The attacker's model

- Exhaustive Search
 - Try all possible n keys (in average it takes n/2 tries)
- Ciphertext only

You know one or several <u>random ciphertexts</u>

Known plaintext

You know one or several pairs of random plaintext and their corresponding ciphertexts

Chosen plaintext

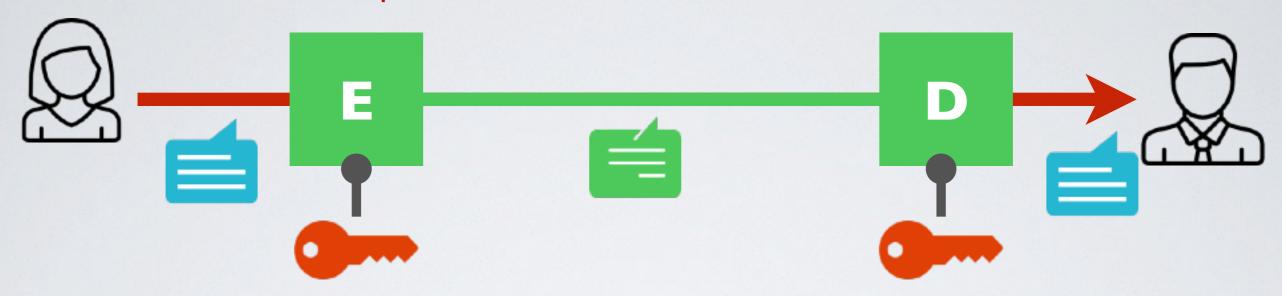
You know one or several pairs of chosen plaintext and their corresponding ciphertexts

Chosen ciphertext

You know one or several pairs of plaintext and their corresponding chosen ciphertexts

→ A good crypto system resists all attacks

Functional Requirements



- ightharpoonup The same key k is used for encryption E and decryption D
- 1. $D_k(E_k(m))=m$ for every k, E_k is an injection with inverse D_k
- 2. $E_k(m)$ is easy to compute (either polynomial or linear)
- 3. $D_k(c)$ is easy to compute (either polynomial or linear)
- 4. $c = E_k(m)$ finding m is hard without k (exponential)