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| **Year****Group** |  | **Autumn** |  | **Spring** |  | **Summer** |
| **EYFS****Nursery and Reception** |  | The computing curriculum in our EYFS cross references with the prime areas of learning, specific areas of learning and the characteristics of effective learning. We use the Barefoot guidance for ‘computing’ at school. We learn computational thinking skills without necessarily using technology. For example, children may use pattern to know more about algorithms, children will know how to sort, match, group and name objects (classification).Children will have access to technology such as laptops, desktop computers, talking tins, cameras, ipads through their continuous provision and will know.Our two year olds learn about pushing buttons, levers, springs to control objects. Children can use logic to press a button for cause and effect.In Nursery, children know how to manipulate objects such as moving an image on an interactive screenIn Reception children apply their knowledge learnt to complete simple programmes on the desktop computers building on their knowledge of cause and effect. They will know the vocabulary ready for year 1 such as keyboard, mouse, screen, monitor, drag and know how to use a mouse and mouse pad to manipulate and move between screens and pages. They will know that simple instructions such as arrows or the delete and enter keys can affect what the technology does. |
| **1** | **Knowledge** | * **Computing Systems and Networks. Technology around us**
* **Creating Media. Digital Painting**

**1.4 use technology purposefully to create, organise, store, manipulate and retrieve digital****content****1.5 recognise common uses of information technology beyond school****1.6 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.** | **Knowledge** | * **Programming A- Moving a Robot**
* **Data and Information- Grouping Data**

**1.1understand what algorithms are; how they are implemented as programs on digital****devices: and that programs execute by following precise and unambiguous instructions****1.2 create and debug simple programs****1.3 use logical reasoning to predict the behaviour of simple programs****1.4 use technology purposefully to create, organise, store, manipulate and retrieve digital content****1.5 recognise common uses of information technology beyond school****1.6 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.** | **Knowledge** | * **Creating Media- Digital Writing**
* **Programming B-Introduction to Animation**

**1.1understand what algorithms are; how they are implemented as programs on digital****devices: and that programs execute by following precise and unambiguous instructions****1.2 create and debug simple programs****1.3 use logical reasoning to predict the behaviour of simple programs****1.4 use technology purposefully to create, organise, store, manipulate and retrieve digital content****1.6 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.** |
| **Skills** | **To identify technology****To identify a computer and its main parts****To use a mouse in different ways****To use a keyboard to type on a computer****To use the keyboard to edit text****To create rules for using technology responsibly****To describe what different freehand tools do****To use the shape tool and the line tools****To make careful choices when painting a digital picture****To explain why I chose the tools I used****To use a computer on my own to paint a picture****To compare painting a picture on a computer and on paper** | **Skills** | **To explain what a given command will do****To act out a given word****To combine forwards and backwards commands to make a sequence****To combine four direction commands to make sequences****To plan a simple program****To find more than one solution to a problem****To label objects****To identify that objects can be counted****To describe objects in different ways****To count objects with the same properties****To compare groups of objects****To answer questions about groups of objects** | **Skills** | **To use a computer to write****To add and remove text on a computer****To identify that the look of text can be changed on a computer****To make careful choices when changing text****To explain why I used the tools that I chose****To compare typing on a computer to writing on paper****To choose a command for a given purpose****To show that a series of commands can be joined together****To identify the effect of changing a value****To explain that each sprite has its own instructions****To design the parts of a project****To use my algorithm to create a program** |

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| **Year****Group** |  | **Autumn** |  | **Spring** |  | **Summer** |
| **2** | **Knowledge** | * **Computing Systems and Networks.IT Around Us**
* **Creating Media. Digital Photography**

**1.4 use technology purposefully to create, organise, store, manipulate and retrieve digital****content****1.5 recognise common uses of information technology beyond school****1.6 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.** | **Knowledge** | * **Programming A- robot Algorithms**
* **Data and Information-Pictograms**

**1.1understand what algorithms are; how they are implemented as programs on digital****devices: and that programs execute by following precise and unambiguous instructions****1.2 create and debug simple programs****1.3 use logical reasoning to predict the behaviour of simple programs****1.4 use technology purposefully to create, organise, store, manipulate and retrieve digital content****1.6 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.** | **Knowledge** | * **Creating Media-Music Making**
* **Programming B-An Introduction to Quizzes**

