St Chad's Curriculum 2022

Computing EYFS Long Term Plan			
Year group	Autumn	Spring	Summer
EYFS *Adapted from Barefoot Computing /Kapow EYFS Resources*	Autumn 1 All about instructions *Exploring sequencing and algorithms.* Autumn 2 Using a Computer *Exploring keyboards and mice* Computational Thinking *Creating algorithms, solving problems, debugging*	Spring 1 Introduction to Data *Grouping and sorting objects, introduction to branching databases and pictograms* Spring 2 Programming Bee-Bots *Exploring position and direction and writing short algorithms and programs for floor robots.*	Summer 1 Exploring Hardware *Tinkering with and exploring computer parts and technology, introduction to digital photography.* Summer 2 Computational Thinking: Boats Ahoy! *Investigating boats, making predictions, exploring designs, debugging and role play.*

Computing Long Term Plan Cycle A			
Year group	Autumn	Spring	Summer
Y1/2	Autumn 1 Technology around us (1.1) *Recognising technology in school and using it responsibly.* Autumn 2 Digital painting (1.2) *Choosing appropriate tools in a program to create art, and making comparisons with working non-digitally.*	Spring 1 Moving a robot (1.3) *Writing short algorithms and programs for floor robots, and predicting program outcomes.* Spring 2 Digital photography (2.2) *Capturing and changing digital photographs for different purposes.*	Summer 1 Robot Algorithms (2.3) *Creating and debugging programs, and using logical reasoning to make predictions.* Summer 2 Making music (2.5) *Using a computer as a tool to explore rhythms and melodies, before creating a musical composition.*
Y3/4	Autumn 1	Spring 1	Summer 1

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	Connecting Computers (3.1) *Identifying that digital devices have inputs, processes, and outputs, and how devices can be connected to make networks.* <u>Autumn 2</u> Animation (3.2) *Capturing and editing digital still images to produce a stop-frame animation that tells a story*	Sequence in Music (3.3) *Creating sequences in a block-based programming language to make music.* <u>Spring 2</u> The Internet (4.1) *Recognising the internet as a network of networks including the WWW, and why we should evaluate online content.*	Events and Actions (3.6) *Writing algorithms and programs that use a range of events to trigger sequences of actions.* <u>Summer 2</u> Photo Editing (4.5) *Manipulating digital images, and reflecting on the impact of changes and whether the required purpose is fulfilled.*
Y5/6	<u>Autumn 1</u> Sharing Information (5.1) *Recognising IT systems around us and how they allow us to search the internet.* <u>Autumn 2</u> Vector Drawing (5.5) *Creating images in a drawing program by using layers and groups of objects.*	<u>Spring 1</u> Communication (6.1) *Identifying and exploring how data is transferred and information is shared online.* <u>Spring 2</u> Selection in Physical Computing (5.3) *Exploring conditions and selection using a programmable microcontroller.*	<u>Summer 1</u> Web Page Creation (6.2) *Designing and creating webpages, giving consideration to copyright, aesthetics, and navigation.* <u>Summer 2</u> Selection in Quizzes (5.6) *Exploring selection in programming to design and code an interactive quiz.*

Computing Long Term Plan Cycle B			
Year group	Autumn	Spring	Summer
Y1/2	<u>Autumn 1</u> IT around us (2.1) *Identifying IT and how its responsible use improves our world in school and beyond.* <u>Autumn 2</u> Digital writing (1.5) *Using a computer to create and format text, before comparing to writing non-digitally.*	<u>Spring 1</u> Grouping data (1.4) *Exploring object labels, then using them to sort and group objects by properties.* <u>Spring 2</u> Introduction to animation (1.6) *Designing and programming the movement of a character on screen to tell stories.*	<u>Summer 1</u> Pictograms (2.4) *Collecting data in tally charts and using attributes to organise and present data on a computer.* <u>Summer 2</u> Introduction to quizzes (2.6) *Designing algorithms and programs that use events to trigger sequences of code to make an interactive quiz.*

