 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 use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content 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	Caught on film; Can you film and edit a stop motion video? Vocab: Sequence, Create, Selection, Edit, digital, Image, Film	Images		
		Create a digital image using a variety of brush types,	Create a digital image using a variety of brush types, pen tools	Create a digital image using a variety of brush types, pen tools and effects.
		Film		
		• Sequence clips onto a timeline.	• Begin to add titles and transitions. Use green screen techniques (with support)	• Cut/Trim video • Use green screen techniques
		Sound		
			Create and edit purposeful compositions using music software (eg create a mood or in a certain style)	*Use sound in videos and film*
		Presenting		
		• Experiment with font sizes and effects (bold, underline, wordart) for different audiences & purposes	• Add borders and other effects (shadow/ glow) to digital images. • Use cut, paste and delete to organise and reorganise text on screen	Use a spell check.
		Evaluating		
		• Check work is finished and has name on before printing	Check colours and fonts and images are appropriate to task	
	How can we be safe when using a computer? Vocab: Information, Control, Internet, Computer Networks, World Wide Web	Research		
			• Locate a webpage using a URL.(web address)	Find and save appropriate images/ text from the internet in their work
		Data		
			Use a database to: • generate bar charts and interpret data. • answer simple questions by sorting a field. • answer simple questions by using search criteria.	

			• Add a record to a file in a computer database.	
		Typing and Mouse Skills		
		• Use enter key for new line. Use shift key for a capital.	• Use index fingers on keyboard: they sit on the home keys (f/j) from there use Thumbs for pressing the space bar. •	• Use Left fingers for a s d f g • Use right fingers for h j k l
		Saving and Retrieving		
			Save work on the school network, renaming different versions (File_Name V1, File_Name V2, File_Name V3)	

National Curriculum Year 3	Key Questions and Vocabulary	Beginning	Developing	Secure
PROGRAMMING SKILLS design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts use sequence, selection, and repetition in programs; work with	Can you program your own race car game? Vocab: Algorithm, Debugging, Sequencing, Repetition, Blocks, Sprite, Script	Sequencing		
		Sequence instructions in the correct order with increasing number of commands.	Understand that a sequence of instructions in computing is called an **Algorithm.** Amount of turn is given as a number of quarter turns, not in number of degrees.	*Evaluates programs that are run and spots errors, debugs and solves the problem*
		Repeat Loops (iteration)		
		Can spot a pattern in a practical activity – knows which actions/instructions are repeated and which action/instructionss are not.	Understand informal notation for showing a move is repeated. E.G [→] x 3 = move right 3 times	*Uses repeat loops in Screatch to simplify code*

variables and various forms of input and output use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs		Event Handling		
		Uses robots/sprites on screen to perform tasks or complete instructions/code	Be able to create an animation or game where clicking on certain 'triggers' (objects/sprites/keys) will cause something to happen. E.g. animations in PowerPoint	**Parallelism** – Allow more than one event to happen at the same time e.g. having more than one set of blocks or instructions running at the same time.
		Selection (conditional statements)		
		Variables		

National Curriculum Year 4	Key Questions and Vocabulary	Beginning	Developing	Secure
DIGITAL SKILLS 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 use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content 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	Can you create a multimedia presentation that is persuasive? Vocab: Digital content, Sequence, Create, Selection, Edit, Image, Film	Images		
		Enhance digital images and photographs using crop & resize tools.	Enhance digital images and photographs using crop, brightness, contrast & resize tools.	
		Film		
		• Add music and sound effects • Add titles and transitions	• Use an animation app to record a movie (such as puppet pals, stopmotion) • Use green screen techniques (with support) Create a stop frame animation	Use green screen independently Create a stop frame animation
		Sound		
			Edit sound and effects for a purpose (eg. to use in a coding project.)	
		Presenting		
		• Use font sizes and effects appropriately for audience & purpose	• Use cut, paste and delete to organise and reorganise text on screen to suit a purpose (eg Presentation, poster, newspaper article) • Combine digital images from different sources, images and text to make a final image. •	Use a spell check and thesaurus.
		Evaluating		
			Plan and keep to a specific style or look for their work- are the fonts, colours, layout appropriate and effective for the content and audience (eg. Don't use rainbow colours in a PPT about the Holocaust, don't use yellow text on white in a poster as it's hard to read)	
		Research		

