



# Uplands Manor Primary School – Computing long term overview

A high-quality computing education equips pupils to use computational thinking and creativity to understand and change the world. Computing has deep links with mathematics, science, and design and technology, and provides insights into both natural and artificial systems. The core of computing is computer science, in which pupils are taught the principles of information and computation, how digital systems work, and how to put this knowledge to use through programming. Building on this knowledge and understanding, pupils are equipped to use information technology to create programs, systems and a range of content. Computing also ensures that pupils become digitally literate – able to use, and express themselves and develop their ideas through, information and communication technology – at a level suitable for the future workplace and as active participants in a digital world.

## **Aims**

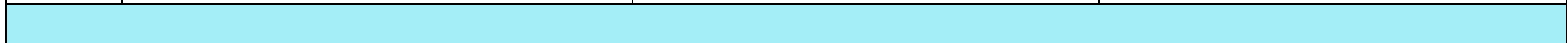
The national curriculum for computing aims to ensure that all pupils:

- can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation
- can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems
- can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems
- are responsible, competent, confident and creative users of information and communication technology.



<p>Recognise technology in school and how they should use it responsibly and safely.</p> <p><b>Moving a Robot</b></p> <p>Program a short set of instructions. Identify and verbalise problems in a simple program</p> <p>Predicting the outcome of their instructions</p>	<p>Learn that programs execute by following clear instructions</p> <p>Understand that programs respond to inputs to do different things. Learn to combine start and input events to create programs using precise instructions.</p> <p><b>Digital Literacy</b></p> <p><b>Digital Painting</b></p> <p>Follow instructions to create content on simple editing programs</p>	<p>Learn that programs execute by following clear instructions</p> <p>Understand that programs respond to inputs to do different things. Learn to combine start and input events to create programs using precise instructions.</p> <p><b>Digital Literacy</b></p> <p><b>Digital Writing</b></p> <p>Using a computer to create and format text</p>
<p><b><u>Internet Safety</u></b></p> <p><b><u>Privacy and Security</u></b></p> <p>Demonstrate the types of data that may be personal to you.</p> <p>Able to articulate under what conditions I would ask an adult for help.</p> <p><b><u>Online Bullying</u></b></p> <p>Recognise that certain behaviours online can upset others.</p> <p>Give examples of behaviours that are unlikely to upset others.</p> <p>Give examples of behaviours that can make others feel more pleasant</p>	<p><b><u>Internet Safety</u></b></p> <p><b><u>Health, Well-being and lifestyle</u></b></p> <p>Explain the rules around their own use of technology in and beyond the home.</p> <p>Explain why these rules help keep them safe.</p> <p>Identify rules that apply to safety and rules that apply to health/well-being</p> <p>Emerging awareness of how rules may change with simple changes in context (where they are, what they are doing and who they might be with)</p>	<p><b><u>Internet Safety</u></b></p> <p><b><u>Self-Image and Identity</u></b></p> <p>Recognise that there may be people online who could make them feel sad, embarrassed or upset.</p> <p>Know when they should ask an adult for help with things online that upset them.</p> <p>Give examples of different adults they can ask for help</p> <p><b><u>Online Relationships</u></b></p>

