

Computing Curriculum Coverage

Through our computing curriculum children’s knowledge and skills build over the course of their time at Tudor Academy. The children have weekly computing lessons and have access to chrome books and I-pads to support their learning journey.

The Primary National Curriculum for Computing is divided into three strands: Information technology, digital literacy and computer science. During their time at Tudor Academy children’s knowledge and skills in these areas are built up over time and become increasingly complex as they reach upper Key Stage two. Our lessons include regular teaching of how children can keep themselves safe online and help them to know what they can do if they come across something which is inappropriate or uncomfortable. This compliments the learning which takes places through the RHSE curriculum.

As our curriculum increases in range, depth and complexity children are encouraged to recognise and ask questions, understand how information technology is about the use of computers for functional purposes, they learn basic computer programming, develop their presenting skills and understand how computers and networks work. Children are also encouraged to develop and use specific vocabulary.

Each unit is supported by a detailed knowledge organiser which is published on our Academy website and sent home to support families at home.

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Reception					
Year 1					
Programming <i>Using programmable toys</i>	Computational Thinking <i>Filming the steps of a recipe</i>	Creativity <i>Illustrating an e-book</i>	Computer Networks <i>Finding images using the web</i>	Communication / collaboration <i>Producing a talking book</i>	Productivity <i>Creating a card electronically</i>
Year 2					
Programming <i>Programming on screen</i>	Computational Thinking <i>Exploring how computer games work</i>	Creativity <i>Taking, selecting and editing digital images</i>	Computer Networks <i>Researching a topic</i>	Communication / collaboration <i>Communicating clues</i>	Productivity <i>Recording bug hunt data</i>
Year 3					
Programming <i>Programming an animation</i>	Computational Thinking <i>Finding and creating bugs in programs</i>	Creativity <i>Videoing performance</i>	Computer Networks <i>Making and sharing a short screencast presentation</i>	Communication / collaboration <i>Communicating safely on the internet</i>	Productivity <i>Collecting and analysing data</i>
Year 4					
Programming	Computational Thinking	Creativity <i>Producing digital music</i>	Computer Networks	Communication / collaboration	Productivity <i>Presenting the weather</i>

<i>Developing a simple educational game</i>	<i>Prototyping an interactive toy</i>		<i>Editing and writing HTML</i>	<i>Producing a wiki</i>	
Year 5					
Programming <i>Developing an interactive game</i>	Computational Thinking <i>Cracking codes</i>	Creativity <i>Fusing geometry and art</i>	Computer Networks <i>Creating a web page about cyber safety</i>	Communication / collaboration <i>Sharing experiences and opinions</i>	Productivity <i>Creating a virtual space</i>
Year 6					
Programming <i>Planning the orientation of a mobile app</i>	Computational Thinking <i>Developing Project Management skills</i>	Creativity <i>Researching the app market</i>	Computer Networks <i>Designing the Interface for an app</i>	Communication / collaboration	Productivity
Autumn 1					
Autumn 2		Spring 1		Spring 2	
Summer 1					
Summer 2					
Reception					
Programming	Computational Thinking	Creativity	Computer Networks	Communication / Collaboration	Productivity
Year 1					
Programming <i>Using programmable toys</i> <i>Children take on the role of a robot, responding to instructions they are given, working out a sequence of instructions (algorithm), follow, create and test sequences and predict.</i>	Computational Thinking <i>Filming the steps of a recipe</i> <i>Children work out the steps for making a sandwich and a healthy snack. They learn how to record a video and film each other making a healthy snack.</i>	Creativity <i>Illustrating an e-book</i> <i>Children create digital artwork based on Rothko, Kandinsky, Picasso, Matisse and Julian Opie.</i>	Computer Networks <i>Finding images using the web</i> <i>Children plan an eBook, they select images and add audio commentary and written text.</i>	Communication / Collaboration <i>Sharing experiences and opinions</i> <i>Children use Scratch to record and playback repeating pattern percussion and GarageBand instruments.</i>	Productivity <i>Creating a card electronically</i> <i>Children explore dataset using Popplet. They organise data into a tree and input data to an online form. They create filters on a spreadsheet and use the spreadsheet to solve clues.</i>
Year 2					

