# Autumn 1 Term Year 4 Computing Overview

## Online Safety

## Key facts

- Personal information should be kept private, and not shared with strangers.
- We can adjust our settings to change who can see the information we share. Usually this is private, friends or public.
- Our 'digital footprint' is our online identity. It is built up by our actions, posts and interests online.
- Strangers can use our digital footprints to find out information about us.
- Some strangers might use this information to trick us or act hurtfully.
- Everybody can see the information we put onto the internet, even those we don't want to show. We should be careful as our parents, teachers, friends, police or strangers could see it and have different opinions.

## Prior Knowledge

Children will have learned about online safety throughout their time at Millfields and will have a good idea of how to protect themselves when worried. They are likely to have a good understanding of the internet, social media and how information can be shared with hundreds or thousands of other people.

## Key Vocabulary

- Public / Private
- Digital Footprint
- Personal information
- Personal boundaries
- Settings
- Internet / Online
- Social media

## Brief summary/ overview

In this topic, children will explore 'digital footprints'. They will discuss the information that can be shared online and identify the information that could be dangerous to share publicly. They will learn to think critically about the information they post or see online in order to keep themselves and others safe. They will explore how information can spread online, as each person could share it with their friends, who could then share it on again, etc. They will reinforce their understanding of how to stay safe online.

## Resources

- SMART Rules
- Google 'Be Internet Legends'
- Interland Online Safety games

## Cross curricular links/visits

Children will become more adept and safe in using the internet for research for a range of topics across the curriculum.

PSHE: Children will learn how online posts could be hurtful to others, and how to protect themselves from sharing personal information.

# Autumn 2 Term Year 4 Computing Overview

## Research

## Key facts

- Taking somebody else's work or information and pretending it is yours is called 'plagiarism'.
- 'Phishing' is when emails or messages are sent pretending to be somebody else. They are usually used to gather personal information.
- People use phishing or false advertisements to scam unwary people on the internet.
- Often, a phishing or scam will look 'too good to be true' and shouldn't be trusted.
- Search engines scan a huge amount of websites to find key words that you are looking for
- You can adjust your search keywords in order to make more effective searches.

## Prior Knowledge

Children will have used search engines to find information in the past. They may have some understanding or experiences of online scams or 'phishing' from home. They may have an understanding of copyright.

## Key Vocabulary

- Search engine
- Efficient
- Link / Hyperlink
- Website/webpage
- Plagiarism
- Copyright
- Phishing
- Scam

## Brief summary/ overview

Children will start be exploring the concept of plagiarism, understanding that simply copying the work of somebody else is not right and also applies to protecting their own work. They will explore 'phishing' and scams and will learn how to look out for these attempts in order to protect themselves – identifying whether information is truthful, or fake. Children will learn to identify what someone is looking for when 'phishing', thinking critically about the information being shared. They will apply all of these skills when using search engines to efficiently and accurately conduct research – Avoiding plagiarised or fake information.

## Resources

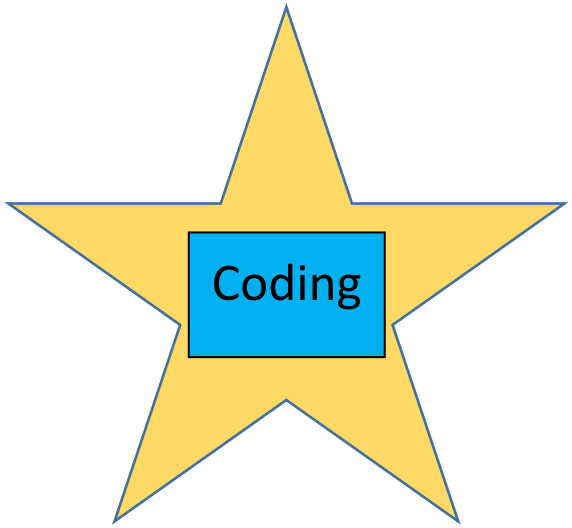
- Google 'Be Internet Legends'
- Interland Online safety game
- Search engines for research

## Cross curricular links/visits

Search engines can be used to perform research for a wide range of topics.

PHSE: Thinking critically to avoid being tricked or hurt online.

