Upminster Infant School

Computing Long Term Plan, Overview and Progression

Computing LONG TERM MAP

	Aut 1	Aut 2	Spr 1	Spr 2	Sum 1	Sum 2
Year 1	Basic skills Computational thinking	Online safety And We are collectors Finding images using the web Computer networks	We are treasure hunters Using a programmable toy Programming	We are painters Illustrating an eBook creativity	We are storytellers Producing a talking book Communication/collaboration	We are celebrating Creating a card electronically Productivity
Year 2	Basic skills Communication/collaboration	Online safety We are games testers Exploring how computer games work Computational thinking	We are astronauts Programming on screen Programming	We are researchers Researching a topic Computer networks	We are photographers Taking selecting and editing digital images Creativity	We are zoologists Recording bug hunt data Productivity

Computing OVERVIEW (direct links to NC)

FOCUS	Year 1	Year 2
Programming Planning, writing and testing computer programs for digital devices, from floor turtles to tablets.	We are treasure Hunters	We are astronauts
Computational thinking Some of the computer science foundations – particularly algorithms, logical reasoning and decomposing problems into smaller parts.	Coding	Coding we are games testers
Creativity Creating and refining original content using digital tools across a range of media.	We are painters	We are photographers
Computer Networks Using and understanding the internet, the web and search engines, effectively and safely.	We are collectors	We are researchers
Communication/collaboration Making the most of computers and the internet for communicating with one or many, and working together on projects.	We are storytellers	Basic skills Christmas activities
Productivity Collecting and analysing data and information using computers; organising, manipulating and presenting this to an audience.	We are celebrating	We are zoologists

Computing PROGRESSION

FOCUS – AUTUMN 1	Year 1	Year 2
Basic Skills	Basic Skills, AUP, Online safety Log on, type name, and find Key stage resources. Follow instructions. Computational thinking	Basic Skills AUP, Online safety Log on, type name, and find Key stage resources. Follow instructions. Use technology purposefully to create, organise, store, manipulate and retrieve digital content. *I can find, open, edit and save files I am working on.* Christmas activities communication and collaboration
FOCUS – AUTUMN 2	**Year 1**	**Year 2**
	Online Safety Understand where to go for help and support when he/she has concerns about content or contact on the internet or other online technologies I know to tell an adult if I see anything worrying online I know to tell an adult if I see anything worrying online Computer networks	Online Safety Use technology safely and keep personal information private I know I need to keep my personal information private Use technology safely and keep personal information private. *I know I need to keep my personal information private* Computational thinking

FOCUS – Spring 1	Year 1	Year 2
	We are treasure Hunters+ coding	We are astronauts +Coding we are games testers

	Predict the behaviour of simple programs I can predict the behaviour of a programmed toy Understand what algorithms are and how they are implemented on digital devices I can explain that an algorithm is a step by step set of instructions I can predict the behaviour of a programmed toy. I can explain that an algorithm is a step by step set of instructions programming I can follow instructions. I can record a set of instructions. I can program a toy. I can give instructions. I know what input, program and output means for a robot toy. I can give examples of input, program and output. I can create a program.	Use logical reasoning to predict the behaviour of simple programs I can predict the behaviour of a programmed toy, clearly relating each action to part of an algorithm Create simple programs I can create a simple program to perform a task Create and debug simple programs I can create and debug simple programs Debug simple programs by using logical reasoning to predict the actions instructed by the code I can find and fix simple bugs in programs Understand that programs execute by following precise and unambiguous instructions I can understand that programs run by following clear instructions Use logical reasoning to predict the behaviour of simple programs. *I can predict the behaviour of a programmed toy, clearly relating each action to part of an algorithm* Create simple programs. *I can create a simple program to perform a task* Create and debug simple programs. *I can create and debug simple programs* Debug simple programs by using logical reasoning to predict the actions instructed by the code. *I can find and fix simple bugs in programs.*

