Block Ciphers

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CUNY - Hunter College

February 16, 2022

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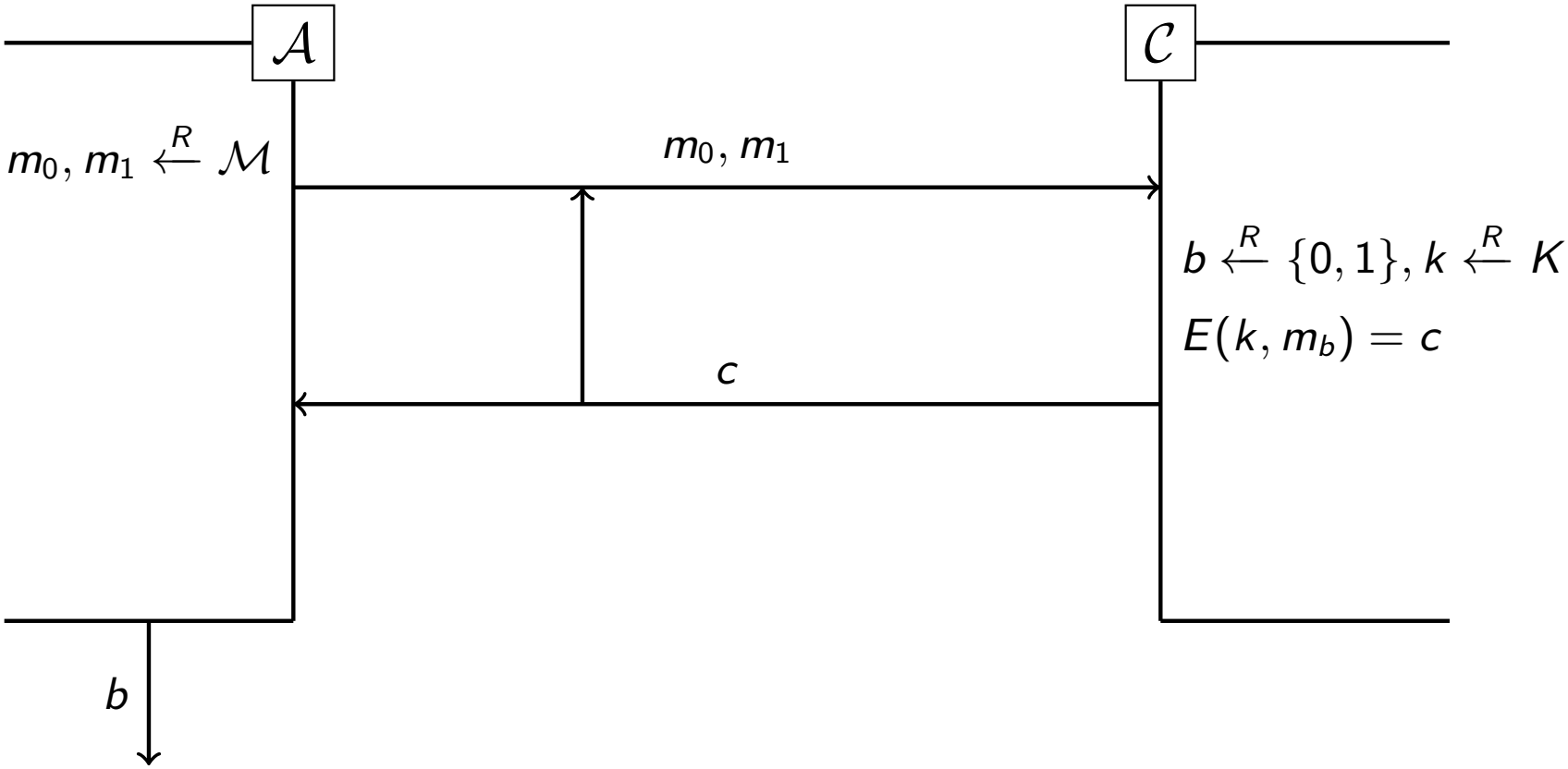
One Time Pad Security Game: Chosen Plaintext Attack



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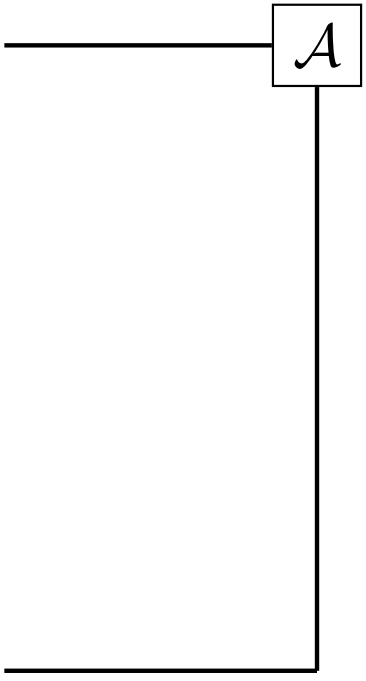

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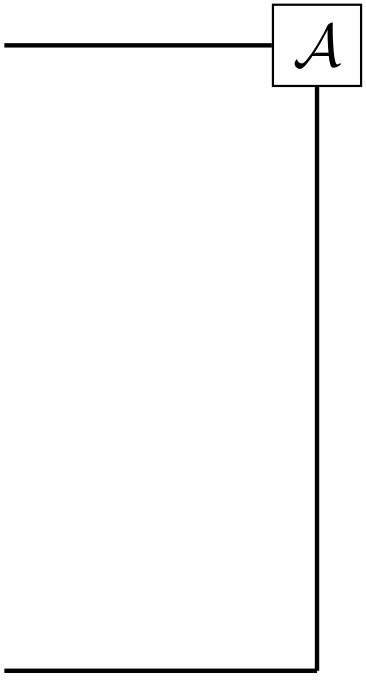

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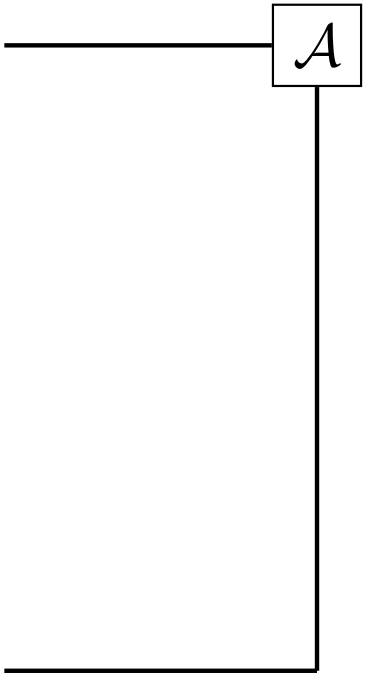

