

Spetisbury C of E Primary School Computing Curriculum Overview

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1	Computing systems and networks – Technology around us	Creating media – Digital painting	Programming A – Moving a robot	Data and information – Grouping data	Creating media – Digital writing	Programming B - Programming animations
	<ul style="list-style-type: none"> • To identify technology • To identify a computer and its main parts • To use a mouse in different ways • To use a keyboard to type on a computer • To use the keyboard to edit text • To create rules for using technology responsibly 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • To explain what a given command will do • To act out a given command • 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 	<ul style="list-style-type: none"> • To label objects • To identify that objects can be counted • To describe objects in different ways • To count objects with the same properties • To compare groups of objects • To answer questions about groups of objects 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • To choose a command for a given purpose • To show that a series of commands can be joined together • To identify the effect of changing a value • To explain that each sprite has its own instructions • To design the parts of a project • To use my algorithm to create a program

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	Computing systems and networks – IT around us	Creating media – Digital photography	Programming A – Robot algorithms	Data and information – Pictograms	Creating media - Digital music	Programming B - Programming quizzes
Year 2	<ul style="list-style-type: none"> 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 recognise that choices are made when using information technology 	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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 To explain that programming projects can have code and artwork To design an algorithm To create and debug a program that I have written 	<ul style="list-style-type: none"> To recognise that we can count and compare objects using tally charts To recognise that objects can be represented as pictures To create a pictogram To select objects by attribute and make comparisons To recognise that people can be described by attributes To explain that we can present information using a computer 	<ul style="list-style-type: none"> To say how music can make us feel To identify that there are patterns in music To experiment with sound using a computer To use a computer to create a musical pattern To create music for a purpose To review and refine our computer work 	<ul style="list-style-type: none"> To explain that a sequence of commands has a start To explain that a sequence of commands has an outcome To create a program using a given design To change a given design To create a program using my own design To decide how my project can be improved

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	Computing systems and networks – Connecting computers	Creating media - Stopframe animation	Programming A - Sequencing sounds	Data and information – Branching databases	Creating media – Desktop publishing	Programming B - Events and actions in programs
Year 3	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • To create questions with yes/no answers • To identify the attributes needed to collect data about an object • To create a branching database • To explain why it is helpful for a database to be well structured • To plan the structure of a branching database • To independently create an identification tool 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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

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	Computing systems and networks – The Internet	Creating media - Audio production	Programming A – Repetition in shapes	Data and information – Data logging	Creating media – Photo editing	Programming B – Repetition in games
Year 4	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> To identify that sound can be recorded To explain that audio recordings can be edited To recognise the different parts of creating a podcast project To apply audio editing skills independently To combine audio to enhance my podcast project To evaluate the effective use of audio 	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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 recognise how a computer can help us analyse data To identify the data needed to answer questions To use data from sensors to answer questions 	<ul style="list-style-type: none"> To explain that the composition of digital images can be changed To explain that colours can be changed in digital images To explain how cloning can be used in photo editing To explain that images can be combined To combine images for a purpose To evaluate how changes can improve an image 	<ul style="list-style-type: none"> 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

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	Computing systems and networks - Systems and searching	Creating media - Video production	Programming A – Selection in physical computing	Data and information – Flat-file databases	Creating media – Introduction to vector graphics	Programming B – Selection in quizzes
Year 5	<ul style="list-style-type: none"> To explain that computers can be connected together to form systems To recognise the role of computer systems in our lives To experiment with search engines 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 	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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 design a physical project that includes selection To create a program that controls a physical computing project 	<ul style="list-style-type: none"> To use a form to record information To compare paper and computer-based databases To outline how you can answer questions by grouping and then sorting data To explain that tools can be used to select specific data To explain that computer programs can be used to compare data visually To use a real-world database to answer questions 	<ul style="list-style-type: none"> 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 apply what I have learned about vector drawings 	<ul style="list-style-type: none"> 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

