Computing

Progression Map – Knowledge and Skills

There are 4 strands of learning:

- Programming
- Computer user
- Data handler
- Media creator

Key Stage One

I am a programmer		
National Curriculum	Year 1	Year 2
Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions	I can follow an instruction Recognise that the order of instructions in an algorithm is important Combine four direction commands to make sequences Control a floor robot Create algorithms for sprites	Recognise the importance of giving clear instructions Use an algorithm to program a sequence on a floor robot Plan algorithms for different parts of a task Identify that a program needs to be started

Create and debug simple programs	Debug my program	Create an algorithm to meet my goal
	Plan a simple program	Test and debug each part of the program
	Use commands to move a sprite	Decide which blocks to use to meet the design
	Use a Start block in a program	Build the sequences of blocks I need
	Explain that each sprite has its own instructions	Create a program based my own design
	Add programming blocks based on my algorithm	Compare my project to my design
	Test the programs I have created	Debug my program
Use logical reasoning to predict the behaviour of simple programs	Explain what my program should do	Explain what my algorithm should achieve
	Predict the outcome of a command on a device	Predict the outcome of a sequence
	Predict the outcome of a sequence involving forwards and backwards commands	Compare my prediction to the program outcome
	Predict the outcome of a sequence involving up to four commands	Predict the outcome of a sequence of commands
		Work out the actions of a sprite in an algorithm

I am a computer user		
National Curriculum	Year 1	Year 2
Recognise common uses of information technology beyond school	Identify technology Explain technology as something that helps us Identify a computer and its main parts (screen, mouse, keyboard) Use a mouse in different ways Use a keyboard to type on a computer Save and open my work	Recognise the uses and features of information technology Identify that a computer is a part of IT Identify the uses of information technology in the school Talk about uses of information technology beyond school e.g. in a shop

I am a data handler		
National Curriculum	Year 1	Year 2
Use technology purposefully to create, organise, store, manipulate and retrieve digital content	Label objects Identify that objects can be counted Describe properties Count and group objects	Recognise that objects can be represented as pictures Create a pictogram Select objects by attribute Explain that we can present information using a computer

I am a media creator			
National Curriculum		Year 1	Year 2
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	TEXT	Use letters, numbers, space and back key Type capital letters Use the arrow keys to move the cursor Use bold, italic and underline Change the font style, size and colour Explain why I used the tools that I choose	Use cross-curricular opportunities to consolidate previous learning from Year 1
	Images	Use the freehand, shape, fill and line tools Change colour and brush styles Make careful choices when painting a digital painting	Use a digital device to take a photograph Take photos landscape and portrait Explore the effect of light on a photo Recognise that images can be altered Use tools to change an image
	Multimedia		Create rhythm patterns on a computer Experiment with pitch and duration Create a musical pattern using three notes Create music for a purpose Review and refine content

Key Stage Two

I am a programmer				
National Curriculum	Year 3	Year 4	Year 5	Year 6
Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems	Successfully modify a program Create a sequence of commands using a block language to produce a given outcome Use an event block to start a program Debug errors to accomplish specific goals	Plan a program using a block language which includes repetition Debug errors in increasingly complex programs to accomplish specific goals Evaluate the effectiveness of a program	Plan a program which includes selection to produce a given outcome Debug errors in increasingly complex programs to accomplish specific goals Evaluate the effectiveness of a program and ways it could be improved	Plan a program which includes variable to produce a given outcome Test programs on an emulator Use a range of approaches to debug errors in increasingly complex programs to accomplish specific goals
Use sequence, selection, and repetition in programs; work with variables and various forms of input and output	Explain the order (sequence) of commands can effect the outcome (same commands, different order -> same or different outcome) Identify different sequences can achieve the same outcome	Identify patterns (repetition) in a sequence Understand repetition in programming is also called looping Identify a loop in a program Understand, identify and justify when to use 'infinite' or 'count - controlled' loops Explain the importance in instruction order in a loop	Define that conditional statements (selection) are used in computer programs Program a microcontroller t control lights and a motor Explain a loop can stop when a condition is met (number of times or event) Explain a that program flow can branch according to a condition Use a condition in an if…then… statement to produce a given outcome	Define 'variable' as something that is changeable Explain that a variable has a name and a value Identify a variable in an existing program Use a variable in a conditional statement to control the flow of a program Program a microcontroller with selection and variables

