Multipurpose Internet Mail Extension
MIME

Why is MIME necessary?

To send non-text (binary) data with a protocol designed for text only data.

SMTP, POP, and IMAP are text-only protocols that use a few non-text characters as control characters.

E-mail attachments such as *.pdf, *.jpg and others contain binary data that is not to be confused as an e-mail protocol control character such as a Carriage Return (CR) or Line Feed (LF).

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What is non-text, or binary, data?

Any 8-bit byte of data with either or both the 2^{7th} or 2^{6th} bit set to a 1 is considered a text character.

When both the 2^{7th} and 2^{6th} bit are set to 0, the byte is considered a non-text or binary character.

Example:

```
Power of 2:  7 6 5 4 3 2 1 0
Bit Value:   0 0 x x x x x x ==> Binary data
             0 1 x x x x x x ==> Text data
             1 0 x x x x x x ==> Text data
             1 1 x x x x x x ==> Text data
```

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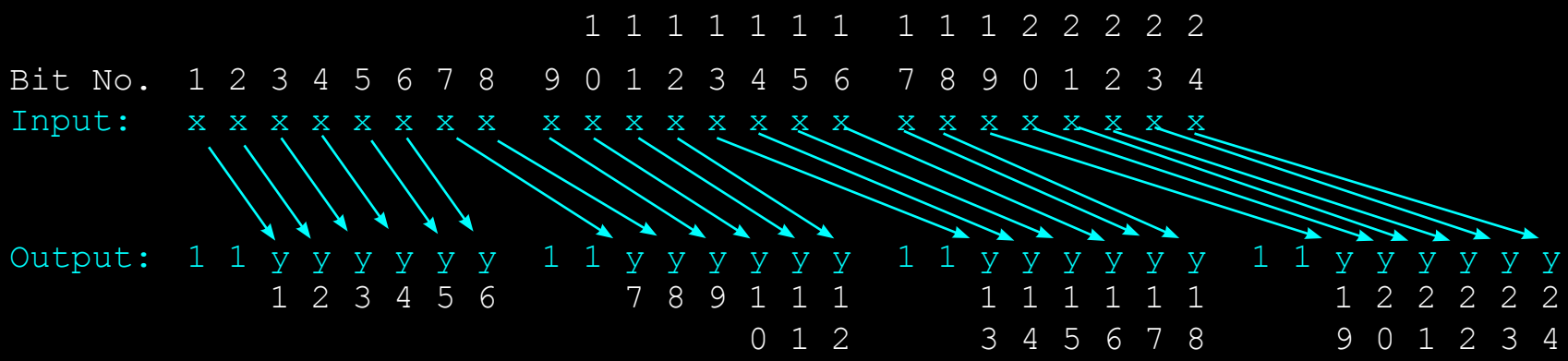
How does MIME work?

MIME is applied to all e-mail attachments, not just those containing binary data.

MIME lengthens the attached file by approximately one-third for transmission.

Every three bytes of input to the MIME process results in four bytes of text-only output.



MIME process uses “Base64 Encoding”.