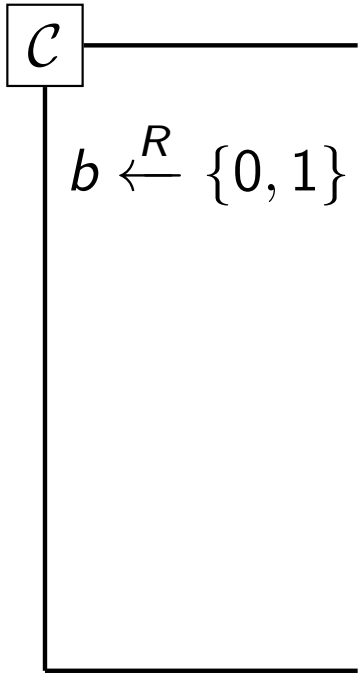

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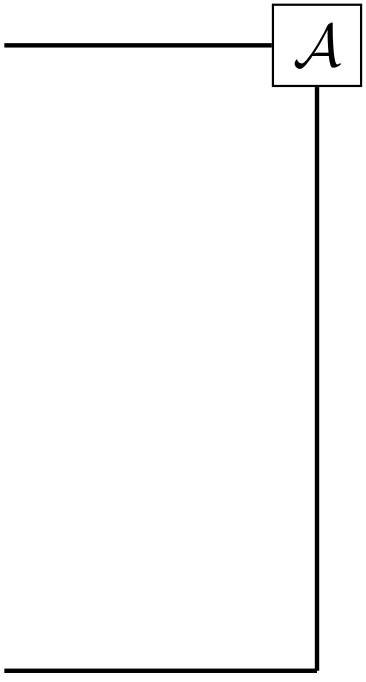

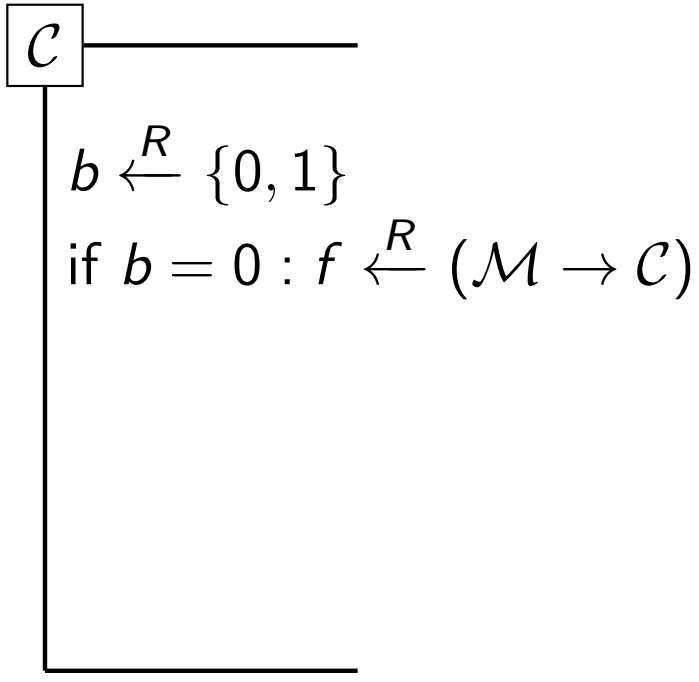

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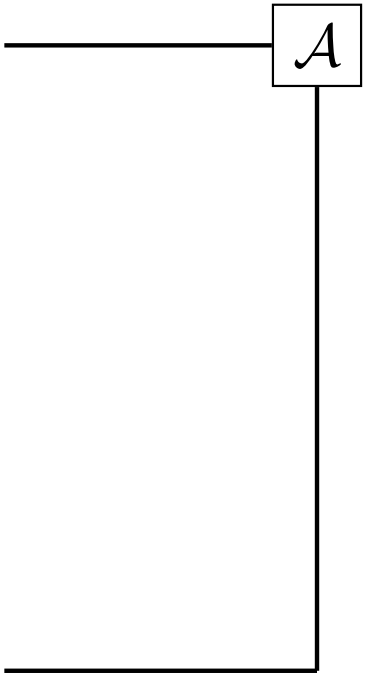

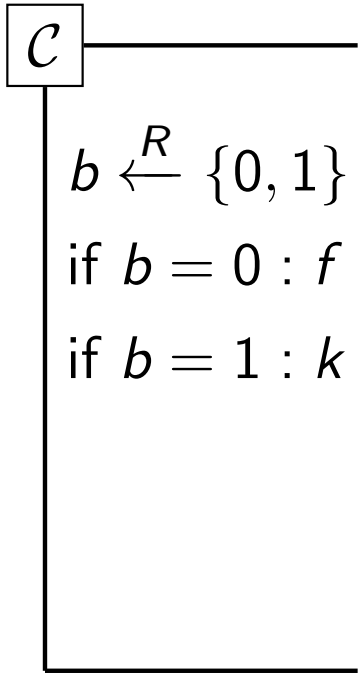

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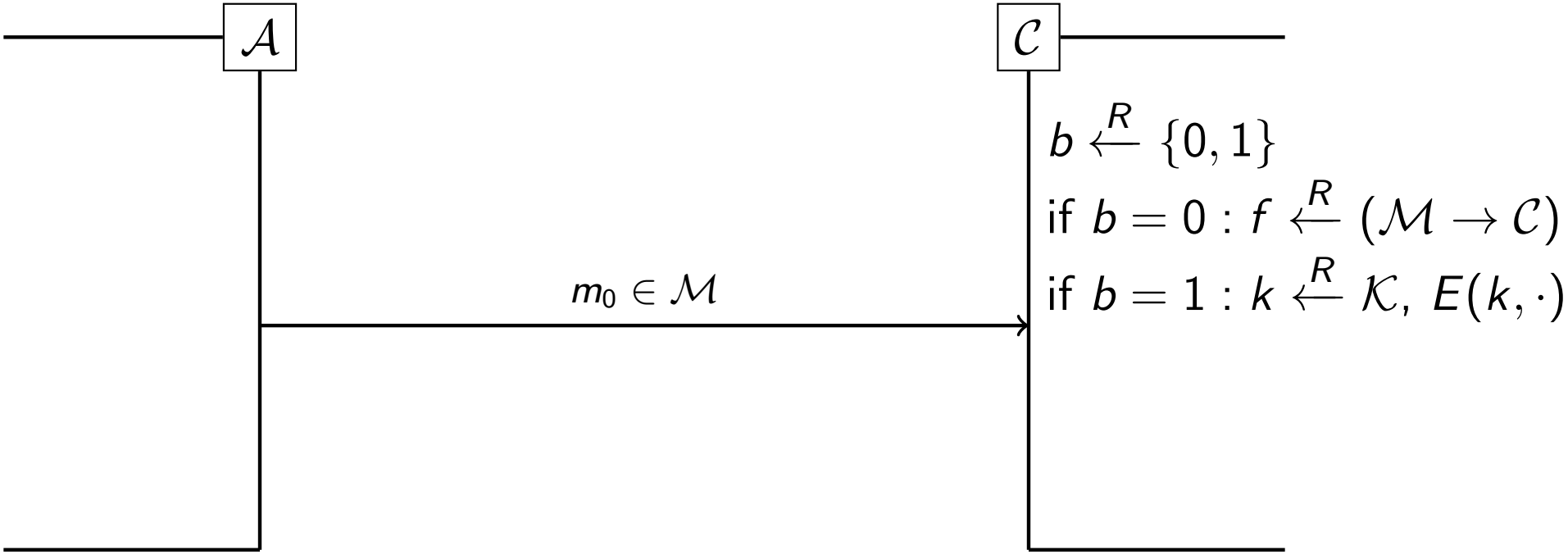

