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| **Happiness Responsibility Friendship Respect Courage** |
| **DIGITAL LITERACY** |
| **Computer Systems and Networks** |
| **Connecting Computers** | **The Internet** | **Sharing Information** | **Communication** |
| **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| Knowledge | Skills | Knowledge | Skills | Knowledge | Skills | Knowledge | Skills |
| I know how digital devices function.I know that input and output devices are parts of digital devices.I know how digital devices can change the way we work.I know how a computer network can be used to share information. I know how digital devices are connected.I know some of the physical components in a network.  | I can explain that a digital device accepts inputs and produce outputs.I can follow a processI can explain how I use digital devices for different activitiesI can recognise different connections.I can explain the role of a switch, server and wireless access point in a network. | I know networks physically connect to other networks.I know the WWW is part of the internet and that the WWW contains websites and web pages.I know how websites and webpages can be shared on the WWW.I know who owns the content on the WWW.I know that not everything on the WWW is true.  | I can describe how networks physically connect to other networks using routers.I recognise that there are lots of routers connecting the internet.I can describe the difference between a website and a webpage.I can explain how websites can be shared on WWW and how they can be added to and accessed. I recognise that the content is created and shared by people I can evaluate the consequences of unreliable content.  | I know that computers can be joined together to form systems.I know that computers work by receiving, storing, processing and sending out information.I know how to use a variety of search engines.**I know search engines select and rank results using an algorithm.****I know that search results are ranked by a search engine using rules.** | **I can explain how computers can be connected to form small and larger systems.** **I can recognise the role of computer systems in our lives.****I can refine searches and compare results from different search engines.****I can recognise the role of web crawlers in creating an index.****I can explain that a search engine uses rules to rank relevant pages.**  | **I know the importance of internet addresses.****I know that information is transferred over the internet in packets.****I know that sharing information online helps people in different places work together.****I know how we communicate using technology.** |  **I can describe how computers use addresses to access websites.****I can explain how working together online enables effective communication.****I can evaluate different methods of online communication.** |
| Key vocabulary: digital, device, function, input, output, network, components, wireless access, process | Key vocabulary: WWW, networks, content, website, webpage, router, internet,  | Key vocabulary: processing, search engine, rank results, algorithm, systems web crawlers | Key vocabulary: internet address, packets, technology, online communication, effective communication |
| **INFORMATION TECHNOLOGY** |
| **DATA AND INFORMATION** |
|  | **Branching Databases****(Cross-curricular)** |  | **Spreadsheets****(Cross-curricular)** |
| **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| Knowledge | Skills | Knowledge | Skills | Knowledge | Skills | Knowledge | Skills |
| Strand not taught in Y3 | Strand not taught in Y3 | I know what a branching database is and that they use yes/no questions. I know the term attribute.I can create a branching database on paper and online. | I can ask questions with yes/no answers.I can create groups of objects separated by attributes. I can select and group objects and arrange them in a branching database.I can identify objects using a branching database. | Strand not taught in Y5 | Strand not taught in Y5 | I know that a spreadsheet is a computer application that allows users to store and analyse data in a table.I know how to build a data set.I know how to create/use formulas.I know how to create a spreadsheet to plan an event.I know how to present data from my spreadsheet graphically.      | Identify questions that can be answered using data.I can explain that objects can be described using data.I can use cell references.I can identify that changing inputs changes outputs.I can duplicate formulas to apply formulas to multiple cells.I can use a spreadsheet to answer questions.I can produce and use a graph to answer questions. |
|  | Key vocabulary: branching, database, attribute |  | Key Vocabulary: Computer application, data, formulas, spreadsheet, cell references, duplicate formulas, graph |
| **INFORMATION TECHNOLOGY** |
| **CREATING MEDIA** |
| **Animation****(Cross-curricular)** |  | **Video Editing****(Cross-curricular)** |  |
| **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| Knowledge  | Skills  | Knowledge  | Skills  | Knowledge  | Skills  | Knowledge  | Skills  |
| I know that a stop frame animation is a sequence of drawings or images. | I can create a paper-based flip book.I can plan an animationI can use the onion skinning tool to make small changes between frames.I can add other media to my animation. | Strand not taught in Y4 | Strand not taught in Y4 | I know some features of video as a visual media format.I know which devices can and can’t record video.I know that filming techniques can be used to create different effects.I know that videos can be improved by reshooting and editing.I know that projects need to be exported to be shared. | I can use pan, tilt, zoom and different camera angles.I can use a storyboard to determine what scenes will convey my idea.I can choose whether to reshoot a scene or improve through editing.I can edit my video using split, trim and crop; I understand there are limitations set by the device/ software.  | Strand not taught in Y6 | Strand not taught in Y6 |