	How can we find, record, save and retrieve information using search technologies? Vocab: Information, Control, Internet, Computer Networks, World Wide Web		Copy notes on a topic from the internet	• Skim and scan search engine results and look at their web address to evaluate usefulness.
		Data		
			• Use online databases to search for information (eg. Online holiday listings, online shopping)	
		Typing and Mouse Skills		
		Use keyboard shortcuts for cut, paste and delete	• Touch type with increasing speed by using fingers to reach from top line keys, resting index fingers on home keys (f/j)	• Work with 2 windows snapped to the sides of the screen when finding information
		Saving and Retrieving		
		Search files and folders • Search windows explorer for a file name	• navigate the network and folders confidently and save consistently. • Search files and folders, sort by date • Search windows explorer for a file name or date	

National Curriculum Year 4	Key Questions and Vocabulary	Beginning	Developing	Secure
PROGRAMMING SKILLS design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts use sequence, selection, and repetition in programs; work with variables and various forms of input and output use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs	Can you design and evaluate a historical game with loops and repeats? Vocab: Algorithm, Debugging, Sequencing, Repetition, Variables, Blocks, Sprite, Script, Costume, Command	Sequencing		
		Sequence instructions in the correct order to create an animation sequence, draw a shape or solve a problem.	Amount of turn in an algorithm to be given as a number of degrees. Be able to assess success of given instructions and identify and correct any errors that occur.	Be able to evaluate the effectiveness of an algorithm written by their peers in class.
		Repeat Loops (iteration)		
		Understand what simple **loops** and **repeats** are and how they can make a program more efficient.	**Pattern spotting** - be able to identify which commands need to be repeated and how many times to achieve a desired end.	*Knows and uses the term 'for loop'*
		Event Handling		
		Uses the green flag to start a program	Uses the green flag and 1 other 'yellow hat'	Know that a range of **triggers** will start an event e.g. space bar, mouse click, press play/go [Use yellow 'hats' in Scratch] 
		Selection (conditional statements)		
			Using the 'If' and 'If/Else' blocks.	Use **sensing** (the turquoise blocks in Scratch) to make selections. 
		Variables		

National Curriculum Year 5	Key Questions and Vocabulary	Beginning	Developing	Secure
DIGITAL SKILLS 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 use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content 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	What software and digital devices do we need for making our own radio station? How can we advertise this effectively? Vocab: Digital content, Sequence, Create, Selection, Edit, Image, Film	Images		
		• Take a digital photo using appropriate settings • Explore the settings and features of a digital device for taking photos	• Enhance digital images and photographs using crop, brightness, contrast & resize tools • Remove background • Consider how to take an appropriate phot - angle/distance/background	• Layer photos within a document • (Discuss photoshopping in the media/ celeb photos and body image)
		Film		
		Use a programme or app to record a movie or animation	• Edit clips • Use green screen if appropriate • Plan and capture a video for a specific purpose to get a message across	• Film with a buffer either side of the video clip • Adjust timings
		Sound		
		Add a sound effect to a PPT presentation	Add a voice over to a film and edit sound clips (volume, pitch, effects, fade)	• Download a sound clip from a database • Manipulate a sound clip e.g. changing voice/pitch/amplitude • Layer sound tracks
		Presenting		
		• Edit and import sounds and voice (eg powerpoint, e-book)	• Organise and reorganise text on screen to suit a purpose (eg PPT, poster, newspaper article).	• Create a non-linear, multimedia text with hyperlinking (eg WWII PPT/ sway with links to different pages)
		Evaluating		
		Begin to consider the style when producing a multimedia document	Plan and mostly keep to a specific style or look in a piece of work	Plan and keep to a specific style or look for their work- are the fonts, colours, layout appropriate and effective for the content and audience (eg. Don't use rainbow colours in a PPT about the Holocaust, don't use yellow text on white in a poster as it's hard to read)

