Subject Intent

Computing

Children will be fluent in using a range of tools.

1. Children use technology safely, respectfully and responsibly

2. Children are masters of technology on a range of programs.

3. Children have the opportunity to design, write and debug programs.

4. Children will collaborate and communicate through computer networks

5. Children will share their learning in creative ways across the curriculum.
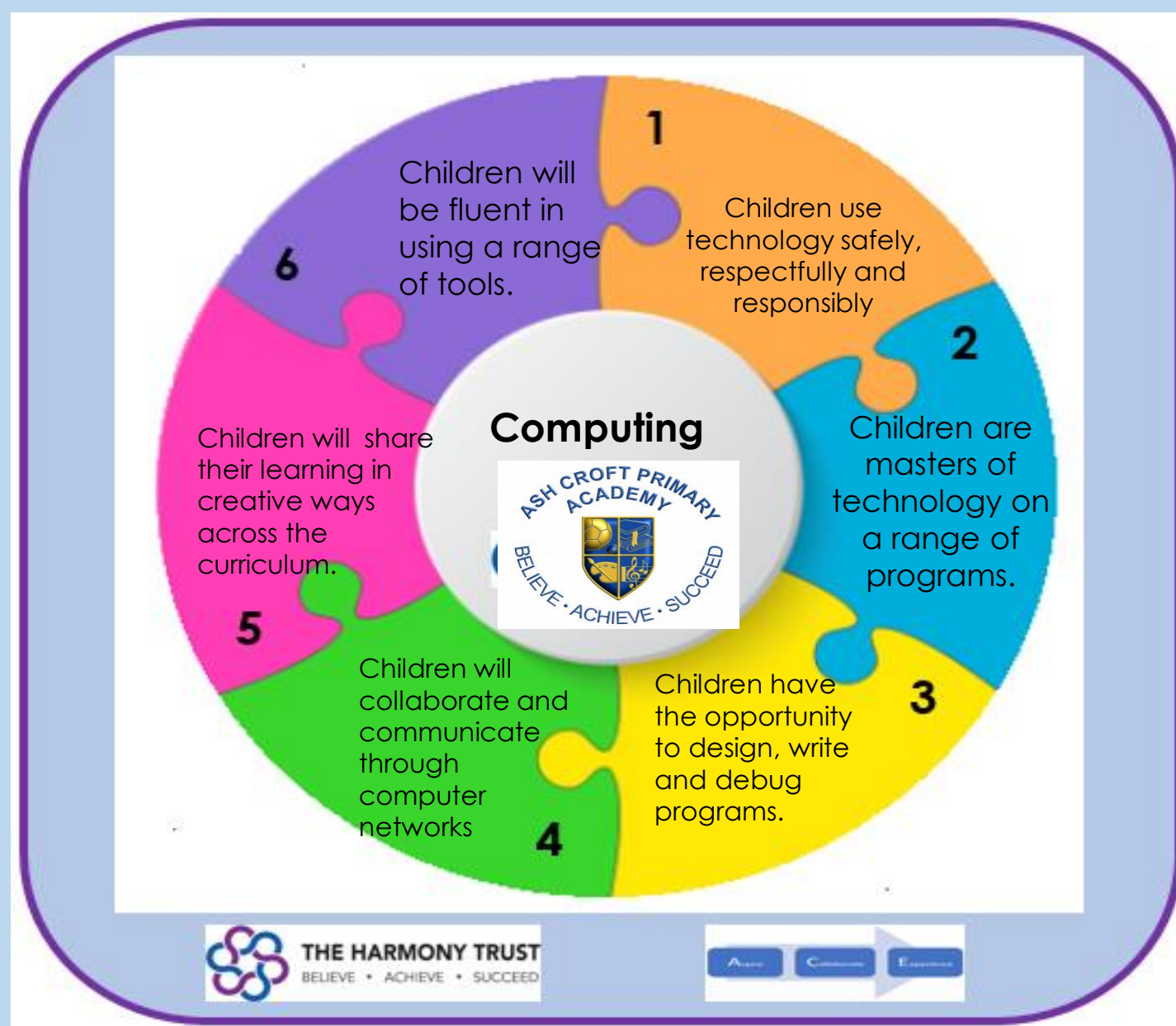
Computing

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Computing Intent

At Ash Croft Primary Academy we aspire to ensure that our pupils become masters of technology and are fluent in all areas of Computing. We also want the children to be secure in their knowledge of Online Safety.
We want to help children develop through a range of learning experiences that are underpinned by our key intentions for learning in this subject:

1. It is our intention that all children use technology **safely, respectfully and responsibly**, that they recognise acceptable/unacceptable behaviour; and know how and when to report concerns.
2. It is our intention that all children are **masters of technology** through carefully planned and sequenced lessons.
3. It is our intention that all children have the opportunity to **design, write and debug programs** to accomplish specific goals. That they learn through **solving problems** and develop their **logical reasoning** through carefully sequenced lessons.
4. It is our intention that all children are able to **collaborate and communicate** through computer networks and to experience the opportunities that this provides.
5. It is our intention that children have the opportunity to share their learning in creative ways - through our knowledge rich curriculum which has the opportunity for pupils to apply their knowledge creatively, which in turn helps them to become **skilful computer scientists.**
6. It is our intention that children will be **fluent with a range of tools** to best express their understanding and learning.

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Computing Implementation

IMPLEMENTATION

How do we implement our computing curriculum?

