Encryption modes

“Hands-on theoretical workshop”

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Centre for Research on Cryptography and Security

Need for encryption...

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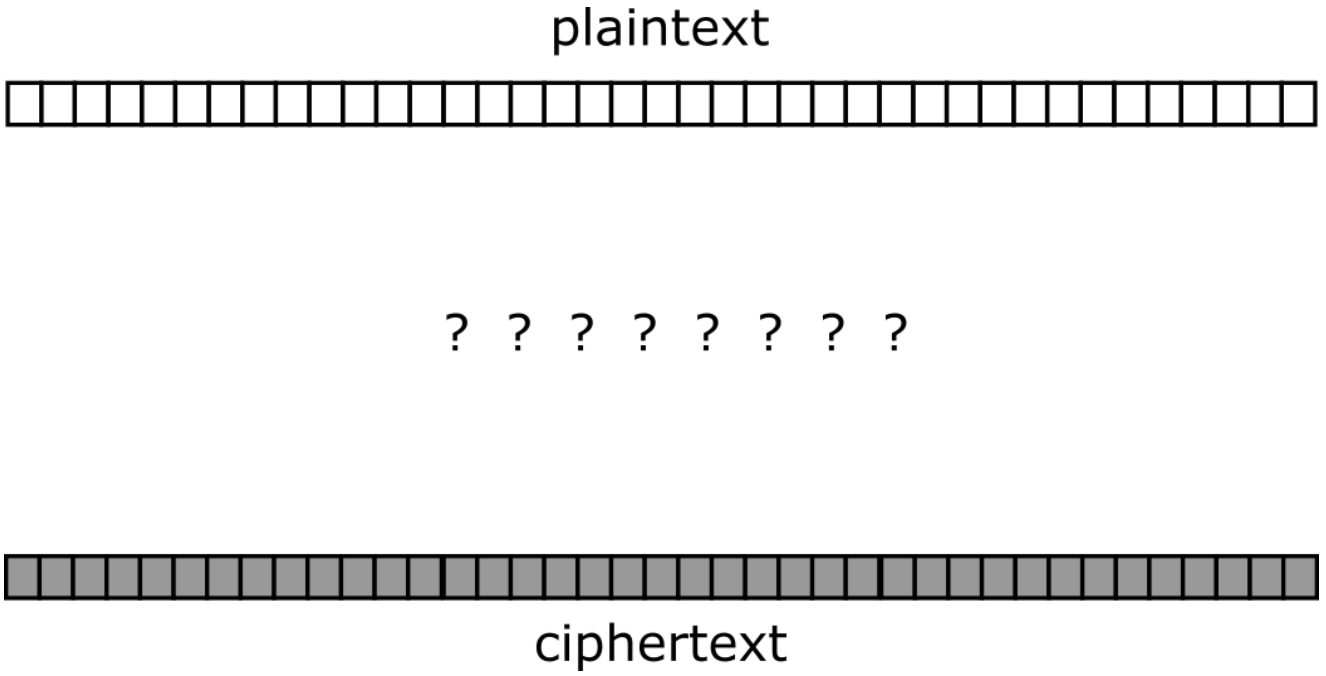
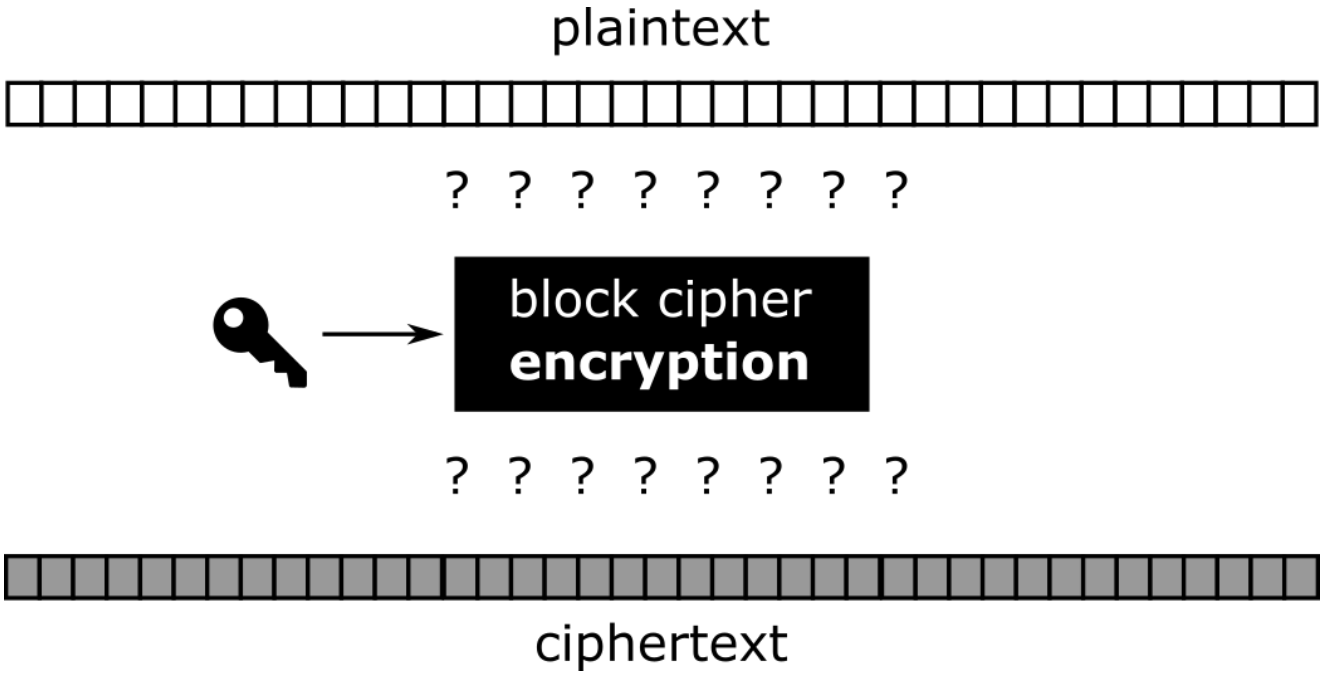
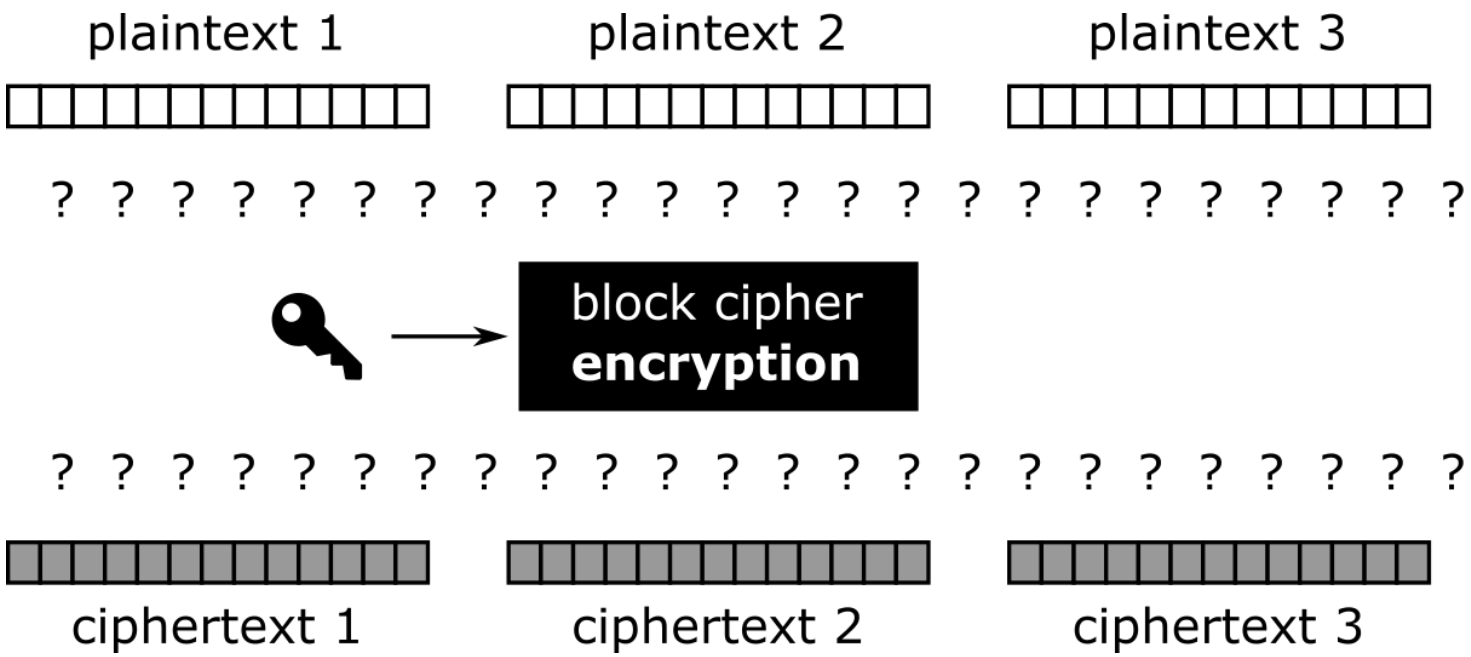


