Heamoor School Computing Long Term Plan

This document shares Heamoor School's Computing curriculum narrative from EYFS to Year 6. It also shares in more detail knowledge, skills and vocabulary expected to be taught. National Centre for Computing Education (NCCE) materials, which have been funded by the DFE, are used to support the teaching of Computing. Whilst the EYFS Framework is structured differently to the national curriculum, we aim to show how Communication and Language, Literacy and Knowledge and Understanding of the world, feeds into the Computing national curriculum programmes of study.

Computing Long Term Planning (Using the NCCE teaching resources)

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
EYFS	As the EYFS frame work is structured differently to the national curriculum, the children are exposed to Computing across the year to help them in readiness for KS1 and the start of the Year 1 curriculum. Throughout the year, children are able to access Chrome Books, the Interactive Smart Board, Micro-bits and i-Pads . Children are able to see other technology outside of the classroom, including using the photocopier, taking photographs and interactive digital hosted learning experiences during whole school opportunities.					
Year 1	**Networks – Technology Around Us** Children will recognise technology in school and they will learn about using it responsibly.	**Creating Media – Digital Painting** The children will look at a program where they will be able to choose appropriate tools to create art and make comparisons with working non-digitally.	**Programming A - Moving a Robot** The children will write a short algorithm and programs for floor robots, and predict the program outcomes.	**Data and information – Grouping information** The children will explore object labels, then using them to sort and group objects by properties.	**Creating Media – Digital Writing** The children will use a computer to create and format text. Once children have created a short piece of text, they will compare to writing non-digitally.	**Programming B Animation** The children will design and program the movement of a character on screen to tell stories.

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Year 2	**Computing Systems and Networks – Information Technology Around Us** The children will identify IT recalling their knowledge from Year 1. They will also identify how its responsible use	**Creating Media- Digital Photography** The children will capture and change digital photographs for different purposes.	**Programming A – Robot Algorithms** The children will create and debug programs. They will also use logical reasoning to make	**Data and Information – Pictograms** The children will collect data in tally charts and use attributes to organise and present data on a computer.	**Creating Media – Making Music** The children will use a computer as a tool to explore rhythms and melodies, before creating a musical	**Introduction to Quizzes** The children will design algorithms and programs that use events to trigger sequence of code to make an interactive quiz.
Year 3	**Computing Systems and Networks – Connecting Computers** The children identify that digital devices have inputs, process and outputs. They will also learn how devices can be connected to make assessments.	**Creating Media- Desktop Publishing** The children create documents by modifying text, images and page layouts for	**Programming A – Sequence in Music** Creating sequences in a block-based programming language to make music	**Data and Information – Branching Databases** Building and using branching databases to group objects using yes/no questions.	**Creating Media – Stop Frame Animation** Capturing and editing digital still images to produce a stop-frame animation that tells a story.	**Programming B Events and Actions** Writing algorithms and programs that use a range of events to trigger sequences of actions.

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Year 4	**Computing Systems and Networks – The Internet** Recognising the internet as a network of networks including the WWW, and why we should evaluate online content	**Creating Media- Photo Editing** Manipulating digital images, and reflecting on the impact of changes and whether the required purpose is fulfilled.	**Programming A – Repetition in shapes** Using a text-based programming language to explore count-controlled loops when drawing shapes.	**Data and Information – Data Logging** Recognising how and why data is collected over time, before using data loggers to carry out an investigation	**Creating Media – Audio Editing** Capturing and editing audio to produce a podcast, ensuring that copyright is considered.	**Programming B Repetition in Games** Using a block-based programming language to explore countcontrolled and infinite loops when creating a game.
Year 5	**Computing Systems and Networks – Sharing Information** Identifying and exploring how information is shared between digital systems.	**Creating Media- Video Editing** Planning, capturing, and editing video to produce a short film.	**Programming A – Selection in Physical Computing** Exploring conditions and selection using a programmable microcontroller.	**Data and Information – Flat File Database** Using a database to order data and create charts to answer questions	**Creating Media – Vector Drawing** Creating images in a drawing program by using layers and groups of objects.	**Programming B Selection in Quizzes** Exploring selection in programming to design and code an interactive quiz.
Year 6	**Computing Systems and Networks – Communication** Recognising how the WWW can be used to communicate and be searched to find information.	**Creating Media- Web Creator** Designing and creating webpages, giving consideration to copyright, aesthetics, and navigation.	**Programming A – Variables in Games** Exploring variables when designing and coding a game.	**Data and Information – Spreadsheets** Answering questions by using spreadsheets to organise and calculate data.	**Creating Media – 3D** Planning, developing, and evaluating 3D computer models of physical objects	**Creating Media – 3D** Designing and coding a project that captures inputs from a physical device.