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Y3/4	<u>Autumn 1</u> Branching Databases (3.4) *Building and using branching databases to group objects using yes/no questions.* <u>Autumn 2</u> Audio Editing (4.2) *Capturing and editing audio to produce a podcast, ensuring that copyright is considered.*	<u>Spring 1</u> Repetition in Shapes (4.3) *Using a text-based programming language to explore count-controlled loops when drawing shapes.* <u>Spring 2</u> Desktop Publishing (3.5) *Creating documents by modifying text, images, and page layouts for a specified purpose.*	<u>Summer 1</u> Data Logging (4.4) *Recognising how and why data is collected over time, before using data loggers to carry out an investigation.* <u>Summer 2</u> Repetition in Games (4.6) *Using a block-based programming language to explore count-controlled and infinite loops when creating a game.*
Y5/6	<u>Autumn 1</u> Flat-file databases (5.4) *Using a database to order data and create charts to answer questions.* <u>Autumn 2</u> Video editing (5.2) *Planning, capturing, and editing video to produce a short film.*	<u>Spring 1</u> Variables in Games (6.3) *Exploring variables when designing and coding a game.* <u>Spring 2</u> Spreadsheets (6.4) *Answering questions by using spreadsheets to organise and calculate data.*	<u>Summer 1</u> 3D Modelling (6.5) *Planning, developing, and evaluating 3D computer models of physical objects.* <u>Summer 2</u> Sensing (6.6) *Designing and coding a project that captures inputs from a physical device.*

Progression of skills, knowledge and vocabulary

	Computing Systems & Networks	Creating Media	Programming	Data & Information
End of EYFS	**Using a computer** • Learn what a keyboard is and how to locate relevant keys • Learn what a mouse is and to develop basic mouse skills such as moving and clicking. **Exploring Hardware** • Learn how to explore and tinker with hardware to develop familiarity and introduce relevant vocabulary	**Using a Computer** • Use a simple online paint tool to create digital art. • Use a simple online paint tool to create digital art **Exploring Hardware** • Learn how to operate a camera and/or iPad and use it to take photographs. • Create a class collage using technology	**All About Instructions** • Follow instructions as part of practical activities and games • Learn to give simple instructions • Learn that an algorithm is a set of instructions to carry out a task, in a specific order • Learn to debug when things go wrong **Programming Bee-Bots**	**Introduction to Data** • Understand how to sort and categorise objects. • Explain how items have been sorted and categorised. • Explore and understand the concept of branch databases • Understand how to represent data in a pictogram • Understand how to read a simple pictogram

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	• Recognise that a range of technology is used in places such as homes and schools		• Understand the meaning of directional arrows • Follow a simple sequence of instructions • Experiment with programming a Bee-bot • Explore and tinker with hardware to develop familiarity and introduce relevant vocabulary • Learn how to give simple commands to a Bee-Bot • Learn to debug instructions, with the help of an adult, when things go wrong • Learn that an algorithm is a set of instructions to carry out a task, in a specific order • Follow an algorithm as part of an unplugged game **Computational Thinking: Boats Ahoy!** • Follow instructions to create a boat • Test and evaluate different materials • Identify problems with their creation and begin to suggest solutions	
Vocabulary	arrow, batteries, behind, buttons, click, computer, computer tower, cursor, dial, drag, drop, electricity, hard drive, keyboard, keys, larger, left click, letters, log in, log out, lowercase, memory, monitor, motherboard, mouse, move, numbers, off, on, on top of, open, power, right click, shut, speaker, system fan, technology, twist, type, under, uppercase, USB stick	blurred, blurry, camera, capture, clear, crisp, gallery, image, iPad, lens, line, paint, photograph, photographer, picture, point, record, selfie, shape, shoot, stamp, still, tablet	adjective, algorithm, arrow, back, backwards, circle, debug, describe, direction, directions, forward, instructions, left/right, program, route, run, sequence, shuffle, skip, stop, straight on, timer, turn, two-part instructions, under	altogether, bigger than, branch database, categorise, category, collect, colour, column, count, data, describe, divide, equal, graph, group, height, in total, least popular, length, less, more, most popular, pattern, pictogram, record, row, share, size, smaller than, sort, square, texture, weight
	Computing Systems & Networks	Creating Media	Programming	Data & Information

