



Coleman Primary School

**Key Knowledge Organiser: Year 5- Autumn 2**

**Computing: WE ARE CYRPTOGRAPHERS**

In this unit, pupils investigate early methods of communicating over distances, learn about two early ciphers, and encrypt and decrypt messages in various ciphers. In:

Session 1 you are introduced to semaphore and communicate information using it

Session 2 you are introduced to Morse code and communicate information using it

Session 3 you learn about ciphers and the Caesar cipher to crack codes

Session 4 you learn how to use frequency analysis, common words and substitution ciphers to crack codes

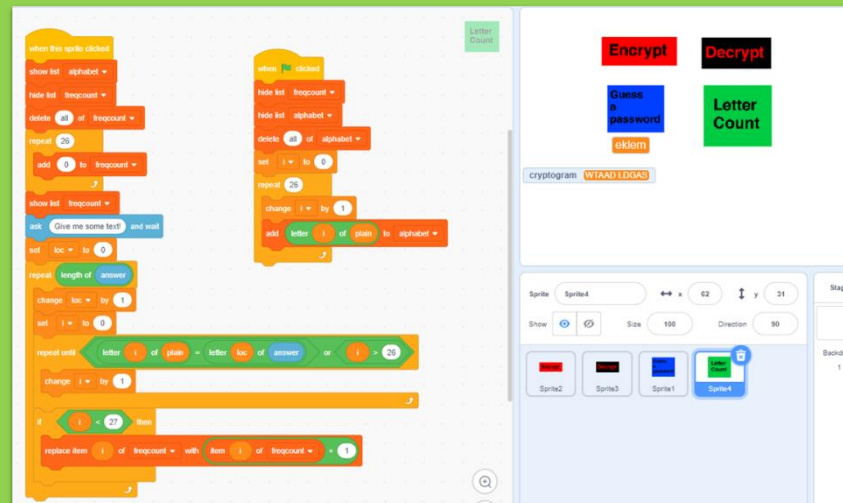
Session 5 you learn about the importance of password security

Session 6 you learn about encrypted websites and evaluate the unit of work

**Key Vocabulary**

**Images:**

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



Prior to year 5 you: In year 5 you will:

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| <ul style="list-style-type: none"> <li>* have learned about different measurement techniques for weather – both analogue and digital</li> <li>* learned how to use computer-based data logging to automate the recording of some weather data</li> <li>* learned how to use spreadsheets to create charts</li> <li>* learned how to analyse data, explore inconsistencies in data and make predictions</li> <li>* learned to practise using presentation and video software.</li> </ul>   | <ul style="list-style-type: none"> <li>* know how to be familiar with semaphore and more code</li> <li>* know how to understand the need for private information to be encrypted</li> <li>* know how to encrypt and decrypt messages in simple ciphers</li> <li>* know how to appreciate the need to use complex passwords and to keep them secure</li> <li>* know how to have some understanding of how encryption works on the internet.</li> </ul> |
| <p><u>Year one</u></p> <ul style="list-style-type: none"> <li>• understand algorithms as sequences of instructions and how algorithms are implemented as programs on digital devices</li> <li>• create and debug simple programs</li> <li>• use reasoning to predict the behaviour of simple programs.</li> </ul> <p><u>Year two</u></p> <ul style="list-style-type: none"> <li>• understand what algorithms are; how they are implemented as programs on digital devices and that programs execute by following precise and unambiguous instructions</li> <li>• create and debug simple programs</li> <li>• use logical reasoning to predict the behaviour of simple programs.</li> </ul> <p><u>Year three</u></p> <ul style="list-style-type: none"> <li>• design, write and debug programs</li> <li>• use sequence in programs; work with various forms of output</li> <li>• begin to use reasoning to explain how some simple algorithms work and to detect errors in programs</li> <li>• begin to understand computer networks including the internet and how they can provide multiple services, such as the World Wide Web</li> </ul> <p><u>Year four</u></p> <ul style="list-style-type: none"> <li>• design, write and debug programs that accomplish specific goals</li> <li>• use sequence and repetition in programs; work with inputs and outputs</li> <li>• use reasoning to explain how some simple algorithms work and to detect and correct errors in programs</li> <li>• begin to understand computer networks including the internet and how they can provide multiple services, such as the World Wide Web</li> </ul> | <ul style="list-style-type: none"> <li>• be familiar with semaphore and Morse code</li> <li>• understand the need for private information to be encrypted</li> <li>• encrypt and decrypt messages in simple ciphers</li> <li>• appreciate the need to use complex passwords and to keep them secure</li> <li>• have some understanding of how encryption works on the Internet.</li> </ul>  |