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Early Years Framework
ELG: Communication and Language, Literacy and Knowledge and Understanding of the world
In EYFS, children are taught about the computers and their use inside and outside the classroom. Through continuous provision the children are able to access the Chrome Books, where they can access educational games, creative software and being able to listen to and watch stories. Children are able to use iPads, which supports their Understanding of the World. EYFS children will be introduced to Micro-bits in preparation for further learning in KS1 and KS2
National Curriculum Key Stage 1
Key Stage 1 - Pupils should be taught to: • understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions • create and debug simple programs • use logical reasoning to predict the behaviour of simple programs • use technology purposefully to create, organise, store, manipulate and retrieve digital content • recognise common uses of information technology beyond school • use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.
Key Stage 2
Key Stage - Pupils should be taught to: • 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 • 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.

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Year 1-6 Curriculum in Detail

Year 1	National Curriculum	Objectives (From NCCE)	Skills (Based on NCCE Learning Graphs)
Computing systems and networks – Technology around us	• use technology purposefully to create, organise, store, manipulate and retrieve digital content • recognise common uses of information technology beyond school • use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.	• To identify technology • To identify a computer and its main parts • To use a mouse in different ways • To use a keyboard to type on a • computer • To use the keyboard to edit • text • To create rules for using	• To choose a piece of technology to do a job • To recognise that some technology can be used in different ways • To identify the main parts of a computer • To use a mouse in different ways • To use a keyboard to type • To use the keyboard to edit text. • To show how to use technology safely
Creating media – Digital painting	• Use technology purposefully to create, organise, store, manipulate and retrieve digital content	• To describe what different freehand tools do • To use the shape tool and the line tools • To make careful choices when painting a digital picture • To explain why I chose the tools I used • To use a computer on my own to paint a picture • To compare painting a picture on a computer and on paper	• To create a picture using freehand tools • To use shape and line tools when precision is needed • To use a range of paint colours • To use the fill tool to colour an enclosed area • To use the undo button to correct a mistake • To combine a range of tools to create a piece of artwork.
Programming A – Moving a robot	• Understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by	• To explain what a given command will do • To act out a given word	• To choose a series of words that can be enacted as a program • To choose a series of words that can be run as a program

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	following precise and unambiguous instructions • Create and debug simple programs • Use logical reasoning to predict the behaviour of simple programs • Recognise common uses of information technology beyond school	• To combine forwards and backwards commands to make a sequence • To combine four direction commands to make sequences • To plan a simple program • To find more than one solution to a problem	• To run a program on a device.
Creating media – Digital writing	• Use technology purposefully to create, organise, store, manipulate and retrieve digital content • Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies	• To use a computer to write • To add and remove text on a computer • To identify that the look of text can be changed on a computer • To make careful choices when changing text • To explain why I used the tools that I chose • To compare typing on a computer to writing on paper	• To use letter, number and Space keys to enter text into a computer • To use punctuation and special characters • To use the Backspace key to remove text • To position the text cursor in a chosen location • To use undo • To choose options to achieve a desired effect • To select text • To change the appearance of text on a computer.
Programming B – Introduction to animation	• Understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions • Create and debug simple programs	• To find more than one solution to a problem • To show that a series of commands can be joined together • To identify the effect of changing a value • To explain that each sprite has its own instructions	• To explain what a command given can do • To match a command to an outcome • To choose a command for a given purpose

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	• Use logical reasoning to predict the behaviour of simple programs • Use technology purposefully to create, organise, store, manipulate and retrieve digital content • Recognise common uses of information technology beyond school • Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies	• To design the parts of a project • To use my algorithm to create a program	• To understand that a program is a set of commands a computer can run • To build a sequence of commands in steps. • To choose a series of words that can be enacted as a program • To choose a series of words that can be run as a program • To run a program on a device.