Units of study that are a requirement of the national curriculum have been mapped out to ensure progression in skills takes place. This ensures that skills are revisited. We use Purple Mash to guide our overviews.

Key knowledge, skills/techniques and understanding are identified at the start of each computing unit of work. These link back to our key intentions, ensuring that all of the key intentions are covered at least once within each computing unit of work.

We have divided Computing into three key concepts; Information Communication Technology (ICT), Computer Science, and Digital Literacy to ensure that our children are masters of technology and fluent in a range of programs.

All of our computing lessons are designed to link to our ACE curriculum drivers.

Lessons are thoughtfully sequenced with opportunities for metacognition opportunities using quizzes and revision of learning.(See Curriculum Map)

Computing skills are mapped out progressively within each year group ensuring that children make progress in their skill-set year on year.

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Computing Implementation

Online Safety

Online Safety underpins everything we do at Ash Croft and we ensure it is taught throughout the school year through a range of mediums. We have assemblies, class sessions, visitors and activities. We recap our intentions to commit this to long term memory. In addition, there are units of work throughout the year groups which have a particular focus on online safety using resources from Project Evolve and other mediums.

During our PSHE lessons we also help the children to understand how to stay safe online, both through focussed units of work as well as through links with other units and special days such as Safer Internet Day. At Ash Croft we are part of the I – Vengers initiative, which empowers children to become Online Safety Champions.

We work in partnership with home to ensure that children are aware of the dangers and that both children and adults know what to do to ensure their safety. Wake up Wednesday's ensure that parents are given support and guidance on how to keep their children safe at home using resources from the National Online Safety Centre. Staff also undertake yearly training.

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Computing Implementation Purple Mash Curriculum

	Autumn 1 Who has changed our world?		Spring 1 How life is different to that of our ancestors?		Summer 2 What makes Derby amazing?	
EYFS	Understanding the word – simple city	Communication and language - simple city	Expressive arts – 2create story	Literacy- writing city	Physical development – 2paint/2handwrite	PSED – 2music
Year 1	Online safety Tech outside school	Keyboard skills Spreadsheets	Keyboard skills Lego builders Maze explorers	Animated stories	Grouping and sorting Pictograms	Coding
Year 2	Spreadsheets Online safety	Creating pictures	Effective searching	Questioning	Making music Presenting ideas	Coding
Year 3	Coding	Online safety Spreadsheets	Touch typing Branching databases	Email	Simulations Making music	Graphing Presenting with PPT
Year 4	Coding Online safety	Writing for different audiences	Spreadsheets	Logo Animation	Effective searching Hardware investigators	Making music
Year 5	3d modelling Online safety	Spreadsheets	Concept maps	Databases	Coding	Game creators
Year 6	Coding	Online safety Spreadsheets	Spreadsheets	Blogging	Text adventures	Networks/ Quizzing

Online Safety Implementation

Online Safety Overview ACPA 2022-23			
KEY Purple Mash Online Safety unit PSHE curriculum Whole school via assembly & in class activity Project Evolve Childnet.co.uk	**Autumn**	**Spring**	**Summer**
EYFS	Smartie the Penguin – Childnet website Eyfs version	Safer Internet day	Chickin' Clikin' – childnet website
Year 1	Log in safely and understand why that is important & password protection	Keeping safe Safer Internet day	Smartie the Penguin – Childnet website Year 1 version
Year 2	Sharing online Emotional impact of communications	Online Relationships -Explain why I should always ask a trusted adult before clicking 'yes', 'agree' or 'accept' online Safer Internet day	Smartie the Penguin – Childnet website Year 2 version
Year 3	Online Bullying Describe appropriate ways to behave towards other people online and why this is important. Give examples of how bullying behaviour could appear online and how someone can get support.	Good Passwords and password privacy Safety Online Safer Internet day	Privacy and Security- give reasons why someone should only share information with people they choose to and can trust. I can explain that if they are not sure or feel pressured then they should tell a trusted adult. Online Reputation - give examples of what anyone may or may not be willing to share about themselves online. I can explain the need to be careful before sharing anything personal.
Year 4	Phishing Digital footprint Malware and viruses	Safer Internet day Self image and identity - describe positive ways for someone to interact with others online and understand how this will positively impact on how others perceive them. Online bullying - plain why people need to think carefully about how content they post might affect others, their feelings and how it may affect how others feel about them (their reputation).	Health, Well-being and Lifestyle - explain how using technology can be a distraction from other things, in both a positive and negative way. Copyright and Ownership - explain why I need to consider who owns it and whether I have the right to reuse it

Online Safety Implementation

Year 5	Responsibility to others when sharing Sources of support Sharing passwords	Safer Internet day Self image and identity - Explain how identity online can be copied, modified or altered. Demonstrate how to make responsible choices about having an online identity, depending on context.	Cyberbullying Online relationships - explain that there are some people I communicate with online who may want to do me or my friends harm. I can recognise that this is not my / our fault. Describe ways that information about anyone online can be used by others to make judgments about an individual and why these may be incorrect
Year 6	Cyberbullying Describe how to capture bullying content as evidence (e.g screen-grab, URL, profile) to share with others who can help me Explain how someone would report online bullying in different contexts.	Responsibility to others when sharing Minimising exposure to risks Sources of support Screen time Being a bystander Safer Internet day	Online Reputation -explain the ways in which anyone can develop a positive online reputation. Explain strategies anyone can use to protect their 'digital personality' and online reputation, including degrees of anonymity.
Be SMART rules should be recapped consistently.			

