

## Our Computing Curriculum Overview

### National Curriculum Purpose and Aims of Study

- 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.

### Our Computing Curriculum

Through our computing curriculum at West Earlham Junior School we aim to equip our students with the skills that will enable them to embrace and utilise new technology in a socially responsible and safe way. We want our students to become independent users of technology, who are able to participate in a rapidly changing digital world. Our intention is to enable students to develop computational thinking to solve problems, exchange and present information and analyse and explore a variety of programs and networks.

#### By the end of Key Stage Two we want our students to;

- Be critical when using research online,
- Be able to navigate the internet safely,
- Create code effectively to suit different purposes,
- Be responsible, competent, confident and creative users of information and communication technology,
- To solve increasingly complex problems using computational thinking.

## Computing Curriculum Overview

Year group	Data and Information	Creating Media	Programming	Computing systems and networks
Year 3	Branching Databases	Stop Frame Animation	(Scratch) Sequencing Sounds	
Year 4		Audio Production	(Scratch) Repetition in Games	The Internet
Year 5	Flat File ~Databases	Introduction to Vector Graphics	(Scratch) Programming Selection in Quizzes.	
Year 6		3D Modelling	(Scratch) Variables in Games	Communication and Collaboration

## Curriculum Objectives

Year 3	<b>Term 1</b>	<b>Term 2</b>	<b>Term 3</b>
	<b>Data and information: Branching databases</b>	<b>Programming: Sequencing sounds</b>	<b>Creating media: Stop frame animation</b>
	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.	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.	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.

	<p>Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.</p>	<p>Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts</p> <p>Use sequence, selection and repetition in programs; work with variables and various forms of input and output.</p> <p>Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.</p>	<p>Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.</p>
Year 4	<b>Term 1</b>	<b>Term 2</b>	<b>Term 3</b>
	<b>Computing systems and networks: The internet</b>	<b>Programming: Repetition in games</b>	<b>Creating media: Audio production</b>
	<p>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.</p> <p>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.</p> <p>Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.</p> <p>Use technology safely, respectfully and responsibly; recognise</p>	<p>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.</p> <p>Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts</p> <p>Use sequence, selection and repetition in programs; work with variables and various forms of input and output.</p> <p>Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.</p>	<p>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.</p> <p>Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.</p> <p>Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.</p>

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Year 5	<b>Term 1</b>	<b>Term 2</b>	<b>Term 3</b>
	<b>Data and information: Flat file databases</b>	<b>Programming: Selection in quizzes</b>	<b>Creating media: Vector Graphics</b>
	<p>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.</p> <p>Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.</p>	<p>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.</p> <p>Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.</p> <p>Use sequence, selection and repetition in programs; work with variables and various forms of input and output.</p> <p>Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.</p>	<p>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.</p>
Year 6	<b>Term 1</b>	<b>Term 2</b>	<b>Term 3</b>
	<b>Computer systems and networks: Communication and collaboration</b>	<b>Programming: Variables in games</b>	<b>Creating media: 3D modelling</b>
	Select, use and combine a variety of software	Select, use and combine a variety of software	Select, use and combine a variety of software

	<p>(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.</p> <p>Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.</p> <p>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.</p>	<p>(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.</p> <p>Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.</p> <p>Use sequence, selection and repetition in programs; work with variables and various forms of input and output.</p> <p>Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.</p> <p>Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.</p>	<p>(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.</p> <p>Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.</p>
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	<b>What is being taught?</b>	
	<b>Area of Study</b>	<b>Context of Learning</b>