Year 2	National Curriculum	Objectives (From NCCE)	Skills (Based on NCCE Learning Graphs)
Computing systems and networks – Information technology around us	• use technology purposefully to create, organise, store, manipulate and retrieve digital content recognise common uses of information technology beyond school • use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.	• To recognise the uses and features of information technology • To identify the uses of information technology in the school • To identify information technology beyond school • To explain how information technology helps us • To explain how to use information technology safely	• To describe some uses of computers • To show how to use information technology safely • To identify information technology in school • To identify information technology beyond school.

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		• To recognise that choices are made when using information technology	
Creating media – Digital photography	• Use technology purposefully to create, organise, store, manipulate and retrieve digital content • Recognise common uses of information technology beyond school	• To use a digital device to take a photograph • To make choices when taking a photograph • To describe what makes a • good photograph • To decide how photographs can be improved • To use tools to change an image • To recognise that photos can be changed	• To capture a digital image • To take photographs in both landscape and portrait frame • To view photographs on a digital device • Todecide which photographs to keep • To use filters to edit the appearance of a photograph • To hold the camera still to take a clear photograph • To use zoom to change the composition of a photograph • To consider lighting before taking a photograph
Programming A – Robot Algorithms	• Understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions • Create and debug simple programs • Use logical reasoning to predict the behaviour of simple programs	• To describe a series of instructions as a sequence • To explain what happens when we change the order of instructions • To use logical reasoning to predict the outcome of a program (series of commands) To explain that programming projects can have code and artwork • To design an algorithm • To create and debug a program that I have written	• To choose a series of words that can be enacted as a sequence • To choose a series of instructions that can be run as a program • To create a program • To trace a sequence to make a prediction • To run a program on a device • To debug a program that I have written
Data and information – Pictograms	• Use technology purposefully to create, organise, store,	• To recognise that we can count and compare objects using tally charts	• To show I can enter data onto a computer

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	manipulate and retrieve digital content • Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies	• To recognise that objects can be represented as pictures • To create a pictogram • To select objects by attribute and make comparisons • To recognise that people can be described by attributes • To explain that we can present information using a computer	• To recognise that people, animals and objects can be described by attributes. • To show I can enter data onto a computer • To use a computer to view data in different formats • To use pictograms to answer single-attribute questions • To use a computer to answer comparison questions (graphs, tables)
Creating media – Making Music	• Use technology purposefully to create, organise, store, manipulate and retrieve digital content	• To say how music can make us feel • To identify that there are patterns in music • To show how music is made from a series of notes • To create music for a purpose • To review and refine our computer work	• To recognise that information on a computer can be stored • To explain that information on a computer can be saved • To explain that stored information can be retrieved, edited and resaved/ • To recognise that people around me can view my screen to see my work • To recognise that my word can be printed or shared. • To recognise that my work can be shared between devices.
Programming B – Programming Quizzes	• Understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions • Create and debug simple programs	• To explain that a sequence of commands has a start • To explain that a sequence of commands has an outcome To create a program using a given design • To change a given design	• To choose a series of words that can be enacted as a sequence • To explain what happens when we change the order of instructions To choose a series of commands that can be run as a program

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	• Use logical reasoning to predict the behaviour of simple programs • Use technology purposefully to create, organise, store, manipulate and retrieve digital content	• To create a program using my own design • To decide how my project can be improved	• To trace a sequence to make a prediction • To test a prediction by running the sequence • To create and debug a program that I have written • To run a program on a device

Year 3	National Curriculum	Objectives (From NCCE)	Skills (Based on NCCE Learning Graphs)
Computing systems and networks – 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	• To explain how digital devices function • To identify input and output devices • To recognise how digital devices can change the way we work • To explain how a computer network can be used to share information • To explore how digital devices can be connected • To recognise the physical components of a network	• To identify input and output devices • To explain that a computer system can accept inputs and processes to produce an output. • To explain how a computer network can be used to share information • To explain the role of a switch, server and wireless access point in a network. • To identify network devices around me • To explain how networks can be connected to other networks