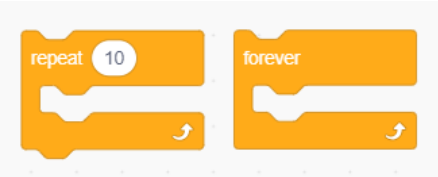
		Research		
		Decide which tab to use when searching e.g. All/Images/videos etc	Understand how to narrow your research to achieve the best results e.g. more specific search terms e.g. 4 children rather than children or UK recipe for correct measures	Use advanced search techniques, eg. Image size/ resolution/ colours.
		Data		
		• Work with a pre-made spreadsheet. With support, begin to understand how spreadsheet can help to solve problems, make decisions, plan for different options and try things out to answer 'what if' questions	• Use graphs to provide supporting evidence for their conclusions about relationships (including data logging results). • Order columns e.g. alphabetically or cost • Develop an understanding of how spreadsheet can help to solve problems, make decisions, plan for different options and try things out to answer 'what if' questions	• Understand how spreadsheet can help to solve problems, make decisions, plan for different options and try things out to answer 'what if' questions (eg. Party planning- what if we change the food…) Use 'SUM' formula
		Typing and Mouse Skills		
		Use keyboard shortcuts for cut, paste and delete	Use right click to bring up menu to save etc	• Touch type with increasing speed by placing index fingers on home keys (f/j) use fingers to reach for top line keys and lower line keys.
		Saving and Retrieving		
			Confidently Search files and folders • Search windows explorer for a file name	• Independently navigate the network and folders confidently and save consistently. • Search files and folders, sort by date • Search windows explorer for a file name or date

<table>
<tr><th>National Curriculum Year 5</th><th>Key Questions and Vocabulary</th><th>Beginning</th><th>Developing</th><th>Secure</th></tr>
<tr><td rowspan="8">PROGRAMMING SKILLS

design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts

use sequence, selection, and repetition in programs; work with variables and various forms of input and output

use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs</td><td rowspan="8">How do I make a game on Scratch with event handling, repetition and selection?

Vocab: Algorithm, Debugging, Sequencing, Blocks, Sprite, Script, Costume, Command,</td><td colspan="3">Sequencing</td></tr>
<tr><td>Understand and use algorithms which include:
• Repeat loops</td><td>Understand and use algorithms which include:
• Repeat loops
• Event handling
• A variety of inputs to control events e.g. space bar, arrow keys etc</td><td>Understand and use algorithms which include:
• Repeat loops
• Event handling/different inputs
• Selection</td></tr>
<tr><td colspan="3">Repeat Loops (iteration)</td></tr>
<tr><td>Secure understanding of use of simple repeat blocks.
 

Understand Forever loop means continuous</td><td>Use the instruction “repeat until” block including a sensing block to limit the repeating loop
 
</td><td>Use a repeat until action determined by a variable.
e.g.
 
</td></tr>
<tr><td colspan="3">Event Handling</td></tr>
<tr><td>Identify in instructions/code when two events are happening at the same time. Understand what triggers events and the effect of events that take place in instruction/code</td><td>Co-ordination & synchronisation
In Scratch use a broadcast to co-ordinate events in a program with more than one sprite (one event causes another to happen)
 