| Key vocabulary: Animation, Stop frame, sequence, flip book, onion skinning, frames, media |  | Key vocabulary: features, visual media, format, reshooting, editing, export, scenes, split, trim, crop, device, software. |  |

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| **COMPUTER SCIENCE** |
| **Programming A** |
| **Sequence in music** | **Repetition in shapes** | **Selection in physical computing** | **Variables in games** |
| **Year Three** | **Year Four** | **Year Five** | **Year Six** |
| Knowledge  | Skills  | Knowledge  | Skills  | Knowledge  | Skills  | Knowledge  | Skills  |
| I know that Scratch is a programming environment that uses block code.I know how to program sprites.I know that a sequence means joining blocks of code together.I know that a sequence of commands has an order. | I can choose commands to control sprites.I can create a program following a design.I can start a program in different ways.I can create a sequence of connected commands.I can create my own project using sequences, sprites with costumes and multiple backdrops.I can create a musical instrument from a task description. | I know that Logo is a text-based programming language.I know some common commands in logo.Fd, bk, lt, rt, setcolor, pu,pdI know an algorithm is a precise set of instructions.I know how to write text-based code from an algorithm.I know that a count- controlled loop allows commands to be repeated. I know decomposition means breaking things down into smaller parts to make them easier to work with. | I can program a computer by typing commands (in a text-based language).I can input commands to draw shapes.I can use the repeat function to draw shapes.I can use decomposition to write and build procedures. I can use a count-controlled loop to build repeating shapes and patterns.I can debug and fix errors in text-based code. | I know that a microcontroller (Crumble) is a physical computing environment.I know how to control a simple circuit connected to a computer.I know that a switch can provide the controller with an input that can be used as a condition.I know that a loop can be used to repeatedly check whether a condition has been met. | I can create a simple circuit and connect it to a microcontroller.I can explain what an infinite loop does.I can write a program that includes count-controlled loops.I can explain that a loop can stop when a condition is met.I can program a controller to respond to an input.I can use selection (an ‘if…then…’ statement) to direct the flow of a program.I can design a physical project that includes selection.I can create a program that controls a physical computing project. | I know a variable is something that is changeable.I know that variables are used in programming. | I can identify examples of information that is variable.I can explain that the way that a variable changes can be defined.I can identify that variables can hold numbers or letters.I can explain why a variable is used in a program.I can decide where in a program to change a variable.I can make use of an event in a program to set a variable.I can recognise that the value of a variable can be used by a program.I can design and create a project using variables.  |
| Key Vocabulary: programming, environment, sprites, program, blocks, code, sequence, command, design, costumes, backdrops | Key Vocabulary: Logo, programming, algorithm, instructions, controlled loop, commands, repeat, decomposition, function, debug, code | Key Vocabulary: microcontroller, switch, condition, loop, circuit, infinite loop, program, design, physical project, selection | Key Vocabulary: variable, design, project, program. |
| **Programming B** |
| **Events and Actions** | **Repetition in games** | **Selection in quizzes** |  |
| **Year Three** | **Year Four** | **Year Five** | **Year Six** |
| Knowledge  | Skills  | Knowledge  | Skills  | Knowledge  | Skills  | Knowledge  | Skills  |
| **Laptops are required for this unit as all commands will not run on iPads.**I know the relationship between an event and an action.I know that debugging is identifying and fixing errors in a program. | I can move a sprite in an existing project.I can create a project to move a sprite in 4 directions. I can use a programming extension block.I can develop my program by adding features.I can test, match code and modify a program. | I know that we can use a loop command in a program to repeat instructions.I know that in programming there are infinite loops and count-controlled loops.I know that a count-controlled loop will stop repeating after a certain number of times.I know that an infinite loop will run until the program is stopped. I know when to use a certain loop.  | I can use a count-controlled loop to produce a specific outcome.I can modify loops to produce a given outcome.I can design and create a project that includes repetition.I can recognise that some programming languages enable more than one process to be run at once. | I know how selection is used.I know that a conditional statement connects a condition to an outcome.I know how selection directs the flow of a program. | I can identify conditions in a program.I can modify a condition in a programI can use selection in an infinite loop to check a condition.I can identify the condition and outcomes in an ‘if… then… else…’ statement.I can create a program with different outcomes using selection.I can explain that program flow can branch according to a condition.I can design the flow of a program which contains ‘if… then… else…’I can show that a condition can direct program flow in one of two waysI can design, create and evaluate a program that uses selection. | I know that the micro:bit is an input, process, output device that can be programmed.I know that selection can control the flow of a program.I know that the value of a variable can be changed using selection.I know how to create code for a given design.]I know the term ’operand’.I know how to apply my knowledge of programming: sequence, repetition, selection and variables.  | I can apply my knowledge of programming to a new environment.I can test my program on an emulatorI can transfer my program to a controllable device.I can apply my knowledge of a variable in an if, then, else statement to select the flow of a program.I can update a variable with user input.I can explain the importance of the order of conditions in else, if statements.I can use an operand (e.g. <>=) in an if, then statement.I can design a project that uses inputs and outputs on a controllable device.I can develop a program to use inputs and outputs on a controllable device. |
| Key Vocabulary: event, action, debugging, sprite, project, extension block, features, test, code, modify,  | Key Vocabulary: loop command, infinte loop, count-controlled loop, modify, design, create, repetition, process. | Key Vocabulary: selection, condition, statement, outcome, identify, infinite loop, branch, design, create, evaluate. | Key Vocabulary: microbit, input, output, selection, control, variable, sequence, repetition, selection, environment, operand |

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| KS2 Vocabulary |
| **Previous Learning (KS1)** | **Vocabulary** | **Definition** |
| Algorithm | Computer network | A group of interconnected computing devices |
| Attribute (property) | Computer system | A combination of hardware and software that can have data input to it, which it then processes and outputs. It can be programmed to perform a variety of tasks. |
| Code | Condition | A statement that can be either True or False |
| Code snippet | Condition-controlled loop | A command that repeatedly runs a defined section of code until a condition is met |
| Command | Count-controlled loop | A command that repeatedly runs a defined section of code indefinitely |
| Computer | Data set | A collection of related data |
| Data | Decompose | To break down a task into smaller, more achievable steps |
| Debugging | Digital device | A computer or a device with a computer inside that has been programmed for a specific task |
| Information | Domain name | The part of a website’s URL that is user friendly and identifies that it is under the control of a particular person or organisation e.g. raspberrypi.org |
| Information technology | Execute (run) | To action the commands in a program |
| Object | Hardware | The physical parts of a **computer system** |
| Program | HTML (HyperText Markup Language) | A standardised language used to define the structure **of** web pages |
| Property (attribute) | Hyperlink | Text or media that when clicked, takes the user to another specified location |
| Run (execute) | Input | Data that is sent to a program to be processed |
| Technology | Input device | A piece of hardware used to control, or send data to, a computer. |
|  | Internet | The global system of interconnected computer networks |
|  | Loop | (Count-controlled, condition-controlled, or infinite) Commands that repeatedly run a defined section of code |
|  | Object | Something that is uniquely identifiable and has attributes |
|  | Output | The result of data processed by a computer |
|  | Output device | A piece of hardware that is controlled by outputs from a computer |
|  | Procedure | A named set of commands that can be called multiple times throughout a program. This type of subroutine does not return a value. |
|  | Process | A program, or part of a program, that is running on a computer |
|  | Repetition | Part of a program where one or more commands are run multiple times in a loop |
|  | Router | A device that manages the flow of data between computer networks |
|  | Selection | Part of a program where if a condition is met, then a set of commands is run |
|  | Server | A networked computer that manages, stores, and provides data such as files to other computers |
|  | Software | The programs used to control computers and perform specific tasks |
|  | Stored (data) | Data kept digitally so that it can be accessed by a computer |
|  | Subroutine | A named sequence of **commands** designed to perform a specific task |
|  | Switch (network switch) | A device that manages the flow of **data packets** within a **computer network** |
|  | URL (Uniform Resource Locator) | The address of a file on the **internet** |
|  | Variable | A named piece of **data** (often a number or text) **stored** in a computer’s memory, which can be accessed and changed by a **computer program** |
|  | Web browser | A **program** used to view, navigate, and interact with **web pages** |
|  | Web page | A **HTML** document viewed using a **web browser** |
|  | Website | A collection of interlinked web pages stored under a single domain |
|  | WiFi | A technology that allows devices to wirelessly access a **network** and transfer **data** |
|  | WAP (Wireless Access Point) | A network device that allows wireless computing devices to connect to a wired network |
|  | WWW (World Wide Web) | A service provided via **the internet** that allows access to **web pages** and other shared files |