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Creating media – Stop Motion	• 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	• To explain that animation is a sequence of drawings or photographs • To relate animated movement with a sequence of images • To plan an animation • To identify the need to work consistently and carefully • To review and improve an animation • To evaluate the impact of adding other media to an animation	• To plan an animation using a storyboard • To set up the work area with an awareness of what will be captured • To capture an image • To use the onion skinning tool to review subject position • To move a subject between captures. • To review a captured sequence of frames as an animation • To remove frames to improve an animation • To add media to enhance an animation • To review a completed project
Programming A – 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 and ranked, and be discerning in evaluating digital content	• To explore a new programming environment • To identify that commands have an outcome • To explain that a program has a start • To recognise that a sequence of commands can have an order • To change the appearance of my project • To create a project from a task description	• To build a sequence of commands • To combine commands in a program order commands in a program • To create a sequence of commands to produce a given outcome

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	• 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 and information – 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	• To create questions with yes/no answers • To identify the object attributes needed to collect relevant data • To create a branching • database • To explain why it is helpful for a database to be well structured • To identify objects using a branching database • To compare the information shown in a pictogram	• To retrieve information from different levels of the branching database • To create questions with yes/no answers
Creating media – 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,	• To recognise how text and images convey information • To recognise that text and layout can be edited • To choose appropriate page settings • To add content to a desktop publishing publication • To consider how different layouts can suit different purposes • To consider the benefits of desktop publishing	• To show that page orientation can be changed • To add text to a placeholder • To organise text and image placeholders in a page layout • To add and remove images to and from placeholders • To edit text in a placeholder • To move resize and rotate images • To choose fonts and apply effects to text • To review a document

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	analysing, evaluating and presenting data and information		
Programming B – Events and Actions	• 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 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	• To explain how a sprite moves in an existing project • To create a program to move a sprite in four directions • To adapt a program to a new context • To develop my program by adding features • To identify and fix bugs in a program • To design and create a maze-based challenge	• To build a sequence of commands • To combine commands in a program • To order commands in a program • To create a sequence of commands to produce a given outcome

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Year 4	National Curriculum	Objectives (From NCCE)	Skills (Based on NCCE Learning Graphs)
Computing systems and networks – 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	• To describe how networks physically connect to other networks • To recognise how networked-devices make up the internet • To outline how websites can be shared via the World Wide Web (WWW) To describe how content can be added and accessed on the World Wide Web (WWW) • To recognise how the content of the WWW is created by people • To evaluate the consequences of unreliable content	
Creating media – Audio editing	• Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content	• To identify that sound can be digitally recorded • To use a digital device to record sound	• To record sound using a computer • To play recorded audio • To import audio into a project • To delete a section of audio

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	• 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	• To explain that a digital recording is stored as a file • To explain that audio can be changed through editing • To show that different types of audio can be combined and played together • To evaluate editing choices made	• To change the volume of tracks in a project
Programming A – 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 and ranked, and be discerning in evaluating digital content Select, use and combine a variety of software (including internet	• To identify that accuracy in programming is important • To create a program in a text-based language • To explain what 'repeat' means • To modify a count-controlled loop to produce a given outcome • To decompose a task into small steps • To create a program that uses count-controlled loops to produce a given outcome	• To list an everyday task as a set of instructions including repetition • To use an indefinite loop to produce a given outcome • To use a count-controlled loop to produce a given outcome • To plan a program that includes appropriate loops to produce a given outcome • To recognise tools that enable more than one process to be run at the same time (concurrency) To create two or more sequences that run at the same time

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	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 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, evaluating and presenting data and information	• To explain that data gathered over time can be used to answer questions • To use a digital device to collect data automatically • To explain that a data logger collects 'data points' from sensors over time • To use data collected over a long duration to find information • To identify the data needed to answer questions • To use collected data to answer questions	• To use a digital device to collect data automatically • To choose how often to automatically collectdata samples • To use a set of logged data to find information • To use a computer program to sort data by one attribute • To export information in different formats
Creating media – 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,	• To explain that digital images can be changed • To change the composition of an image • To describe how images can be changed for different uses • To make good choices when selecting different tools • To recognise that not all images are real • To evaluate how changes can improve an image	• To recognise that digital images can be manipulated • To recognise that images can be changed for different purposes • To use the most appropriate tool for a particular purpose • To recognise that not all images are real • To consider the impact of changes made on the quality of the image • To change the composition of an image • To apply a change globally