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End of Y2	**Technology around us (1.1)** • Identify technology • Identify a computer and its main parts • Use a mouse in different ways • Use a keyboard to type on a computer • Use the keyboard to edit text • Create rules for using technology responsibly **IT around us (2.1)** • Recognise the uses and features of information technology • Identify the uses of information technology in the school • Identify information technology beyond school • Explain how information technology helps us • Explain how to use information technology safely • Recognise that choices are made when using information technology	**Digital painting (1.2)** • Describe what different freehand tools do • Use the shape tool and the line tools • Make careful choices when painting a digital picture • Explain why I chose the tools I used • Use a computer on my own to paint a picture • Compare painting a picture on a computer and on paper **Digital photography (2.2)** • Use a digital device to take a photograph • Make choices when taking a photograph To describe what makes a good photograph • Decide how photographs can be improved • Use tools to change an image • Recognise that photos can be changed **Digital writing (1.5)** • Use a computer to write • Add and remove text on a computer • Identify that the look of text can be changed on a computer • Make careful choices when changing text • Explain why I used the tools that I chose • Compare typing on a computer to writing on paper **Making music (2.5)** • Say how music can make us feel • Identify that there are patterns in music • Show how music is made from a series of notes • Show how music is made from a series of notes • Create music for a purpose • Review and refine our computer work	**Moving a robot (1.3)** • Explain what a given command will do • Act out a given word • Combine forwards and backwards commands to make a sequence • Combine four direction commands to make sequences • Plan a simple program • Find more than one solution to a problem **Robot Algorithms (2.3)** • Describe a series of instructions as a sequence • Explain what happens when we change the order of instructions • Use logical reasoning to predict the outcome of a program (series of commands) • Explain that programming projects can have code and artwork • Design an algorithm • Create and debug a program that I have written **Introduction to animation (1.6)** • Choose a command for a given purpose • Show that a series of commands can be joined together • Identify the effect of changing a value • Explain that each sprite has its own instructions • Design the parts of a project • Use my algorithm to create a program **Introduction to quizzes (2.6)** • Explain that a sequence of commands has a start • Explain that a sequence of commands has an outcome • Create a program using a given design • Change a given design • Create a program using my own design • Decide how my project can be improved	**Grouping data (1.4)** • Label objects • Identify that objects can be counted • Describe objects in different ways • Count objects with the same properties • Compare groups of objects • Answer questions about groups of objects **Pictograms (2.4)** • Recognise that we can count and compare objects using tally charts • Recognise that objects can be represented as pictures • Create a pictogram • Select objects by attribute and make comparisons • Recognise that people can be described by attributes • Explain that we can present information using a computer
Vocabulary	barcode, computer, double-click, Information Technology (IT), keyboard, mouse, scanner/scanscreen, technology, trackpad, typing	brush size, brush style, colour, computers, erase, fill tool, fill, like/dislike, line tool, paint program, paintbrush, painting, pictures, prefer, primary colours, shape tools, tool, tools, undo tool, undo	actions, algorithm, appropriate, artwork, background, backwards, bee-bot, block, blocks, change, clear, command, compare, debug, debugging, decomposition, delete, design, directions, effect, evaluate features, forwards, go, instruction, joining, left, mat, modify, order,	attribute, block diagram, colour, common, compare, conclusion, count, data, data set, different, enter, explain, fewest, group, image, label, least common, least popular, more common, more than/less than, more/less, most

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		background, camera, capture, compose, device, digital, editing, filter, flash, focus, format, framing, image, landscape, light sources, lighting, photograph, portrait, subject bold, capital letters, compare, edit, font, format, italic, keyboard, keys, letters, mouse, open, redo, select, toolbar, type, typing, underline, undo, word processor, writing beat, create, emotion, emotions, feelings, instrument, loud, music, quiet, notes, pattern, pitch, pulse, rhythm, tempo	outcome, plan, predict, prediction, program, programming area, programming block, programming, project, reset, right, route, run, ScratchJr, sequence, sprite, start start block, turn, unambiguous, value	popular, most/least, object, organise, pictogram, property, same, search, shape, sharing, size, tally chart, the same, total, value, votes
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End of Y4	**Connecting Computers (3.1)** • Explain how digital devices function • Identify input and output devices • Recognise how digital devices can change the way we work • Explain how a computer network can be used to share information • Explore how digital devices can be connected • Recognise the physical components of a network **The Internet (4.1)** • Describe how networks physically connect to other networks • Recognise how networked devices make up the internet • Outline how websites can be shared via the World Wide Web (WWW) • Describe how content can be added and accessed on the World Wide Web (WWW) • Recognise how the content of the WWW is created by people • Evaluate the consequences of unreliable content	**Animation (3.2)** • Explain that animation is a sequence of drawings or photographs • Relate animated movement with a sequence of images • Plan an animation • Identify the need to work consistently and carefully • Review and improve an animation • Evaluate the impact of adding other media to an animation **Photo Editing (4.5)** • Explain that digital images can be changed • Change the composition of an image • Describe how images can be changed for different uses • Make good choices when selecting different tools • Recognise that not all images are real • Evaluate how changes can improve an image **Audio Editing (4.2)** • Identify that sound can be digitally recorded • Use a digital device to record sound • Explain that a digital recording is stored as a file • Explain that audio can be changed through editing	**Sequence in Music (3.3)** • Explore a new programming environment • Identify that commands have an outcome • Explain that a program has a start • Recognise that a sequence of commands can have an order • Change the appearance of my project • Create a project from a task description **Events and Actions (3.6)** • Explain how a sprite moves in an existing project • Create a program to move a sprite in four directions • Adapt a program to a new context • Develop my program by adding features • Identify and fix bugs in a program • Design and create a maze-based challenge **Repetition in Shapes (4.3)** • Identify that accuracy in programming is important • Create a program in a text-based language • Explain what 'repeat' means • Modify a count-controlled loop to produce a given outcome	**Branching Databases (3.4)** • Create questions with yes/no answers • Identify the object attributes needed to collect relevant data • Create a branching database • Explain why it is helpful for a database to be well structured • Identify objects using a branching database • Compare the information shown in a pictogram with a branching database **Data Logging (4.4)** • Explain that data gathered over time can be used to answer questions • Use a digital device to collect data automatically • Explain that a data logger collects 'data points' from sensors over time • Use data collected over a long duration to find information • Identify the data needed to answer questions • Use collected data to answer questions