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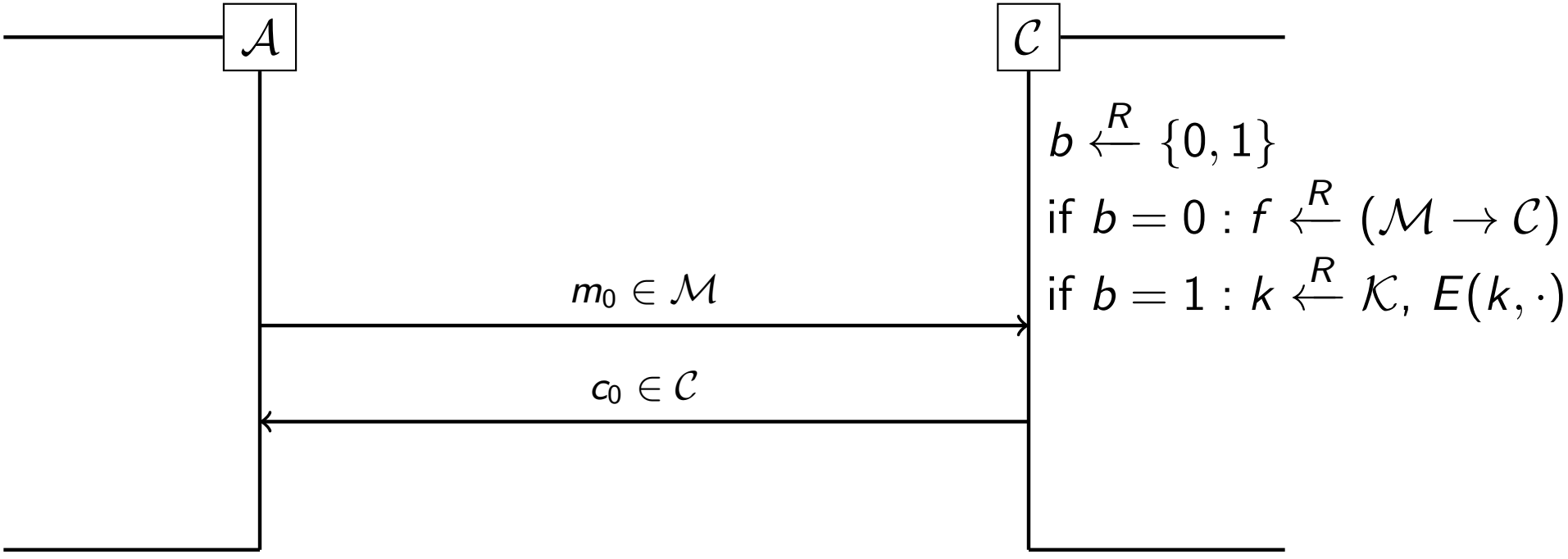

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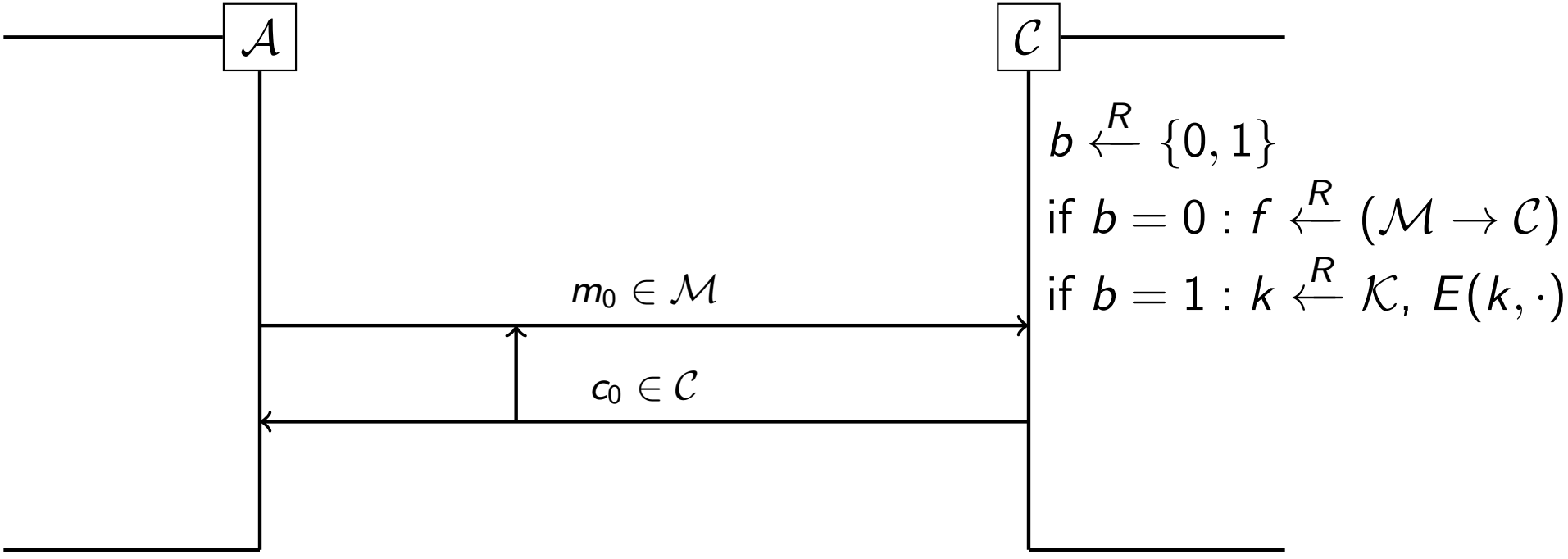

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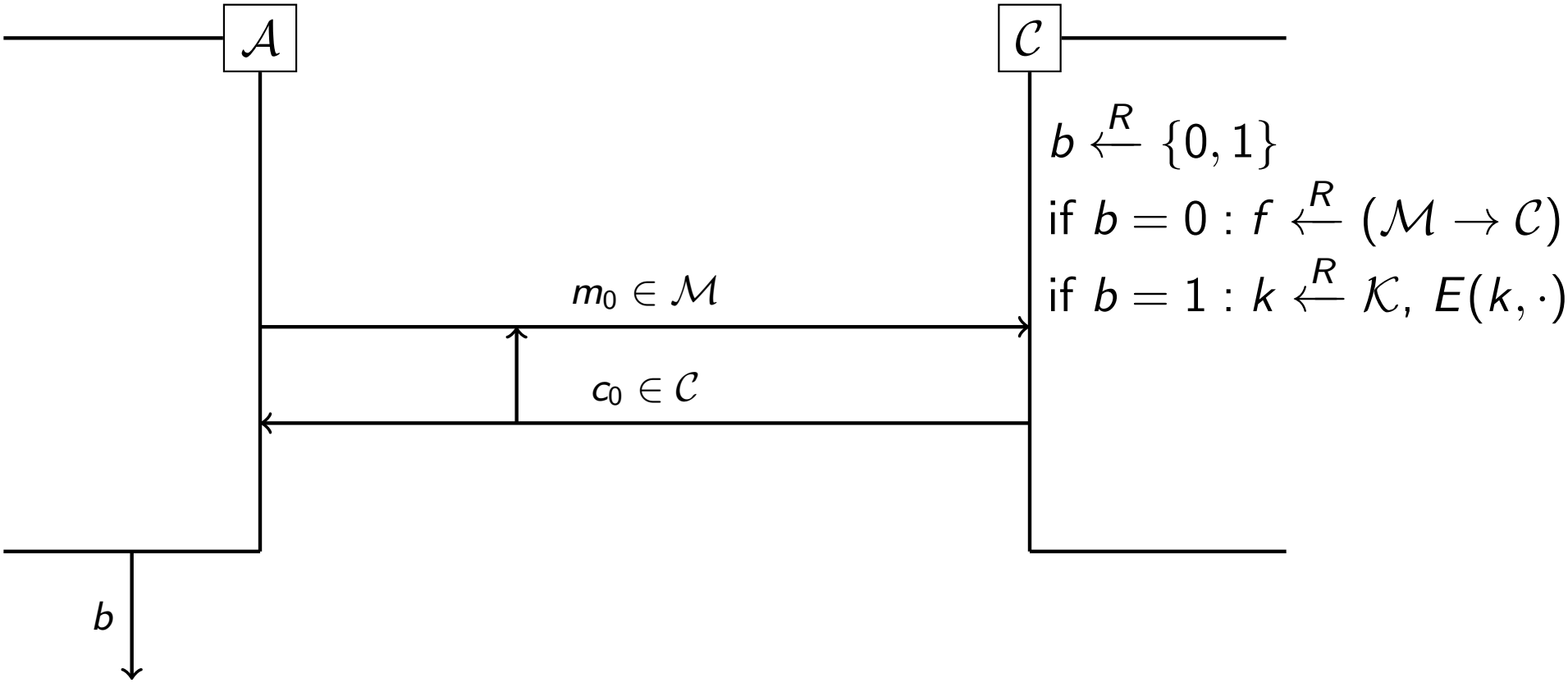

