MORSE CODE

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OUTLINE

What is morsecode ?

1. Morse code is a character encoding scheme used in telecommunication that encodes text characters as standardized sequences of two different signal durations called dots and dashes or dits and dahs.
2. Dits refers to dots and dahs refer to dash.
3. Recipient can understand the message without additional decoding equipment.
4. The Morse code transmission rate (speed) is specified in groups per minute, commonly referred to as words per minute.

HISTORY

- ❏ Samuel Morse got idea of inventing a secret code language in 1800s when he worked with an electrical telegraph system.
- ❏ In 1836 - Samuel Morse, Joseph Henry and Alfred Vail developed an electrical telegraph system.
- ❏ Morse planned to transmit only numerals at first.
- ❏ After that , Alfred Vail included letters and special characters.

International Morse Codes

□ **'E' is** the most commonly used letter so its Morse code is just a **single dot.**

□ The letter **'I' has two dots.**

□ The letter **'T' has a single dash.**

Morse Code Decoding Tree
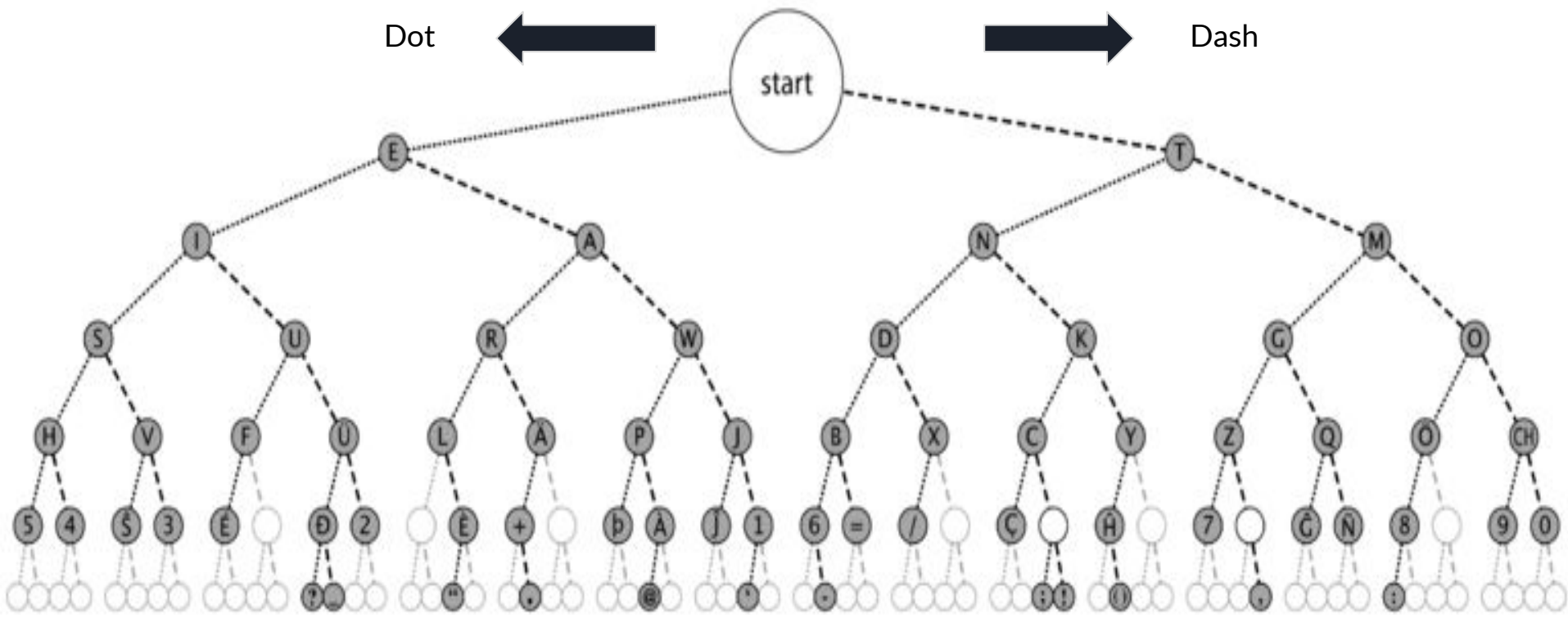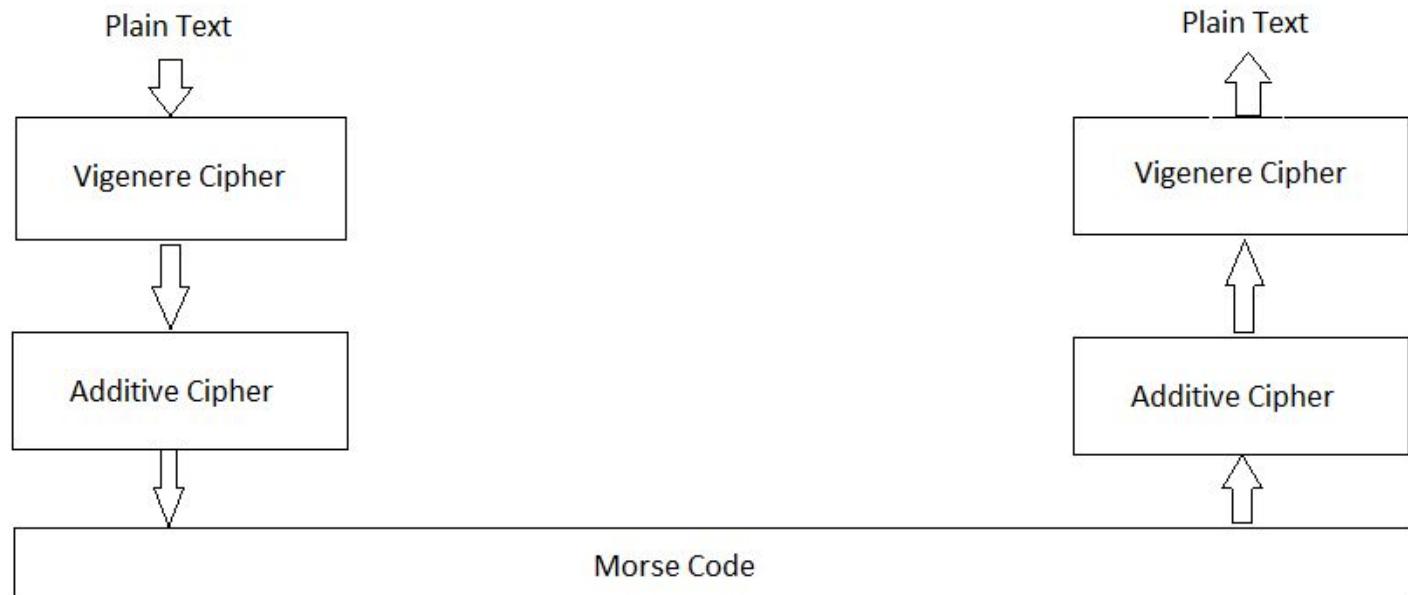
Morse Code Transmission Mode

