

The Difference Between Encoding and Encryption, Daniel Meissler

Encoding is often confused with encryption. They are not the same. But before I go into the differences, I'll first mention the similarities:

1. Both transform data into another format.
2. Both are reversible (unlike hashing).

And now the differences:

Encoding

The purpose of *encoding* is to transform data so that it can be properly (and safely) consumed by a different type of system, e.g. binary data being sent over email, or viewing special characters on a web page. The goal is **not** to keep information secret, but rather to ensure that it's able to be properly consumed.

000d	00h	☐	(nul)	016d	10h	▶	(dle)
001d	01h	☐	(soh)	017d	11h	◀	(dc1)
002d	02h	☐	(stx)	018d	12h	↑	(dc2)
003d	03h	♥	(etx)	019d	13h	!!	(dc3)
004d	04h	♦	(eot)	020d	14h	⚡	(dc4)
005d	05h	♣	(enq)	021d	15h	\$	(nak)
006d	06h	♠	(ack)	022d	16h	■	(syn)
007d	07h	•	(bel)	023d	17h	⚡	(etb)
008d	08h	▣	(bs)	024d	18h	↑	(can)
009d	09h		(tab)	025d	19h	↓	(em)
010d	0Ah		(lf)	026d	1Ah		(eof)
011d	0Bh	♂	(vt)	027d	1Bh	←	(esc)
012d	0Ch	♀	(np)	028d	1Ch	↖	(fs)
013d	0Dh		(cr)	029d	1Dh	↔	(rs)
014d	0Eh	↓	(so)	030d	1Eh	▲	(gs)
015d	0Fh	○	(si)	031d	1Fh	▼	(us)

Encoding transforms data into another format using a scheme *that is publicly available* so that it can easily be reversed. It does not require a key as the only thing required to decode it is the algorithm that was used to encode it.

Examples: [ASCII](#), [Unicode](#), [URL Encoding](#), [Base64](#)

Encryption

The purpose of *encryption* is to transform data in order to keep it secret from others, e.g. sending someone a secret letter that only they should be able to read, or securely sending a password over the Internet. Rather than focusing on usability, the goal is to ensure the data cannot be consumed by anyone other than the intended recipient(s).

```
-----BEGIN PGP MESSAGE-----
Version: GnuPG v1.4.5 (GNU/Linux)

hQIOAOuHnue4n32EAf/UEF6JLrap10BMDKwB+Dz9GvoijUixH+gbcp19qGa+43
vC3ktHwo70WqPyJseVRSPBov6d0wy65KrrzHwhOHQ/CKEk20SSTAwzj6C3USgBfZ
6E+Gc4iUmH17250NahJzcL5ED33LfD26uoEjggqgxG1dFvwwksRHA4+VU9Bcd5eL
T9aRvbkXNxXkQnzFVhWuhPQFNWLeIVrBd9TPcDvpRT16f1B1AH9ks3H1YZHL7mfR
H99yfyInoCZah106EdvvtVd/Lq1xsFjKh6y/pG6KxABgd16VoeWGVtQGqwpbOZGq
x0SfKmhMhAkKoyXZLraSEyyxxu4cQrvz3vrm3AgAhObP2eUFU9EJAQpdKJW
fKAhohPVp46+ETnL53VLg1JJdNG1pIzi09a1NnM8nt2EwAELqTU13jF1Gvt5
cvSUBe3ER4/CkjvYXOVa07ezHwCAkQpB2ILV80w174DQn7NKf2g3nwkYAF7yyf
XFG1J8oaLpRV499mN7lNfo+ZV2HrB9xti+3UPFv+H+R0c4fHmAUSI95UksQFe/A9
YUdSBAEqKkU9zLbopW32oxJymGufBdhzxp7uJ1zrwsHIYIt7PSeJG4V0+XJqRv0
1qHXSukK648F10ImwUUM9csPOcvfOMZeAgh41+HYOvFF/kGhp60gevd4pVhztbzd
F9JhAbJ8eOvZK2FPhjgX+uCGvzVRniSdDg7wc3+YKNe12zQcmTsi106JyVQV2OI
tAqTkS72zdZbrCtSgcthrN/uxbJSNnw4X9IZbWtF0Uc3lr676I18Q112tt03IVCe
fF/pZA==
=sPwF
-----END PGP MESSAGE-----
```

Encryption transforms data into another format in such a way that *only specific individual(s)* can reverse the transformation. It uses a key, which is kept secret, in conjunction with the plaintext and the algorithm, in order to perform the encryption operation. As such, the ciphertext, algorithm, and key are all required to return to the plaintext.

Examples: [AES](#), [Blowfish](#), [RSA](#)

http://danielmeissler.com/study/encoding_vs_encryption/