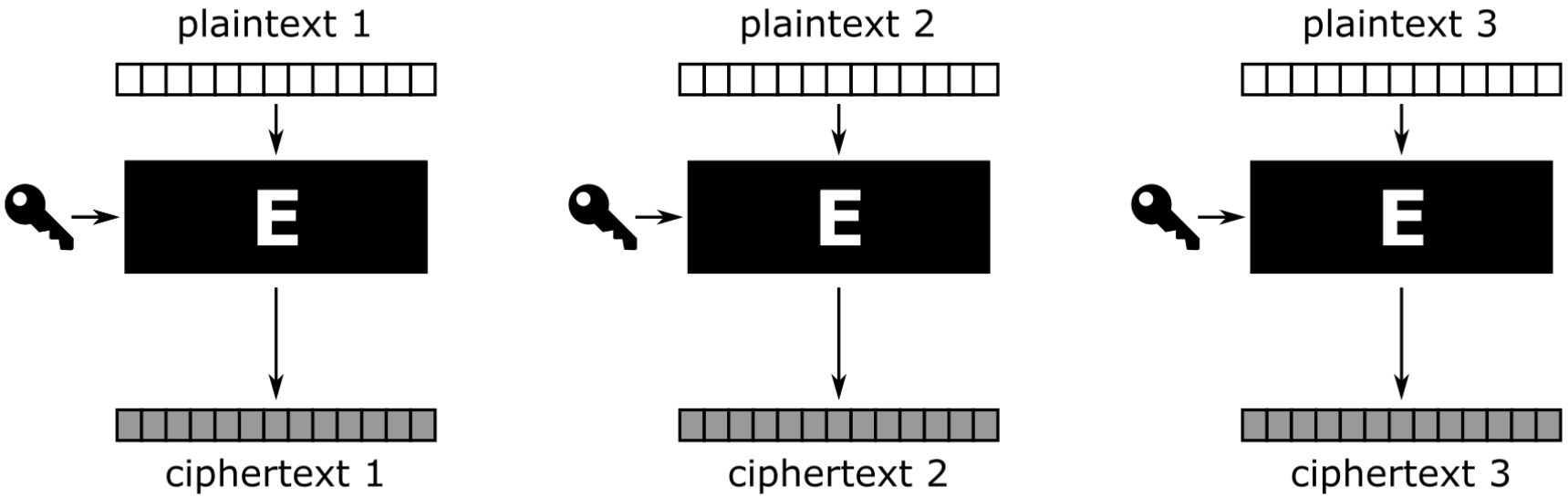
Block cipher to help!