Morse code can be transmitted(sent) through a number of ways

Electrical Telegraph Wire

Light

Sound

The transmission has mainly three sections:
a transmitter, a receiver and channel.

Plain Text

Vigenere Cipher

Additive Cipher

Morse Code

Plain Text

Vigenere Cipher

Additive Cipher

Block Diagram

Input & Output

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Enter the Text You Wish to transfer via Morse Code : NORTH REMEMBERS

****Applying Vigenere cipher****

Vigenere cipher original message: NORTHREMEMBERS

Vigenere Ciphertext (Encrypted Message ): NARKHDEDEYBVRE


****Applying Additive cipher****


Original Message for Additive cipher:NARKHDEDEYBVRE

Additive Cipher Text is :LYPIFBCBCWZTPC
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****Applying Morse Code****

Your Entered Text in Morse Code:

.-..-.--.--..-..-...-.-.-...-.-.--..-
.--.-.-.

Morse code cipher-text is :.-..$-.--$.--$.-$.-.-$-...$-.-.$-...$-.-.$.--$--..$-
$.--.$-.-.$

Recovering Original Morse Message .../-
.-.. -> L
-.-- -> Y
.--. -> P
.. -> I
..-. -> F
-... -> B
-.-. -> C
-... -> B
-.-. -> C
.-- -> W
--.. -> Z
- -> T
.--. -> P
-.-. -> C
Morse Code Original Message(Plain-Text) :LYPIFBCBCWZTPC
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Additve cipher Original message after Decryption is :NARKHDEDEYBVRE

The Vignere original Message (Plain-Text) is :NORTHREMEMBERS

Process returned 0 (0x0)   execution time : 19.695 s
Press any key to continue.
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Time Complexity:

Complexity to break additive cipher is $O(n^2)$, n being the length of message.

Complexity to break vigenere cipher is $O(26^k)$ for a key of length k without statistical analysis.

Complexity to break morse code is $O(n)$.

Overall complexity to break our algorithm is $O(n^2 * 26^k * n)$.

Advantages & Disadvantages

Advantages :

1. Cheap

Use of the Morse code is a cheaper way to send information over long distances.

2. Wireless

The lack of wires has made the application of Morse code diverse since it is silently sent and received at any desirable speed. Its wireless nature makes Morse code receivable though any visible means.

Disadvantages

1. Learning the Morse Code

The Morse code is not an easy concept to understand and it is largely a reserve of a few radio programmers.

2. Time Consuming

Sending and decoding of the Morse code is time consuming and it is the reason many people put it off.

3. Interruption

The Morse code is easy to intercept and it is no longer a reliable option compared to the recent technological inventions.

Applications :

- It was used by a military soldier being held captive, he blinked out his location while being video taped and was rescued.
- Morse code has been employed as an assistive technology, helping people with a variety of disabilities to communicate.
- Hams today use it to communicate farther than they can with voice modes. They also use it to keep this part of radio active.
- Morse code also plays a part in emergency communication. It can be heard when other modes can not.
- Morse code can be applied to flash light and you can communicate this way much further than when using your voice.

References

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Thank You