Key Outcomes

Year 1

	Computer Science			Information Technology	Digital Literacy	
Statement	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.	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.
Outcome	Children understand that an algorithm is a set of instructions used to solve a problem or achieve an objective. They know that an algorithm written for a computer is called a program.	Children can work out what is wrong with a simple algorithm when the steps are out of order, e.g. The Wrong Sandwich in Purple Mash and can write their own simple algorithm, e.g. Colouring in a Bird activity. Children know that an unexpected outcome is due to the code they have created and can make logical attempts to fix the code, e.g. Bubbles activity in 2Code.	When looking at a program, children can read code one line at a time and make good attempts to envision the bigger picture of the overall effect of the program. Children can, for example, interpret where the turtle in 2Go challenges will end up at the end of the program.	Children are able to sort, collate, edit and store simple digital content e.g. children can name, save and retrieve their work and follow simple instructions to access online resources, use Purple Mash 2Quiz example (sorting shapes), 2Code design mode (manipulating backgrounds) or using pictogram software such as 2Count.	Children understand what is meant by technology and can identify a variety of examples both in and out of school. They can make a distinction between objects that use modern technology and those that do not e.g. a microwave vs. a chair.	Children understand the importance of keeping information, such as their usernames and passwords, private and actively demonstrate this in lessons. Children take ownership of their work and save this in their own private space such as their My Work folder on Purple Mash.

Key Outcomes

Year 2

	Computer Science			Information Technology	Digital Literacy	
Statement	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.	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.
Outcome	Children can explain that an algorithm is a set of instructions to complete a task. When designing simple programs, children show an awareness of the need to be precise with their algorithms so that they can be successfully converted into code.	Children can create a simple program that achieves a specific purpose. They can also identify and correct some errors, e.g. Debug Challenges: Chimp. Children's program designs display a growing awareness of the need for logical, programmable steps.	Children can identify the parts of a program that respond to specific events and initiate specific actions. For example, they can write a cause and effect sentence of what will happen in a program.	Children demonstrate an ability to organise data using, for example, a database such as 2Investigate and can retrieve specific data for conducting simple searches. Children are able to edit more complex digital data such as music compositions within 2Sequence. Children are confident when creating, naming, saving and retrieving content. Children use a range of media in their digital content including photos, text and sound.	Children can effectively retrieve relevant, purposeful digital content using a search engine. They can apply their learning of effective searching beyond the classroom. They can share this knowledge, e.g. 2Publish example template. Children make links between technology they see around them, coding and multimedia work they do in school e.g. animations, interactive code and programs.	Children know the implications of inappropriate online searches. Children begin to understand how things are shared electronically such as posting work to the Purple Mash display board. They develop an understanding of using email safely by using 2Respond activities on Purple Mash and know ways of reporting inappropriate behaviours and content to a trusted adult.

Key Outcomes

Year 3

Computer Science				Information Technology		Digital Literacy
Statement						
Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.	Use sequence, selection and repetition in programs; work with variables and various forms of input and output.	Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.	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.	Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.	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.	Use technology safely, respectfully and responsibly; recognise acceptable/ unacceptable behaviour; identify a range of ways to report concern about content and contact.
Outcome						
Children can turn a simple real-life situation into an algorithm for a program by deconstructing it into manageable parts. Their design shows that they are thinking of the desired task and how this translates into code. Children can identify an error within their program that prevents it following the desired algorithm and then fix it.	Children demonstrate the ability to design and code a program that follows a simple sequence. They experiment with timers to achieve repetition effects in their programs. Children are beginning to understand the difference in the effect of using a timer command rather than a repeat command when creating repetition effects. Children understand how variables can be used to store information while a program is executing.	Children's designs for their programs show that they are thinking of the structure of a program in logical, achievable steps and absorbing some new knowledge of coding structures. For example, 'if' statements, repetition and variables. They make good attempts to 'step through' more complex code in order to identify errors in algorithms and can correct this. e.g. traffic light algorithm in 2Code. In programs such as Logo, they can 'read' programs with several steps and predict the outcome accurately.	Children can list a range of ways that the internet can be used to provide different methods of communication. They can use some of these methods of communication, e.g. being able to open, respond to and attach files to emails using 2Email. They can describe appropriate email conventions when communicating in this way.	Children can carry out simple searches to retrieve digital content. They understand that to do this, they are connecting to the internet and using a search engine such as Purple Mash search or internet-wide search engines.	Children can collect, analyse, evaluate and present data and information using a selection of software, e.g. using a branching database (2Question), using software such as 2Graph. Children can consider what software is most appropriate for a given task. They can create purposeful content to attach to emails, e.g. 2Respond.	Children demonstrate the importance of having a secure password and not sharing this with anyone else. Furthermore, children can explain the negative implications of failure to keep passwords safe and secure. They understand the importance of staying safe and the importance of their conduct when using familiar communication tools such as 2Email in Purple Mash. They know more than one way to report unacceptable content and contact.