**1.1understand what algorithms are; how they are implemented as programs on digital****devices: and that programs execute by following precise and unambiguous instructions****1.2 create and debug simple programs****1.3 use logical reasoning to predict the behaviour of simple programs****1.4 use technology purposefully to create, organise, store, manipulate and retrieve digital content** |
| **Skills** | **To recognise the uses and features of information technology****To identify the uses of information technology in the school****To identify information technology beyond school****To explain how information technology helps us****To explain how to use information technology safely****To recognise that choices are made when using information technology****To use a digital device to take a photograph****To make choices when taking a photograph****To describe what makes a good photograph****To decide how photographs can be improved****To use tools to change an image****To recognise that photos can be changed** | **Skills** | **To describe a series of instructions as a sequence****To explain what happens when we change the order of instructions****To use logical reasoning to predict the outcome of a program (series of commands)****To explain that programming projects can have code and artwork****To design an algorithm****To create and debug a program that I have written****To recognise that we can count and compare objects using tally charts****To recognise that objects can be represented as pictures****To create a pictogram****To select objects by attribute and make comparisons****To recognise that people can be described by attributes****To explain that we can present information using a computer** | **Skills** | **To say how music can make us feel****To identify that there are patterns in music****To show how music is made from a series of notes****To show how music is made from a series of notes****To create music for a purpose****To review and refine our computer work****To explain that a sequence of commands has a start****To explain that a sequence of commands has an outcome****To create a program using a given design****To change a given design****To create a program using my own design****To decide how my project can be improved** |

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| **Year****Group** |  | **Autumn** |  | **Spring** |  | **Summer** |
| **3** | **Knowledge** | * **Computing Systems and Networks. Connecting Computers**
* **Creating Media. Animation**

**2.2 use sequence, selection, and repetition in programs; work with variables and various****2.4 understand computer networks including the internet; how they can provide multiple****services, such as the world wide web; and the opportunities they offer for communication and collaboration****2.6 select, use and combine a variety of software (including internet services) on a range of****digital devices to design and create a range of programs, systems and content that****accomplish given goals, including collecting, analysing, evaluating and presenting data****and information****2.7 use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about****content and contact.** | **Knowledge** | * **Programming A- Sequence in Music**
* **Data and Information-Branching Databases**

**2.1 design, write and debug programs that accomplish specific goals, including controlling****or simulating physical systems; solve problems by decomposing them into smaller parts****2.2 use sequence, selection, and repetition in programs; work with variables and various****forms of input and output****2.3 use logical reasoning to explain how some simple algorithms work and to detect and****correct errors in algorithms and programs****2.6 select, use and combine a variety of software (including internet services) on a range of****digital devices to design and create a range of programs, systems and content that****accomplish given goals, including collecting, analysing, evaluating and presenting data****and information** | **Knowledge** | * **Creating Media-Desktop Publishing**
* **Programming B-Events and Actions**

**2.1 design, write and debug programs that accomplish specific goals, including controlling****or simulating physical systems; solve problems by decomposing them into smaller****parts****2.2 use sequence, selection, and repetition in programs; work with variables and various****forms of input and output****2.3 use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs****2.5 use search technologies effectively, appreciate how results are selected and ranked,****and be discerning in evaluating digital content****2.6 select, use and combine a variety of software (including internet services) on a range of****digital devices to design and create a range of programs, systems and content that****accomplish given goals, including collecting, analysing, evaluating and presenting data****and information** |
| **Skills** | **To explain how digital devices function****To identify input and output devices****To recognise how digital devices can change the way we work****To explain how a computer network can be used to share information****To explore how digital devices can be connected****To recognise the physical components of a network****To explain that animation is a sequence of drawings or photographs****To relate animated movement with a sequence of images****To plan an animation****To identify the need to work consistently and carefully****To review and improve an animation****To evaluate the impact of adding other media to an animation** | **Skills** | **To explore a new programming environment****To identify that commands have an outcome****To explain that a program has a start****To recognise that a sequence of commands can have an order****To change the appearance of my project****To create a project from a task description****To create questions with yes/no answers****To identify the object attributes needed to collect relevant data****To create a branching database****To explain why it is helpful for a database to be well structured****To identify objects using a branching database****To compare the information shown in a pictogram with a branching database** | **Skills** | **To recognise how text and images convey information****To recognise that text and layout can be edited****To choose appropriate page settings****To add content to a desktop publishing publication****To consider how different layouts can suit different purposes****To consider the benefits of desktop publishing****To explain how a sprite moves in an existing project****To create a program to move a sprite in four directions****To adapt a program to a new context****To develop my program by adding features****To identify and fix bugs in a program****To design and create a maze-based challenge** |

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| **Year****Group** |  | **Autumn** |  | **Spring** |  | **Summer** |
| **4** | **Knowledge** | * **Computing Systems and Networks. The Internet**
* **Creating Media. Audio Editing**

