EYFS			
Computing systems and networks	Creating Media	Data and information	Programming
And, from Development Matters **Shows an interesting in technological toys with knobs or pullets or real objects such as cameras or mobile phones [30 to 50 months]** **knows the information can be retrieved from computers [30 to 50 months]** **uses ICT hardware to interact with age appropriate computer software [40 to 60 months]** **recognise a range of technology is used in places such as homes and schools [ELG]**	**Children should:** **Know what technology is. Know how to use an app.** **Know how to drag.** **Use a simple PAINT program** **Children should:** **Know that we can use technology for a range of purposes.** **Know that text comes in different sizes and colours. Know that computers can be used to create text.** **Use technology to assist their learning.**	**Children should:** **Know that some objects are the same and some are different. Know how to sort objects.** **Count objects in a set.**	**Children should:** **know what a bee-bot is.** **Make a bee-bot move forward, backwards and turn.** **Follow a route with a bee-bot. Move from one place to another with a bee-bot.** **Children should:** **Recall basic bee bot programmes.** **Plan a route for a bee bot.** **Plan two or three turns in their route.** **Reach a destination.** **Follow routes on other programmes.** **Control an object on an iPad programme using forwards backwards and turns.** **And, from development Matters** **completes a simple programme on a computer [40 to 60 months]**

Year 1			
Computing systems and networks	Creating Media	Data and information	Programming
Children should **Know that technology is something that helps us.** **Know how to locate examples of technology in the classroom.** **Know the main parts of a computer. Know how to switch on and log into a computer.** **Know how to can use a mouse to click and drag.** **Know how to use a mouse to open a program.** **Know how to click and drag to make objects on a screen.** **know how to use a mouse to create a picture.** **Know that writing on a computer is called typing.** **Know how to type their name on a computer.** **Know how to save and open work to a file.** **Know how to use the arrow keys to move the cursor.** **Know how to delete letters.** **Know some rules for using technology responsibly.**	**Children should** **Know how to make marks on a screen and explain which tools are used.** **Know how to draw lines on a screen and explain which tools are used.** **Know how to use the paint tools to draw a picture.** **Know how to make marks with the square and line tools and can use the shape and line tools effectively.** **Know how to use the shape and line tools to recreate the work of an artist.** **Know how to choose appropriate shapes and colour choices.** **Know how to create a picture in the style of an artist.** **Know that different paint tools do different jobs and can say which tools were helpful and why.** **Know how to make dots of colour on the page. Know how to change the colour and brush sizes.** **Know how to use dots of colour to create a picture in the style of an artist.** **Know the differences between painting on a computer and on paper and can express a preference.** **Know how to open a word processor. Recognise keys on a keyboard.** **Know the keys on a keyboard.** **Know how to enter text into a computer.** **Know how to use letter, number, and space keys.** **Know how to use backspace to remove text.** **Know how to type capital letters.** **Know what the keys that they have learnt about already do.** **Know the toolbar and can use bold, italic, and underline.** **Know how to select a word by double-clicking and all of the text by clicking and dragging.** **Know how to change the font.** **Know what tool they used to change the text.** **Know if changes have improved the writing and can use 'undo' to remove changes.** **Know how to write a message on a computer and on paper and then compare using a computer with using a pencil and paper.** **Know which method they like best.**	**Know how to describe objects using labels.** **Know how to match objects to groups.** **Know what the label for a group of objects is.** **Know how to count and group objects.** **Know how to describe an object using its properties.** **Know how to find objects with similar properties. Know how to group similar objects in more than one way.** **Know how to count how many objects share a property.** **Know to group objects and record how many objects are in a group.** **Know how to group objects to answer a question.** **Know how to compare groups of objects.** **Know how to record and share what they have found.**	**Know the outcome of a command on a device. match a command to an outcome.** **Know how to run a command on a device.** **Know how to follow an instruction.** **Know how to recall words that can be acted out.** **Know how to give directions and compare forwards and backwards movements.** **Know how to start a sequence from the same place.** **Know how to predict the outcome of a sequence involving forwards and backwards commands.** **Know how to compare left and right turns and experiment with turn and move commands to move a robot.** **Know how to predict the outcome of a sequence involving up to four commands.** **Know how to plan a simple program and explain what their program should do.** **Know how to choose the order of commands in a sequence.** **Know how to debug my program and identify several possible solutions.** **Know how to find the commands to move a sprite.** **Know how to use more than one block by joining them together.** **Know how to use a Start block in a program and then run their program.** **Know how to find blocks that have numbers and change them.** **Know what happens when they do.** **Know how to include more than one sprite and can delete a sprite if needed.** **Know how to add blocks to each of my sprites.** **Know how to choose appropriate artwork for my project.** **. Know how to create an algorithm for each sprite and use an algorithm to create a program.** **Know how to use sprites that match a design.** **Know how to add programming blocks based on an algorithm.** **Know how to test the programs.**

