Computing Learning Journey
Year 5 Autumn 2nd ½

5.2 We are Cryptogrophers

Cracking Codes

Pupils learn about encrypted websites and evaluate the unit of work.

Pupils learn about the importance of password security

Pupils learn how to use frequency analysis, common words and substitution ciphers to crack

Pupils learn about ciphers and the Caesar cipher to crack codes

Pupils are introduced to Morse code and communicate information using it

Pupils are introduced to semaphore and communicate information using it

Key Vocabulary

- **Cipher**: an agreed scheme (algorithm) for encrypting or decrypting a message
- **Codes:** ways of changing the way information is represented
- **Cryptanalysis**: the process of decrypting an encrypted message without prior access to the encryption key
- **Cryptography**: the science of keeping communication and information secret
- **Decrypt**: to convert an encrypted message into readable text
- **Encode:** to change the form of a message into an agreed code
- **Encrypt:** to convert a readable message into an encrypted form so that it cannot be read by those without the key
- **Message:** information to be transmitted from one person (or system) to another
- **Morse code:** a simple code for converting letters and numbers into patterns of short and long electrical pulses
- **Semaphore**: a simple code for converting letters and numbers into different positions of two flags, one held in each hand
- **Transmit**: to communicate a message over a long distance

Software: Scratch
Hardware: Laptop/desktop/Chromebook computers or tablets

Online safety:
One of the key messages in the unit is the need for password security. We understand that we should not share passwords with anyone else. We understand the importance of encrypted Internet connections-(HTTPS) connections is observed by the school and its service provider.

Switched on Online Safety Unit:
<u>Social and emotional wellbeing and developing resilience</u>
Unit 5.2 – We are responsible for our online actions
Understanding the impact of online behaviour

Unit overview:
The children will learn to:
- be familiar with semaphore and Morse code
- understand the need for private information to be encrypted
- encrypt and decrypt messages in simple ciphers
- appreciate the need to use complex passwords and to keep them secure
- have some understanding of how encryption works on the Internet.

In Key Stage 1:
- In **Unit 1.5: We are rhythmic** and **Unit 2.1: We are astronauts** pupils programmed in ScratchJr.
- In **Unit 2.2: We are games testers** pupils accessed and explored Scratch.

In Key Stage 2:
In **Unit 3.1: We are programmers** pupils created Scratch animations.
- In **Unit 3.2: We are bug fixers** they learned techniques for debugging programs.
- In **Unit 4.1: We are software developers** and **Unit 5.1: We are game developers** they developed games in Scratch.
- In **Unit 5.4: We are web developers** they learn more on how the Internet makes communication possible and the applications of cryptography.
- In **Unit 6.2: We are computational thinkers** they will learn standard algorithms of computer science and maths.