# Spring 1 Term Year 4 Computing Overview




## Key facts

- Touch typing involves using both hands on the keyboard to type without the need to look for each key.
- If/Then statements wait for a specific event to occur before they trigger.
- Variables store data which can be changed (It 'varies')
- Variables can be accessed by code in order to read, increase, decrease or reset the data inside.
- Variables usually need to be reset once a program ends to avoid any errors or incorrect values.
- The appearance of objects can be changed using appropriate code. This can be linked with if/then statements to change at specific times.

## Prior Knowledge

Children will have explored coding in their Computing lessons from previous years. They may have experience of some coding topics explored based on their experiences outside of school, including through videogames or programs they have accessed. Children will have varying levels of ability with touch typing.

## Brief summary/ overview

Children will continue to reinforce their touch-typing skills before moving on to the design and creation of programs. Children will make use of 'if/then' statements to add conditions to their code, triggering events only when certain criteria has been met. They will also be introduced to 'variables' as a method of storing and changing data for their programs, discussing how this can be applied to their work, and where it can be seen in programs they have used at home.

## Key Vocabulary

- Algorithm
- Code
- If/Then statements
- Variables
- Data
- Sequence
- Appearance
- Debug
- Trigger
- Conditions

## Resources

- Purple Mash
- Laptops
- Paper based designs and planning

## Cross curricular links/visits

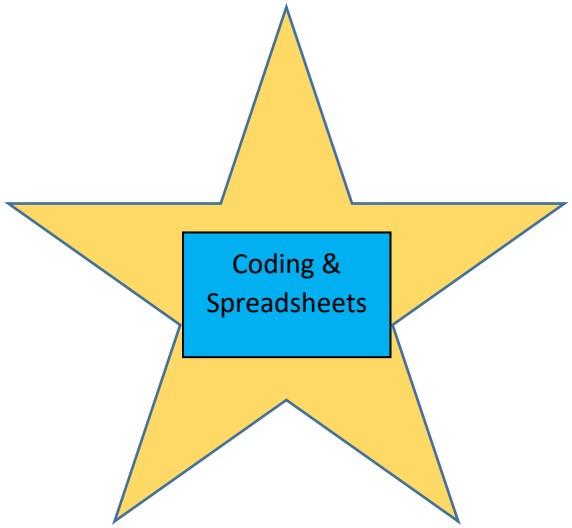
Touch typing skills will improve children's ability to use computers for a range of other topics – Especially typing for English.

Maths – Data in variables can be linked to changing values in Maths, and will be operated upon using the same methods (+, - , x, ÷)

# Spring 2 Term Year 4 Computing Overview

## Key facts

- An understanding of a coding 'language' or program can be applied to other tools and languages.
- Scratch works by 'listening' for events. Use the green flag event, for example, will start the following code when the program is begun.
- Scratch can run multiple algorithms simultaneously, unlike 2Code, allowing for more specific and complex programs.
- Scratch attaches its code to individual sprites. Each character can have its own code, and can interact with other sprites.
- You can use operators to change variable values, just like in maths, using +, -, =, > or <.




## Prior Knowledge

Children have been using 2Code throughout their Computing lessons in school, learning skills that can be applied to Scratch. They may have experience in using Scratch from home. Children will also have some understanding of using simple spreadsheets for collecting and presenting data.

## Key Vocabulary

- Programming language
- Sprites / Objects
- Variables
- Conditions / Events
- Algorithm
- Debug
- Variables
- Operator

## Brief summary/ overview

For the majority of this term, children will be applying their skills and understanding of coding to a new platform: Scratch 3. They will recognise the similarities and differences between these tools and explore the functions and how they interact with each other in order to create a 'chase game'. This will require them to use all of the coding skills and techniques they have developed so far to create their own product. They will finish up by exploring spreadsheets – Collecting data and modifying them with formulae in order to present it clearly.