Year 2			
Computing systems and networks	Creating Media	Data and information	Programming
Children should: Know some examples of computers. Know some uses of computers. Know that a computer is a part of information technology. Know the purpose of information technology in the home. Know how to open a file. Know how to move and resize images. Know some examples of information technology and talk about their uses. Know how information technology is used in a shop. Know that information technology can be connected and can explain how information technology helps people. Know different uses of information technology. Know how to use information technology responsibly.	**Children should:** Know what devices can be used to take photographs. Know how to take a photograph. Know the process of taking a good photograph. Know how to take photos in both landscape and portrait format and explain which looks better. Know what is wrong with a photograph and can improve a photograph by retaking it. Know the effect that light has on a photo and can experiment with different light sources. Know why a picture may be unclear. Know that images can be changed and can use a tool to achieve a desired effect. Know when a photo has been changed. Know simple differences in pieces of music. Know how music makes me feel, e.g. happy or sad. Know how to create a rhythm pattern. Know that music is created and played by humans. Know how to connect images with sounds. Know how to use a computer to experiment with pitch and duration. Know how to relate an idea to a piece of music. Know that music is a sequence of notes. Know how to use a computer to create a musical pattern using three notes. Know how to refine a musical pattern on a computer. Know how to describe an animal using sounds and explain their choices. Know how to save their work. Know how to reopen their work. Know how to make their work better.	**Children should** Know how to record data in a tally chart. Know how to represent a tally count as a total. Know how to compare totals in a tally chart. Know how to enter data onto a computer. Know how to use a computer to view data in a different format. Know how to use pictograms to answer simple questions about objects. Know how to organise data in a tally chart. Know how to use a tally chart to create a pictogram. Know what the pictogram shows. Know how to tally objects using a common attribute. Know how to create a pictogram to arrange objects by an attribute. Know how to answer, 'more than'/'less than' and 'most/least' questions about an attribute. Know how to choose a suitable attribute to compare people. Know how to collect the data they need to create a pictogram and draw conclusions from it. Know how to use a computer program to present information in different ways. Know why information should not be shared.	**Children should:** Know how to choose a series of words that can be enacted as a sequence. Know how to create different algorithms for a range of sequences (using the same commands). Know how to use an algorithm to program a sequence on a floor robot. Know the difference in outcomes between two sequences that consist of the same commands. Know how to follow a sequence and predict the outcome. Know how to compare a prediction to the program outcome. Know how to identify different routes around a mat. Know how to test a mat to make sure that it is usable. Know what an algorithm should achieve and can create an algorithm to meet a goal. Know how to use an algorithm to create a program. Know how to test and debug each part of the program and put together the different parts of a program. Know that a program needs to be started. Know how to run a program and predict the outcome of a sequence of commands. Know how to match two sequences with the same outcome. Know how to change the outcome of a sequence of commands. Know how to work out the actions of a sprite in an algorithm. Know which blocks to use to meet the design. Know how to build the sequences of blocks they need. Know how to choose backgrounds and characters for the design. Know how to choose the images for my own design. Know how to create an algorithm and can build sequences of blocks to match my design. Know how to compare a project to a design. Improve a project by adding features. Know how to debug.

Year 3			
Computing systems and networks	Creating Media	Data and information	Programming
Children should: Know that digital devices accept inputs. Know that digital devices produce outputs. Know how to follow a process.	**Children should:** Know how an animation/flip book works. Predict what an animation will look like.	**Children should:** Know some questions with yes/no answers. Know how to make up a yes/no question about a collection of objects.	**Children should:** Know how to identify the objects in a Scratch project (sprites, backdrops). Know that objects in Scratch have attributes.