<p>Programming <i>Programming on screen</i> Children plan a series of instructions to move sprites in Scratch. They create, test and debug programs for sprites and learn to use repetition in their programs.</p>	<p>Computational Thinking <i>Exploring how computer games work</i> Children play some Scratch games, trying to work out the rules of the game (algorithms the programmers have used).</p>	<p>Creativity <i>Taking, selecting and editing digital images</i> Children take, review and edit digital photos.</p>	<p>Computer Networks <i>Researching a topic</i> Children retrieve digital content from the Internet for a purpose and use mind mapping software to organise their questions and answers about a topic. They use presentation software to present their findings.</p>	<p>Communication / Collaboration <i>Communicating clues</i> Children learn how animation works. They will plan their own animation, creating their own characters, props and backgrounds. They will film, review and edit their animation using stop-motion.</p>	<p>Productivity <i>Recording bug hunt data</i> Children go on a bug hunt and record and identify the small animals they find. They organise the data they have collected, record it on a spreadsheet and create charts.</p>
Year 3					
<p>Programming <i>Children create an animated cartoon using characters they design.</i> They use a paint tool to create characters and backgrounds. They then create an animation by translating a storyboard into a series of scripted instructions (program) for graphic objects</p>	<p>Computational Thinking <i>Finding and creating bugs in programs</i> Children work with six example Scratch projects. They explain how scripts work, finding and correcting errors in them, and explore creative ways of improving them. Children learn to recognise some common types of programming error, and practise solving problems through logical thinking.</p>	<p>Creativity <i>Videoing performance</i> Children make a short narrated video of themselves practising a sport or other skill, and use this to help improve their performance.</p>	<p>Computer Networks <i>Making and sharing a short screencast presentation</i> Children choose a topic to teach to others. They research this using web-based sources, plan a presentation, source and create visual content and record a spoken commentary. These are presented in KS1 and KS2 assembly.</p>	<p>Communication / collaboration <i>Communicating safely on the internet</i> Children learn about online safety. They will work with a partner in another class, learning how to use email and video conferencing safely.</p>	<p>Productivity <i>Collecting and analysing data</i> Children create their own opinion poll, seek responses, and then analyse the results.</p>
Year 4					
<p>Programming <i>Developing a simple educational game</i> Children analyse educational computer games, identifying those features that make a</p>	<p>Computational Thinking <i>Prototyping an interactive toy</i> Children work together to design a simple toy that incorporates sensors and</p>	<p>Creativity <i>Producing digital music</i> Children produce music suitable for the purpose they choose.</p>	<p>Computer Networks <i>Editing and writing HTML</i> Children learn about the history of the web, before studying HTML</p>	<p>Communication / collaboration <i>Producing a wiki</i> Wikipedia is a free online encyclopaedia that anyone can view and</p>	<p>Productivity <i>Presenting the weather</i> Children take the role of meteorologists and weather presenters by bringing together data</p>

<p><i>game successful. They then plan and design a game, with a clear target audience in mind. They create a working prototype, and then develop it further to add functionality and improve user interface. They test their game and make any necessary changes</i></p>	<p><i>outputs and then create an on-screen prototype of their toy in Scratch. Finally, they pitch their toy idea to a Dragon's Den-style panel</i></p>		<p><i>(Hypertext mark-up language), the language in which web pages are written. Children learn to edit and write HTML, and then use this knowledge to create a web page.</i></p>	<p><i>edit. Children learn how to create their own mini Wikipedia. They then go on to add or amend content on the real Wikipedia page.</i></p>	<p><i>measurement, analysis and presentation.</i></p>
<p>Year 5</p>					
<p>Programming <i>Developing an interactive game</i> Children plan their own simple computer game. They design characters and backgrounds, and create a working prototype, which they develop further based on feedback they receive.</p>	<p>Computational Thinking <i>Cracking codes</i> Children learn more about communicating information securely through an introduction to cryptography (the science of keeping communication and information secret). They investigate early methods of communicating over distances, learn about two early ciphers, and consider what makes a secure password.</p>	<p>Creativity <i>Fusing geometry and art</i> Children use vector and turtle graphics to explore geometric art, taking inspiration from the work of Escher, Rile and traditional Islamic artists, as well as experimenting with complex 'fractal' landscapes.</p>	<p>Computer Networks <i>Creating a web page about cyber safety</i> Children work together to create a website explaining online safety and responsible online behaviour. Children present this in assembly.</p>	<p>Communication / collaboration <i>Sharing experiences and opinions</i> Blogging provides a worldwide audience for pupils' work. Commenting on others' work extends childrens sense of membership of a learning community beyond school. Children create a media-rich blog, comment on blogs and respond to comments.</p>	<p>Productivity <i>Creating a virtual space</i> Children research examples of art gallery architecture, before using Trimble SketchUp to create their own virtual gallery. Finally, they use the gallery to exhibit their own work.</p>
<p>Year 6</p>					
<p>Programming <i>Planning the orientation of a mobile app</i> Children learn about the capabilities of smart phones. They consider a problem that a smartphone or tablet app could solve,</p>	<p>Computational Thinking <i>Developing Project Management skills</i> Children work collaboratively to develop a smartphone or tablet app. Children apply computational thinking to</p>	<p>Creativity <i>Researching the app market</i> Children conduct research into the potential market of their app, using an on-line survey together with</p>	<p>Computer Networks <i>Designing the Interface for an app</i> Children begin to design the look / feel of their app's interface. They begin by sketching ideas, planning the different</p>	<p>Communication / collaboration <i>Developing a simple mobile phone app</i></p>	<p>Productivity <i>Creating video and web copy for a mobile phone app</i></p>