<b>Year Three</b>	<b>Data and Information</b>	<p><b>Branching Databases</b> Learners will develop their understanding of what a branching database is and how to create one. They will use yes/no questions to gain an understanding of what attributes are and how to use them to sort groups of objects. Learners will create physical and on-screen branching databases. To conclude, they will create an identification tool using a branching database, which they will test by using it. They will also consider real-world applications for branching databases.</p>
	<b>Creating media</b>	<p><b>Stop Frame Animation</b> Learners will use a range of techniques to create a stop-frame animation using tablets. Next, they will apply those skills to create a story-based animation. This will conclude with learners adding other types of media to their animation, such as music and text.</p>
	<b>Programming</b>	<p><b>Sequencing Sounds</b> Learners will explore the concept of sequencing in programming through Scratch beginning with an introduction to the programming environment. Learners will be introduced to a selection of motion, sound, and event blocks which they will use to create their own programs, featuring sequences..</p>
<b>Year Four</b>	<b>Computing systems and networks</b>	<p><b>The internet</b> Learners will apply their knowledge and understanding of networks, to appreciate the internet as a network which needs to be kept secure. They will learn that the World Wide Web is part of the internet, and will be given opportunities to explore the World Wide Web for themselves in order to learn about who owns content and what they can access, add, and create. Finally, they will evaluate online content to decide how honest, accurate, or reliable it is, and understand the consequences of false information.</p>
	<b>Creating media</b>	<p><b>Audio Production</b> Learners will identify the input device (microphone) and output devices (speaker or headphones) required to work with sound digitally. Learners will discuss the ownership of digital audio and the copyright implications of duplicating the work of others. In order to record audio themselves, learners will use Audacity to produce a podcast, which will include editing their work, adding multiple tracks, and opening and saving the audio files. Finally, learners will evaluate their work and give feedback to their peers.</p>

	<b>Programming</b>	<p><b>Repetition in Games</b></p> <p>Learners will explore the concept of repetition in programming using the Scratch environment. Learners look at the difference between count-controlled and infinite loops, and use their knowledge to modify existing animations and games using repetition. Their final project is to design and create a game which uses repetition, applying stages of programming design throughout.</p>
<b>Year Five</b>	<b>Data and Information</b>	<p><b>Flat File Databases</b></p> <p>Learners look at how a flat-file database can be used to organise data in records. They will use tools within a database to order and answer questions about data. They will create graphs and charts from their data to help solve problems. They will also use a real-life database to answer a question, and present their work to others.</p>
	<b>Creating media</b>	<p><b>Vector Graphics</b></p> <p>Learners start to create vector drawings. They learn how to use different drawing tools to help them create images. Learners recognise that images in vector drawings are created using shapes and lines, and each individual element in the drawing is called an object. Learners layer their objects and begin grouping and duplicating them to support the creation of more complex pieces of work.</p>
	<b>Programming</b>	<p><b>Selection in Quizzes</b></p> <p>Learners will develop their knowledge of 'selection' by revisiting how 'conditions' can be used in programming, and then learning how the 'if... then... else...' structure can be used to select different outcomes depending on whether a condition is 'true' or 'false'. They represent this understanding in algorithms, and then by constructing programs in the Scratch programming environment. They learn how to write programs that ask questions and use selection to control the outcomes based on the answers given. They use this knowledge to design a quiz in response to a given task and implement it as a program.</p>
<b>Year Six</b>	<b>Computing systems and networks</b>	<p><b>Communication and Collaboration</b></p> <p>Learners explore how data is transferred over the internet. Learners initially focus on addressing, before they move on to the makeup and structure of data packets. Learners then look at how the internet facilitates online communication and collaboration; they complete shared projects online and evaluate different methods of communication. Finally, they learn how to communicate responsibly by considering what should and should not be shared on the internet.</p>

	<b>Creating media</b>	<b>3D Modelling</b> Learners will develop their knowledge and understanding of using a computer to produce 3D models. Learners will initially familiarise themselves with working in a 3D space, moving, resizing, and duplicating objects. They will then create hollow objects using placeholders and combine multiple objects to create a model of a desk tidy. Finally, learners will examine the benefits of grouping and ungrouping 3D objects, then go on to plan, develop, and evaluate their own 3D model of a building.
	<b>Programming</b>	<b>Variables in Games</b> Learners explore the concept of variables in programming through games in Scratch. First, learners find out what variables are and relate them to real-world examples of values that can be set and changed. Then they use variables to create a simulation of a scoreboard. Learners experiment with variables in an existing project, then modify them, before they create their own project. Learners focus on design and apply their knowledge of variables to improve their games in Scratch.