Cutting plaintext in small, workable pieces



Electronic code book (ECB)



Encrypting TUX (ECB)

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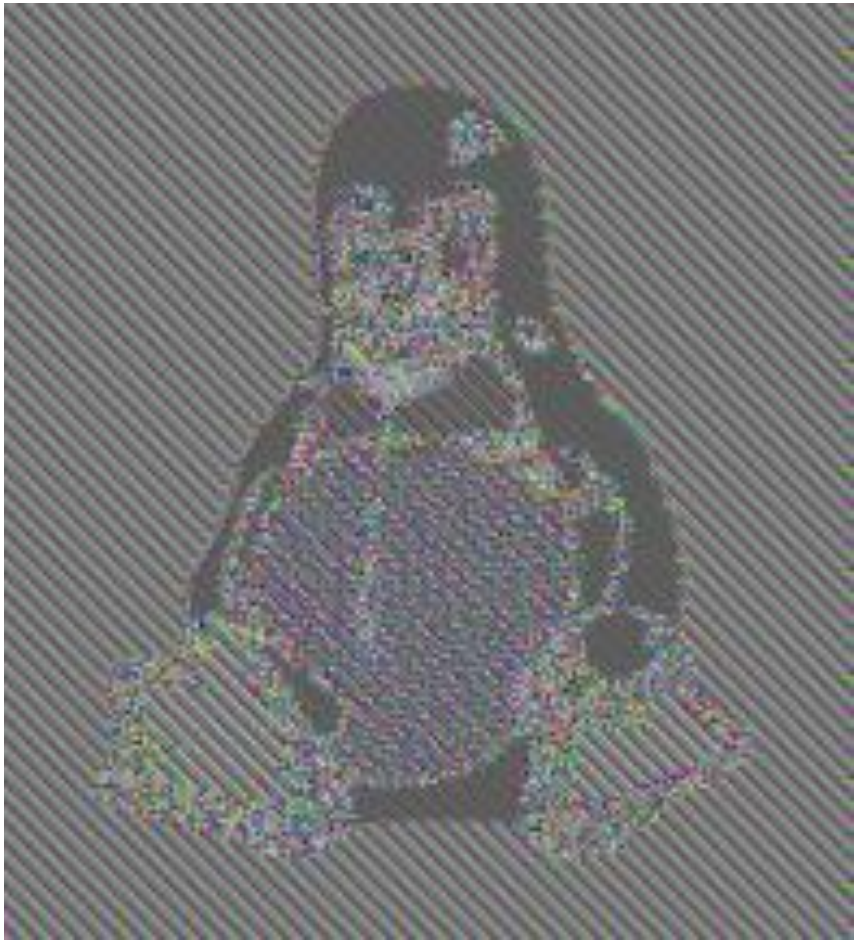
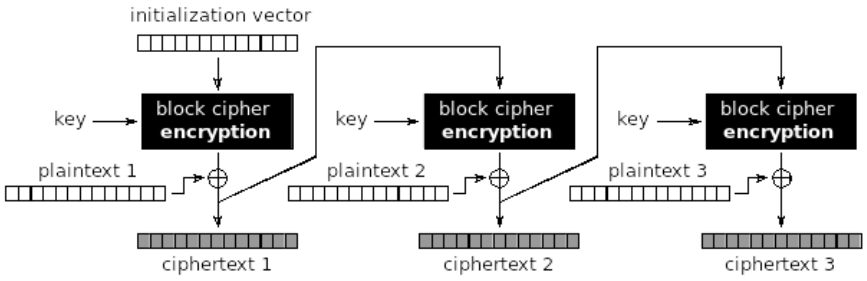
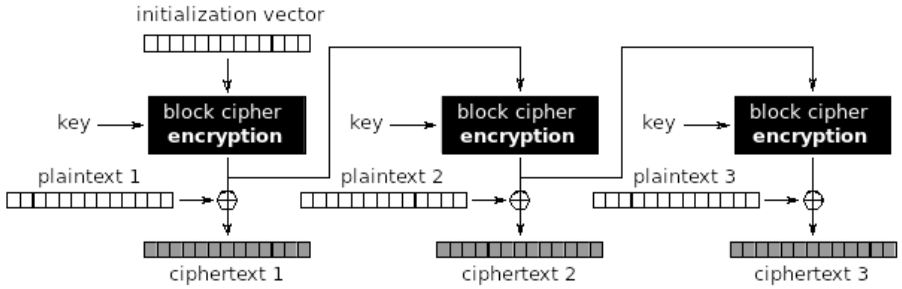
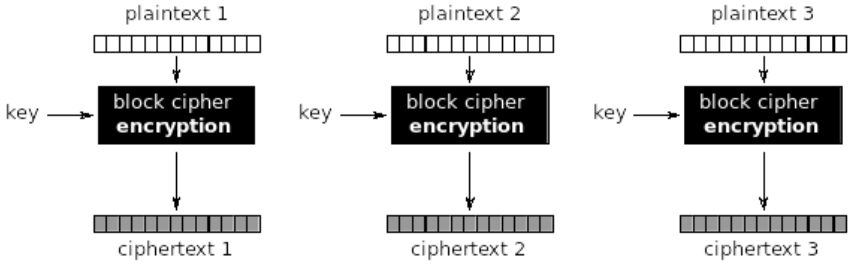
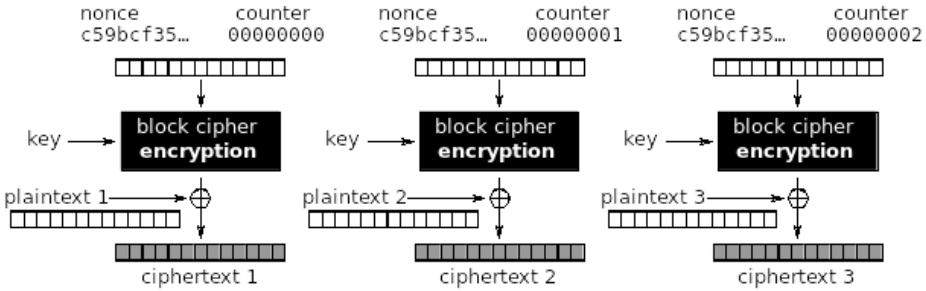