</td><td></td></tr>
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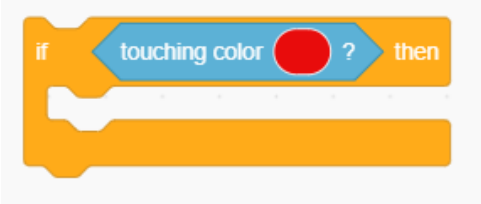
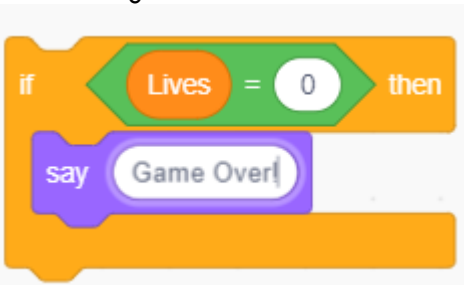
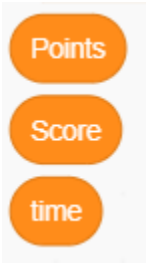
<table>
<tr><td rowspan="4"></td><td rowspan="4"></td><td colspan="3">Selection (conditional statements)</td></tr>
<tr>
<td>Use simple selection block “If … then”
 

Designs if/then/else flow charts and sequences on paper or on apps like Popplet.</td>
<td>Use a simple selection block in a broader range of context.
 
</td>
<td>Use ‘if, then, else’ statements
e.g. in a quiz: if answer correct…
 
</td>
</tr>
<tr><td colspan="3">Variables</td></tr>
<tr>
<td>Use a program that included a variable</td>
<td>Introduce the concept of variables.
Demonstrate / model how they work.
 
</td>
<td>Understand what variables are and how to use them and where to place them in a program.
(orange blocks in Scratch).
 
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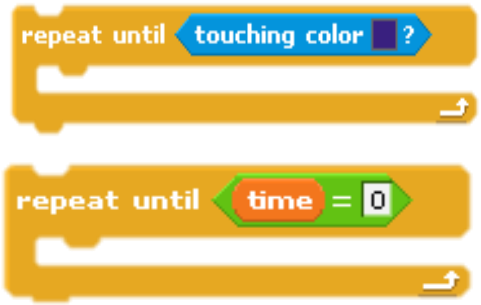
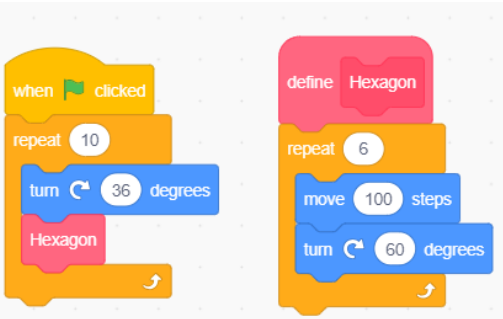
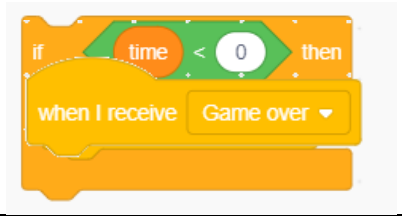
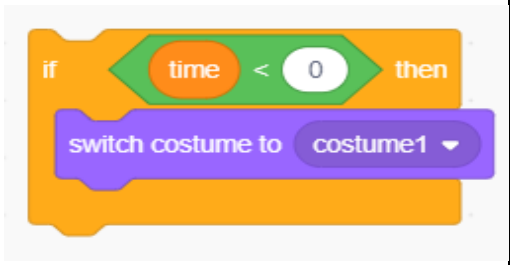
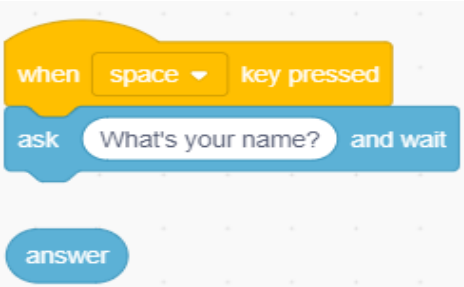
</tr>
</table>

