Computing Skill Progression

EYFS
Computer Systems and Networks – Technology Around Us
Understand that things created using technology belong to me. Recognise that I can use the Internet to play and learn Develop an interest in ICT by using age appropriate websites or programs Recognise text, images and sound when using ICT
Creating Media – Photos and Video
Take a photograph and use it in an app Use paint programs to create pictures and explore the paint and brush tools Record and play a film Move and resize images with my fingers or mouse.
Creating Media – Sound
Create a simple digital collage. Record sounds with different resources Find ways to change your voice (tube, tin can, shouting to create an echo) Record sounds/voices in storytelling and explanations
Data and information – Grouping Data
Collect information as photos or sound files Use a simple pictogram or set of photos to count and organise information Sort physical objects, take a picture and discuss what I have done. Present simple data on a digital device.
Programming
Follow simple oral algorithms Use simple software to make things happen Input a simple sequence of commands to control a digital device with support (Bee Bot) Spot simple patterns Sequence simple familiar tasks
Multimedia
Use a mouse, touch screen or appropriate access device to target and select options on screen Begin to use a keyboard Type letters with increasing confidence using a keyboard and tablet. Play on a touch screen game and use computers/keyboards/mouse in role play Use a mouse to rearrange objects and pictures on a screen

Year 1	Year 2
Computer Systems and Networks – Technology Around Us	Computer Systems and Networks – IT Around Us
Understand that technology helps us. Switch on and log in to a computer. Use a mouse to click and drag. Use a mouse to open a program. Type their name on a computer. Use the shift key to type a capital letter. Save work to a file. Open work from a file. Identify rules to keep us safe and healthy when we are using technology.	Describe some uses of computers. Identify that a computer is a part of information technology. Open a file. Move and resize images. Compare types of information technology. Demonstrate how information technology is used in a shop. Recognise that information technology can be connected. Explain how information technology helps people. List different uses of information technology. Recognise how to use information technology responsibly. Identify the choices that I make when using information technology. Explain simple guidance for using information technology in different environments and settings.
Creating Media – Digital Painting	Creating Media – Digital Photography
Use the paint tools to draw a picture. Use the shape and line tools effectively. Choose appropriate paint tools and colours. Change the colour and brush sizes.	Talk about how to take a photograph. Capture digital photos and talk about my experience. Explain the process of taking a good photograph. Take photos in both landscape and portrait format.

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Spot the differences between painting on a computer and on paper.	Identify what is wrong with a photograph. Improve a photograph by retaking it. Experiment with different light sources. Focus on an object. Use a tool to achieve a desired effect. Apply a range of photography skills to capture a photo. Recognise which images have been changed.
Creating Media – Digital writing	Creating Media – Making Music
Open a word processor. Identify and find keys on a keyboard. Enter text into a computer. Use letter, number, and space keys. Use backspace to remove text. Type capital letters. Identify the toolbar and use bold, italic, and underline. Select a word by double-clicking . Select all of the text by clicking and dragging. Change the font. Use 'undo' to remove changes.	Identify simple differences in pieces of music. Create a rhythm pattern. Use a computer to experiment with pitch and duration. Use a computer to create a musical pattern using three notes. Refine my musical pattern on a computer.
Data and information – Grouping Data	Data and information – Pictograms
Describe objects using labels. Match objects to groups. Count objects. Group objects. Count a group of objects. Describe an object. Describe a property of an object. Find objects with similar properties. Group objects in more than one way. Decide how to group objects to answer a question. Record and share what i have found.	Record data in a tally chart. Enter data onto a computer. Use a computer to view data in a different format. Organise data in a tally chart. Create a pictogram to arrange objects by an attribute. Collect the data I need. Create a pictogram and draw conclusions from it. Use a computer program to present information in different ways. Give simple examples of why information should not be shared.
Programming A – Moving a Robot	Programming A – Robot Algorithms
Predict the outcome of a command on a device. Match a command to an outcome. Run a command on a device. Follow an instruction. Start a sequence from the same place. Predict the outcome of a sequence involving forwards and backwards commands. Explain what my program should do. Choose the order of commands in a sequence. Debug my program.	Follow instructions given by someone else. Choose a series of words that can be enacted as a sequence. Create different algorithms for a range of sequences (using the same commands). Use an algorithm to program a sequence on a floor robot. Follow a sequence. Predict the outcome of a sequence. Explain what my algorithm should achieve. Create an algorithm to meet my goal. Use my algorithm to create a program. Test and debug each part of the program. Put together the different parts of my program.
Programming B – Introduction to Animation	Programming B – Introduction to Quizzes
Use commands to move a sprite. Use more than one block by joining them together. Use a start block in a program. Run my program. Change the value. Say what happens when I change a value. Show that a project can include more than one sprite. Delete a sprite. Add blocks to each of my sprites. Decide how each sprite will move. Create an algorithm for each sprite.	Identify the start of a sequence. Show how to run my program. Predict the outcome of a sequence of commands. Change the outcome of a sequence of commands. Tell the actions of a sprite in an algorithm. Decide which blocks to use to meet the design. Build the sequences of blocks I need. Create an algorithm. Build sequences of blocks to match my design. Improve my project by adding features. Debug.