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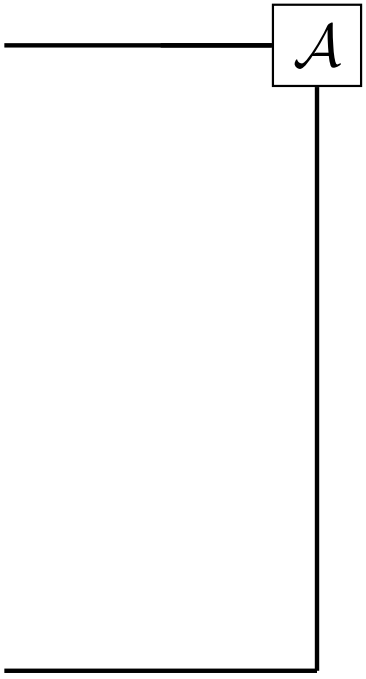

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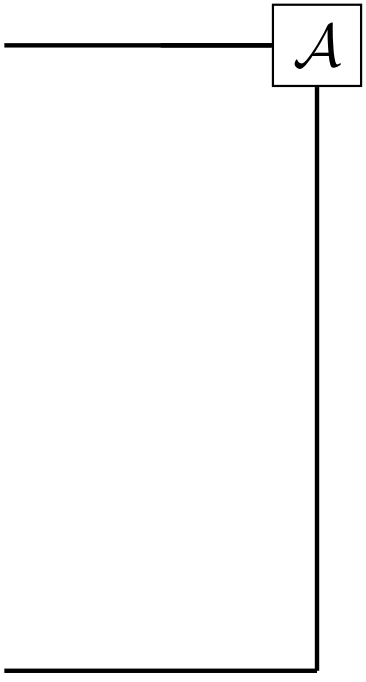

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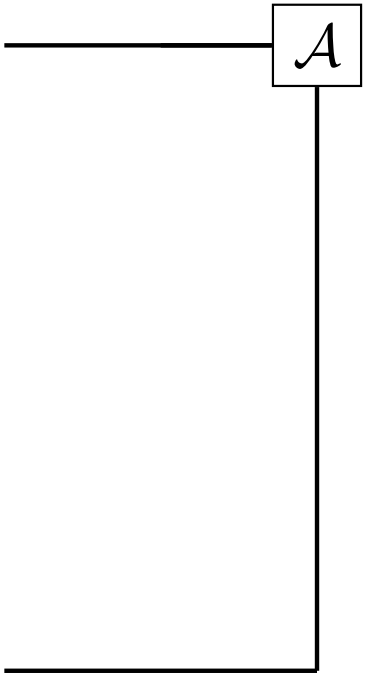

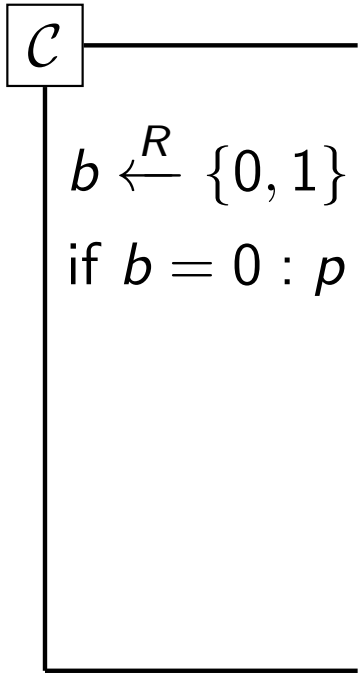

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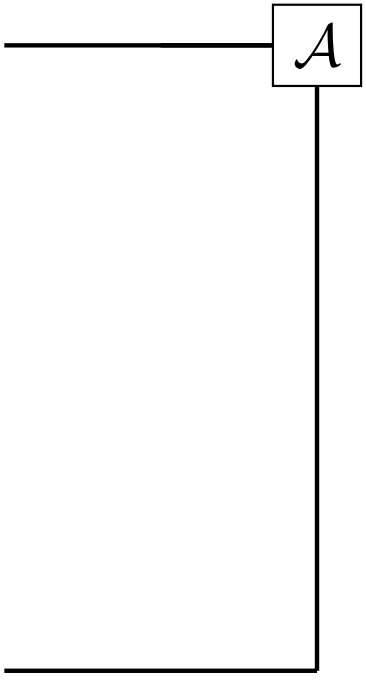

