Becoming a Computer Scientist

Esh Winning Progress Map for Computing

Year Group	Autumn	Spring	Summer
N	Knows how to operate simple equipment, e.g. turns on the CD player and uses a remote control. Shows an interest in technological toys with knobs and pulleys, or real objects such as cameras or mobile phones.	Shows skill in making toys work by pressing parts or lifting flaps to achieve sound effects, such as sound, movements or new images. Knows that information can be retrieved from computer.	Complete a simple program on a computer. Uses hardware to interact with age-appropriate computer software.
Rec	Children recognise that a range of technology is used in places such as homes and schools.	They select and use technology for particular purposes. Children can find out about and use a range of everyday technology.	Children can select appropriate applications that support and identify need, for example in deciding how best to make a record of a special event in their lives, such as a journey on a stream train.
1	***Autumn term 1: (Computing systems and networks-Technology around us)*** To identify technology To identify a computer and its main parts To use a mouse in different ways To use a keyboard to type on a computer To use the keyboard to edit text To create rules for using technology responsibly **Autumn term 2 (creating media-digital painting)** To describe what different freehand tools do To use the shape tool and line tool To make careful choices when painting a digital picture To explain why I used the tools I did To use a computer on my own to paint a picture	**Spring term 1: (Programming A-moving a robot)** To explain what a given command will do To act out a given word To combine forwards and backwards commands to make a sequence To combine four direction commands to make sequences To plan a simple program To find more than one solution to a problem **Spring term 2 (data and information-grouping data)** To label objects To identify that objects can be counted To describe objects in different ways To count objects with the same properties To compare groups of objects To answer questions about groups of objects	**Summer term 1: (creating media-digital writing)** To use a computer to write To add and remove text on a computer To identify that the look of text can be changed on a computer To make careful choices when changing text To explain why I used the tools that I chose To compare writing on a computer with writing on paper **Summer term 2 (programming B-animations)** To choose a command for a given purpose To show that a series of commands can be joined together To identify the effect of changing a value To explain that each sprite has its own instructions To design the parts of a project To use my algorithm to create a program

2	**Autumn term 1 (computing systems and networks-IT around us)** To recognise the uses and features of information technology To identify information technology in the home To identify information technology beyond school To explain how information technology benefits us To show how to use information technology safely To recognise that choices are made when using information technology **Autumn Term 2: (creating media-digital photography)** To know what devices can be used to take photographs To use a digital device to take a photograph To describe what makes a good photograph To decide how photographs can be improved To use tools to change an image To recognise that images can be changed	**Spring term 1 (programming A-robot algorithms)** To describe a series of instructions as a sequence To explain what happens when we change the order of instructions To use logical reasoning to predict the outcome of a program (series of commands) To explain that programming projects can have code and artwork To design an algorithm To create and debug a program that I have written **Spring term 2 (data and information-Pictograms)** To recognise that we can count and compare objects using tally charts To recognise that objects can be represented as pictures To create a pictogram To select objects by attribute and make comparisons To recognise that people can be described by attributes To explain that we can present information using a computer	**Summer 1 (creating media-digital music)** To say how music can make us feel (not a computing related progression step) To identify that there are patterns in music To describe how music can be used in different ways To show how music is made from a series of notes To create music for a purpose To review and refine our computer work **Summer 2 (programming B-programming quizzes)** To explain that a sequence of commands has a start To explain that a sequence of commands has an outcome To create a program using a given design To change a given design To create a program using my own design
3	**Autumn term 1 (computing systems and networks-connecting computers)** To explain how digital devices function To identify input and output devices To recognise how digital devices can change the way we work To explain how a computer network can be used to share information To explore how digital devices can be connected To recognise the physical components of a network **Autumn 2 (creating media-stop-frame animation)** To explain that animation is a sequence of drawings or photographs To relate animated movement with a sequence of images To plan an animation To identify the need to work consistently and carefully To review and improve an animation To evaluate the impact of adding other media to an animation	**Spring 1 (programming A-sequencing sounds)** To explore a new programming environment I can identify that each sprite is controlled by the commands I choose To explain that a program has a start To recognise that a sequence of commands can have an order To change the appearance of my project To create a project from a task description **Spring 2 (data and information-branching databases)** To create questions with yes/no answers To create a branching database To explain why it is helpful for a database to be well structured To identify objects using a branching database To identify the object attributes needed to collect relevant data To compare the information shown in a pictogram with a branching database	**Summer 1 (creating media-desktop publishing)** To recognise how text and images convey information To recognise that text and layout can be edited To choose appropriate page settings To add content to a desktop publishing publication To consider how different layouts can suit different purposes To consider the benefits of desktop publishing **Summer 2 (programming B-events and actions in programs)** To explain how a sprite moves in an existing project To create a program to move a sprite in four directions To adapt a program to a new context To develop my program by adding features To identify and fix bugs in a program To design and create a maze based (given) challenge

