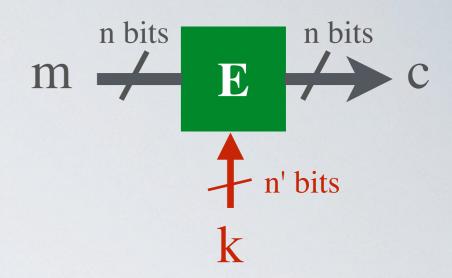
## Ideal block cipher



- Combines confusion (substitution) and diffusion (permutation)
- Changing single bit in plaintext block or key results in changes to approximately half the ciphertext bits
- → Completely obscure statistical properties of the original message
- → A known-plaintext attack does not reveal the key

## DES - Data Encryption Standard

Block size	64 bits
Key Size	56 bits
Speed	~ 50 cycles per byte
Algorithm	Feistel Network

## Timeline

- 1972 NBS call for proposals
- 1974 IBM Lucifer proposal analyzed by DOD and enhanced by NSA
- 1976 adopted as standard
- 2004 NIST withdraws the standard