Computing Knowledge and Skills Progression

National Curriculum Coverage of skills				
	Year 3	Year 4	Year 5	Year 6
Autumn 1	**Connecting Computers** Use sequence, selection, and repetition in programs; work with variables and various forms of input and output. 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. 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.	**The internet** 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. Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	**Sharing information** 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. 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. Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	**Internet communication** Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. 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. 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. Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.
Autumn 2	**Stop-frame animation** 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.	**Audio production** 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,	**Video production** 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,	**Webpage creation** 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,

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	Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	including collecting, analysing, evaluating and presenting data and information. Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	including collecting, analysing, evaluating and presenting data and information. Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	including collecting, analysing, evaluating and presenting data and information. Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.
Spring 1	**Sequencing sounds** 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. 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.	**Repetition in shapes** 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. 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.	**Selection in physical computing** 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. 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.	**Variables in games** 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. 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.
Spring 2	**Branching databases** 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.	**Data Logging** Use sequence, selection, and repetition in programs; work with variables and various forms of input and output. 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,	**Flat-file databases** 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,	**Introduction to spreadsheets** 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.

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	Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	evaluating and presenting data and information.	including collecting, analysing, evaluating and presenting data and information.	
Summer 1	**Desktop publishing** 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.	**Photo editing** 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. Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	**Vector drawing** 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.	**3D Modelling** 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. Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.
Summer 2	**Events and actions in programs** 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. 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	**Repetition in games** 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. 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	**Selection in quizzes** 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. 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.	**Sensing** 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. 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

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	content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information.	content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information.		content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information.

Knowledge and skills Progression				
	Year 3	Year 4	Year 5	Year 6
Autumn 1	To explain how digital devices function I can explain that digital devices accept inputs I can explain that digital devices produce outputs I can follow a process To identify input and output devices I can classify input and output devices I can describe a simple process I can design a digital device To recognise how digital devices can change the way that we work I can explain how I use digital devices for different activities I can recognise similarities between using digital devices and using non-digital tools I can suggest differences between using digital devices and using non-digital tools To explain how a computer network can be used to share information I can recognise different connections I can explain how messages are passed through multiple connections I can discuss why we need a network switch To explore how digital devices can be connected I can recognise that a computer network is made up of a number of devices I can demonstrate how information can be passed between devices I can explain the role of a switch, server, and wireless access point in a network	To describe how networks physically connect to other networks I can describe the internet as a network of networks I can demonstrate how information is shared across the internet I can discuss why a network needs protecting To recognise how networked devices make up the internet I can describe networked devices and how they connect I can explain that the internet is used to provide many services I can recognise that the World Wide Web contains websites and web pages To outline how websites can be shared via the World Wide Web (WWW) I can explain the types of media that can be shared on the WWW I can describe where websites are stored when uploaded to the WWW I can describe how to access websites on the WWW To describe how content can be added and accessed on the World Wide Web (WWW) I can explain what media can be found on websites I can recognise that I can add content to the WWW	To explain that computers can be connected together to form systems I can explain that systems are built using a number of parts I can describe the input, process, and output of a digital system I can explain that computer systems communicate with other devices To recognise the role of computer systems in our lives I can identify tasks that are managed by computer systems I can identify the human elements of a computer system I can explain the benefits of a given computer system To identify how to use a search engine I can make use of a web search to find specific information I can refine my web search I can compare results from different search engines To describe how search engines select results I can explain why we need tools to find things online I can recognise the role of web crawlers in creating an index I can relate a search term to the search engine's index To explain how search results are ranked I can order a list by rank I can explain that a search engine follows rules to rank results	To identify how to use a search engine I can complete a web search to find specific information I can refine my search I can compare results from different search engines To describe how search engines select results I can explain why we need tools to find things online I can recognise the role of web crawlers in creating an index I can relate a search term to the search engine's index To explain how search results are ranked I can explain that search results are ordered I can explain that a search engine follows rules to rank relevant pages I can suggest some of the criteria that a search engine checks to decide on the order of results To recognise why the order of results is important, and to whom I can describe some of the ways that search results can be influenced I can recognise some of the limitations of search engines I can explain how search engines make money To recognise how we communicate using technology