Know how to classify input and output devices. Know how to model a simple process. Know how to design a digital device. Know how to use digital devices for different activities. Know some similarities between using digital devices and non-digital tools. Know some differences between using digital devices and non-digital tools. Know some different connections. Know how messages are passed through multiple connections. Know why we need a network switch. Know that a computer network is made up of a number of devices. Know how information can be passed between devices. Know the role of a switch, server, and wireless access point in a network. Know how devices in a network are connected with one another. Know some networked devices around me. Know what the benefits of computer networks are.	Know why little changes are needed for each frame. Create an effective stop-frame animation. Know how to break down a story into settings, characters and events. Describe an animation that is achievable on screen. Know how to create a storyboard. Know how to use onion skinning to make small changes between frames. Know how to review a sequence of frames to check work. Add other media to an animation. Know the difference between text and images. Know that text and images can communicate messages clearly. Know the advantages and disadvantages of using text and images. Change font style, size, and colours for a given purpose. Know how to edit text and can explain that text can be changed to communicate more clearly. Define the term 'page orientation'. Know what placeholders are and say why they are important. Know how to create a template for a particular purpose. Know the best locations for content. Paste text and images to create a magazine cover. Make changes to content. Identify different layouts and match a layout to a purpose. Identify the uses of desktop publishing in the real world and say why desktop publishing might be helpful. Compare work made on desktop publishing to work created by hand.	Know how to create two groups of objects separated by one attribute. Know how to select an attribute to separate objects into groups. Know how to create a group of objects within an existing group. Know how to arrange objects into a tree structure. Know how to select objects to arrange in a branching database. Know how to group objects using my own yes/no questions. Know how to prove my branching database works. Know how to create yes/no questions using given attributes. Know that questions need to be ordered carefully to split objects into similarly sized groups. Know how to compare two branching database structures. Know how to select a theme and choose a variety of objects. Know how to create questions and apply them to a tree structure. Know how to use my branching database to answer questions. Know what a pictogram tells me. Know what a branching database tells them. Know how to compare two ways of presenting information.	Know that commands in Scratch are represented as blocks. Know that each sprite is controlled by the commands they choose. Know how to choose a word which describes an on-screen action for their design. Know how to create a program following a design. Know how to start a program in different ways. Create a sequence of connected commands. Know that the objects in a project will respond exactly to the code. Know what a sequence is. Know how to create sound commands. Know how to order notes into a sequence. Know how to build a sequence of commands. Know how to decide the actions for each sprite in a program. Know how to make design choices for their artwork. Know how to name the objects they will need for a project. Know how to relate a task description to a design. Implement an algorithm as code. Know the relationship between an event and an action. Know which keys to use for actions and explain my choices. Know how to improve a program. Know how to choose a character for my project. Know how to program movement. Know how to use a programming extension. Consider the real world when making design choices. Know how to choose blocks to set up my program. Know how to identify additional features (from a given set of blocks). Know how to choose suitable keys to turn on additional features. Know how to build more sequences of commands to make their design work. Know how to test a program against a given design. Know how to match a piece of code to an outcome. Know how to modify a program using a design. Know how to make design choices and justify them.

Year 4			
Computing systems and networks	Creating Media	Data and information	Programming
Children should: Know how information is shared across the internet.	Children should: Know some digital devices that can record sound and play it back.	Children should: Know how to choose a data set to answer a given question.	Children should: Know how to program a computer by typing commands. Know the effect of changing a value of a command.