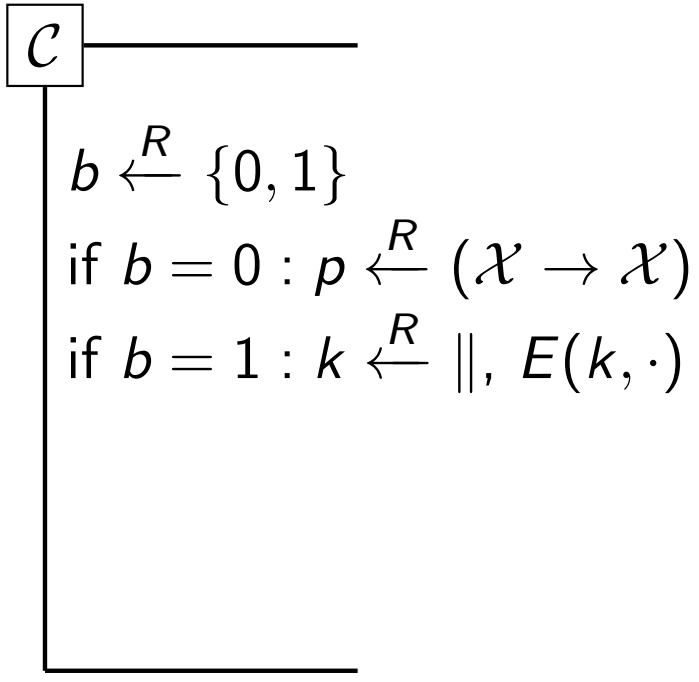

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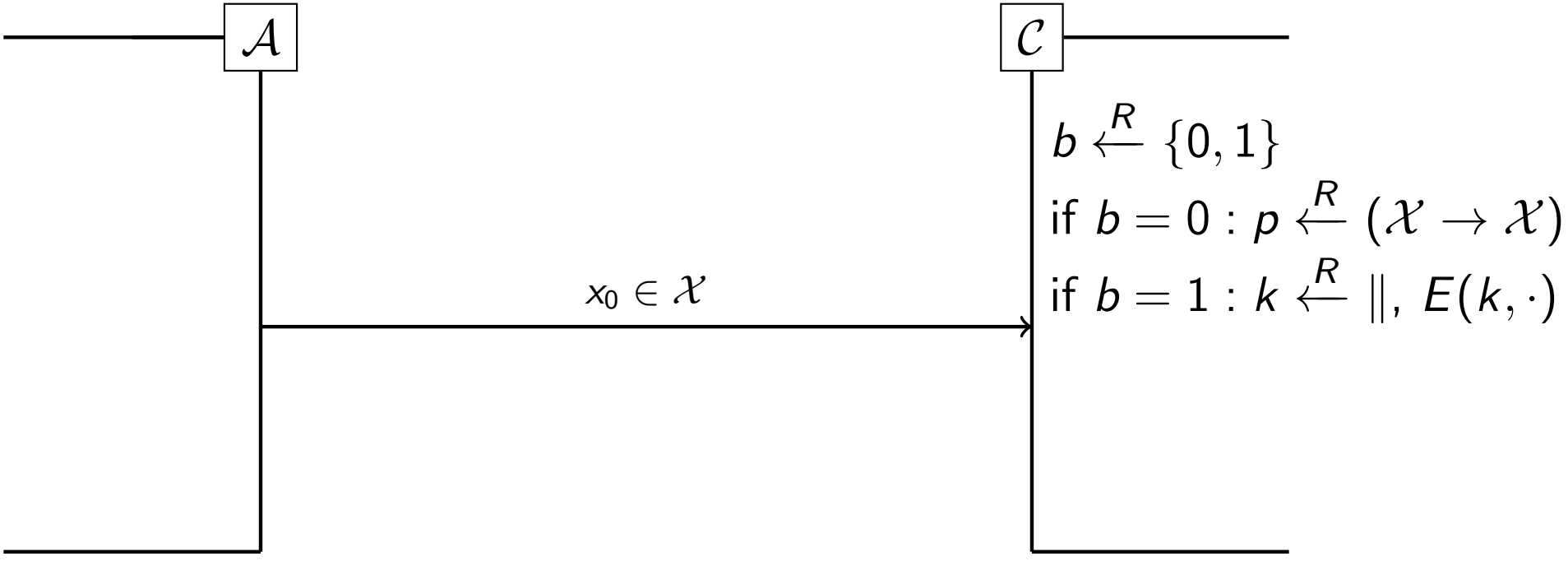

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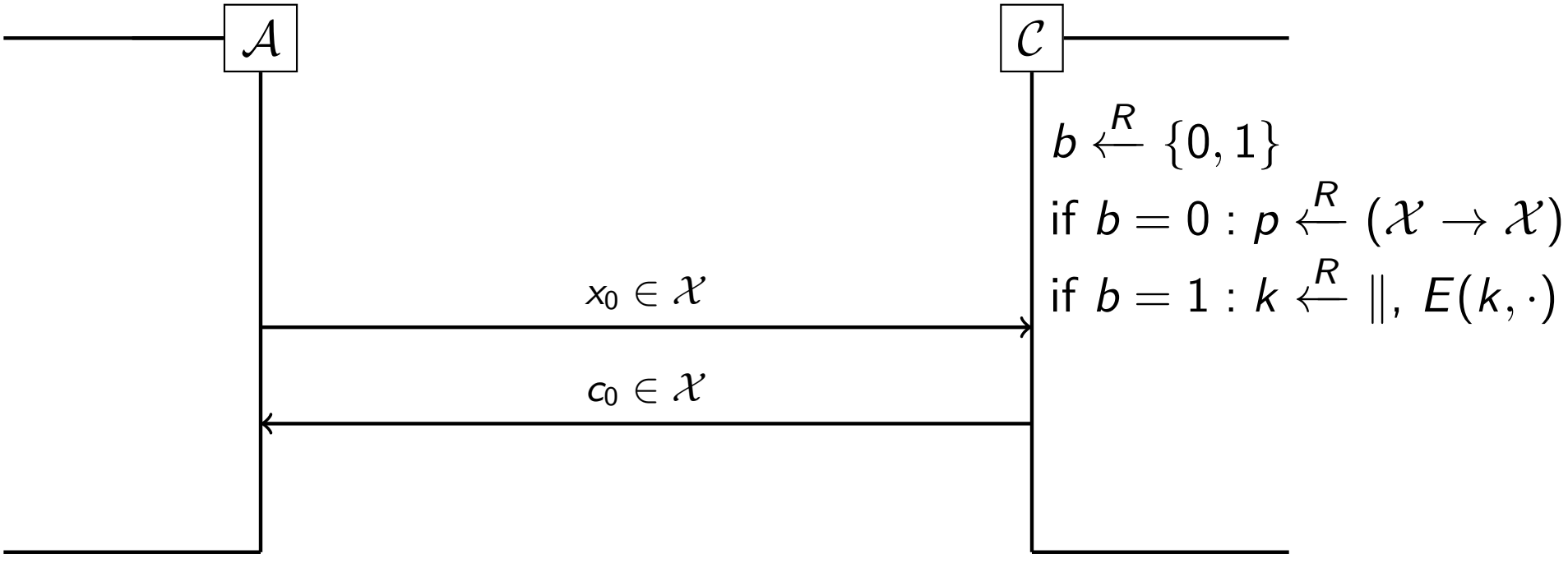