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	To recognise the physical components of a network I can identify how devices in a network are connected together I can identify networked devices around me I can identify the benefits of computer networks	I can explain that internet services can be used to create content online To recognise how the content of the WWW is created by people I can explain that websites and their content are created by people I can suggest who owns the content on websites I can explain that there are rules to protect content To evaluate the consequences of unreliable content I can explain that not everything on the World Wide Web is true I can explain why some information I find online may not be honest, accurate, or legal I can explain why I need to think carefully before I share or reshare content	I can give examples of criteria used by search engines to rank results To recognise why the order of results is important, and to whom I can describe some of the ways that search results can be influenced I can recognise some of the limitations of search engines I can explain how search engines make money	I can explain the different ways in which people communicate I can identify that there are a variety of ways of communicating over the internet I can choose methods of communication to suit particular purposes To evaluate different methods of online communication I can compare different methods of communicating on the internet I can decide when I should and should not share I can explain that communication on the internet may not be private
Autumn 2	To explain that animation is a sequence of drawings or photographs I can draw a sequence of pictures I can create an effective flipbook—style animation I can explain how an animation/flip book works To relate animated movement with a sequence of images I can predict what an animation will look like I can explain why little changes are needed for each frame I can create an effective stop-frame animation To plan an animation I can break down a story into settings, characters and events I can describe an animation that is achievable on screen I can create a storyboard To identify the need to work consistently and carefully I can use onion skinning to help me make small changes between frames	To identify that sound can be recorded I can identify the input and output devices used to record and play sound I can use a computer to record audio I can explain that the person who records the sound can say who is allowed to use it To explain that audio recordings can be edited I can re-record my voice to improve my recording I can inspect the soundwave view to know where to trim my recording I can discuss what sounds can be added to a podcast To recognise the different parts of creating a podcast project I can explain how sounds can be combined to make a podcast more engaging I can save my project so the different parts remain editable I can plan appropriate content for a podcast	To identify that drawing tools can be used to produce different outcomes I can recognise that vector drawings are made using shapes I can experiment with the shape and line tools I can discuss how vector drawings are different from paper-based drawings To create a vector drawing by combining shapes I can identify the shapes used to make a vector drawing I can explain that each element added to a vector drawing is an object I can move, resize, and rotate objects I have duplicated To use tools to achieve a desired effect I can use the zoom tool to help me add detail to my drawings I can explain how alignment grids and resize handles can be used to improve consistency I can modify objects to create a new image	To recognise that you can work in three dimensions on a computer I can add 3D shapes to a project I can view 3D shapes from different perspectives I can move 3D shapes relative to one another To identify that digital 3D objects can be modified I can resize an object in three dimensions I can lift/lower 3D objects I can recolour a 3D object To recognise that objects can be combined in a 3D model I can rotate objects in three dimensions I can duplicate 3D objects I can group 3D objects To create a 3D model for a given purpose I can accurately size 3D objects I can show that placeholders can create holes in 3D objects I can combine a number of 3D objects To plan my own 3D model I can analyse a 3D model

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	I can review a sequence of frames to check my work I can evaluate the quality of my animation To review and improve an animation I can explain ways to make my animation better I can evaluate another learner's animation I can improve my animation based on feedback To evaluate the impact of adding other media to an animation I can add other media to my animation I can explain why I added other media to my animation I can evaluate my final film	To apply audio editing skills independently I can record content following my plan I can review the quality of my recordings I can improve my voice recordings To combine audio to enhance my podcast project I can open my project to continue working on it I can arrange multiple sounds to create the effect I want I can explain the difference between saving a project and exporting an audio file To evaluate the effective use of audio I can listen to an audio recording to identify its strengths I can suggest improvements to an audio recording I can choose appropriate edits to improve my podcast	To recognise that vector drawings consist of layers I can identify that each added object creates a new layer in the drawing I can change the order of layers in a vector drawing I can use layering to create an image To group objects to make them easier to work with I can copy part of a drawing by duplicating several objects I can recognise when I need to group and ungroup objects I can reuse a group of objects to further develop my vector drawing To apply what I have learned about vector drawings I can create a vector drawing for a specific purpose I can reflect on the skills I have used and why I have used them I can compare vector drawings to freehand paint drawings	I can choose objects to use in a 3D model I can combine objects in a design To create my own digital 3D model I can construct a 3D model based on a design I can explain how my 3D model could be improved I can modify my 3D model to improve it
Spring 1	To recognise how text and images convey information I can explain the difference between text and images I can recognise that text and images can communicate messages clearly I can identify the advantages and disadvantages of using text and images To recognise that text and layout can be edited I can change font style, size, and colours for a given purpose I can edit text I can explain that text can be changed to communicate more clearly To choose appropriate page settings I can explain what 'page orientation' means I can recognise placeholders and say why they are important	To explain that the composition of digital images can be changed I can improve an image by rotating it I can explain why I might crop an image I can use photo editing software to crop an image To explain that colours can be changed in digital images I can explain that different colour effects make you think and feel different things I can experiment with different colour effects I can explain why I chose certain colour effects	To explain what makes a video effective I can explain that video is a visual media format I can identify features of videos I can compare features in different videos To use a digital device to record video I can identify and find features on a digital video recording device I can experiment with different camera angles I can make use of a microphone To capture video using a range of techniques I can suggest filming techniques for a given purpose I can capture video using a range of filming techniques I can review how effective my video is To create a storyboard	To review an existing website and consider its structure I can explore a website I can discuss the different types of media used on websites I know that websites are written in HTML To plan the features of a web page I can recognise the common features of a web page I can suggest media to include on my page I can draw a web page layout that suits my purpose To consider the ownership and use of images (copyright) I can say why I should use copyright-free images I can find copyright-free images I can describe what is meant by the term 'fair use'