and then pitch the idea for their app.	the task of managing a complex project.	interviews or focus groups. they analyse the data and information they obtain and create a presentation summarising their findings.	screen layouts for their app and developing these using a wireframing tool		
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KEY STAGE 1	
Year 1	
<p>Autumn 1: Programming National Curriculum Objectives: Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute them by following precise and unambiguous instructions. Create and debug simple programs. Use logical reasoning to predict the behaviour of simple programs</p>	<p>Vocabulary / Key questions <i>algorithm, bug, computer, debug, input, output, program, robot.</i></p>
<p>Autumn 2: Computational Thinking National Curriculum Objectives: Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute them by following precise and unambiguous instructions. Use logical reasoning to predict the behaviour of simple programs. Recognise common uses of information technology beyond school. Use technology safely and respectfully, keeping personal information private.</p>	
<p>Spring 1: Creativity National Curriculum Objectives: 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.</p>	
<p>Spring 2: Computer Networks National Curriculum Objectives: Use technology purposefully to create, organise, store, manipulate and retrieve digital content. Recognise common uses of information technology beyond school.</p>	

<p>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.</p>	
<p>Summer 1: Communication / Collaboration National Curriculum Objectives: 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.</p>	
<p>Summer 2: Productivity National Curriculum Objectives: 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, <i>keeping personal information private and identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies</i></p>	
<p>Year 2</p>	
<p>Autumn 1: Programming National Curriculum Objectives: Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute them by following precise and unambiguous instructions. Create and debug simple programs. Use logical reasoning to predict the behaviour of simple programs</p>	<p>Vocabulary / Key questions <i>Abstraction, algorithm, bug, code, debug, event, input, output, parallel processing, program, repetition, Scratch, Sprite.</i></p>
<p>Autumn 2: Computational Thinking National Curriculum Objectives: Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute them by following precise and unambiguous instructions. Use logical reasoning to predict the behaviour of simple programs. Recognise common uses of information technology beyond school. Use technology safely and respectfully, keeping personal information private.</p>	
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KEY STAGE 2	
Year 3	
<p>Autumn 1: Programming National Curriculum Objectives: Design, write and debug programs that accomplish specific goals; solve problems by decomposing them into smaller parts. Use sequence ... in programs; work with variables and various forms of input and output. Use logical reasoning to detect and correct errors in algorithms and programs. Select, use and combine a variety of software ... to design and create ... content that accomplish(es) given goals, including ... presenting ... information.</p>	<p>Vocabulary / Key questions <i>Algorithm, arithmetic bugs, computer networks, conceptual bugs, creative commons, debug, input, internet, Internet Protocol (IP) address, ISPs, mail client, mail server, malware, multi-thread bugs, network switch, off-by-one bugs, output, packets of data, performance bug, programs, repetition, rushes</i></p>
<p>Autumn 2: Computational Thinking National Curriculum Objectives: Debug programs that accomplish specific goals. 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.</p>	

<p>Spring 1: Creativity National Curriculum Objectives: 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. Work with various forms of input and output. Use technology safely, respectfully and responsibly.</p>	<p><i>of footage, screencast, selection, sequence, spam, spoofed links, sprite, variables, web server, world wide web.</i></p>
<p>Spring 2: Computer Networks National Curriculum Objectives: Understand computer networks including the internet; how they can provide multiple services, such as the world wide web. 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 content that accomplish given goals, including collecting, analysing, evaluating and presenting information. Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.</p>	
<p>Summer 1: Communication / Collaboration National Curriculum Objectives: 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.</p>	
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<p>Year 4</p>	
<p>Autumn 1: Programming National Curriculum Objectives:</p>	<p><i>Vocabulary / Key questions</i></p>