	I can spot and correct mistakes in a program (debug). I can predict where a set of instructions will take a to or person. I can look for ways to make a program work better.	Understand that programs execute by following precise and unambiguous instructions. *I can understand that programs run by following clear instructions.* Programming I can plan a route from one place to another. I can plan a route to more than one place. I can pretend to be a robot and follow instructions. I can program a toy. I can program a sprite to move in Scratch. I can program a sprite to move in Scratch using blocks I can predict where instructions will take a person, toy or sprite. I can record instructions to move a toy or sprite from one place to another. I can record instructions to move a toy or sprite to more than one place. I can spot and correct mistakes in a program (debug). I can solve problems. I can consider the most efficient solution to a problem. I can talk about what happens in a computer game. I can see that a computer game works by following instructions.

		I can see how computer games are similar. I can predict what will happen in a computer game. I can test a computer game. I can find and understand the code for a computer game in Scratch. I can change the code for a computer game in Scratch/Coding to make it work better. I know to tell someone if I am worried about a computer game. I know that some games are for older children. I can see why it can be hard to stop playing computer games. I know that I need to limit the time I spend playing computer games.

FOCUS – Spring 2	Year 1	Year 2
	We are painters Use technology purposefully to create digital content I can use a program to create a simple document Creativity I can use a paint program.	We are researchers Use technology purposefully to create digital content comparing the benefits of different programs I can use different software programs and discuss the benefits of their usage Use technology purposefully to create digital content comparing the benefits of different programs. *I can use different software programs and discuss the benefits of their usage*

	I can edit an image. I can use a paint program to show details of my character. I can put more than one image into a document. I can save my work. I can save my document in a portable format, for example PDF. I can find images on the web. I know how to let my teacher know if I am worried about an image. I can give helpful feedback to my friends. I can see how digital images are created. I can see how images are stored on a computer. I can make my work even better.	Computer networks I can add questions to a mind map. I can organise questions in my mind map. I can find information to add to my mind map. I can use search engines. I can use the web to find information. I know that it is important to say where I found information. I know that there are some images I can copy and some that I can't. I can find images and add them to my presentation. I know how to let someone know if I am worried about something on the web. I can create a presentation that shows my research. I can use my presentation to teach others about a topic.
FOCUS – Summer 1	Year 1	Year 2
	We are collectors	We are photographers

	Recognise common uses of information technology in the home and school environment I can recognise how I use technology in my home and at school I can recognise how I use technology in my home and at school computer networks I can look for pictures on the web. I can copy a picture and put it in my presentation. I can move pictures in my presentation. I can resize pictures. I can sort pictures in order of size. I can choose the best pictures for my collection. I know how to let my teacher know if I am worried about a picture. I know that there are some pictures I can copy and some that I can't. I can put pictures into groups. I can use yes or no questions to find a picture.	Use technology purposefully to create, organise, store, manipulate and retrieve digital content I can find, open, edit and save files I am working on Creativity I can take photos. I can take photos that are in focus. I can take high quality photos. I can decide if a photo is worth keeping. I can edit photos. I can edit photos to make them look better. I can choose my best photos for our class collection. I can talk about how I took, edited and chose my best photos. I can give helpful feedback to my friends. I know how to let my teacher know if I am worried about an image. I know that there are some photos I shouldn't put on the web. I can add photos to a digital map. I can add information about my bugs to a digital map I can create a presentation showing my research. I can present my research to my friends.

	I can see how drawings and photos are different. I can add labels to my presentation. I know I shouldn't put my name or a photo of myself on the web.	