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	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		• To apply changes locally • To make additions
Programming B – 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 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	• To develop the use of count-controlled loops in a different programming environment • To explain that in programming there are infinite loops and count-controlled loops • To develop a design that includes two or more loops which run at the same time • To modify an infinite loop in a given program • To design a project that includes repetition • To create a project that includes repetition	• To list an everyday task as a set of instructions including repetition • To use an indefinite loop to produce a given outcome • To use a count-controlled loop to produce a given outcome • To plan a program that includes appropriate loops to produce a given outcome • To recognise tools that enable more than one process to be run at the same time (concurrency) • To create two or more sequences that run at the same time

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Year 5	National Curriculum	Objectives (From NCCE)	Skills (Based on NCCE Learning Graphs)
Computing systems and networks – Sharing Information	• 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 • 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	• To explain that computers can be connected together to form systems • To recognise the role of computer systems in our lives • To recognise how information is transferred over the internet • To explain how sharing information online lets people in different places work together • To contribute to a shared project online • To evaluate different ways of working together online	• To recognise that computers can be part of a system in an electronic device • To understand that computers can be connected together to form systems • To see that computers communicate with other devices (including other computers) • To recognise input, process, and output in larger computer systems • To recognise that connections between computers allow us to work together • To explain that the internet lets people in different places work together

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	content and contact		
Creating media – Video editing	• 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	• To explain what makes a video effective • To identify digital devices that can record video • To capture video using a range of techniques • To create a storyboard • To identify that video can be improved through reshooting and editing • To consider the impact of the choices made when making and sharing a video	• To use different camera angles • To use pan, tilt and zoom • To identify features of a video recording device or application • To combine filming techniques for a given purpose • To determine what scenes will convey your idea • To decide what changes I will make when editing • To choose to reshoot a scene or improve later through editing • To use split, trim and crop to edit a video
Programming A – 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	• To control a simple circuit connected to a computer • To write a program that includes count-controlled loops • To explain that a loop can stop when a condition is met • To explain that a loop can be used to repeatedly check whether a condition has been met	• To create a condition-controlled loop • To use a condition in an 'if...then…' statement to start an action • To use selection to switch the program flow in one of two ways • To use a condition in an 'if...then...else…' statement to produce given outcomes

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	• 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	• To design a physical project that includes selection • To create a program that controls a physical computing project	
Data and information –Flat-File Databases	• 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	• To use a form to record information • To compare paper and computer-based databases • To outline how grouping and then sorting data allows us to answer questions • To explain that tools can be used to select specific data • To explain that computer programs can be used to compare data visually • To apply my knowledge of a database to ask and answer real-world question	• To navigate a flat-file database • To design a structure for a flat-file database • To choose different ways to view data • To ask questions that need more than one attribute to answer • To choose which attribute to sort data by to answer a given question • To choose which attribute and value to search by to answer a given question (operands) • To choose multiple criteria to search data to answer a given question (AND and OR) • To select an appropriate graph to visually compare data • To choose suitable ways to present information to other people

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Creating media – 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	• To identify that drawing tools can be used to produce different outcomes • To create a vector drawing by combining shapes • To use tools to achieve a desired effect • To recognise that vector drawings consist of layers • To group objects to make them easier to work with • To evaluate my vector drawing	• To add an object to a vector drawing • To select one object or choices made multiple objects • To delete objects • To move objects between the layers of a drawing • To group and ungroup selected objects • To duplicate objects using copy and paste • To modify objects • To reposition objects • To combine options to achieve a desired effect • To create a vector drawing for a given purpose
Programming B – Selection	• 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	• To explain how selection is used in computer programs • To relate that a conditional statement connects a condition to an outcome • To explain how selection directs the flow of a program • To design a program which uses selection • To create a program which uses selection • To evaluate my program	• To experiment with a repeat-until loop • To use a condition in an 'if... then…' statement to produce a given outcome • To show that a condition can switch program flow in one of two ways • To use a condition in an 'if... then... else...' statement to produce given outcomes