## Resources

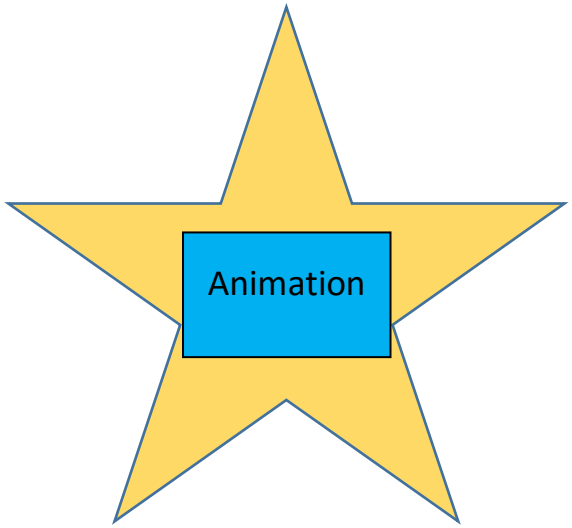
- Scratch 3
- Purple Mash (2Calculate, spreadsheets)
- Laptops

## Cross curricular links/visits

Maths – Use spreadsheets to store and present data in charts and graphs.

Science – Present findings from experiments using spreadsheets.

# Summer 1 Term Year 4 Computing Overview




## Key facts

- Hardware refers to the physical parts of a computer or device. The parts inside the computer casing are often called the components.
- The parts that are attached to the computer case are called peripherals. Software describes the programs that run on the computer.
- Animation is the process of giving the illusion of movement to drawings, models or inanimate objects.
- Onion skinning is a 2D computer graphics term for a technique used in creating cartoons and movies to see several frames at once.
- Stop motion animation is a filming technique in which objects (such as clay odels) are photographed in a series of slightly different positions so that the objects seem to move.

## Prior Knowledge

Children may have some understanding of computer hardware from their experiences outside of school, as well as a basic understanding from key vocabulary and discussion in Computing lessons. Children are likely to have an understanding of what animation is based on their own experiences of it at home.

## Key Vocabulary

- Motherboard
- CPU
- RAM
- Graphics card
- Network card
- Monitor
- Speakers
- Keyframes
- Onion skin
- Layers
- Frames / Frames per second
- Stop motion

## Brief summary/ overview

Children will begin by exploring computer hardware. They will investigate the parts of computers, and recognising different types of computers both in school and outside in the wider world. They will then create their own 2D animations. Children will learn appropriate terminology and techniques for creating frame by frame animations and cartoons, improving them with sound and backdrops to engage their audience. They will upload and share these animations to give and receive constructive feedback.

## Resources

- Laptops and examples of computer hardware.
- Purple Mash (2Animate)
- Paper flip books
- Examples of animations or cartoons

## Cross curricular links/visits

Art – Creating their own artwork for animations
English – Animating stories to appeal to a wider audience.

# Summer 2 Term Year 4 Computing Overview

## Key facts

- A target audience is the people you want to play or experience your product.
- Debugging involves finding and correcting errors in your code to create a working, successful product.
- Games are advertised over a wide range of different media in order to reach as many people as possible.
- Creating unique and interesting games allows your product to stand out from the crowd, encouraging more people to play.
- Making your game accessible means making it easy for anybody to play, no matter their needs or skill.


## Brief summary/ overview

This term, children are applying all of their coding and computing skills learned throughout their time in school to design, create and market their own video game. They will be challenged to plan a game that is interesting and appeals to a target audience, reflecting on the techniques and tools they have learned and considering how to best use them for their own purposes. Children will have to frequently test, debug and share their work before creating media to advertise and present their work to their audience.

## Prior Knowledge

Children have worked with coding, both in 2Code and Scratch, throughout their time in school. They have previously worked on design documents to plan and create their projects. They will have an understanding of audiences and videogames from their Computing lessons and experiences outside of school.

## Key Vocabulary

- Algorithm
- Target audience
- Debugging
- Present / Advertise
- Media
- Feedback / Review
- Sprite
- Graphics
- Backdrops
- Animation

## Resources

- Laptops
- Scratch 3
- Individual design documents
- Access to previous work and designs
- Research into topics, audiences and successful products

## Cross curricular links/visits

- English – Creating advertisements and products aimed at target audiences.
- Art – Select artistic styles and creating interesting pieces to grab people's attention.
- The games can be used to present a range of learning from different topics.