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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 process  I can explain how I use digital devices for different activities  I 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 animation  I 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,pd  I 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 program  I 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 ways  I 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 emulator  I 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 |