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	Computing systems and networks - Communication and collaboration	Creating media – Web page creation	Programming A – Variables in games	Data and information – Spreadsheets	Creating media – 3D Modelling	Programming B - Sensing movement
Year 6	<ul style="list-style-type: none"> To explain the importance of internet addresses To recognise how data is transferred across the internet To explain how sharing information online can help people to work together To evaluate different ways of working together online To recognise how we communicate using technology To evaluate different methods of online communication 	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> To create a data set in a spreadsheet To build a data set in a spreadsheet To explain that formulas can be used to produce calculated data To apply formulas to data To create a spreadsheet to plan an event To choose suitable ways to present data 	<ul style="list-style-type: none"> To recognise that you can work in three dimensions on a computer To identify that digital 3D objects can be modified To recognise that objects can be combined in a 3D model To create a 3D model for a given purpose To plan my own 3D model To create my own digital 3D model 	<ul style="list-style-type: none"> To create a program to run on a controllable device 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

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Computing Curriculum – Subject Progression

Key Concepts

Through the computing curriculum, pupils will develop an understanding of the following key concepts. These concepts are revisited through different units as pupils move through the school. By the end of primary school, children will know and understand these key concepts.

- 1. Computing systems and networks:** (systems, networks and how they are used, the internet, hardware and software)
- 2. Programming:** (interpreting, creating and evaluating algorithms, programming to accomplish specific goals, detecting and correcting errors)
- 3. Data and information:** (collecting, analysing, evaluating, presenting data and information)
- 4. Creating media:** (design and development, communicating and collaborating online, evaluating online content, respectful and responsible communication, presenting, creating content)

As part of the work on each key concept, children also explore and learn about:

- **The effective use of tools**
- **The impact of technology**
- **Safety and security**

End points:

1. Understanding how to use algorithms to solve problems
2. Be able to use a computer programme to write code to perform a task
3. Be able to use mathematical and logical concepts to solve problems
4. Understand different networks and how they communicate
5. Understand how to work safely and responsibly online, how to recognise and report security issues and concerns
6. Be able to explain the different hardware in computers and how they work together
7. Be able to evaluate real world issues by using personal experiences and real life examples

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Domains of knowledge:

The computing curriculum provides pupils with an understanding of the following domains of knowledge.

NW	Networks: (How networks can be used to retrieve and share information)
CM	Creating Media: (Selecting and creating a range of media including text, images, sounds and video)
DI	Data and Information: (How data is stored, organised and used to represent real world artefacts and scenarios)
DD	Design and Development: (The activities involved in planning, creating and evaluating computing artefacts)
CS	Computing Systems: (What a computer is and how its constituent parts function as a whole)
IT	Impact of Technology: (How individuals, systems and society as a whole interact with computer systems)
AL	Algorithms: (Comprehending, designing, creating and evaluating algorithms)
PG	Programming: (Creating software to allow computers to solve problems)
ET	Effective Use of Tools: (Using software tools to support computing work)
SS	Safety and Security: (Understanding risks when using technology and how to protect individuals and systems)

Second order concepts:

Through each unit of computing, the following second order concepts are explored:

- **Responsibility:** (being safe online, using social media responsibly and respectfully, privacy, cyberbullying)
- **Similarity and difference:** (making comparisons, finding patterns, noting differences and drawing conclusions)
- **Cause and consequence:** (inputs and outputs, programming)
- **Significance:** (significant inventions, significant figures from the world of computing)
- **Chronology:** (changes in technology over time, inventions, future technology)
- **Written and oral expression:** (Using computing terminology, using technology to support and improve communication, using technology to presenting and interpreting data, digital media)

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Progressive objectives:

Our progressive objectives show what pupils should know and be able to do in each aspect of computing by the end of each year group. The key concepts of computing are developed through each unit of work. These are used to support planning and the ongoing assessments of pupils' work.