FOCUS – Summer 2	Year 1	Year 2
	We are celebrating Recognise common uses of information technology in the home and school environment I can recognise how I use technology in my home and at school Use technology purposefully to create digital content I can use a program to create a simple I can use a program to create a simple document Productivity	We are zoologists Recognise common uses of information technology beyond school I can recognise how others use technology outside of school Recognise common uses of information technology beyond school. *I can recognise how others use technology outside of school* Productivity

	I can type words. I can type symbols. I can type carefully and check my work for mistakes. I can change the way the words look in my card. I can find pictures on the web. I can edit a picture to suit my card. I can put words and a picture together to make a card. I can listen to my friends' ideas and make my card even better. I can save my work and open it when I next need it. I know how my card is saved on the computer. I can see how cards on paper and cards on the computer are different.	I can take photos of bugs. I can take photos of bugs that are in focus and of high quality. I can edit my photos (e.g. cropping). I can label my photos and rate them. I can move my photos onto the computer or to a website. I can use yes or no questions to decide which group a bug fits into. I can create a chart. I can add a title and label the axes of my chart. I can change the way my chart looks. I can show my results in different types of charts. I can use a digital map to find a place. I can use GPS to show where I found my bugs.

	I can practise the sound effects for my book. I can record the sound effects. I can listen to the sound effects and make them even better. I can practise the dialogue for my book. I can record the dialogue. I can listen to the dialogue and make it even better. I can put the sound effects and dialogue together in my book. I can give helpful feedback to my friends. I can save my work and open it when I next need it. I know how my recording is saved on the computer. I can see how talking books and reading books are different.	

Computing Overview of Units KS1

Units Year 1	Expectations	Computing PoS	Key Questions	Key Vocab	Software/Apps	Hardware
Basic Skills	• Develop basic keyboard skills, through typing and formatting text. • Develop basic mouse skills. • Use the web to find and select images. • Develop skills in storing and retrieving files. • Talk about and reflect on their use of ICT. • Know how to save, retrieve and change their work. • Develop collaboration skills as they work together in a group.	• Recognise common uses of information technology beyond school.	Can you log on to the computer? Can you use a mouse? Can you save your work? Can you retrieve your work?	Mouse Keyboard Log on Username Password Start button Screen Save Retrieve Edit Type	**word**	**Computers and laptops**

Online Safety	School rules • Use the web safely • Recognise common uses of information technology beyond school. • Know what to do if they encounter pictures that cause concern.	• 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. • Recognise common uses of information technology beyond school.	Why do we have rules? Can you create your own online safety rules? What should you do if something or someone bothers you?	Personal information School rules Online safety	**Word, Powerpoint**	**Computers and laptops** **Paper for posters**
1.1 We are treasure hunters Using programmable toys	• Understand that a programmable toy can be controlled by inputting a sequence of instructions. • Develop and record sequences of instructions as an algorithm. • Program the toy to follow their algorithm. • Debug their programs.	•Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions. • Create and debug simple programs. • Use logical reasoning to predict the behaviour of simple programs.	Can you follow instructions? Can you make your toy move? Can you predict where your toy will end up? Can you program your toy to find treasure? Can you spot and correct mistakes?	algorithm debug instructions predict programming robot treasure	Software: Programming interface for programmable toy Scratch Bee-Bot simulator Apps: Bee-Bot app; Daisy the Dinosaur; Blue-Bot app,	Programmable toy, such as a Bee-Bot or Roamer Too. Audio recorders are needed for the first step (your phone may be sufficient)

	• Predict how their programs will work.	• Recognise common uses of information technology beyond school.				
1.3 We are painters Illustrating an eBook	• Use the web safely to find ideas for an illustration. • Select and use appropriate painting tools to create and change images on the computer. • Understand how this use of ICT differs from using paint and paper. • Create an illustration for a particular purpose. • Know how to save, retrieve and change their work. • Reflect on their work and act on feedback received. • Use technology purposefully to create, organise, store, manipulate and retrieve digital content.	• Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.	Can you plan your picture and write keywords? Can you create your picture? Can you edit each other's pictures? Can you make your eBook? Can you look at the eBooks? How can you make your eBook even better?	character eBook edit illustration traditional tale	Software: Tux Paint/ Microsoft Paint/2Simple 2Paint A Picture/Fresh Paint, IWB software, Microsoft Word®, Microsoft PowerPoint® Apps: Brushes Redux, SketchBook Express, Fresh Paint	Laptop/desktop computers or tablets