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	I can create a template for a particular purpose To add content to a desktop publishing publication I can choose the best locations for my content I can paste text and images to create a magazine cover I can make changes to content after I've added it To consider how different layouts can suit different purposes I can identify different layouts I can match a layout to a purpose I can choose a suitable layout for a given purpose To consider the benefits of desktop publishing I can identify the uses of desktop publishing in the real world I can say why desktop publishing might be helpful I can compare work made on desktop publishing to work created by hand	To explain how cloning can be used in photo editing I can add to the composition of an image by cloning I can identify how a photo edit can be improved I can remove parts of an image using cloning To explain that images can be combined I can experiment with tools to select and copy part of an image I can use a range of tools to copy between images I can explain why photos might be edited To combine images for a purpose I can describe the image I want to create I can choose suitable images for my project I can create a project that is a combination of other images To evaluate how changes can improve an image I can review images against a given criteria I can use feedback to guide making changes I can combine text and my image to complete the project	I can outline the scenes of my video I can decide which filming techniques I will use I can create and save video content To identify that video can be improved through reshooting and editing I can store, retrieve, and export my recording to a computer I can explain how to improve a video by reshooting and editing I can select the correct tools to make edits to my video To consider the impact of the choices made when making and sharing a video I can make edits to my video and improve the final outcome I can recognise that my choices when making a video will impact the quality of the final outcome I can evaluate my video and share my opinions	To recognise the need to preview pages I can add content to my own web page I can preview what my web page looks like I can evaluate what my web page looks like on different devices and suggest/make edits. To outline the need for a navigation path I can explain what a navigation path is I can describe why navigation paths are useful I can make multiple web pages and link them using hyperlinks To recognise the implications of linking to content owned by other people I can explain the implication of linking to content owned by others I can create hyperlinks to link to other people's work I can evaluate the user experience of a website
Spring 2	To create questions with yes/no answers I can investigate questions with yes/no answers I can make up a yes/no question about a collection of objects I can create two groups of objects separated by one attribute	To explain that data gathered over time can be used to answer questions I can choose a data set to answer a given question I can suggest questions that can be answered using a given data set I can identify data that can be gathered over time	To use a form to record information I can create a database using cards I can explain how information can be recorded I can order, sort, and group my data cards To compare paper and computer-based databases	To create a data set in a spreadsheet I can collect data I can suggest how to structure my data I can enter data into a spreadsheet To build a data set in a spreadsheet I can explain what an item of data is