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	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		

Year 6	National Curriculum	Objectives (From NCCE)	Skills (Based on NCCE Learning Graphs)
Computing systems and networks – 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 • 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,	• To identify how to use a search engine • To describe how search engines select results • To explain how search results are ranked • To recognise why the order of results is important, and to whom • To recognise how we communicate using technology • To evaluate different methods of online communication	• To recall how to use a search engine • To compare the results from different search engines • To demonstrate that different search terms produce different results • To explain that search terms need to be chosen carefully • To evaluate the results of search terms • To identify that results from search engines can include adverts, and that the adverts can be targeted • To identify different ways to communicate without technology • To list methods of communicating using the internet • To choose an appropriate method of internet communication for a given purpose • To evaluate different methods of online communication

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	analysing, evaluating and presenting data and information		• To explain which types of media can be shared through the internet • To explain that communicating through the internet can be public or private • To decide what I should/should not share • To classify internet communication by messenger and recipient or audience
Creating media – Webpage creation	• 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	• To review an existing website and consider its structure • To plan the features of a web page • To consider the ownership and use of images (copyright) • To recognise the need to preview pages • To outline the need for a navigation path • To recognise the implications of linking to content owned by other people	• To review an existing website (navigation bars, header) • To create a new blank web page • To add text to a web page • To set the style of text on a web page • To embed media in a web page • To change the appearance of text • To add web pages to a website • To insert hyperlinks to another site • To insert hyperlinks between pages • To preview a web page (different screen sizes)

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Programming A – 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 • Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable • behaviour; identify a range of ways to report concerns about content and contact	• To define a 'variable' as something that is changeable • To explain why a variable is used in a program • To choose how to improve a game by using variables • To design a project that builds on a given example • To use my design to create a project • To evaluate my project	• To identify a variable in an existing program • To experiment with the value of an existing variable • To choose a name that identifies the role of a variable to make it easier for humans to understand it • To decide where in a program to set a variable • To update a variable with a user input • To use an event in a program to update a variable • To use a variable in a conditional statement to control the flow of a program • To use the same variable in more than one location in a program
Data and information –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	• To identify questions which can be answered using data • To explain that objects can be described using data	• To calculate data using a formula for each operation • To use functions to create new data

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	range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information	• To explain that formulas can be used to produce calculated data • To apply formulas to data, including duplicating • To create a spreadsheet to plan an event • To choose suitable ways to present data	• To use existing cells within a formula • To choose suitable ways to present spreadsheet data
Creating media – 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	• To use a computer to create and manipulate three dimensional • (3D) digital objects • To compare working digitally with 2D and 3D graphics • To construct a digital 3D model of a physical object • To identify that physical objects can be broken down into a collection of 3D shapes • To design a digital model by combining 3D objects • To develop and improve a digital 3D model	• To create 3D graphical objects on a computer screen • To alter the view of the 3D space • To place a 3D object in a 3D space • To select an object • To delete an object • To duplicate an object • To reposition objects in three dimensions • To rotate objects in three dimensions • To resize an object in three dimensions • To recolour an object • To use an object as a placeholder • To select multiple objects • To group objects • To modify multiple objects • To recognise that blank objects must be used as placeholders to create holes • To recognise the role of scale in design
Programming B – Sensing	• Design, write and debug programs that accomplish specific goals, including controlling or simulating	• To create a program to run on a controllable device	• To identify a variable in an existing program

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	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	• To explain that selection can control the flow of a program • To update a variable with a user input • To use a conditional statement to compare a variable to a value • To design a project that uses inputs and outputs on a controllable device • To develop a program to use inputs and outputs on a controllable device	• To experiment with the value of an existing variable • To choose a name that identifies the role of a variable to make it more usable (to humans) • To decide where in a program to set a variable • To update a variable with a user input • To use an event in a program to update a variable • To use a variable in a conditional statement to control the flow of a program • To use the same variable in more than one location in a program