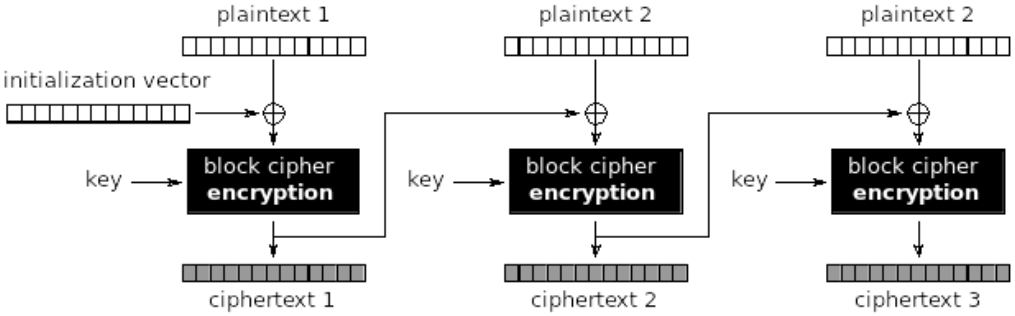
We can do better...











Features of XOR (eXclusive OR)

$$\begin{array}{rcccc} & 0 & 0 & 1 & 1 \\ \oplus & 0 & 1 & 0 & 1 \\ \hline & 0 & 1 & 1 & 0 \end{array}$$

Features of XOR (eXclusive OR)

$$
\begin{array}{r}
0\ 0\ 1\ 1 \\
\oplus\ 0\ 1\ 0\ 1 \\
\hline
0\ 1\ 1\ 0
\end{array}
$$

$$
\begin{array}{r}
0\ 1\ 1\ 0 \\
\oplus\ 0\ 1\ 0\ 1 \\
\hline
0\ 0\ 1\ 1
\end{array}
$$

Thank you
for your attention.

Questions are welcome!

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