Key Concept: 1. Computing systems and networks: (systems, networks and how they are used, the internet, hardware and software)	
Y1	To identify technology
	To identify a computer and its main parts
	To use a mouse in different ways
	To use a keyboard to type
	To use the keyboard to edit text
	To create rules for using technology responsibly
Y2	To recognise the uses and features of information technology
	To identify information technology in the home
	To identify information technology beyond school
	To explain how information technology benefits us
	To show how to use information technology safely
	To recognise that choices are made when using information technology
Y3	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
Y4	To describe how networks physically connect to other networks
	To recognise how networked devices make up the internet
	To outline how websites can be shared via the World Wide Web
	To describe how content can be added and accessed on the World Wide Web
	To recognise how the content of the WWW is created by people
	To evaluate the consequences of unreliable content
Y5	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

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Y6	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

Key Concept: 2. Programming: (interpreting, creating and evaluating algorithms, programming to accomplish specific goals, detecting and correcting errors)

Y1	To explain what a given command will do
	To act out a given word
	To combine forwards and backwards commands to make a sequence
	To combine four direction commands to make sequences
	To plan a simple program
	To find more than one solution to a problem
	To choose a command for a given purpose
	To show that a series of commands can be joined together
	To identify the effect of changing a value
	To explain that each sprite has its own instructions
	To design the parts of a project
	To use my algorithm to create a program
Y2	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 explain that a sequence of commands has a start
	To explain that a sequence of commands has an outcome
	To create a program using a given design
	To change a given design
	To create a program using my own design
	To decide how my project can be improved
Y3	To explore a new programming environment
	I can identify that each sprite is controlled by the commands I choose
	To explain that a program has a start

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	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 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
Y4	To identify that accuracy in programming is important
	To create a program in a text-based language
	To explain what 'repeat' means
	To modify a count-controlled loop to produce a given outcome
	To decompose a program into parts
	To create a program that uses count-controlled loops to produce a given outcome
	To develop the use of count-controlled loops in a different programming environment
	To explain that in programming there are infinite loops and count controlled loops
	To develop a design which includes two or more loops which run at the same time
	To modify an infinite loop in a given program
	To design a project that includes repetition
	To create a project that includes repetition
Y5	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, eg number of times
	To conclude that a loop can be used to repeatedly check whether a condition has been met
	To design a physical project that includes selection
	To create a controllable system that includes selection
	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

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Y6	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 create a program to run on a controllable device
	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

Key Concept: 3. Data and information: (collecting, analysing, evaluating, presenting data and information)

Y1	To label objects
	To identify that objects can be counted
	To describe objects in different ways
	To count objects with the same properties
	To compare groups of objects
	To answer questions about groups of objects
Y2	To recognise that we can count and compare objects using tally charts
	To recognise that objects can be represented as pictures
	To create a pictogram
	To select objects by attribute and make comparisons
	To recognise that people can be described by attributes
	To explain that we can present information using a computer
Y3	To create questions with yes/no answers
	To identify the object attributes needed to collect relevant data
	To create a branching database
	To identify objects using a branching database
	To explain why it is helpful for a database to be well structured
	To compare the information shown in a pictogram with a branching database
Y4	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

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	To identify the data needed to answer questions
	To use collected data to answer questions
Y5	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 questions
Y6	To identify questions which can be answered using data
	To explain that objects can be described using data
	To explain that formula 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

Key Concept: 4. Creating media: (design and development, communicating and collaborating online, evaluating online content, respectful and responsible communication, presenting, creating content)

Y1	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 use a computer to write
	To add and remove text on a computer
	To identify that the look of text can be changed on a computer
	To make careful choices when changing text
	To explain why I used the tools that I chose
	To compare writing on a computer with writing on paper
Y2	To know what devices can be used to take photographs
	To use a digital device to take a photograph
	To describe what makes a good photograph
	To decide how photographs can be improved
	To use tools to change an image
	To recognise that images can be changed
	To say how music can make us feel

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	To identify that there are patterns in music
	To describe how music can be used in different ways
	To show how music is made from a series of notes
	To create music for a purpose
	To review and refine our computer work
Y3	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 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
Y4	To identify that sound can be digitally recorded
	To use a digital device to record sound
	To explain that a digital recording is stored as a file
	To explain that audio can be changed through editing
	To show that different types of audio can be combined and played together
	To evaluate editing choices made
	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
Y5	To recognise video as moving pictures, which can include audio
	To identify digital devices that can record video
	To capture video using a digital device
	To recognise the features of an effective video
	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 identify that drawing tools can be used to produce different outcomes
	To create a vector drawing by combining shapes

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	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
Y6	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 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