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Test the programs created.	

Year 3	Year 4
Computer Systems and Networks – Connecting Computers	**Computer Systems and Networks – The Internet**
Explain that digital devices accept inputs. Explain that digital devices produce outputs. Follow a process. Design a digital device. Recognise similarities between using digital devices and non-digital tools. Recognise different connections. Explain how messages are passed through multiple connections. Discuss why we need a network switch. Recognise that a computer network is made up of a number of devices. Explain the role of a switch, server, and wireless access point in a network. Identify networked devices around me. Identify the benefits of computer networks.	Describe the internet as a network of networks. Demonstrate how information is shared across the internet. Explain how the internet allows us to view the world wide web. Describe the different networked devices and how they connect. Recognise that the world wide web is the part of the internet that contains websites and web pages. Recognise that i can add content to the www. Suggest who owns the content on websites. Explain that there are rules to protect content. Explain why some information i find online may not be honest, accurate, or legal.
Creating Media – Animation	**Creating Media – Audio Editing**
Create an effective flip book–style animation. Explain how an animation/flip book works. Explain why little changes are needed for each frame. Create an effective stop frame animation. Create a storyboard. Review a sequence of frames to check my work. Improve my animation based on feedback. Add other media to my animation.	Identify digital devices that can record sound and play it back. Identify the inputs and outputs required to play audio or record sound. Use a device to record audio and play back sound. Discuss why it is useful to be able to save digital recordings. Save a digital recording as a file. Open a digital recording from a file. Edit sections of an audio recording. Use editing tools to arrange sections of audio. Explain that digital recordings need to be exported to share them.
Creating Media – Desktop Publishing	**Creating Media – Photo Editing**
Explain the difference between text and images. Recognise that text and images can communicate messages clearly. Change font style, size, and colours for a given purpose. Edit text. Create a template for a particular purpose. Paste text and images to create a magazine cover. Make changes to content after I've added it. Match a layout to a purpose. Choose a suitable layout for a given purpose. Say why desktop publishing might be helpful.	Identify changes that we can make to an image. Explain the effect that editing can have on an image. Explain what has changed in an edited image. Change the composition of an image by selecting parts of it. Choose effects to make my image fit a scenario. Give examples of positive and negative effects that retouching can have on an image. Sort images into 'fake' or 'real' and explain my choices. Combine parts of images to create new images. Consider the effect of adding other elements to my work.
Data and information – Branching Databases	**Data and information – Data Logging**
Investigate questions with yes/no answers. Select an attribute to separate objects into groups. Arrange objects into a tree structure. Select objects to arrange in a branching database. Prove my branching database works. Compare two branching database structures. Create questions and apply them to a tree structure. Use my branching database to answer questions. Explain what a branching database tells me.	Suggest questions that can be answered using a given data set. Identify data that can be gathered over time. Explain that sensors are input devices. Use data from a sensor to answer a given question. Identify a suitable place to collect data. Import a data set. Use a computer to view data in different ways. Propose a question that can be answered using logged data. Plan how to collect data using a data logger. Interpret data that has been collected using a data logger. Draw conclusions from the data that I have collected.
Programming A – Sequence in Music	**Programming A – Repetition in Shapes**
Identify the objects in a Scratch project (sprites, backdrops). Create a program following a design. Start a program in different ways. Create a sequence of connected commands. Combine sound commands.	Program a computer by typing commands. Use a template to create a design for my program. Write an algorithm to produce a given outcome. Use a count-controlled loop to produce a given outcome. Predict the outcome of a program containing a count-controlled loop.

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Decide the actions for each sprite in a program. Implement my algorithm as code.	Use a procedure in a program. Design a program that includes count-controlled loops. Develop my program by debugging it.
Programming B – Events and Actions	Programming B – Repetition in Games
Explain the relationship between an event and an action Choose which keys to use for actions and explain my choices. Identify a way to improve a program. Program movement. Use a programming extension. Identify additional features (from a given set of blocks). Choose suitable keys to turn on additional features. Build more sequences of commands to make my design work. Test a program against a given design. Match a piece of code to an outcome. Modify a program using a design. Make design choices and justify them. Implement my design.	Predict the outcome of a snippet of code. Choose when to use a count-controlled and an infinite loop. Choose which action will be repeated for each object. Evaluate the effectiveness of the repeated sequences used in my program. Identify which parts of a loop can be changed. Re-use existing code snippets on new sprites. Evaluate the use of repetition in a project. Select key parts of a given project to use in my own design. Refine the algorithm in my design. Build a program that follows my design.