	• Recognise common uses of information technology beyond school.					
1.4 We are collectors Finding images using the web	• Find and use pictures on the web. • Know what to do if they encounter pictures that cause concern. • Group images on the basis of a binary (yes/no) question. • Organise images into more than two groups according to clear rules. • Sort (order) images according to some criteria. • Ask and answer binary (yes/no) questions about their images.	• Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions. • Use technology purposefully to create, organise, store, manipulate and retrieve digital content. contact on the internet or other online technologies. • 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	Can you look for animal pictures? Can you make a page of fish pictures? Can you sort bird pictures into two groups? Can you put mini beast pictures into groups? Can you order mammal pictures? Can you use yes/no questions to guess the animal?	algorithm copyright Online safety mammal permission personal private	Software: Web browser, Microsoft PowerPoint® or IWB Software Apps: Web browser, Keynote or Explain Everything	Internet connection, laptop/ desktop computers

		they have concerns about content or				
1.5 We are storytellers Producing a talking book	• Use sound recording equipment to record sounds. • Develop skills in saving and storing sounds on the computer. • Develop collaboration skills as they work together in a group. • Understand how a talking book differs from a paper-based book. • Talk about and reflect on their use of ICT. • Share recordings with an audience.	• 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 ...	Can you listen to an audio book? Can you think about sound effects? Can you plan your talking book? Can you use a microphone and audio recorder? Can you record and save sound effects? Can you record and save your talking book? Can you look at your books? How can you make them better?	audio book copyright microphone recording sound effects talking book	Software: Microsoft PowerPoint®/2Create A Story/IWB software Apps: Keynote/Explain Everything/Book Creator	Computers/tablets, MP3 recorders/microphones
1.6 We are celebrating Creating a card digitally	• Develop basic keyboard skills, through typing and formatting text. • Develop basic mouse skills.	• Use technology purposefully to create, organise, store, manipulate and retrieve digital content.	Can you think about your card you would like to make?	celebrate copyright edit greeting keyboard save type	Software: Microsoft PowerPoint®/Microsoft Word®/Clicker 7 Apps: Pages/Keynote, Brushes	Laptops/computers/tablets, printer

	• Use the web to find and select images. • Develop skills in storing and retrieving files. • Develop skills in combining text and images. • Discuss their work and think about whether it could be improved.	• 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.	Can you use the keyboard? Can you write and edit the text for your card? Can you save it? Can you create the image for your card? Can you save it? Can you finish your card? How can you make it even better? Can you look at all the cards and talk about them?		Redux/Sketchbook Express	

Units Year 2	Expectations	Computing PoS	Key questions	Key vocab	Software/Apps	Hardware
Basic Skills	• Develop basic keyboard skills, through typing and formatting text. • Develop basic mouse skills.	• Recognise common uses of information technology beyond school.	Can you log on? Can you find and select images?	Mouse Keyboard Log on Username Password Start button Screen	**word**	**Computers and laptops**

	• Use the web to find and select images. • Develop skills in storing and retrieving files. • Talk about and reflect on their use of ICT. • Know how to save, retrieve and change their work. • Develop collaboration skills as they work together in a group.		Can you save, retrieve and edit files?	Save Retrieve Edit Type		
Online Safety	School rules • Use the web safely • Recognise common uses of information technology beyond school. • Know what to do if they encounter pictures that cause concern.	• 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. • Recognise common uses of information technology beyond school.	Why do we have rules? Can you create your own online safety rules? What should you do if something or someone bothers you? What would you do if you see a picture that concerns you?	Personal information School rules Online safety Content Contact	**Word, Powerpoint**	**Computers and laptops** **Paper for posters**