Key Outcomes

Year 4

	Computer Science				Information Technology		Digital Literacy
Statement	Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.	Use sequence, selection and repetition in programs; work with variables and various forms of input and output.	Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.	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.	Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.	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.	Use technology safely, respectfully and responsibly; recognise acceptable/ unacceptable behaviour; identify a range of ways to report concern about content and contact.
Outcome	When turning a real-life situation into an algorithm, the children's design shows that they are thinking of the required task and how to accomplish this in code using coding structures for selection and repetition. Children make more intuitive attempts to debug their own programs.	Children's use of timers to achieve repetition effects are becoming more logical and are integrated into their program designs. They understand 'if statements' for selection and attempt to combine these with other coding structures including variables to achieve the effects that they design in their programs. As well as understanding how variables can be used to store information while a program is executing, they are able to use and manipulate the value of variables. Children can make use of user inputs and outputs such as 'print to screen'. e.g. 2Code.	Children's designs for their programs show that they are thinking of the structure of a program in logical, achievable steps and absorbing some new knowledge of coding structures. For example, 'if' statements, repetition and variables. They can trace code and use step-through methods to identify errors in code and make logical attempts to correct this. e.g. traffic light algorithm in 2Code. In programs such as Logo, they can 'read' programs with several steps and predict the outcome accurately.	Children recognise the main component parts of hardware which allow computers to join and form a network. Their ability to understand the online safety implications associated with the ways the internet can be used to provide different methods of communication is improving.	Children understand the function, features and layout of a search engine. They can appraise selected webpages for credibility and information at a basic level. .	Children are able to make improvements to digital solutions based on feedback. Children make informed software choices when presenting information and data. They create linked content using a range of software such as 2Connect and 2Publish+. Children share digital content within their community, i.e. using Virtual Display Boards	Children can explore key concepts relating to online safety using concept mapping such as 2Connect. They can help others to understand the importance of online safety. Children know a range of ways of reporting inappropriate content and contact.

Key Outcomes

Year 5

	Computer Science				Information Technology		Digital Literacy
Statement	Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.	Use sequence, selection and repetition in programs; work with variables and various forms of input and output.	Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.	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.	Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.	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.	Use technology safely, respectfully and responsibly; recognise acceptable/ unacceptable behaviour; identify a range of ways to report concern about content and contact.
Outcome	Children may attempt to turn more complex real-life situations into algorithms for a program by deconstructing it into manageable parts. Children are able to test and debug their programs as they go and can use logical methods to identify the approximate cause of any bug but may need some support identifying the specific line of code.	Children can translate algorithms that include sequence, selection and repetition into code with increasing ease and their own designs show that they are thinking of how to accomplish the set task in code utilising such structures. They are combining sequence, selection and repetition with other coding structures to achieve their algorithm design.	When children code, they are beginning to think about their code structure in terms of the ability to debug and interpret the code later, e.g. the use of tabs to organise code and the naming of variables.	Children understand the value of computer networks but are also aware of the main dangers. They recognise what personal information is and can explain how this can be kept safe. Children can select the most appropriate form of online communications contingent on audience and digital content, e.g. 2Blog, 2Email, Display Boards.	Children search with greater complexity for digital content when using a search engine. They are able to explain in some detail how credible a webpage is and the information it contains.	Children are able to make appropriate improvements to digital solutions based on feedback received and can confidently comment on the success of the solution. e.g. creating their own program to meet a design brief using 2Code. They objectively review solutions from others. Children are able to collaboratively create content and solutions using digital features within software such as collaborative mode. They are able to use several ways of sharing digital content, i.e. 2Blog, Display Boards and 2Email.	Children have a secure knowledge of common online safety rules and can apply this by demonstrating the safe and respectful use of a few different technologies and online services. Children implicitly relate appropriate online behaviour to their right to personal privacy and mental wellbeing of themselves and others.

Key Outcomes

Year 6

	Computer Science				Information Technology		Digital Literacy
Statement	Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.	Use sequence, selection and repetition in programs; work with variables and various forms of input and output.	Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.	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.	Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.	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.	Use technology safely, respectfully and responsibly; recognise acceptable/ unacceptable behaviour; identify a range of ways to report concern about content and contact.
Outcome	Children are able to turn a more complex programming task into an algorithm by identifying the important aspects of the task (abstraction) and then decomposing them in a logical way using their knowledge of possible coding structures and applying skills from previous programs. Children test and debug their program as they go and use logical methods to identify the cause of bugs, demonstrating a systematic approach to try to identify a particular line of code causing a problem.	Children translate algorithms that include sequence, selection and repetition into code and their own designs show that they are thinking of how to accomplish the set task in code utilising such structures, including nesting structures within each other. Coding displays an improving understanding of variables in coding, outputs such as sound and movement, inputs from the user of the program such as button clicks and the value of functions.	Children are able to interpret a program in parts and can make logical attempts to put the separate parts of a complex algorithm together to explain the program as a whole.	Children understand and can explain in some depth the difference between the internet and the World Wide Web. Children know what a WAN and LAN are and can describe how they access the internet in school.	Children readily apply filters when searching for digital content. They are able to explain in detail how credible a webpage is and the information it contains. They compare a range of digital content sources and are able to rate them in terms of content quality and accuracy. Children use critical thinking skills in everyday use of online communication.	Children make clear connections to the audience when designing and creating digital content. The children design and create their own blogs to become a content creator on the internet, e.g. 2Blog. They are able to use criteria to evaluate the quality of digital solutions and are able to identify improvements, making some refinements.	Children demonstrate the safe and respectful use of a range of different technologies and online services. They identify more discreet inappropriate behaviours through developing critical thinking, e.g. 2Respond activities. They recognise the value in preserving their privacy when online for their own and other people's safety.

Computing
Key Knowledge, skills and concepts

Intention 1 – It is our intention that all children use technology safely, respectfully and responsibly, that they recognise acceptable/unacceptable behaviour; and know how and when to report concerns.