**2.4 understand computer networks including the internet; how they can provide multiple****services, such as the world wide web; and the opportunities they offer for****communication and collaboration****2.5 use search technologies effectively, appreciate how results are selected and ranked,****and be discerning in evaluating digital content****2.6 select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that****accomplish given goals, including collecting, analysing, evaluating and presenting data****and information****2.7 use technology safely, respectfully and responsibly; recognise****acceptable/unacceptable behaviour; identify a range of ways to report concerns about****content and contact.** | **Knowledge** | * **Programming A-Repetition in Shapes**
* **Data and Information- Data Logging**

**2.1 design, write and debug programs that accomplish specific goals, including controlling****or simulating physical systems; solve problems by decomposing them into smaller****parts****2.2 use sequence, selection, and repetition in programs; work with variables and various****forms of input and output****2.3 use logical reasoning to explain how some simple algorithms work and to detect and****correct errors in algorithms and programs****2.6 select, use and combine a variety of software (including internet services) on a range of****digital devices to design and create a range of programs, systems and content that****accomplish given goals, including collecting, analysing, evaluating and presenting data****and information** | **Knowledge** | * **Creating Media-Photo Editing**
* **Programming B- Repetition in Games**

**2.1 design, write and debug programs that accomplish specific goals, including controlling****or simulating physical systems; solve problems by decomposing them into smaller****parts****2.2 use sequence, selection, and repetition in programs; work with variables and various****forms of input and output****2.3 use logical reasoning to explain how some simple algorithms work and to detect and****correct errors in algorithms and programs****2.5 use search technologies effectively, appreciate how results are selected and ranked,****and be discerning in evaluating digital content****2.6 select, use and combine a variety of software (including internet services) on a range of****digital devices to design and create a range of programs, systems and content that****accomplish given goals, including collecting, analysing, evaluating and presenting data****and information****2.7 use technology safely, respectfully and responsibly; recognise****acceptable/unacceptable behaviour; identify a range of ways to report concerns about****content and contact.** |
| **Skills** | **To describe how networks physically connect to other networks****To recognise how networked devices make up the internet****To outline how websites can be shared via the World Wide Web (WWW)****To describe how content can be added and accessed on the World Wide Web (WWW)****To recognise how the content of the WWW is created by people****To evaluate the consequences of unreliable content****To identify that sound can be digitally recorded****To use a digital device to record sound****To explain that a digital recording is stored as a file****To explain that audio can be changed through editing****To show that different types of audio can be combined and played together****To evaluate editing choices made** | **Skills** | **To identify that accuracy in programming is important****To create a program in a text-based language****To explain what ‘repeat’ means****To modify a count-controlled loop to produce a given outcome****To decompose a task into small steps****To create a program that uses count-controlled loops to produce a given outcome****To explain that data gathered over time can be used to answer questions****To use a digital device to collect data automatically****To explain that a data logger collects ‘data points’ from sensors over time****To use data collected over a long duration to find information****To identify the data needed to answer questions****To use collected data to answer questions** | **Skills** | **To explain that digital images can be changed****To change the composition of an image****To describe how images can be changed for different uses****To make good choices when selecting different tools****To recognise that not all images are real****To evaluate how changes can improve an image****To develop the use of count-controlled loops in a different programming environment****To explain that in programming there are infinite loops and count controlled loops****To develop a design that includes two or more loops which run at the same time****To modify an infinite loop in a given program****To design a project that includes repetition****To create a project that includes repetition** |

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| **Year****Group** |  | **Autumn** |  | **Spring** |  | **Summer** |
| **5** | **Knowledge** | * **Computing Systems and Networks. Sharing Information**
* **Creating Media. Video Editing**

**2.1 design, write and debug programs that accomplish specific goals, including controlling****or simulating physical systems; solve problems by decomposing them into smaller parts****2.2 use sequence, selection, and repetition in programs; work with variables and various****forms of input and output****2.3 use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs****2.4 understand computer networks including the internet; how they can provide multiple****services, such as the world wide web; and the opportunities they offer for communication and collaboration****2.6 select, use and combine a variety of software (including internet services) on a range of****digital devices to design and create a range of programs, systems and content that****accomplish given goals, including collecting, analysing, evaluating and presenting data****and information****2.7 use technology safely, respectfully and responsibly; recognise****acceptable/unacceptable behaviour; identify a range of ways to report concerns about****content and contact.** | **Knowledge** | * **Programming A-Selection in Physical Computing**
* **Data and Information- Flat-File Databases**