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	To identify the attributes needed to collect data about an object I can select an attribute to separate objects into groups I can create a group of objects within an existing group I can arrange objects into a tree structure To create a branching database I can select objects to arrange in a branching database I can group objects using my own yes/no questions I can test my branching database to see if it works To explain why it is helpful for a database to be well structured I can create yes/no questions using given attributes I can compare two branching database structures I can explain that questions need to be ordered carefully to split objects into similarly sized groups To plan the structure of a branching database I can independently create questions to use in a branching database I can create questions that will enable objects to be uniquely identified I can create a physical version of a branching database To independently create an identification tool I can create a branching database that reflects my plan I can work with a partner to test my identification tool I can suggest real-world uses for branching databases	To use a digital device to collect data automatically I can explain what data can be collected using sensors I can use data from a sensor to answer a given question I can identify that data from sensors can be recorded To explain that a data logger collects 'data points' from sensors over time I can recognise that a data logger collects data at given points I can identify the intervals used to collect data I can talk about the data that I have captured To recognise how a computer can help us analyse data I can view data at different levels of detail I can sort data to find information I can explain that there are different ways to view data To identify the data needed to answer questions I can propose a question that can be answered using logged data I can plan how to collect data using a data logger I can use a data logger to collect data To use data from sensors to answer questions I can interpret data that has been collected using a data logger I can draw conclusions from the data that I have collected I can explain the benefits of using a data logger	I can explain what a field and a record is in a database I can navigate a flat-file database to compare different views of information I can choose which field to sort data by to answer a given question To outline how you can answer questions by grouping and then sorting data I can explain that data can be grouped using chosen values I can group information using a database I can combine grouping and sorting to answer specific questions To explain that tools can be used to select specific data I can choose which field and value are required to answer a given question I can outline how 'AND' and 'OR' can be used to refine data selection I can choose multiple criteria to answer a given question To explain that computer programs can be used to compare data visually I can select an appropriate chart to visually compare data I can refine a chart by selecting a particular filter I can explain the benefits of using a computer to create charts To use a real-world database to answer questions I can ask questions that will need more than one field to answer I can refine a search in a real-world context I can present my findings to a group	I can choose an appropriate format for a cell I can apply an appropriate format to a cell To explain that formulas can be used to produce calculated data I can explain which data types can be used in calculations I can construct a formula in a spreadsheet I can identify that changing inputs changes outputs To apply formulas to data I can calculate data using different operations I can create a formula which includes a range of cells I can apply a formula to multiple cells by duplicating it To create a spreadsheet to plan an event I can use a spreadsheet to answer questions I can explain why data should be organised I can apply a formula to calculate the data I need to answer questions To choose suitable ways to present data I can produce a chart I can use a chart to show the answer to a question I can suggest when to use a table or chart
Summer 1	To explore a new programming environment I can identify the objects in a Scratch project (sprites, backdrops)	To identify that accuracy in programming is important I can program a computer by typing commands	To control a simple circuit connected to a computer I can create a simple circuit and connect it to a microcontroller	To define a 'variable' as something that is changeable I can identify examples of information that is variable

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	I can explain that objects in Scratch have attributes (linked to) I can recognise that commands in Scratch are represented as blocks To identify that commands have an outcome I can identify that each sprite is controlled by the commands I choose I can choose a word which describes an on-screen action for my plan I can create a program following a design To explain that a program has a start I can start a program in different ways I can create a sequence of connected commands I can explain that the objects in my project will respond exactly to the code To recognise that a sequence of commands can have an order I can explain what a sequence is I can combine sound commands I can order notes into a sequence To change the appearance of my project I can build a sequence of commands I can decide the actions for each sprite in a program I can make design choices for my artwork To create a project from a task description I can identify and name the objects I will need for a project I can relate a task description to a design I can implement my algorithm as code	I can explain the effect of changing a value of a command I can create a code snippet for a given purpose To create a program in a text-based language I can use a template to draw what I want my program to do I can write an algorithm to produce a given outcome I can test my algorithm in a text-based language To explain what 'repeat' means I can identify repetition in everyday tasks I can identify patterns in a sequence I can use a count-controlled loop to produce a given outcome To modify a count-controlled loop to produce a given outcome I can identify the effect of changing the number of times a task is repeated I can predict the outcome of a program containing a count-controlled loop I can choose which values to change in a loop To decompose a task into small steps I can identify 'chunks' of actions in the real world I can use a procedure in a program I can explain that a computer can repeatedly call a procedure To create a program that uses count-controlled loops to produce a given outcome I can design a program that includes count-controlled loops I can make use of my design to write a program I can develop my program by debugging it	I can program a microcontroller to make an LED switch on I can explain what an infinite loop does To write a program that includes count-controlled loops I can connect more than one output component to a microcontroller I can use a count-controlled loop to control outputs I can design sequences that use count-controlled loops To explain that a loop can stop when a condition is met I can explain that a condition is either true or false I can design a conditional loop I can program a microcontroller to respond to an input To explain that a loop can be used to repeatedly check whether a condition has been met I can explain that a condition being met can start an action I can identify a condition and an action in my project I can use selection (an 'if…then…' statement) to direct the flow of a program To design a physical project that includes selection I can identify a real-world example of a condition starting an action I can describe what my project will do I can create a detailed drawing of my project To create a program that controls a physical computing project I can write an algorithm that describes what my model will do I can use selection to produce an intended outcome I can test and debug my project	I can explain that the way a variable changes can be defined I can identify that variables can hold numbers or letters To explain why a variable is used in a program I can identify a program variable as a placeholder in memory for a single value I can explain that a variable has a name and a value I can recognise that the value of a variable can be changed To choose how to improve a game by using variables I can decide where in a program to change a variable I can make use of an event in a program to set a variable I can recognise that the value of a variable can be used by a program To design a project that builds on a given example I can choose the artwork for my project I can create algorithms for my project I can explain my design choices To use my design to create a project I can create the artwork for my project I can choose a name that identifies the role of a variable I can test the code that I have written To evaluate my project I can identify ways that my game could be improved I can use variables to extend my game I can share my game with others
Summer 2	To explain how a sprite moves in an existing project	To develop the use of count-controlled loops in a different programming environment	To explain how selection is used in computer programs	To create a program to run on a controllable device