	<p>emotions (e.g., happy, satisfied, proud, etc.)</p>	<p><b><u>Safer Internet Day – Spring 1</u></b></p>	<p>Understand that information that is shared online can stay there for a very long time</p> <p>Know that information can copied off the internet</p> <p>Understand that information about them can be copied by others.</p>
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<p><b>Year 2</b></p>	<p><b><u>Computer Science (including coding)</u></b>  <b>Information Technology around us</b>  Identifying Information Technology and how its responsible use improves our world in school and beyond  <b>Coding</b>  Create a simple program  Identify and describe bugs in simple programs and start to suggest corrections  Verbalise what will happen in a program before running it.</p>	<p><b><u>Computer Science (including coding)</u></b>  <b>Robot Algorithms</b>  Create a simple program  Identify and describe bugs in simple programs and start to suggest corrections  Verbalise what will happen in a program before running it.</p> <p><b>Programming quizzes</b>  Understand that sequences of commands have an outcome, and make predictions.</p>	<p><b><u>Computer Science (including coding)</u></b>  <b>Coding</b>  Create a simple program  Identify and describe bugs in simple programs and start to suggest corrections  Verbalise what will happen in a program before running it.</p> <p><b>Digital Literacy</b>  <b>Pictograms</b>  Begin to understand what the term data means. Learn the term 'attribute' and use this to help them organise data.</p>
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		Use, modify and evaluate designs to create their own quiz questions in ScratchJr.	Present data in the form of pictograms.
	<p><b><u>Internet Safety</u></b> <b><u>Privacy and Security</u></b></p> <p>Describe the difference between information shared on public platforms (YouTube) and privately (WhatsApp/Direct message).</p> <p>Identify the appropriate types of content that can be shared online and suggest ways to protect this.</p> <p><b><u>Online Bullying</u></b></p> <p>Identify some characteristics that are typical of bullying behaviour (online and offline)</p> <p>Consider the motives behind bullying behaviour.</p>	<p><b><u>Internet Safety</u></b> <b><u>Health, Well-being and lifestyle</u></b></p> <p>Give examples of and explain the positive and negative impact of using technology and the internet. Give examples of tech/online activities that they (could) engage with for extended periods of time. Explain simple rules/strategies they use to reduce the impact of these issues.</p> <p><b><u>Safer Internet Day – Spring 1</u></b></p>	<p><b><u>Internet Safety</u></b> <b><u>Self-Image and Identity</u></b></p> <p>Know that people can choose different pictures online to what they actually look like in real life.</p> <p>Explain why someone might want to change their appearance online.</p> <p>Describe ways in which people might make themselves look different online.</p> <p><b><u>Online Relationships</u></b></p> <p>Describe how you might send a message to someone you know using technology.</p> <p>List ways people might use technology to talk to.</p> <p>Name some of the risks in doing this.</p>

	Show awareness of the range of emotions that people involved in a bullying situation may feel.		
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KS2			
NC requirements	Autumn	Spring	Summer

<p><b>Year 3</b></p>	<p><b><u>Computer Science (including coding)</u></b></p> <p><b>Coding</b></p> <p>Write programs that accomplish as simple purpose  Debug a simple program independently and start to identify bugs in their own work  Explain how some simple algorithms work</p> <p><b><u>Digital Literacy</u></b></p> <p><b>Desktop Publishing</b></p> <p>Creating documents by modifying text, images and page layouts for a specified purpose.</p>	<p><b><u>Computer Science (including coding)</u></b></p> <p><b>Connecting Computers</b></p> <p>Identifying that digital devices have inputs, processes and outputs. How devices can be connected to make networks</p> <p><b><u>Digital Literacy (iPads)</u></b></p> <p><b>Stop Frame Animation</b></p> <p>Capturing and editing digital still images to produce a stop frame animation that tells a story</p>	<p><b><u>Computer Science (including coding)</u></b></p> <p><b>Coding</b></p> <p>Write programs that accomplish as simple purpose  Debug a simple program independently and start to identify bugs in their own work  Explain how some simple algorithms work</p> <p><b><u>Digital Literacy</u></b></p> <p><b>Branching Databases</b></p> <p>Develop an understanding of what a branching database is and how to create one.  Create physical and on-screen branching databases.  Consider real-world applications for branching databases.</p>
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**Internet Safety**

**Privacy and Security**

Demonstrate an awareness of the people I trust.

Make decisions about what information they share and with whom.

**Online Bullying**

Explain why it is important to be kind online vs. unkind  
To know how you should act online  
Explain how to make sure they are being kind online

**Internet Safety**

**Managing Online Information**

Explain the difference between a 'belief', an 'opinion' and a 'fact'.

Analyse information and differentiate between 'opinions', 'beliefs' and 'facts'.

Understand what criteria must be met before something is a 'fact'.

Explain how to evaluate evidence to determine its credibility.

Identify how to get help from a trusted adult if needed.

**Safer Internet Day – Spring 1**

**Internet Safety**

**Self-Image and Identity**

Explain what is meant by the term 'identity'.

Explain how people can represent themselves in different ways online.