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		• Show that different types of audio can be combined and played together • Evaluate editing choices made **Desktop Publishing (3.5)** • Recognise how text and images convey information • Recognise that text and layout can be edited • Choose appropriate page settings • Add content to a desktop publishing publication • Consider how different layouts can suit different purposes • Consider the benefits of desktop publishing	• Decompose a task into small steps • Create a program that uses count-controlled loops to produce a given outcome **Repetition in Games (4.6)** • Develop the use of count-controlled loops in a different programming environment • Explain that in programming there are infinite loops and count controlled loops • Develop a design that includes two or more loops which run at the same time • Modify an infinite loop in a given program • Design a project that includes repetition • Create a project that includes repetition	
Vocabulary	accurate, adverts connection, content, digital device, digital, download, files, honest, information, input, internet, links, network cables, network security, network sockets, network switch, network, non-digital, output, ownership, permission, process, program, router, routing, server, sharing, use, web address, web browser, web page, website, Wireless Access Point (WAP), World Wide Web	animation, character, consistency, events, flip book, frame, image, import, media, onion skinning, photograph, sequence, setting, stop-frame animation, transition adjustments, alter, background, clone, colours, combine, composite, copy, crop, cut, digital, edit, effects, font foreground, hue, image, made up, paste, real, retouch, rotate, saturation, save, select, sepia, undo, vignette, zoom align, audio, edit, editing, evaluate, export, feedback headphones, import, input device, layer, load, microphone, mp3, output device, playback, podcast, record, save, selection, sound, speaker, trim advantages, benefits communicate, content, copy, desktop publishing, disadvantages, font style, font, images, landscape, layout, orientation, paste, placeholder, portrait, purpose, template, text,	action, algorithm, animate, backdrop, block, bug, chord, code snippet, code, commands, costume, count-controlled loop, debug, debugging, decompose, design, duplicate, errors, evaluate event block, event, extension block, forever,glide, go to, infinite loop, logic, loop, modify, motion, move, note, order, pattern, pen up, pen, point in direction, procedure, program, programming blocks, programming, refine, repeat, repetition, resize, run the code, Scratch, sequence, setup, sprite, stage, task, test, trace, turn, value	analyse, attribute, branching database, collection, conclusion data logger, data set, data, database, decision tree, equal, even, export, import, information, input device, layout, logged, objects, questions,review, selecting, sensor, separate, table, value,
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End of Y6	**Sharing Information (5.1)** • Explain that computers can be connected together to form systems • Recognise the role of computer systems in our lives • Recognise how information is transferred over the internet • Explain how sharing information online lets people in different places work together • Contribute to a shared project online • Evaluate different ways of working together online **Communication (6.1)** • Identify how to use a search engine • Describe how search engines select results • Explain how search results are ranked • Recognise why the order of results is important, and to whom • Recognise how we communicate using technology • Evaluate different methods of online communication	**Vector Drawing (5.5)** • Identify that drawing tools can be used to produce different outcomes • Create a vector drawing by combining shapes • Use tools to achieve a desired effect • Recognise that vector drawings consist of layers • Group objects to make them easier to work with • Evaluate my vector drawing **Web Page Creation (6.2)** • Review an existing website and consider its structure • Plan the features of a web page • Consider the ownership and use of images (copyright) • Recognise the need to preview pages • Outline the need for a navigation path • Recognise the implications of linking to content owned by other people **Video editing (5.2)** • Explain what makes a video effective • Identify digital devices that can record video • Capture video using a range of techniques • Create a storyboard • Identify that video can be improved through reshooting and editing • Consider the impact of the choices made when making and sharing a video **3D Modelling (6.5)** • Use a computer to create and manipulate three-dimensional (3D) digital objects • Compare working digitally with 2D and 3D graphics • Construct a digital 3D model of a physical object • Identify that physical objects can be broken down into a collection of 3D shapes • Design a digital model by combining 3D objects • Develop and improve a digital 3D model	**Selection in Physical Computing (5.3)** • Control a simple circuit connected to a computer • Write a program that includes count-controlled loops • Explain that a loop can stop when a condition is met • Explain that a loop can be used to repeatedly check whether a condition has been met • Design a physical project that includes selection • Create a program that controls a physical computing project **Selection in Quizzes (5.6)** • Explain how selection is used in computer programs • Relate that a conditional statement connects a condition to an outcome • Explain how selection directs the flow of a program • Design a program which uses selection • Create a program which uses selection • Evaluate my program **Variables in Games (6.3)** • Define a 'variable' as something that is changeable • Explain why a variable is used in a program • Choose how to improve a game by using variables • Design a project that builds on a given example • Use my design to create a project • Evaluate my project **Sensing (6.6)** • Create a program to run on a controllable device • Explain that selection can control the flow of a program • Update a variable with a user input • Use an conditional statement to compare a variable to a value • Design a project that uses inputs and outputs on a controllable device • Develop a program to use inputs and outputs on a controllable device	**Flat-file databases (5.4)** • Use a form to record information • Compare paper and computer-based databases • Outline how grouping and then sorting data allows us to answer questions • Explain that tools can be used to select specific data • Explain that computer programs can be used to compare data visually • Apply my knowledge of a database to ask and answer real-world questions **Spreadsheets (6.4)** • Identify questions which can be answered using data • Explain that objects can be described using data • Explain that formulas can be used to produce calculated data • Apply formulas to data, including duplicating • Create a spreadsheet to plan an event • Choose suitable ways to present data