2.1 We are astronauts Programming on screen	• Have a clear understanding of algorithms as sequences of instructions. • Convert simple algorithms to programs. • Predict what a simple program will do. • Spot and fix (debug) errors in their programs.	• Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions. • Create and debug simple programs. • Use logical reasoning to predict the behaviour of simple programs.	Can you plan instructions and try them out? Can you work with Scratch? Can you work with Beebot on screen? Can you write a program in Scratch/Beebot? Can you debug it?	algorithm instructions predict problem program robot Scratch Sprite Beebot on screen	Software: Scratch, Kodu, Snap! Apps: Hopscotch, Daisy the Dinosaur, Pyonkee	Programmable toy, such as a Bee-Bot or Roamer Too
2.2 We are games testers Exploring how computer games work	• Describe carefully what happens in computer games. • Use logical reasoning to make predictions of what a program will do. • Test these predictions. • Think critically about computer games and their use. • Be aware of how to use games safely and in balance with other activities.	• Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions. • Use logical reasoning to predict the behaviour of simple programs.	Can you find out how game works? Can you look at complex games? How do you think they work? Can you work out the rules in each other's games? Can you use code to make your own game?	algorithm predict rules Scratch Test Coding Code	Software: Discovery Education: Coding: Scratch, Screencast-o-matic, web-based or open source games, pupils' games, Snap Apps: Pyonkee free game apps, Light-bot	Desktop/laptop computers, IWB, internet connection; optionally, MP3 recorders, pupils' own game consoles

		• Recognise common uses of information technology beyond school. • Use technology safely and respectfully, keeping personal information private.				
2.3 We are photographers Taking better photos	• Consider the technical and artistic merits of photographs. • Use a digital camera or camera app. • Take digital photographs. • Review and reject or rate the images they take. • Edit and enhance their photographs. • Select their best images to include in a shared portfolio	• 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	What makes a good photo? Can you take photos on your chosen theme? Can you use Picasa/or other to organise your photos? Can you edit your photos? Can you pick your best photos for the portfolio.	camera image Picasa pixel portfolio theme photoshop	Software: Picasa, Pixlr Apps: Photos (iOS), Snapseed	Desktop or laptop computers and digital cameras/tablets/ smartphones

		other online technologies.				
2. 4 We are researchers Researching a topic	• Develop collaboration skills through working as part of a group. • Develop research skills through searching for information on the internet. • Improve note-taking skills through the use of mind mapping. • Develop presentation skills through creating and delivering a short multimedia presentation.	• 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.	Can you write questions in a mind map? Can you add information to your mind map? Can you use Google to search for information? Can you use other search engines and Simple Wikipedia to search for information? Can you create a presentation? Can you give your presentation to the class?	Google mind map presentation research search search engine	Software: FreeMind, bubbl.us, Google Custom Search, web browser, Microsoft PowerPoint® Apps: iThoughtsHD, Safari, Keynote, Popplet Lite, bubbl.us	Laptop or desktop computers or tablets, internet connection
2.6 We are zoologists Collecting data about bugs	• Sort and classify a group of items by answering questions. • Collect data using tick charts or tally charts.	•Use technology purposefully to create, organise, store, manipulate and retrieve digital content.	Can you talk about bugs and get ready for your bug hunt? Can you hunt for bugs and record what you find?	chart classification key data database photograph tally chart tick chart	Software: Microsoft Excel®/Google Sheets/IWB software, Picasa/Photo Gallery, Google My Maps/ Google Earth Apps: Numbers/Google	Desktop or laptop computers with digital cameras/tablets, internet connection

	• Use simple charting software to produce pictograms and other basic charts. • Take, edit and enhance photographs. • Record information on a digital map.	• 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.	Can you edit and organise your bug photos? Can you use your bug data to create a chart? Can you add bug information using maps? Can you present your results and discuss them?		Sheets, Snapseed, RunKeeper	