Explain ways in which and why they might change their identity depending on what they are doing online (e.g., gaming; using an avatar; social media)

**Online Relationships**

Explain what it means to 'know' someone.

Give different examples of how well they know people e.g., friends, family, teachers.

Explain the differences between 'knowing' someone online compared to offline



<p><b>Year 4</b></p>	<p><b><u>Computer Science (including coding)</u></b></p> <p><b>Coding</b> Identify and fix bugs in their own programming Explain what logical reasoning is. Use selection (if...then) and repetition (repeat...until) commands</p> <p><b>The Internet</b> Recognising the internet as a network of networks including the Worldwide Web and why we should evaluate online content.</p>	<p><b><u>Computer Science (including coding)</u></b></p> <p><b>Coding</b> Start to design programs for a specific goal – planning before writing Explain what logical reasoning is. Use selection (if...then) and repetition (repeat...until) commands Identify and fix bugs in their own programming</p> <p><b>Data logging</b> Understanding how and why data is collected over time before. Using data loggers to carry out an investigation.</p>	<p><b><u>Computer Science (including coding)</u></b></p> <p><b>Programming Quizzes</b> Using Scratch Jr Design algorithms and programs that use events to trigger sequences of code to make an interactive quiz.</p> <p><b>Digital Literacy</b></p> <p><b>Photo Editing</b> Taking digital images and altering them. Reflecting on the impact of changes.</p>
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**Internet Safety**

**Privacy and Security**

Identify the risks posed by over-sharing information online.

Suggest appropriate strategies for keeping personal information private in different contexts.

**Online Bullying**

Know that what they do online can affect other people's feelings

Understand that what they do online can influence how someone feels about them.

Understand you should not be mean online.

**Internet Safety**

**Managing Online Information**

Describe how to search for information within a wide group of technologies (e.g., social media, image sites, video sites).

Identify how to get help from a trusted adult if needed.

**Safer Internet Day – Spring 1**

**Internet Safety**

**Self-Image and Identity**

Explain how an online identity can be different to the identity presented in 'real life'.

Explain the reasons for and against changing your identity online and explain how someone might do so.

Describe the right decisions about how to interact with others online and how this will impact on how others perceive them.

**Online Relationships**

Understand and can explain what is meant by respect.

Give examples of how online behaviour is either respectful or disrespectful.