Computing Knowledge and Skills Progression

	I can explain the relationship between an event and an action I can choose which keys to use for actions and explain my choices I can identify a way to improve a program To create a program to move a sprite in four directions I can choose a character for my project I can choose a suitable size for a character in a maze I can program movement To adapt a program to a new context I can use a programming extension I can consider the real world when making design choices I can choose blocks to set up my program To develop my program by adding features I can identify additional features (from a given set of blocks) I can choose suitable keys to turn on additional features I can build more sequences of commands to make my design work To identify and fix bugs in a program I can test a program against a given design I can match a piece of code to an outcome I can modify a program using a design To design and create a maze-based challenge I can make design choices and justify them I can implement my design I can evaluate my project	I can list an everyday task as a set of instructions including repetition I can predict the outcome of a snippet of code I can modify a snippet of code to create a given outcome To explain that in programming there are infinite loops and count-controlled loops I can modify loops to produce a given outcome I can choose when to use a count-controlled and an infinite loop I can recognise that some programming languages enable more than one process to be run at once To develop a design that includes two or more loops which run at the same time I can choose which action will be repeated for each object I can explain what the outcome of the repeated action should be I can evaluate the effectiveness of the repeated sequences used in my program To modify an infinite loop in a given program I can identify which parts of a loop can be changed I can explain the effect of my changes I can re-use existing code snippets on new sprites To design a project that includes repetition I can evaluate the use of repetition in a project I can select key parts of a given project to use in my own design I can develop my own design explaining what my project will do To create a project that includes repetition I can refine the algorithm in my design I can build a program that follows my design	I can recall how conditions are used in selection I can identify conditions in a program I can modify a condition in a program To relate that a conditional statement connects a condition to an outcome I can use selection in an infinite loop to check a condition I can identify the condition and outcomes in an 'if… then… else…' statement I can create a program that uses selection to produce different outcomes To explain how selection directs the flow of a program I can explain that program flow can branch according to a condition I can design the flow of a program that contains 'if… then… else…' I can show that a condition can direct program flow in one of two ways To design a program that uses selection I can outline a given task I can use a design format to outline my project I can identify the outcome of user input in an algorithm To create a program that uses selection I can implement my algorithm to create the first section of my program I can test my program I can share my program with others To evaluate my program I can identify ways the program could be improved I can identify the setup code I need in my program I can extend my program further	I can apply my knowledge of programming to a new environment I can test my program on an emulator I can transfer my program to a controllable device To explain that selection can control the flow of a program I can identify examples of conditions in the real world I can use a variable in an if, then, else statement to select the flow of a program I can determine the flow of a program using selection To update a variable with a user input I can use a condition to change a variable I can experiment with different physical inputs I can explain that checking a variable doesn't change its value To use an conditional statement to compare a variable to a value I can use an operand (e.g. <>=) in an if, then statement I can explain the importance of the order of conditions in else, if statements I can modify a program to achieve a different outcome To design a project that uses inputs and outputs on a controllable device I can decide what variables to include in a project I can design the algorithm for my project I can design the program flow for my project To develop a program to use inputs and outputs on a controllable device I can create a program based on my design I can test my program against my design I can use a range of approaches to find and fix bugs

		I can evaluate the steps I followed when building my project		