Vocab and glossary	Year 1	Year 2
	• Acceptable Use Policy (AUP): An Acceptable Use Policy comprises a set of rules applied by the owner/ manager of a network, website or large computer system that defines the ways in which the network, site or system may be used. • Algorithm: An unambiguous set of rules or a precise step-by-step guide to solve a problem or achieve a particular objective. • Binary: A system in which any data or information is represented by a sequence of on/off signals, represented as 1 and 0.	• Algorithm: An unambiguous set of rules or a precise step-by-step guide to solve a problem or achieve a particular objective. • Bitly: A web service that provides shortened links; can also be used to provide a bundle of links. • Blog: An online journal or website made of a series of individual posts, usually displayed in reverse chronological order. • Creative Commons: A licensing scheme where the creator of an original work allows others to use it without seeking further permission, subject to a number of agreed conditions: www.creativecommons.org.

	• Classification guide: Rules for determining which of several classes an object belongs to, such as determining the species of an animal or plant. • Creative Commons: A licensing scheme where the creator of an original work allows others to use it without seeking further permission, subject to a number of agreed conditions: www.creativecommons.org • Debug: To fix the errors in a program – the term 'bug' was used by the computing pioneer Grace Hopper in relation to a moth that had to be removed from an automatic switch in an early computer in order for the program to run. • Google Custom Search: The ability, via Google, to create a customised search facility for a predefined list of websites. • Google Maps: A web-based interactive geographical information service providing mapping, satellite and aerial photography, directions and additional information. See www.google.com/maps. Google Translate: A free online language service from Google, which translates text and web pages using statistical matching techniques. See https://translate.google.com/. • Input: Data supplied to a computer, typically via the keyboard or mouse. • Interface: The link between one system and another, typically between the user of a program and the computer on which it runs. • Network server: A computer connected to a local area network providing services – such as file storage, printing, authentication, web access or email – automatically to other computers on the network.	• Debug: To fix the errors in a program – the term 'bug' was used by the computing pioneer Grace Hopper in relation to a moth that had to be removed from an automatic switch in an early computer in order for the program to run. • Global Position System (GPS): This system allows a user to determine their exact location using a network of military satellites. • Google Custom Search: The ability, via Google, to create a customised search facility for a predefined list of websites. • Google Maps: A web-based interactive geographical information service providing mapping, satellite and aerial photography, directions and additional information. See google.com/maps. • Interface: The link between one system and another, typically between the user of a program and the computer on which it runs. • IWB: Interactive whiteboard. • Learning platform: A term used by some schools to describe a virtual learning environment; a collection of web-based tools designed to support learning at home or in school. • Logical reasoning: A systematic approach to solving problems or deducing information using a set of universally applicable and totally reliable rules. • MP3: A common format for audio files. • Online safety: Used to describe behaviours and policies intended to minimise the risks to a user of using digital technology, particularly the internet. • Open Air Laboratories (OPAL): A network of UK-wide citizen science initiatives: www.opalexplorenature.org.

	• Online safety: Used to describe behaviours and policies intended to minimise the risks to a user of using digital technology, particularly the internet. • Output: Information produced by computer processing systems, typically on the screen or through speakers. • Phonemes: The smallest unit of sound that signals a distinct, contrasting meaning. • Podcast: A series of audio (or sometimes video) files, such as episodes of a radio programme and associated metadata, which can be imported directly and played on appropriate software or digital devices. • Programmable toys: Robots designed for children to use, accepting input, storing short sequences of simple instructions and moving according to this stored program. • Screencast: A recording of on-screen action that is often accompanied by an audio narration.	• Programmable toys: Robots designed for children to use, accepting input, storing short sequences of simple instructions and moving according to this stored program. • Sequence: To place programming instructions in order, with each executed one after the other. • Sprite: A computer graphics object that can be controlled (programmed) independently of other objects or the background.