Year 3	Year 4
• Children will understand how to do a safe search on the internet and what to do if material is inappropriate. • The children will learn how email works and how to use it safely. • Children will learn about the risks associated with emails and how to respond to them. • The children will be introduced to the idea of a digital footprint and will understand what that means and they will understand the need for anonymity and the importance of e safety.	• Children know that security symbols such as a padlock protect their identity online. • Children know the meaning of the term 'phishing' and are aware of the existence of scam websites. • Children can explain what a digital footprint is and how it relates to identity theft. • Children can give examples of things that they wouldn't want to be in their digital footprint • Children can identify possible risks of installing free and paid for software. • Children know that malware is software that is specifically designed to disrupt, damage, or gain access to a computer. • Children know what a computer virus is. • Children are able to determine whether activities that they undertake online, infringe another's' copyright. They know the difference between researching and using information and copying it. • They recognise a need to find a balance between being active and digital activities.

Computing
Key Knowledge, skills and concepts

Intention 1 – It is our intention that all children use technology safely, respectfully and responsibly, that they recognise acceptable/unacceptable behaviour; and know how and when to report concerns.

Year 5	Year 6
• Children will recap what makes a safe password and how to check the security certificates of encrypted webpages. • Children will learn how to encode messages using substitution ciphers. • Children will create a website offering advice on all aspects of safe and responsible use.	• Children will understand how to use the internet safely. • Children will learn how to deal with online bullying. • Children will learn how to interpret emotions behind texts and messages. • Children will learn about negative and positive online interactions and how to deal with them. • Children will understand how to maintain a positive online profile by managing their privacy and protecting their personal information. • Children will study a collection of personal information about a fictitious character in order to try to deduce things about this person. • Children will learn that different people can see the same information and draw different conclusions from it. They will learn not to assume that people online will see you the way you think they'll see you. • Children will understand that different situations call for different responses online and offline.

Computing
Key Knowledge, skills and concepts

Intention 2 - It is our intention that all children are masters of technology through carefully planned and sequenced lessons.

Year 3	Year 4	Year 5	Year 6
- Children will be **introduced to the concepts of input, process, and output.** - Children will create two pieces of work with the same focus, using digital devices to create one piece of work, and non-digital tools to create the other. Children will then **compare and contrast the two approaches.** - Children will be introduced to the concept of **connections and moving information between connected devices.** - Children will learn to explain **how and why computers are joined together to form networks.** - Children will be **introduced to key network components, including a server and wireless access points.** - Children will **examine each device's functionality and look at the benefits of networking computers.** - Children **will further develop their understanding of computer networks.** - Children will see **examples of network infrastructure in a real-world setting.**	- Children will **explore how a network can share messages with another network to form the internet.** - Children will **describe parts of a network** and how they connect to each other to form the internet. - Children will **explain how the internet lets us view the World Wide Web .** - Children will **recognise that the World Wide Web is part of the internet which contains websites and web pages.** - Children will **explore what can be shared on the World Wide Web** and where websites are stored. - Children will also **explore how the World Wide Web can be accessed on a variety of devices.** - Children will **analyse the contents of websites.** - Children will **design their own website.** - Children will **consider the content they would like to include on a website of their own,** and then **decide how they could create that content.** - Children will **use an existing website to create some of their own content online.** - Children will **explore who owns the content on websites.** - Children will **gain an appreciation of the fact that not everything they see on the internet is true, honest, or accurate.**	- Children are **introduced to the concept of a system.** - Children will **develop their understanding of components working together to make a whole.** - Children will **outline how digital systems might work and the physical and electronic connections that exist.** - Children will **consider how larger computer systems work.** - Children will **consider how devices and processes are connected.** - Children are introduced to the idea that **parts of a computer system are not always in the same place or country.** - Children will **consider how people can work together when they are not in the same location.** - Children will **reflect on how they can worked together and how their working together might be improved.** - Children will work together on an unplugged activity and use that experience to **develop their own ideas of good collective working practices.**	- Children will be **introduced to a range of search engines.** - Children will **learn that searches do not always return the results that we are looking for, and will refine their searches accordingly.** - Children will be **introduced to the two most common methods of searching: using a search engine and the address bar.** - Children will **gain an understanding of why search engines are necessary to help us find things on the World Wide Web.** - Children **emulate web crawlers to create an index of their own classroom.** - Children will **consider why some searches return more results than others.** - Children will **learn about some of the main factors that influence how a search engine ranks a web page.** - Children will **create paper-based 'web pages' in groups, on a topic that they are currently studying.** - Children will **explore how the person performing a web search can influence the results that are returned, and how content creators can optimise their sites for searching.** - Children will also **explore some of the limitations of searching, then discuss what cannot be searched.** - Children will **deepen their understanding of the term 'communication'.** - Children will **explore different methods of communication, then they will consider internet-based communication in more detail.** - Children will **evaluate which methods of communication suit particular purposes.** - Children will **use information provided and their own prior knowledge to categorise different forms of internet communication.** - Children will **explore issues around privacy and information security.**

Computing
Key Knowledge, skills and concepts

Intention 3 - It is our intention that all children have the opportunity to design, write and debug programs to accomplish specific goals. That they learn through solving problems and develop their logical reasoning through carefully sequenced lessons.