Solve problems by decomposing them into smaller parts	Work with others to decompose a problem into smaller steps in planning a project	Independently decompose a problem into smaller steps in planning a project	Plan a solution to a problem using decomposition	Solve problems using decomposition, tackling each part separately

I am a computer user				
National Curriculum	Year 3	Year 4	Year 5	Year 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	Explain how digital devices function (input, output, process) Identify input and output devices Explain how a computer network can be used to share information Recognise the physical components of a network (switch, sever, wireless access point)	Describe how networks physically connect to other networks Describe the internet as a network or networks Describe how the world wide is part of the internet Describe how content can be added and accessed on the World Wide Web Recognise how the content of the WWW is created and shared by people	Explain that computers can be connected together to form systems Describe a computer system Recognise the role of computer systems in our lives Recognise how information is transferred over the internet using packets Explain how sharing information online lets people in different places work together Contribute to a shared project online Evaluate different ways of working together online	Describe different ways people communicate online Choose a method of communication to suit a particular purpose
Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content	Search for information in a single site Understand that search engines select pages according to keywords found in the content	Use a standard search engine to find information Understand that search engines rank pages according to relevance.	Use filters to make more effective use of a standard search engine Understand that search engines use a cached copy of the crawled web to select and rank results	Use of a range of search engines appropriate to finding information that is required Understand that search engines rank pages based on the number and quality of inbound links

I am a data handler				
National Curriculum	Year 3	Year 4	Year 5	Year 6
Collecting, analysing, evaluating and presenting data and information	Identify object attributes needed to collect relevant data Create a branching database Identify objects using a branching database Compare branching database structures and comment on their effectiveness Compare information shown in a pictogram with a branching database Explain that data can be used to answer questions	Collect data using a digital device Recognise that a sensor can be used as an input device for data collection Use a larger data set to find information Use a computer program to sort data by one attribute Export information and present data in a table and a graph Interpret data that has been collected and draw conclusions	Explain 'fields' and 'records' Navigate a flat -file database Apply knowledge of a database to ask and answer real -world questions Design a structure for a flat -file database Choose tools to select and analyse data to answer questions Use 'AND' and 'OR' to refine data selection Select an appropriate graph to visually compare data	Identify questions that can be answered using data Create a spreadsheet for a purpose Apply a formula that can be used to produce calculated data Recognise data can be calculated using different operations Evaluate results in comparison to the question asked Choose suitable ways to presents data such as a graph

I am a media creator					
National Curriculum		Year 3	Year 4	Year 5	Year 6
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	Text	Identify the advantages and disadvantages of using text and images Change font style, size and colour for a given purpose Consider how different layouts can suit different purposes Define the term 'page orientation' Type with increased confidence and speed using age appropriate punctuation Recognise a document can be formatted with placeholders Identify the use of desktop publishing in the real world	Use cross-curricular opportunities to consolidate previous learning from Year 1 – Year 3	Use cross-curricular opportunities to consolidate previous learning from Year 1 – Year 3	Recognise components of a webpage layout Create a webpage including text, images, hyperlinks and embedded content Understand the need for a navigation path
	Images	Change orientation of images	Use a computer to (further) manipulate images Change the composition of an image Recognise images can be changed for different purposes	Recognise vector drawings are made using shapes Add, remove, modify and combine objects to create graphical drawing on a computer Change the order of layers in	Create 3D graphical objects on a computer Rotate and re-position a 3D space Modify multiple 3D objects Combine 3D objects to create

				a vector drawing	desired effect
			Describe positive and negative effects that retouching can have on an image

Use the most appropriate tool for a particular purpose | Group objects to create a single object

Edit and refine work | Apply blank 3D objects as placeholders to create holes |
| | Multimedia | Understand how animation works

Plan an animation

Use onion skinning to create small changes between frames

Review and improve an animation

Add and evaluate the impact of adding other media to an animation | Press/tap buttons to start and stop recordings

Recognise recorded audio is stored as a file

Edit and alter recorded audio

Layer sounds

Save/export an audio file

Consider the results of editing choices made | Identify the features of a good video

Plan a video production using a story board

Use a computer to make a video

Make edits to a video to improve the outcome

Consider the impact of changes made on the quality of the video | Use cross -curricular opportunities to consolidate previous learning from Year 1 – Year 5 |