**2.1 design, write and debug programs that accomplish specific goals, including controlling****or simulating physical systems; solve problems by decomposing them into smaller parts****2.2 use sequence, selection, and repetition in programs; work with variables and various forms of input and output****2.3 use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs****2.5 use search technologies effectively, appreciate how results are selected and ranked,****and be discerning in evaluating digital content****2.6 select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information** | **Knowledge** | * **Creating Media- Vector Drawing**
* **Programming B- selection in Quizzes**

**2.1 design, write and debug programs that accomplish specific goals, including controlling****or simulating physical systems; solve problems by decomposing them into smaller parts****2.2 use sequence, selection, and repetition in programs; work with variables and various forms of input and output****2.3 use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs****2.6 select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information** |
| **Skills** | **To explain that computers can be connected together to form systems****To recognise the role of computer systems in our lives****To recognise how information is transferred over the internet****To explain how sharing information online lets people in different places work together****To contribute to a shared project online****To evaluate different ways of working together online****To explain what makes a video effective****To identify digital devices that can record video****To capture video using a range of techniques****To create a storyboard****To identify that video can be improved through reshooting and editing****To consider the impact of the choices made when making and sharing a video** | **Skills** | **To control a simple circuit connected to a computer****To write a program that includes count-controlled loops****To explain that a loop can stop when a condition is met****To explain that a loop can be used to repeatedly check whether a condition has been met****To design a physical project that includes selection****To create a program that controls a physical computing project****To use a form to record information****To compare paper and computer-based databases****To outline how grouping and then sorting data allows us to answer questions****To explain that tools can be used to select specific data****To explain that computer programs can be used to compare data visually****To apply my knowledge of a database to ask and answer real-world questions** | **Skills** | **To identify that drawing tools can be used to produce different outcomes****To create a vector drawing by combining shapes****To use tools to achieve a desired effect****To recognise that vector drawings consist of layers****To group objects to make them easier to work with****To evaluate my vector drawing****To explain how selection is used in computer programs****To relate that a conditional statement connects a condition to an outcome****To explain how selection directs the flow of a program****To design a program which uses selection****To create a program which uses selection****To evaluate my program** |

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| **Year****Group** |  | **Autumn** |  | **Spring** |  | **Summer** |
| **6** | **Knowledge** | * **Computing Systems and Networks. Communication**
* **Creating Media. Webpage Creation**

**2.1 design, write and debug programs that accomplish specific goals, including controlling****or simulating physical systems; solve problems by decomposing them into smaller parts****2.4 understand computer networks including the internet; how they can provide multiple****services, such as the world wide web; and the opportunities they offer for communication and collaboration****2.5 use search technologies effectively, appreciate how results are selected and ranked,****and be discerning in evaluating digital content****2.6 select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information****2.7 use technology safely, respectfully and responsibly; recognise****acceptable/unacceptable behaviour; identify a range of ways to report concerns about****content and contact.** | **Knowledge** | * **Programming A- Variables in Games**
* **Data and Information- Spreadsheets**

**2.1 design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts****2.2 use sequence, selection, and repetition in programs; work with variables and various forms of input and output****2.3 use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs****2.6 select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information** | **Knowledge** | * **Creating Media- 3D Modelling**
* **Programming B- Sensing**

**2.1 design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts****2.2 use sequence, selection, and repetition in programs; work with variables and various forms of input and output****2.3 use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs****2.6 select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information** |
| **Skills** | **To identify how to use a search engine****To describe how search engines select results****To explain how search results are ranked****To recognise why the order of results is important, and to whom****To recognise how we communicate using technology****To evaluate different methods of online communication****To review an existing website and consider its structure****To plan the features of a web page****To consider the ownership and use of images (copyright)****To recognise the need to preview pages****To outline the need for a navigation path****To recognise the implications of linking to content owned by other people** | **Skills** | **To define a ‘variable’ as something that is changeable****To explain why a variable is used in a program****To choose how to improve a game by using variables****To design a project that builds on a given example****To use my design to create a project****To evaluate my project****To identify questions which can be answered using data****To explain that objects can be described using data****To explain that formulas can be used to produce calculated data****To apply formulas to data, including duplicating****To create a spreadsheet to plan an event****To choose suitable ways to present data** | **Skills** | **To use a computer to create and manipulate three-dimensional (3D) digital objects****To compare working digitally with 2D and 3D graphics****To construct a digital 3D model of a physical object****To identify that physical objects can be broken down into a collection of 3D shapes****To design a digital model by combining 3D objects****To develop and improve a digital 3D model****To create a program to run on a controllable device****To explain that selection can control the flow of a program****To update a variable with a user input****To use a conditional statement to compare a variable to a value****To design a project that uses inputs and outputs on a controllable device****To develop a program to use inputs and outputs on a controllable device** |