Year 5	Year 6
Computer Systems and Networks – Sharing Information	Computer Systems and Networks – Communication
Explain that systems are built using a number of parts. Describe that a computer system features inputs, processes, and outputs. Explain that computer systems communicate with other devices. Identify tasks that are managed by computer systems. Identify the human elements of a computer system. Recognise that data is transferred using agreed methods. Explain that networked digital devices have unique addresses. Recognise that connected digital devices can allow us to access shared files stored online. Compare working online with working offline.	Complete a web search to find specific information. Refine my search. Explain that search results are ordered. Suggest some of the criteria that a search engine checks to decide on the order of results. Describe some of the ways that search results can be influenced. Explain how search engines make money. Explain the different ways in which people communicate. Choose methods of communication to suit particular purposes. Compare different methods of communicating on the internet. Decide when i should and should not share. Explain that communication on the internet may not be private.
Creating Media – Vector Drawing	Creating Media – 3D Modelling
Recognise that vector drawings are made using shapes. Discuss how a vector drawing is different from paper-based drawings. Identify the shapes used to make a vector drawing. Move, resize, and rotate objects I have duplicated. Modify objects to create different effects. Identify that each added object creates a new layer in the drawing. Copy part of a drawing by duplicating several objects. Suggest improvements to a vector drawing.	Discuss the similarities and differences between 2D and 3D shapes. Select, move, and delete a digital 3D shape. Resize a 3D object. Rotate a 3D object. Select and duplicate multiple 3D objects. Create digital 3D objects of an appropriate size. Plan my 3D model. Modify multiple 3D objects.
Creating Media – Video Editing	Creating Media – Web Page Creation
Explain that a video can include both visual and audio media. Plan a video project using a storyboard. Choose the most suitable digital device for recording my project. Demonstrate suitable methods of using a digital device to capture my video. Record a video that demonstrates some of the features of an effective video. Explain why lighting and angle are important in creating an effective video. Store, retrieve, and export my recording to a computer. Explain how to improve a video by reshooting and editing. Make edits to my video and improve the final outcome.	Discuss the different types of media used on websites. Know that websites are written in html. Recognise the common features of a web page. Draw a web page layout that suits my purpose. Say why i should use copyright-free images. Describe what is meant by the term 'fair use'. Add content to my own web page. Evaluate what my web page looks like on different devices and suggest/make edits.. Explain what a navigation path is. Make multiple web pages and link them using hyperlinks. Explain the implication of linking to content owned by others. Evaluate the user experience of a website.
Data and information – Flat-file Databases	Data and information – Spreadsheets

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Create multiple questions about the same field. Order, sort, and group my data cards. Navigate a flat-file database to compare different views of information. Explain how information can be grouped. Choose which field and value are required to answer a given question. Choose multiple criteria to answer a given question. Select an appropriate chart to visually compare data. Explain the benefits of using a computer to create graphs. Present my findings to a group.	Explain the relevance of data headings. Answer questions from an existing data set. Explain what an item of data is. Build a data set in a spreadsheet application. Construct a formula in a spreadsheet. Recognise that data can be calculated using different operations. Create a formula which includes a range of cells. Apply a formula to multiple cells by duplicating it. Use a spreadsheet to answer questions. Produce a graph. Use a graph to show the answer to questions.
Programming A – Selection in Physical Computing	Programming A – Variables in Games
Build a simple circuit to connect a microcontroller to a computer. Program a microcontroller to light an led. Connect more than one output device to a microcontroller. Design sequences for given output devices. Program a microcontroller to respond to an input. Explain a condition being met can start an action. Use selection (an if... then... statement) to direct the flow of a program. Use selection to produce an intended outcome. Test and debug my project.	Explain that the way that a variable changes can be defined. Identify a program variable as a placeholder in memory for a single value. Recognise that the value of a variable can be changed. Decide where in a program to change a variable. Create algorithms for my project. Test the code that I have written. Extend my game further using more variables.
Programming B – Selection in Quizzes	Programming B – Sensing
Recall how conditions are used in selection. Identify conditions in a program. Use selection in an infinite loop to check a condition. Identify the condition and outcomes in an if...then... else statement. Explain that program flow can branch according to a condition. Design the flow of a program which contains if... then... else... Identify the outcome of user input in an algorithm. Identify what setup code my project needs.	Apply my knowledge of programming to a new environment. Test my program on an emulator. Transfer my program to a controllable device. Use a variable in an if... then... else... statement to select the flow of a program. Use a condition to change a variable. Experiment with different physical inputs. Explain the importance of the order of conditions in else if statements. Use an operand (e.g. <>=) in an if... then... statement. Modify a program to achieve a different outcome. Design the program flow for my project. Test my program against my design. Use a range of approaches to find and fix bugs.