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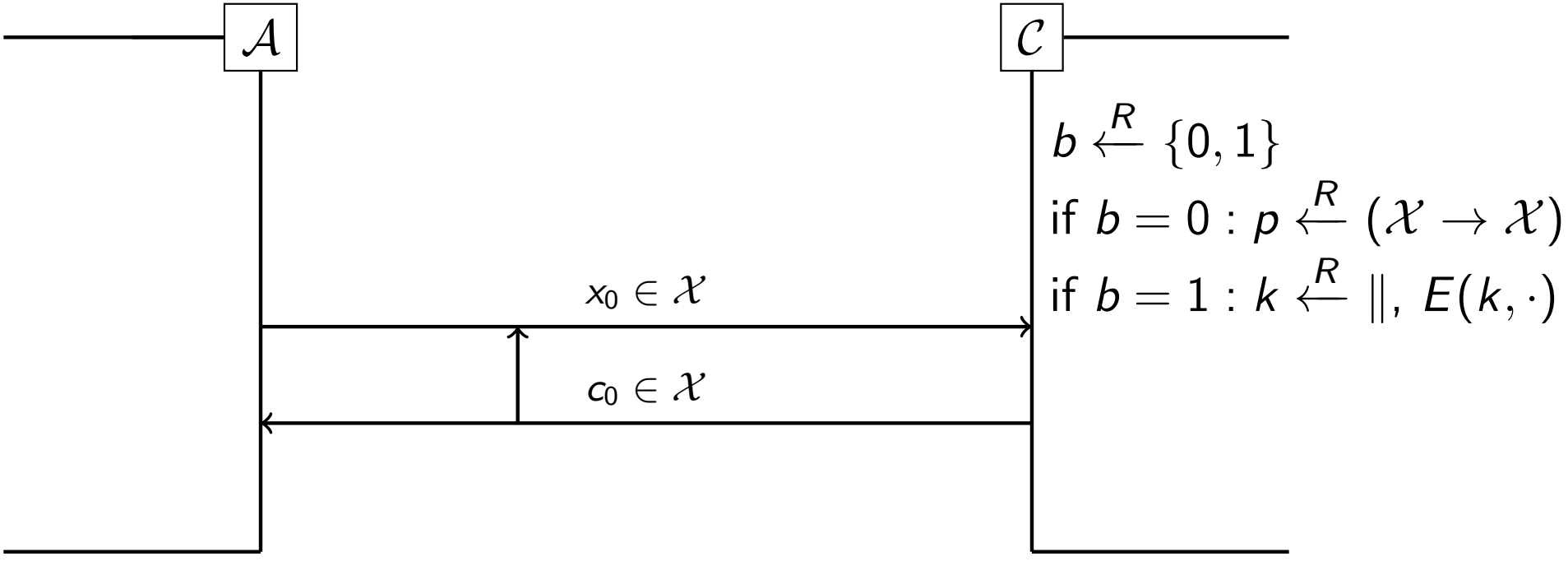

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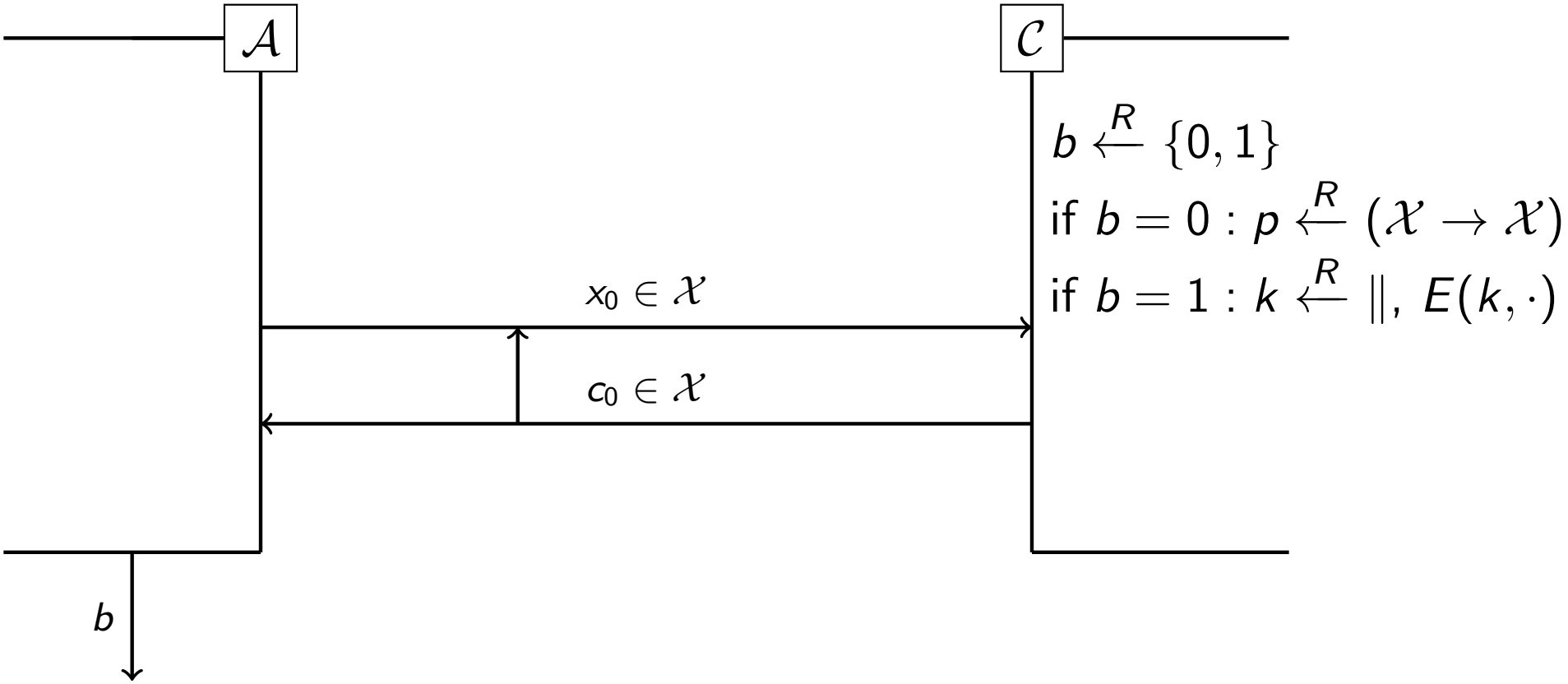

Security Lemma

- a secure PRP is equivalent to a secure PRF

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- Shares the correctness requirement with Shannon Ciphers $D(k, E(k, m)) = m$

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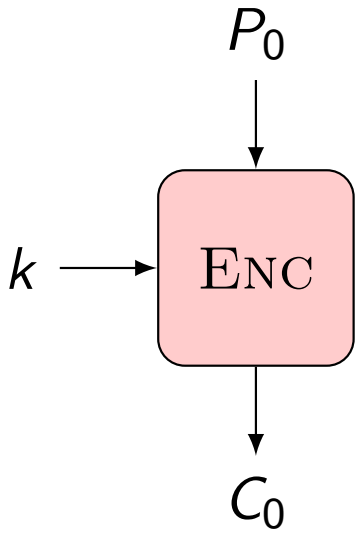

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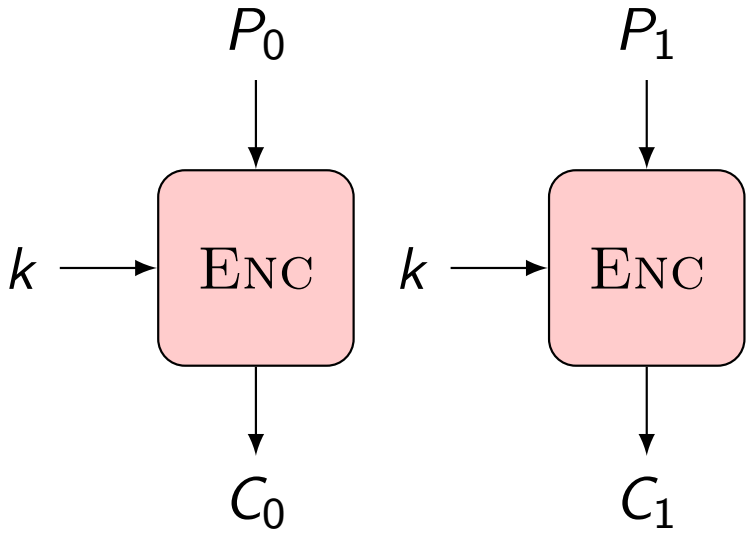