Year 3	Year 4	Year 5	Year 6
-Children will **create movement for more than one sprite.** - Children will **design and implement their code, and then will create code to replicate a given outcome.** - Children **will be introduced to the concept of sequences by joining blocks of code together.** - Children **will learn how event blocks can be used to start a project in a variety of different ways.** - Children **will apply principles of design to plan and create a project.** - Children will have the **opportunity to experiment with sequences where order is and is not important. They will create their own sequences from given designs.** - Children will learn **how to use costumes to change the appearance of a sprite, and backdrops to change the appearance of the stage.** - Children will **design and create their own project, including sequences, sprites with costumes, and multiple backdrops.** - Children will **apply the concept of design to help develop programs and use programming blocks.** - They will **learn that code can be copied from one sprite to another, and that projects should be tested to see if they perform as expected.**	- Children will be **introduced to programming in Logo.** - Children will **learn the basic Logo commands, and will use their knowledge of them to read and write code.** - Children will **create algorithms** - Children will then **implement algorithms** by writing them in Logo commands to draw the letter. - Children will **debug their code by finding and fixing any errors that they spot.** - **Children will create algorithms for drawing a square,** - Children will **work with count-controlled loops in a range of contexts.** - **Children will trace code to predict which shapes will be drawn.** - Children will **modify existing code by changing values within the code snippet.** - Children will **focus on decomposition.** - Children will learn to **create, name, and call procedures in Logo, which are code snippets that can be reused in their programming.** - Children will **apply the skills that they have learnt in this unit to create a program containing a count-controlled loop.** - Children will begin by **creating the algorithm, either as an annotated sketch, or as a sketch and algorithm, and then implement it as code.** - Children will **debug their work throughout, and evaluate their programs against the original brief.**	- -Children will be **introduced to the micro: bit as an input, process, output device that can be programmed.** - Children will **explore how if, then, else statements are used to direct the flow of a program.** - Children will then **develop their programs to update the variable by moving their micro: bit using the accelerometer to sense motion.** - Children will **learn that a variable can be displayed after it is updated or in response to an input.** - Children will **design the algorithm for their step counter project** - Children will **test and debug their code, using the emulator and then the physical device.** - Children will **use all four programming constructs: sequence, repetition, selection, and variables.**	• pupils will be introduced to variables. Pupils will see examples of real-world variables (score and time in a football match), then they will explore them in a Scratch project. Pupils will then design and make their own project including variables. Finally, pupils will identify that variables are named and can be letters (strings) as well as numbers. • pupils will understand that variables are used in programs, and that they can hold a single value at a time. Pupils will complete an unplugged task that will demonstrate the process of changing variables. Next, they will explore why it is important to name variables, then they will apply their learning in a Scratch project in which they will make, name, and update variables • Pupils will apply the concept of variables to enhance an existing game in Scratch. They will predict the outcome of changing the same change score block in different parts of a program, then they will test their predictions in Scratch. They will also experiment with using different values in variables, and with using a variable elsewhere in a program. Finally, they will add comments to their project, explaining how they have met the objectives of the lesson. • pupils will be working at the algorithmic level of abstraction. Pupils will first design the sprites and backgrounds for their project, then they will design their algorithms to create their program flow. • pupils will implement the algorithms that they created in Lesson 4 as code. In doing this, they will identify variables in an unfamiliar project and learn the importance of naming variables. They will also have the opportunity to add another variable to enhance their project. • pupils will evaluate each other's projects, identifying features that they like, and features that could be improved further •

Computing
Key Knowledge, skills and concepts

Intention 5 - It is our intention that all children are able to collaborate and communicate through computer networks and to experience the opportunities that this provides.

Year 3	Year 4	Year 5	Year 6
- Children will **learn about simple animation techniques and create their own animations in the style of flip books (flick books) using sticky notes.**	- Children will **familiarise themselves with digital devices capable of recording sound and/or playing audio.**	- Children **explore the benefits of adding audio to a video and, in groups, begin to develop ideas for their own video project.**	– Children will **explore and review existing websites and evaluate their content. They will have some understanding that websites are created using HTML code.**
- Children will **develop this knowledge and apply it to make a stop-frame animation using a tablet.**	- Children will **identify devices' inputs (microphone) and outputs (headphones or speakers).**	- Children can **explore devices and locate working features such as the on/off button, record button (start/stop), volume, camera lens, and zoom.**	- Children will **become familiar with the terms 'fair use' and 'copyright'.**
-Children will **work together to create a storyboard showing the characters, settings and events that they would like to include in their own stop-frame animation .**	- Children will **consider ownership and copyright issues relating to the recording of audio.**	- Children will **explore devices and apps, becoming familiar with the devices, functions, and apps.**	- Children will **gain an understanding of why they should only use copyright-free images and will find appropriate images to use in their work from suggested sources.**
- Children will **use tablets to carefully create stop-frame animations, paying attention to consistency.**	- Children will **record their own sounds in groups and play back the recorded audio.** - They will also **listen to a range of podcasts and identify the features of a podcast.**	- **Working collaboratively**, they begin to **record their video content, considering the use of zoom, angle, and movement (pan).**	- Children will **create their own web page/home page.**
– Children will **evaluate their animations and try to improve them by creating a brand-new animation based on their feedback.**	- Children will **plan and begin recording their own podcast. They will also discuss the importance of saving their work and save their recordings as a file.**	- Children will **have opportunities to investigate further the features of an effective video, including the use of theme, setting, characters, colour, sound, and dialogue.**	- Children will **preview their web page as it will appear on different devices and suggest or make edits to improve the user experience on each device.**
– Children will **add other media and effects into their animations, such as music and text**	- Children will **record additional content for their podcast, such as sound effects or background music.**	- They learn to **apply their knowledge as they record their video content in their groups.** - **Children will be guided through the process of making edits to their video, including choosing the best recording, clipping videos, and adding transition effects.**	- Children will begin to **appreciate the need to plan the structure of a website carefully.**
	- Children will **combine, or mix, with their existing digital recordings and exported as an audio file.**		- **They will plan their website, paying attention to the navigation paths (the way that pages are linked together).**
	- Children will **export their digital recordings so that they can be listened to on a range of digital devices.**	- Children **review the content of their videos and finalise them by adding special effects, titles, and end credits.**	- Children will **create multiple web pages for their site and use hyperlinks to link them together as detailed in their planning.**
	- Children will **give feedback on their own and their peers' podcasts, including areas for improvement**	- Children will **evaluate their own and their peers work.**	- Children will **consider the implications of linking to content owned by other people and create hyperlinks on their own websites that link to other people's work**.
			- Children will **then evaluate the user experience when using their own website and that of another learner.**