Know why a network needs protecting. Know some different networked devices and how they connect. Know how the internet allows us to view the World Wide Web. Know that the World Wide Web is the part of the internet that contains websites and web pages. Know the types of media that can be shared on the World Wide Web (WWW). Know where websites are stored when uploaded to the WWW. Know how to access websites on the WWW. Know how to create media which can be found on websites. Know they can add content to the WWW. Know that websites and their content are created by people. Know who owns the content on websites. Know that there are rules to protect content. Know that not everything on the World Wide Web is true. Know why they need to think carefully before sharing or resharing content.	Know the inputs and outputs required to play audio or record sound. Know that a range of sounds can be recorded. Know how to use a device to record audio and play back sound. Know why it is useful to be able to save digital recordings. Know how to save a digital recording as a file. Know how to open a digital recording from a file. Know ways in which audio recordings can be altered. Know how to edit sections of an audio recording. Know how to use editing tools to arrange sections of audio. Know that digital recordings need to be exported to share them. Know some changes that we can make to an image. Know how images can be changed in real life. Know some of the effects that editing can have on an image. Know how to recognise what has changed in an edited image. Know how to change the composition of an image by selecting parts of it. Know why someone might want to change the composition of an image. Know how to choose effects to make my image fit a scenario. Know some examples of positive and negative effects that retouching can have on an image. Know some appropriate tools to retouch an image. Know how to combine parts of images to create new images. Know how to compare the original image with my completed publication.	Know some questions that can be answered using a given data set. Know that data can be gathered over time. Know that sensors are input devices. Know how to use data from a sensor to answer a given question. Know that data from sensors can be recorded. Know where a suitable place to collect data. might be. Know what intervals used to collect data. Know how to import a data set and can use a computer to view data in different ways. Know how to use a computer program to sort data. Know how to propose a question that can be answered using logged data. Know how to plan how to collect data using a data logger. Know how to interpret data that has been collected using a data logger and draw conclusions from the data that has been collected. Know the benefits of using a data logger.	Know how to create a code snippet for a given purpose. . Know how to write an algorithm to produce a given outcome. Know how to test an algorithm in a text-based language. Know how to identify patterns in a sequence. Know how to use a count-controlled loop to produce a given outcome. Know how to identify the effect of changing the number of times a task is repeated. Know how to predict the outcome of a program containing a count-controlled loop. Know which values to change in a loop. Know how to use a procedure in a program. Know that a computer can repeatedly call a procedure. Know how to design a program that includes count-controlled loops. Know how to develop my program by debugging it. Know how to predict the outcome of a snippet of code. Know how to modify a snippet of code to create a given outcome. Know how to modify loops to produce a given outcome. Know when to use a count-controlled and an infinite loop. Know that some programming languages enable more than one process to be run at once. Know which action will be repeated for each object. Know what the outcome of the repeated action should be. Know how to evaluate the effectiveness of the repeated sequences used in a program. Know which parts of a loop can be changed and what happens then. Know how to re-use existing code snippets on new sprites. Know how to design a project that includes repetition. Know how to select key parts of a given project to use in their own design. Know how to refine the algorithm in a design and build a program that follows the design. Know how to evaluate the project.

Year 5			
Computing systems and networks	Creating Media	Data and information	Programming
Children should: Know that systems are built using a number of parts.	Children should: Know that vector drawings are made using shapes. Know the main drawing tools.	Children should: Know how to create multiple questions about the same field.	Children should: Know how to build a simple circuit to connect a microcontroller to a computer.