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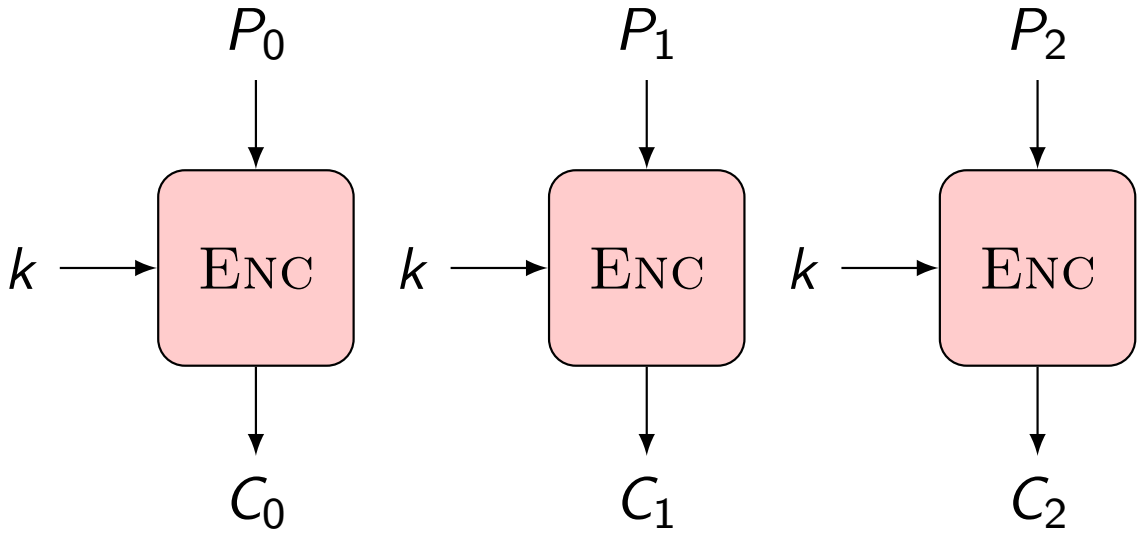

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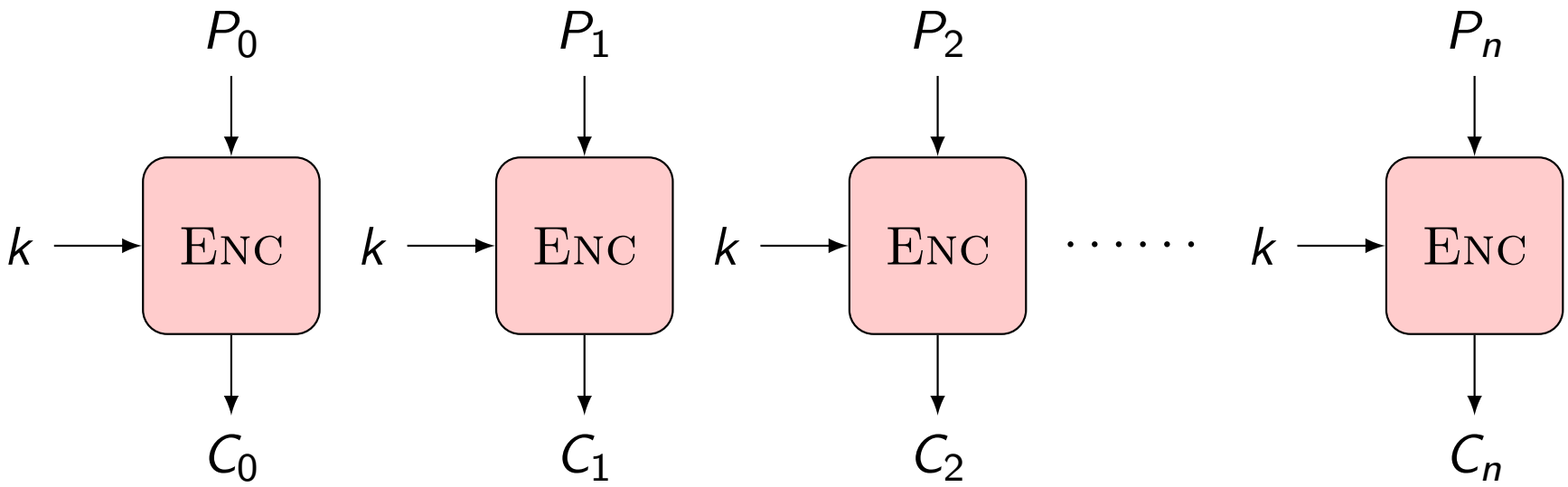

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Future HW: describe an attack to break CPA given ECB

Image Encryption using ECB

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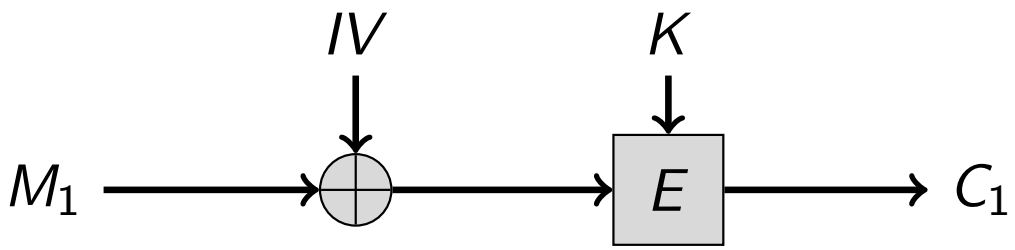

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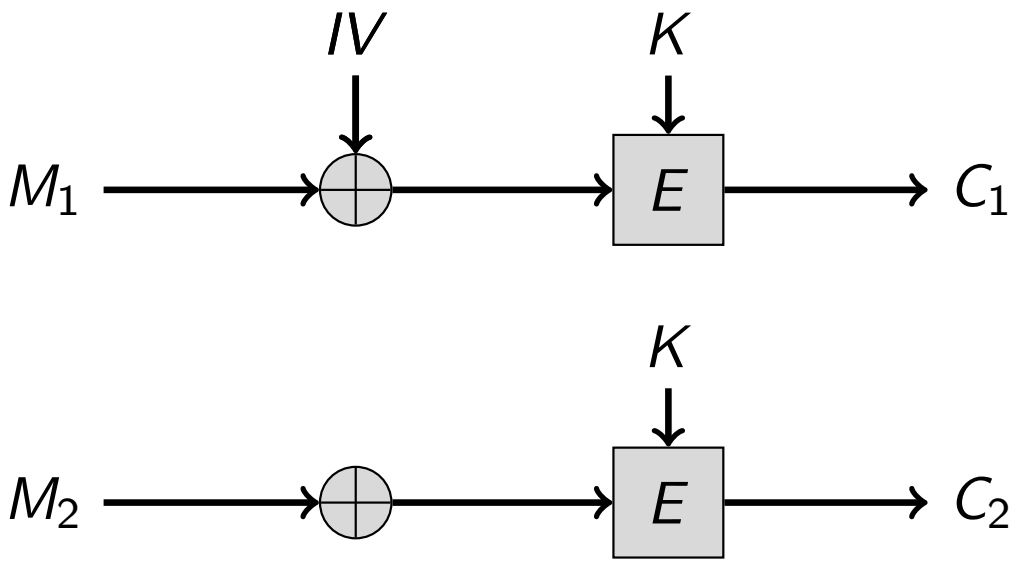