<p>Design, write and debug programs that accomplish specific goals; solve problems by decomposing them into smaller parts. Use sequence ... in programs; work with variables and various forms of input and output. Use logical reasoning to detect and correct errors in algorithms and programs. Select, use and combine a variety of software ... to design and create ... content that accomplish(es) given goals, including ... presenting ... information.</p>	<p><i>Algorithm, anchor tag, audacity, computational thinking, creative commons, cup anemometer, debug, decomposing, digital technology, hypertext mark-up (HTML), HTML tags, hyperlinks, hypertext transfer protocol (HTTP), interface, kickstart, LMMS, logical reasoning, loop, micro blog, mix, plenary, pressure pad, protocol, prototype, proximity sensor, pseudocode, Raspberry Pi, repeat block, repetition, screencast, simulation, smartphone, thimble editor, Uniform Resource Locator (URL), Wikipedia.</i></p>
<p>Autumn 2: Computational Thinking National Curriculum Objectives: Debug programs that accomplish specific goals. 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.</p>	
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<p>Summer 1: Communication / Collaboration National Curriculum Objectives: 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.</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>Summer 2: Productivity National Curriculum Objectives: 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. 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>Year 5</p>	
<p>Autumn 1: Programming National Curriculum Objectives: Design, write and debug programs that accomplish specific goals; solve problems by decomposing them into smaller parts. Use sequence ... in programs; work with variables and various forms of input and output. Use logical reasoning to detect and correct errors in algorithms and programs. Select, use and combine a variety of software ... to design and create ... content that accomplish(es) given goals, including ... presenting ... information.</p>	<p>Vocabulary / Key questions <i>Algorithm, Bitmap, Blog, Buggy code, Caesar cipher, computer aided design, cascading style sheet, computer networks, creative commons, cryptanalysis, cryptographer, cyberbullying, debug, decrypt, encrypt, firewall, fractal, hyperlinks, hypertext mark-up language (HTML), iterative development, logical reasoning, Morse code, page rank, photorealistic, semaphore, tessellation, vector graphics, web server, WordPress.</i></p>
<p>Autumn 2: Computational Thinking National Curriculum Objectives: Debug programs that accomplish specific goals. 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.</p>	
<p>Spring 1: Creativity National Curriculum Objectives: 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. Work with various forms of input and output. Use technology safely, respectfully and responsibly.</p>	
<p>Spring 2: Computer Networks National Curriculum Objectives: Understand computer networks including the internet; how they can provide multiple services, such as the world wide web.</p>	

<p>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 content that accomplish given goals, including collecting, analysing, evaluating and presenting information. Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.</p>	
<p>Summer 1: Communication / Collaboration National Curriculum Objectives: 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.</p>	
<p>Summer 2: Productivity National Curriculum Objectives: 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. 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>Year 6</p>	
<p>Autumn 1: Programming National Curriculum Objectives: 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. Work with ... various forms of input and output.</p>	<p>Vocabulary / Key questions <i>Algorithm, App, Uniform Resource Locator (URL), Widget, Wireframe, creative commons, debug, digital signage system, Gantt charts, geotagging, Global Position System (GPS), Hypertext mark-up (HTML), interface, iOS, MP4, OS X, page rank,</i></p>
<p>Autumn 2: Computational Thinking National Curriculum Objectives: Solve problems by decomposing them into smaller parts. Select, use and combine a variety of software (including internet services) on a range of digital devices to design and</p>	

<p>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. Be discerning in evaluating digital content. Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.</p>	<p><i>prototype, pseudocode, QR code, tablet, chrome book.</i></p>
<p>Spring 1: Creativity National Curriculum Objectives: 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.</p>	
<p>Spring 2: Computer Networks National Curriculum Objectives: 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. Be discerning in evaluating digital content. Recognise acceptable/unacceptable behaviour.</p>	
<p>Summer 1: Communication / Collaboration National Curriculum Objectives: 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.</p>	
<p>Summer 2: Productivity</p>	

National Curriculum Objectives:

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) ... to design and create ... content that accomplishes given goals, including collecting, analysing, evaluating and presenting ... information.

Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.