Computing
Key Knowledge, skills and concepts

Intention 5 -It is our intention that children have the opportunity to share their learning in creative ways - through our knowledge rich curriculum which has the opportunity for pupils to apply their knowledge creatively, which in turn helps them to become skilful computer scientists.

Year 3	Year 4	Year 5	Year 6
- Children will **learn how to arrange objects in a tree structure and will continue to think about which attributes the questions are related to.** - Children will **learn how to use an online database tool to arrange objects into a branching database, and will create their own questions with yes or no answers.** - Children will **show that their branching database works through testing.** - Children will **continue to develop their understanding of how to create a well-structured database.** - Children **will be able to explain why questions need to be in a specific order and will compare the efficiency of different branching databases.** - Children will **independently create a branching database that will identify a given object**. - Children will **arrange the questions and objects into a tree structure, before using their branching database to answer questions.** - Children will **compare two ways of presenting information.** - Children will **demonstrate their ability to explain what information is shown in a pictogram and a branching database.** - Children will **begin to compare the two ways of presenting information.**	- Children will be **introduced to the idea of collecting data automatically using computers.** - Children will **understand that Computers can capture data from the physical world using input devices called 'sensors'.** - Children will **try recording data at set moments in time and draw parallels with the data points that a data logger captures at regular intervals.** - Children **will use data loggers independently from a computer, then they will connect the loggers to a computer and download the data.** - Children will **open an existing data file and use software to find out key information.** - **Children will access and review the data that they have collected using a data logger.** - .Children will also **reflect on the benefits of using a data loggers.**	- Children use **a computer-based database to examine how data can be recorded and viewed.** - Children **learn that a database consists of 'records', and that each record contains 'fields'.** - **Children will order records in different ways and compare this database to the paper databases.** - Children **investigate how records can be grouped, using both the paper record cards created and a computer based database from J2E. They use 'grouping' and 'sorting' to answer questions about the data.** - Children **develop their search techniques to answer questions about the data.** - **Children use advanced techniques to search for more than one field, and practise doing this through both unplugged methods (without using computers), and using a computer database.** - Children **consider what makes a useful chart, and how charts can be used to compare data.** - **Children create charts from their data in order to answer questions about it.** - Children **use a real-life database to ask questions and find answers in the context of a flight search based on set parameters.** - Children **take on the role of a travel agent and present their findings, showing how they arrived at their chosen options.**	- Children will **understand that a spreadsheet is a computer application which allows users to organise, analyse, and store data in a table.** **Children will begin to realise the importance of data headings.** - Children will **answer questions about a spreadsheet, and then create their own questions that can be answered using a given set of data.** - Children will be **taught that objects can be described using data.** - Children will **build a data set (a collection of related data that can be manipulated using a computer) within a spreadsheet application, and apply appropriate number formats to cells.** - Children will **begin to use formulas to produce calculated data.** - Children will **understand that the type of data in a cell is important (e.g. numbers can be used in calculations whereas words cannot). Learners will create formulas to use in their spreadsheet using cell references and identify that changing inputs will change the output of the calculation.** - Children will **recognise that data can be calculated using different operations: multiplication, subtraction, division, and addition.** - Children will use **these operations to create formulas in a spreadsheet.** - Children will then **begin to understand the importance of creating formulas that include a range of cells and the advantage of duplicating in order to apply formulas to multiple cells.** - Children will **plan and calculate the cost of an event using a spreadsheet.** - Children **will use a predefined list to choose what they would like to include in their event, and use their spreadsheet to answer questions on the data they have selected.** - Children will **be reminded of the importance of organising data and will then create a spreadsheet using formulas to work out costs for their event.** - Children **will acquire the skills to create charts in Google Sheets.** - Children will **evaluate results based on questions asked using the chart that they have created.** - Children will **outline their understanding that there are different software tools available within spreadsheet applications to present data.**

Computing
Key Knowledge, skills and concepts

Intention 6 -It is our intention that children will be fluent with a range of tools to best express their understanding and learning.