National Curriculum Year 6	Key Questions and Vocabulary	Beginning	Developing	Secure
DIGITAL SKILLS 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 use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content 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	Can you create a multimedia presentation to present your findings? Vocab: Digital content, Sequence, Create, Selection, Edit, Image, Film	Images		
		• Edit picture to remove items, add new backgrounds, and merge 2 photos.	• Use a 3D graphic drawing program to create a realistic representation of real world objects.	• (Discuss photoshopping in the media- fake news/ celeb photos and body image)
		Film		
			• Confidently create a video using appropriate tools and techniques • Use green screen if appropriate	
		Sound		
			Add a voice over to a film and edit sound clips (volume, pitch, effects, fade)	
		Presenting		
			• Format text to suit a purpose (tab, justify, bullet points)	• Choose the most suitable applications and devices to communicate to a specific audience
		Evaluating		
			• Evaluate another's presentation on the basis of content and appropriate style.	Refine the quality of presentations as a result of peer review.
	How can I do effective internet searches and use the internet safely? Vocab: Information, Control, Internet, Computer Networks, World Wide Web	Research		
			Use advanced search techniques, eg. Image size/ type key words. Eg Google image search tools	• Explore and generate digital links (For example QR codes) http://www.qr-code-generator.com/

	How can I use different software to present data? Vocab: data, Sequence, Create, Selection, Edit	Data		
			• Create graphs from spreadsheets. • Enter data and formulae into cells, modify the data, make predictions of changes and check results. Use 'SUM'.	• Drag-copy formulae to create tables of results. • Create and use a spreadsheet to produce costings that are within budget. •
		Typing and Mouse Skills		
				Touch type with increasing speed by placing index fingers on home keys (f/j) use fingers to reach for top line keys and lower line keys.
		Saving and Retrieving		
			Search files and folders • Search windows explorer for a file name	• Independently navigate the network and folders confidently and save consistently. • Search files and folders, sort by date • Search windows explorer for a file name or date

National Curriculum Year 6	Key Questions and Vocabulary	Beginning	Developing	Secure
PROGRAMMING SKILLS design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts use sequence, selection, and repetition in programs; work with variables and various forms of input and output use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs	How can I design and code my own game including variables, event handling, repetition and selection? Vocab: Algorithm, Debugging, Sequencing, Repetition, Variables, Blocks, Sprite, Script, Costume, Command,	Sequencing		
		Understand and use algorithms which include: • Repeat loops • Event handling /inputs • Selection	Understand and use algorithms which include: • Repeat loops • Event handling /inputs • Selection • Variables	Secure understanding of more complex sequences which include: • Repeat loops • Event handling /inputs • Selection • Variables Be able to identify bugs in a sequence when program fails.
		Repeat Loops (iteration)		
		Use the instruction **repeat until …** to determine how long to repeat the instruction. 	Read/write **nested loops** (loops within a loop) e.g. use a repeat loop to draw a square, then put this algorithm inside another loop to create a repeated pattern. 	Use a range of repeat blocks competently and extensively Such as understand and use procedures within an algorithm. E.g. make your own blocks 
		Event Handling / Inputs		
		Use a **variable** as an input to trigger different events such as: in Scratch sending a **broadcast** in Scratch to other sprites.	Competently use a **broadcast** to trigger actions in other sprites different 	Ability to teach others about a range of event handling tools and strategies.

		Selection (conditional statements)			
		 Use selection to govern different events using the 'if … then" blocks, green blocks and a variable.	 Use selection to govern different events using the 'if / else' blocks, green blocks and a variable.	Ability to teach others about a range of selection tools and strategies.	
		Variables			
		Begin to understand what **variables** are and how to use them. (orange blocks in Scratch). 	Secure understanding what **variables** are and how to use them. (orange blocks in Scratch). Understand that the "ask" block is a special pre-programmed variable and be able to use it in a program. 	Know and understand what and how to use the **list blocks** can store lists of data in a scratch program.	