Know that a computer system features inputs, processes, and outputs. Know that computer systems communicate with other devices. Know some tasks that are managed by computer systems. Know the human elements of a computer system. Know the benefits of a given computer system. Know that data is transferred using agreed methods. Know that networked digital devices have unique addresses. Know that data is transferred over networks in packets. Know that connected digital devices can allow us to access shared files stored online. Know how to send information over the internet in different ways. Know that the internet allows different media to be shared. Know some strategies to ensure successful group work. Know different ways of working together online. Know that working together on the internet can be public or private. Know how the internet enables effective collaboration.	Know how a vector drawing is different from paper-based drawings. Know the shapes used to make a vector drawing. Know that each element added to a vector drawing is an object. Know how to move, resize, and rotate objects. Know how to use the zoom tool to help add detail to drawings. Know how alignment grids and resize handles can be used to improve consistency. Know how to modify objects to create different effects. Know that each added object creates a new layer in the drawing. Know which objects are in the front layer or in the back layer of a drawing. Know how to change the order of layers in a Vector drawing. Know that a video can include both visual and audio media. Know the benefits of adding audio to a video. Know some digital devices that can record video and sound. Know the most suitable digital device for recording a project. Know the working features of a digital device that can record video. Know suitable methods of using a digital device to capture a video. Know the safe use and handling of devices. Know some of the features of an effective video. . Know why lighting and angle are important in creating an effective video. Know how to store, retrieve, and export my recording to a computer. Know how to improve a video by reshooting and editing. Know the correct tools to make edits to a video. Know that choices when making a video will impact on the quality of the final outcome. Know how to evaluate a video and share opinions.	Know how information can be recorded. Know how to order, sort, and group my data cards. Know how to navigate a flat-file database to compare different views of information. Know what a 'field' and a 'record' is in a database. Know which field to sort data by to answer a given question. Know how information can be grouped. Know how to combine grouping and sorting to answer more specific questions. Know which field and value are required to answer a given question. Know how 'AND' and 'OR' can be used to refine data selection. Know how to choose multiple criteria to answer a given question. Know how to select an appropriate chart to visually compare data. Know how to refine a chart by selecting a particular filter. Know the benefits of using a computer to create graphs. . Know how to refine a search in a real-world context.	know how to program a microcontroller to light an LED. Know when to use an infinite loop. Know how to connect more than one output device to a microcontroller. Know how to design sequences for given output devices. Know which output devices to control with a count-controlled loop. Know that a condition is something that can be either true or false (e.g. whether a value is more than 10, or whether a button has been pressed). Know what a 'do until' loop is. Know how to program a microcontroller to respond to an input. Know that a condition being met can start an action. Identify a condition and an action in my project. Know how to use selection to direct the flow. Know how to identify a condition to start an action Know what my project will do (the task) and create a detailed drawing of my project. Know how to write an algorithm to control lights and a motor. Know how to use selection to produce an intended outcome. Know how to test and debug a project. Know how conditions are used in selection. Identify conditions in a program. Know how to modify a condition in a program. Know how to use selection in an infinite loop to check a condition. Know how to create a program with different outcomes using selection. Know that program flow can branch according to a condition. Know how to design the flow of a program which contains 'if… then… else…' Know that a condition can direct program flow in one of two ways. Know how to identify the outcome of user input in an algorithm. Know how to create the first section of a program. Know how to test a program and identify ways the program could be improved. Know how to identify the setup code and extend a program further.

Year 6			
Computing systems and networks	Creating Media	Data and information	Programming
Children should:	know that websites are written in HTML. know the common features of a web page.	Know how to collect data. Know how to enter data into a spreadsheet.	Know the way a variable change can be defined. Know that variables can be numbers or letters.

Know that computers use addresses to access websites. Know that data is transferred using agreed methods. Know that data is transferred over the Internet in packets. Know the main part of a data packet. Know the Internet allows different media to be shared. Know the different ways in which people communicate over the Internet. Know that communication on the Internet may not be private.	Know some media that can be included on a web page. know what is meant by the term fair use. Know how to find copy free copyright free images. Know how to preview what a web page looks like Know what a navigation path is and why it is useful. Know how to link multiple webpages by a hyperlink. Know the implications of linking to content owned by others. Know how to add 3D shapes to a project. Know how to move, left, lower, objects, resize, duplicate, group, rotate, and view 3D shapes from different perspectives. Know how to accurately size 3D objects. Know how to combine a number of 3D objects. Know that placeholders can create holes in 3D objects. Know how to construct a 3D model based on a design.	Know how to format a cell. Know how to construct a formula in a spreadsheet. Know that changing inputs changes outputs. Know how to apply a formula to multiple cells by duplicating it. Know how to calculate data using different operations. Know how to produce a chart. Know when it is better to use a table or a chart	Know that variables have a name and value. Know how to identify a programme variable as a placeholder in memory for a single value. Know that the value of a variable can change. Know how to make use of an event in a programme to set a variable. Know how to create algorithms for a project. Know how to choose the name that identifies the role of the variable. Know how to improve a game. Know how to test the programme on an emulator. Know how to transfer a programme to a controllable device. Know how to determine the flow of a programme using selection. Know how to use a variable in an if, then, else statement to select the flow of a programme. Know how to change different physical inputs# Know that checking a variable doesn't change its value Know how to use a condition to change your variable Know the importance of the order of conditions in else if statements. Know how to modify a programme to achieve a different outcome. Know how to use an operand in an if then statement Know how to design an algorithm for a project. Know how to create a programme based on a design.