Year 3	Year 4	Year 5	Year 6
- Children will **become familiar with the terms 'text' and 'images' and understand that text and images need to be used carefully to communicate messages clearly.** - Children will be able to **give advantages and disadvantages of using text, images, or both text and images to communicate messages effectively.** - Children will look at desktop publishing and will think about how to - Children will be **introduced to the terms 'templates', 'orientation', and 'placeholders' within desktop publishing software.** - Children will **create their own magazine template, which they will add content to. – Related to the topic Farm to Fork.** - Children will **add their own content (text and images) to the magazine templates** - Children will **copy the information for the front of their magazine from a prewritten document and paste it into the chosen place on their magazine cover.** - Children will **think about the different ways information can be laid out on a page.** - Children will **explain what desktop publishing means in their own words**. - Children will **think about how desktop publishing is used in the wider world and consider the benefits of using desktop publishing applications.**	- Children will be **introduced to the online editor, and changes that can be made to images using a range of tools.** - They will look **at changing the composition of images using the 'crop' tool, and evaluate the effect that this can have on an image** - Children will **identify changes that have been made to edited images.** - **Children will search for and save images from a copyright-free website.** - Children will then **use an image editor to make a new image composition linked to a cross-curricular theme.** - Children will **look at the effect that different colours and filters can have on an image.** - Children will **choose appropriate effects to fit a scenario, and explain how they made their choices.** - Children will then **edit the same original image using different effects to suit two different scenarios, and compare the two versions.** - Children will **consider why people may choose to retouch images, and the positive and negative effects that retouching can have on images.** - **Children will use retouching tools to improve images, and consider which tools are appropriate for retouching.** - Children will **create their own fake images and reflect on how easy it is to digitally alter images, and what this might mean for the images that they see around them.** - **Children will use the 'fake' image to make a publication designed to advertise their imaginary place.** - Children will **add elements such as text, shapes, and borders.** - Children will **design a survey for gaining feedback on their work, and compare their completed publications with the original images.**	- Children will be **introduced to the concept of 3D modelling by creating a range of 3D shapes that they select and move** - .Children **discuss the similarities and differences they have identified so far, then move on to combine 3D shapes, including lifting the 3D object, to produce a house.** - Children **colour their 3D shapes, followed by adding further shapes and undertaking further reflection on the similarities and differences between working digitally with 2D and 3D graphics.** - Children will **produce a 3D model of a physical object, which will contain a number of different 3D objects. 3D objects will need to be rotated and placed into position in relation to other 3D objects.** - Children **will produce a 3D model of a pencil holder desk tidy. The 3D model will contain a number of 3D objects that are of specific dimensions and use other 3D objects as placeholders to create holes with them.** - Children will **resize and enhance their 3D model of a pencil holder desk tidy.** - Children will **evaluate their work and make improvements based on feedback from their peers.**	- Children **explore the benefits of adding audio to a video and, in groups, begin to develop ideas for their own video project.** - Children can **explore devices and locate working features such as the on/off button, record button (start/stop), volume, camera lens, and zoom.** - Children will **explore devices and apps, becoming familiar with the devices, functions, and apps.** - **Working collaboratively**, they begin to **record their video content, considering the use of zoom, angle, and movement (pan).** - Children will **have opportunities to investigate further the features of an effective video, including the use of theme, setting, characters, colour, sound, and dialogue.** - They learn to **apply their knowledge as they record their video content in their groups.** - **Children will be guided through the process of making edits to their video, including choosing the best recording, clipping videos, and adding transition effects.** - Children **review the content of their videos and finalise them by adding special effects, titles, and end credits.** - Children will **evaluate their own and their peers work.**

Key Vocabulary

Ks1	Year 3	Year 4	Year 5	Year 6
Algorithm	Choices	Browser	Communication	Spreadsheets
Coding	Internet	Web server	Informed Choices	Complex Searches
Cyberbullying	Website	Web site	Virus Threats	Commands
Debug	Rules	World Wide Web	Blogs	Cell
Programing	Online	Wired	Vlogs	Problem Solving
Sequencing	Private Information	Wireless	Messaging	Computational Thinking
	Email	Router	Edit	Generate
	Appropriate/Inappropriate Sites	Search	Type	Process
	Secure Passwords	URL	Program	Store
	Digital Footprint	HTML	Code	Present
	Gaming	Software	Commands	Information
	Blogs	Packet	Modification	Plausibility
	Equipment	Program	Collaboration	Appropriate Data
	Movement	WAN	Searching Strategies	LED
	Patterns	IP address	Algorithm	Algorithm
	Program	ISP	Evaluation	Decomposition
	Algorithm	LAN	Sequence	Evaluation
	Sequence	Network	Digital content	Simulate
	Debug	Internet	Variables	Repetition
	Programming	Hub	Input	Selection
	Screen	Open – Ended	Output	Database
	Mouse	Complex	Repetition	Construct
	Images	Programming	Selection	Contribute
	Keyboard	Commands	Collaborate	Input
	Animation	Sensors	Collect	
	Multimedia	Audio	Sort	
	Alignment	Editing	Organise	
	Information Sources	Effects	Data Collection	
	School Network	Multimedia	Database	
	Devices	Podcast	Construct	
	Collaborate	Digital Content	Contribute	
	Collect	Creating	Micro: Bit	
	Sort	Modifying	Tinker Cad	
	Organise	Movement	Modelling	
	Data Collection	Patterns	3D/2D	
	Database	Program	Project	
	Construct	Algorithm	Collaborative	
	Contribute	Sequence	CSS (Cascading Style Sheets)	
	Input	Debug		
	Output	Programming		
	Variables			
	Sprite			
	Text			
	Images			