Describe how it is possible to be respectful online

<p><b>Year 5</b></p>	<p><b><u>Digital Literacy</u></b></p> <p><b>Databases</b></p> <p>Understand how a flat-file database is used to organise data in records.</p> <p>Use a database to order and answer questions about data.</p> <p>Use real-life database to answer a question, and present their work to others.</p> <p><b><u>Computer Science (including coding)</u></b></p> <p><b>Coding</b></p> <p>Design and write programs for a given purpose.</p> <p>Use a range of inputs – speed, location and movement of an object.</p> <p>Creating games that use random number generators.</p> <p>Independently debug a program to make it more efficient.</p>	<p><b><u>Digital Literacy</u></b></p> <p><b>Video Production and photo editing</b></p> <p>Planning, capturing and editing video to produce a short film.</p> <p>Manipulating digital images and reflecting on the impact of the changes.</p> <p><b><u>Computer Science (including coding)</u></b></p> <p><b>Selection in physical computing</b></p> <p>Design and write programs using a micro controller (Crumble Controller)</p>	<p><b><u>Computer Science (including coding)</u></b></p> <p><b>Systems and Searching</b></p> <p>Develop an understanding of computer systems and how information is transferred between systems and devices.</p> <p>Explain the input, output, and process aspects of a variety of different real-world systems.</p> <p>Understand how information is found on the World Wide Web, through learning how search engines work.</p> <p><b>Coding using Espresso</b></p> <p>Design and write programs for a given purpose.</p> <p>Use a range of inputs – speed, location and movement of an object.</p> <p>Creating games that use random number generators.</p> <p>Independently debug a program to make it more efficient.</p>
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	<p><b><u>Internet Safety</u></b>  <b><u>Privacy and Security</u></b>  Identify the risks posed by not protecting accounts and information online.  Suggest appropriate strategies for creating strong passwords and explain why these are effective.</p> <p><b><u>Online Bullying</u></b>  Explain some differences between online and offline bullying  Know some of the different ways people can be hurtful to others online  Know how to be an ‘upstander’ online  .</p>	<p><b><u>Internet Safety</u></b>  <b><u>Health, Well-being and Lifestyle</u></b>  Explain what in-app purchasing is (including loot boxes).  Identify the benefits but also the risks of in-app purchases.  Know that they should always ask permission when making an online purchase</p> <p><b><u>Safer Internet Day – Spring 1</u></b></p>	<p><b><u>Internet Safety</u></b>  <b><u>Self-Image and Identity</u></b>  Understand how can show an online identity in different ways.  Know that an online identity can have an impact on others, both positively and negatively.  Demonstrate responsible choices about my online identity, depending on context.</p> <p><b><u>Online Relationships</u></b>  Understand that communication online does not have to be text-based.  Understand that a variety of communication methods have been developed specific to online communication.  Understand that the appropriate use of technology specific communication.</p>
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<p><b>Year 6</b></p>	<p><b>Digital Literacy</b>  <b>Webpage creation</b>          Designing and creating web pages using Google Sites, giving consideration to copyright, aesthetics and navigation          Work confidently with sequence, selection and repetition; work with variables and various forms of input and output.          Alter and improve their own and others' programs, explaining why and predicting and describing the effect.</p> <p><b>Computer Science (including coding)</b>  <b>Coding</b>          Solve problems they identify themselves, designing and writing programs to address this.          Work confidently with sequence, selection and repetition; work with variables and various forms of input and output.          Alter and improve their own and others' programs, explaining why and predicting and describing the effect.</p>	<p><b>Digital Literacy</b>  <b>Introduction to spreadsheets</b>          Understand how to organise data into columns and rows to create their own data set.          Understand how to format data to support calculations.          Begin to understand formulas and will begin to calculated data.          Use spreadsheets to plan an event and answer questions.</p> <p><b>Computer Science (including coding)</b>  <b>Sensing – micro:bit</b>          Opportunity to use coding knowledge in a different, but still familiar environment, utilising a physical device — the micro: bit.          Use the micro:bit as an input, process, output device that can be programmed.          Building programs to test the micro: bit.</p>	<p><b>Computer Science (including coding)</b>  <b>Coding</b>          Solve problems they identify themselves, designing and writing programs to address this.          Work confidently with sequence, selection and repetition; work with variables and various forms of input and output.          Alter and improve their own and others' programs, explaining why and predicting and describing the effect.</p> <p><b>3D Modelling</b>          Planning, developing and evaluating 3D computer models of physical objects.          Using 3D printer to create a physical model.</p>
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	<p><b><u>Internet Safety</u></b>  <b><u>Privacy and Security</u></b>  Identify the risks posed by not protecting accounts and information online.</p> <p>Suggest appropriate strategies for creating strong passwords and explain why these are effective.</p> <p><b><u>Online Bullying</u></b>  Identify routes for reporting bullying and harmful behaviours they witness or experience online.  Make decisions about the suitability of different reporting routes based on context.  Consider strategies for safely and positively intervening</p> <p>.</p>	<p><b><u>Internet Safety</u></b>  <b><u>Managing Online Information</u></b>  Describe how some online information can be opinion and can offer examples.</p> <p>Explain how and why some people may present ‘opinions’ as ‘facts’.</p> <p>Define the terms ‘influence’, ‘manipulation’ and ‘persuasion’ and explain how these might be encountered online.</p> <p><b><u>Safer Internet Day – Spring 1</u></b></p>	<p><b><u>Internet Safety</u></b>  <b><u>Self-Image and Identity</u></b>  Describe issues online that might make me or others feel sad, worried, uncomfortable or frightened.</p> <p>Know and can give examples of how to get help, both on and offline.</p> <p>Explain why it is important to keep asking until you get the help needed.</p> <p><b><u>Online Relationships &amp; Reputation</u></b>  Learning about the risks, responsibilities and consequences of sharing inappropriate images – including nude selfies.</p>
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