4	***Autu*mn 1 (computing systems and networks-The Internet)** To describe how networks physically connect to other networks To recognise how networked devices make up the internet To outline how websites can be shared via the World Wide Web To describe how content can be added and accessed on the World Wide Web To recognise how the content of the WWW is created by people To evaluate the consequences of unreliable content **Autumn2 (creating media-Audio production)** To identify that sound can be digitally recorded To use a digital device to record sound To explain that a digital recording is stored as a file To explain that audio can be changed through editing To show that different types of audio can be combined and played together To evaluate editing choices made	**Spring 1 (programming A-repetition in shapes)** To identify that accuracy in programming is important To create a program in a text-based language To explain what 'repeat' means To modify a count-controlled loop to produce a given outcome To decompose a program into parts To create a program that uses count-controlled loops to produce a given outcome **Spring 2 (data and information-data logging)** To explain that data gathered over time can be used to answer questions To use a digital device to collect data automatically To explain that a data logger collects 'data points' from sensors over time To use data collected over a long duration to find information To identify the data needed to answer questions To use collected data to answer questions	**Summer 1 (creating media-photo editing)** To explain that digital images can be changed To change the composition of an image To describe how images can be changed for different uses To make good choices when selecting different tools To recognise that not all images are real To evaluate how changes can improve an image **Summer 2 (programming B-repetition in games)** To develop the use of count-controlled loops in a different programming environment To explain that in programming there are infinite loops and count controlled loops To develop a design which includes two or more loops which run at the same time To modify an infinite loop in a given program To design a project that includes repetition To create a project that includes repetition
5	***Autu*mn 1 (computing systems and networks—systems and searching)** To explain that computers can be connected together to form systems To recognise the role of computer systems in our lives To recognise how information is transferred over the internet To explain how sharing information online lets people in different places work together To contribute to a shared project online To evaluate different ways of working together online **Autumn 2 (creating media-video production)** To recognise video as moving pictures, which can include audio To identify digital devices that can record video To capture video using a digital device To recognise the features of an effective video	**Spring 1 (programming A-selection in physical computing)** To control a simple circuit connected to a computer To write a program that includes count-controlled loops To explain that a loop can stop when a condition is met, e.g. number of times To conclude that a loop can be used to repeatedly check whether a condition has been met To design a physical project which includes selection To create a controllable system which includes selection **Spring 2 (data and information-flat-file databases)** To use a form to record information To compare paper and computer-based databases To apply my knowledge of a database to ask and answer real-world questions To explain that tools can be used to select data to answer questions	**Summer 1 (creating media-introduction to vector graphics)** To identify that drawing tools can be used to produce different outcomes To create a vector drawing by combining shapes To use tools to achieve a desired effect To recognise that vector drawings consist of layers To group objects to make them easier to work with To evaluate my vector drawing **Summer 2 (Programming B-selection in quizzes)** To explain how selection is used in computer programs To relate that a conditional statement connects a condition to an outcome To explain how selection directs the flow of a program To design a program which uses selection To create a program which uses selection To evaluate my program

	To identify that video can be improved through reshooting and editing To consider the impact of the choices made when making and sharing a video	To apply my knowledge of a database to ask and answer real-world questions To apply my knowledge of a database to ask and answer real-world questions	
6	**Autumn 1 (computing systems and networks-communication and collaboration)** To explain the importance of internet addresses To explain how data is transferred across the internet To explain how sharing information online can help people work together To evaluate different ways of working together online To recognise how we communicate using technology To evaluate different methods of online communication **Autumn 2 (creating media-webpage creation)** To review an existing website and consider its structure To plan the features of a web page To consider the ownership and use of images (copyright) To recognise the need to preview pages To outline the need for a navigation path To recognise the implications of linking to content owned by other people	**Spring 1 (programming A-variables in games)** To define a 'variable' as something that is changeable To explain why a variable is used in a program To choose how to improve a game by using variables To design a project that builds on a given example To use my design to create a project To evaluate my project **Spring 2 (data and information-spreadsheets)** To create a data set in a spreadsheet To build a data set in a spreadsheet To explain that formulae should be used to produce calculated data To apply formulae to data To create a spreadsheet to plan an event To choose suitable ways to present data	**Summer 1 (creating media 3D modelling)** To recognise that you can work in 3D on a computer To identify that digital 3d objects can be modified To recognise that objects can be combined in a 3d model To create a 3d model for a given purpose To plan my own 3d model **Summer 2 (programming B –sensing movement)** To create a program to run on a controllable device To explain that selection can control the flow of a program To update the variable with a user input To use a conditional statement to compare a variable to a value To design a project that uses inputs and outputs on a controllable device To develop a program to use inputs and outputs on a controllable device