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Vocabulary	address, algorithm, bot, chat, collaboration, communication, connection, content creator, crawler, data payload, data, digital, domain name server (DNS), explore, header, index,input, internet protocol (IP) address, internet, links, one-to-many one-to-one, one-way, ordering, output, packet, private, process, protocol, public, ranking, refine, remix, reuse, search engine optimisation (SEO), search engine, search, searching, selection, slide deck, system, two-way, web crawler	align, colour, copy, drawing tools, duplicate, group, layers, modify, move, object, order, paste, reflection, resize, reuse, rotate, select, toolbar, ungroup, vector drawing vector, zoom breadcrumb trail, browser, copyright, device, embed evaluate, external link, fair use, google sites, header, home page, hyperlink, HyperText Markup Language (HTML), implication, layout, logo, media, navigation, preview, purpose, subpage, web page, website audio, camera, clip, close up, delete, edit, evaluate, export, filming, high angle, import, lens, long shot, low angle, microphone, mid range, moving subject, normal angle, pan, panning, reorder, reshoot, review, share side by side, split, static camera, storyboard, talking head, tilt, trim, video camera, video, zoom 2d, 3d shapes, 3d, choose, combine, construct, cylinder, duplicate, evaluate, group, handles, hollow, lift, lower, modify move, perspective, placeholder, recolour, resize, rotate, select, shapes, view	accelerometer, action, algorithm, answer, artwork, battery box, change, code, compass, components, condition, conditional statement, connect, connection, count-controlled loop, create, crocodile clips, Crumble Controller, debug, design,direction, evaluate, event, false, flashing, if then else, implement, improve, infinite loop, input, led, Makecode, Micro:bit, microcontroller, motor, name, navigation, outcomes, output, plan, process, program, project, question, random, repetition, run,selection, sensing, set, setup, share, Sparkle, step counter, switch, task, test, trace, true, USB, value, variable	axis, calculate, calculation, cell reference, cell, chart, collecting, compare, comparison, criteria, data, data item, data set, database, duplicate, evaluate, field, filter, format, formula, graph, group, information, input, operation, order, organised, output, presentation, propose, questions, range, record, results, search, sigma, software, sort, spreadsheet, structure, table, tools, value