

STEM: MORSE CODE

CODING today refers to computer programming but it hasn't always been that way.

Codes have been used for thousands of years. Codes were a necessity to make sure that important information did not come into hostile hands - especially during wartime. Communications relied on coding messages (encrypting) and decoding codes. The decryption codes were kept secret.

Well known codes include Morse code, semaphore, shorthand, and Steganography. All these have standardised decryption keys.

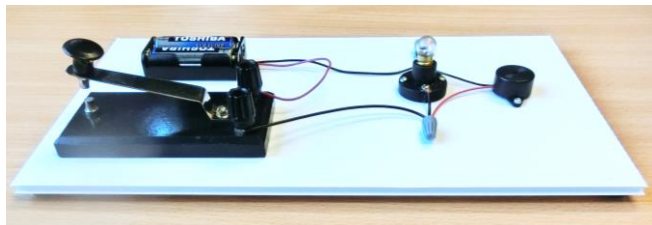
Morse Code allowed communication to occur over large distances using the telegraph lines. It is a form of binary on-off code that has been used since 1844.

The newest Scorpio kit in the coding range is the **MORSE CODE SET**. It is also an example of a simple circuit.



The kit provides a basic Morse code set

- a tapping key,
 - a buzzer,
 - indicator light
 - battery holder
- Teacher notes with background information



MORSE CODE SET

(Code: MORSE)

1-19 \$12.90

20+ \$12.50

DESIGN BRIEF

- Build the Morse code set – the “sender” (battery holder, tapping key and the indicator light) and the “receiver”(the buzzer)
- Gain an understanding of the Morse code and how it is structured

INVESTIGATION

This unit of work provides opportunities to investigate the following:

- Electrical generation and conversion of energy to sound
- Research the development of Morse Code and / or other codes
- Investigate the difference between codes and ciphers

LEARNING OPPORTUNITIES

- Constructing a simple circuit
- Mounting components
- Using basic hand tools
- Testing electrical circuits
- Troubleshooting
- Sending and recording code
- Evaluation of completed project
- Demonstrate your ability to code a message and communicate effectively with someone else in the same room or in another room

DID YOU KNOW?

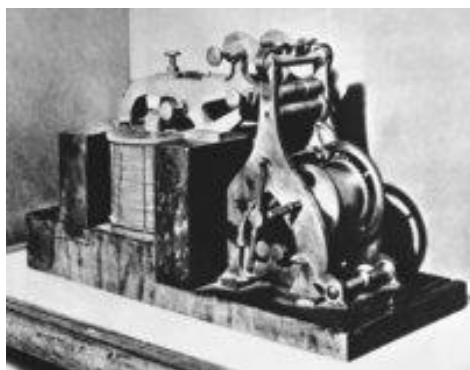
- Ancient languages and writings are treated as codes when they are decrypted. The Rosetta Stone of Ancient Egypt became an important tool to decode Demotic script and hieroglyphics. Greek was also on the stone so this was used to decode the other two scripts.
- The Morse Code first message sent in 1844 was "What Hath God Wrought?" in Washington DC.



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The original Morse telegraph receiver
(Underwood Archives / Getty Images)

- Due to different languages there are different versions of Morse Code. The international standard is the International Morse Code.
- More frequently used letters are shorter so it's faster to send messages
- The International Morse Code has a formula for the length of the dots and dashes.

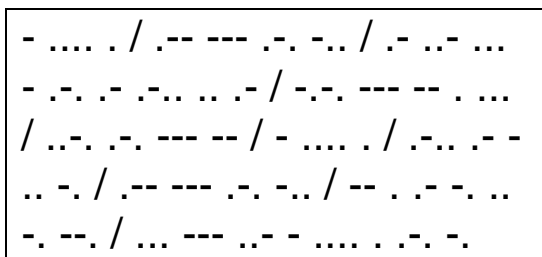
Dit (dot) - 1 unit of time;

Dah (dash) - 3 units of time;

Pause between letters - 3 units of time;

Pause between words - 7 units of time

- Try it out yourself. *Decode this Morse Code encryption.* (Stroke = end of word)



- Inventor Thomas Edison and his wife talked in secret by tapping Morse Code on each other's hands.
- Since 1956 the Capitol Records building flashes out HOLLYWOOD in dots and dashes from the top of its tower as an aircraft warning light.

GLOSSARY OF TERMS

Binary code	Decipher	Record
Buzzer	Decode	Sender
Cipher	Indicator	Simple Circuit
Code	Insulation	Telegraph
Connector	Receiver	Transmitter

HAVE YOU REGISTERED?



Get your school community involved in the Design & Technologies Week (15 - 21 October).

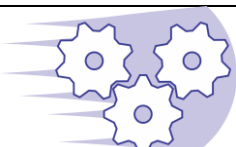
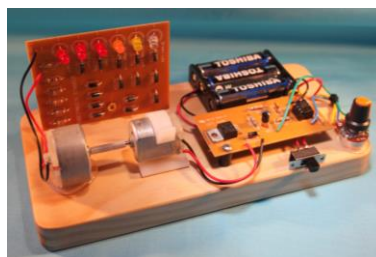
- Explore the [D&T Week website](http://dattaaaustralia.com/designandtechnologyweek/) for free resources
- Run an event in your school - perhaps an exhibition of student work, a lunchtime Makerspace, or a design challenge in class.

Check out our website for projects for National Design & Technologies Week 2018! This is a great time to try a different Scorpio kit or product.

COMING SOON

We have some exciting products coming to our great range. Keep a look out for . . .

- Electricity Generation Demonstrator Kit
- Ferris Wheel V2
- Simple Circuit kits



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