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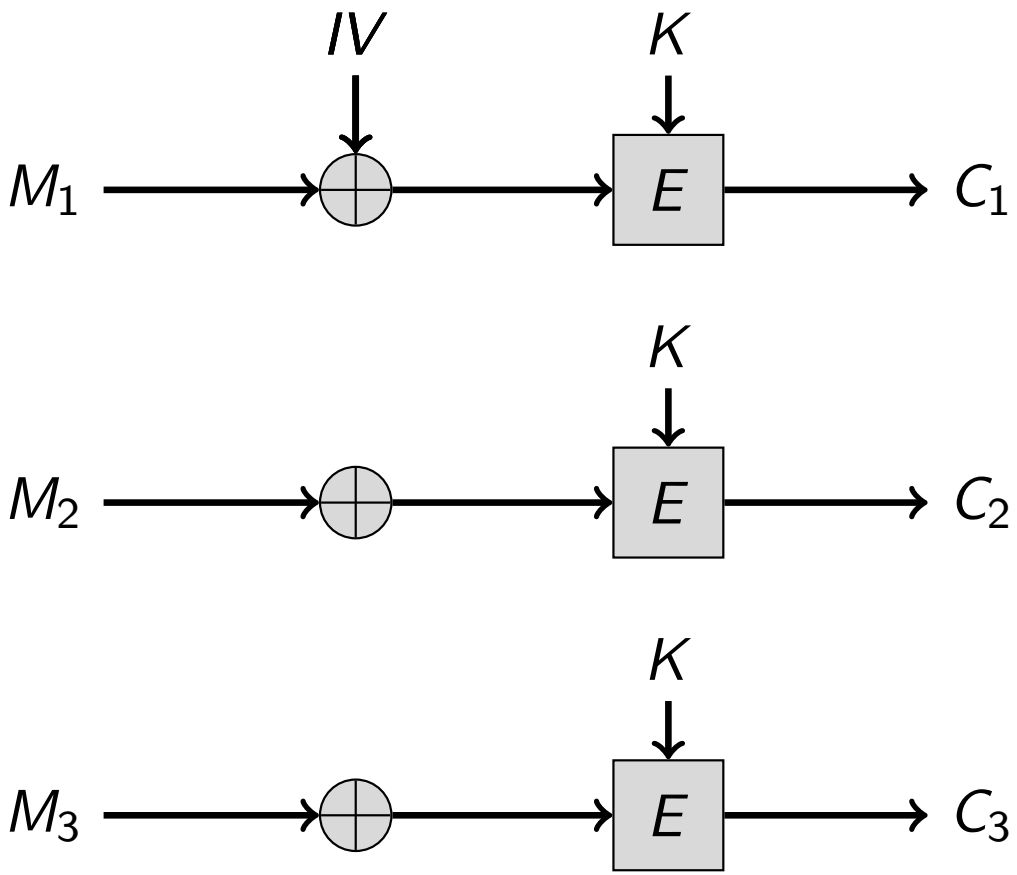

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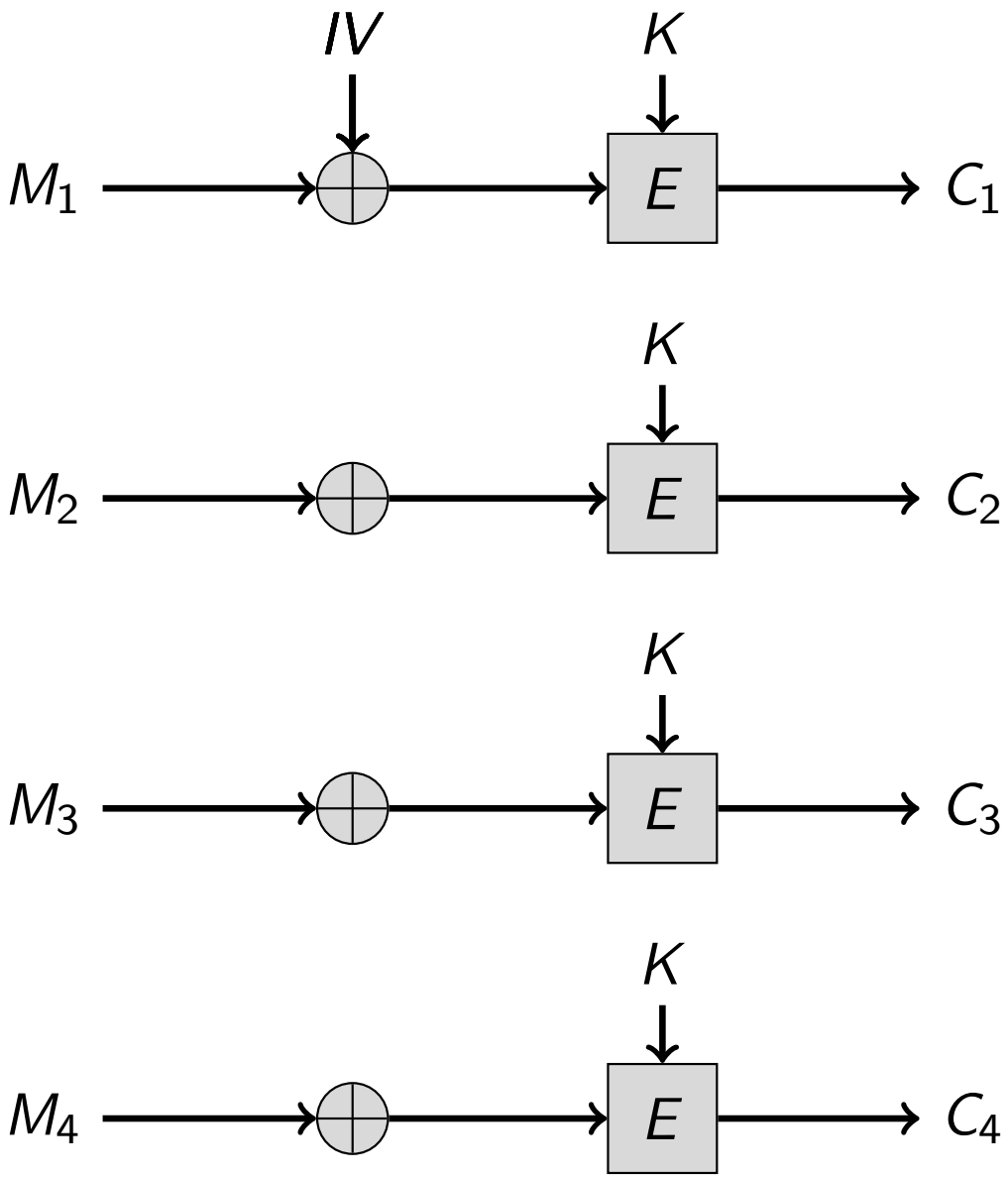

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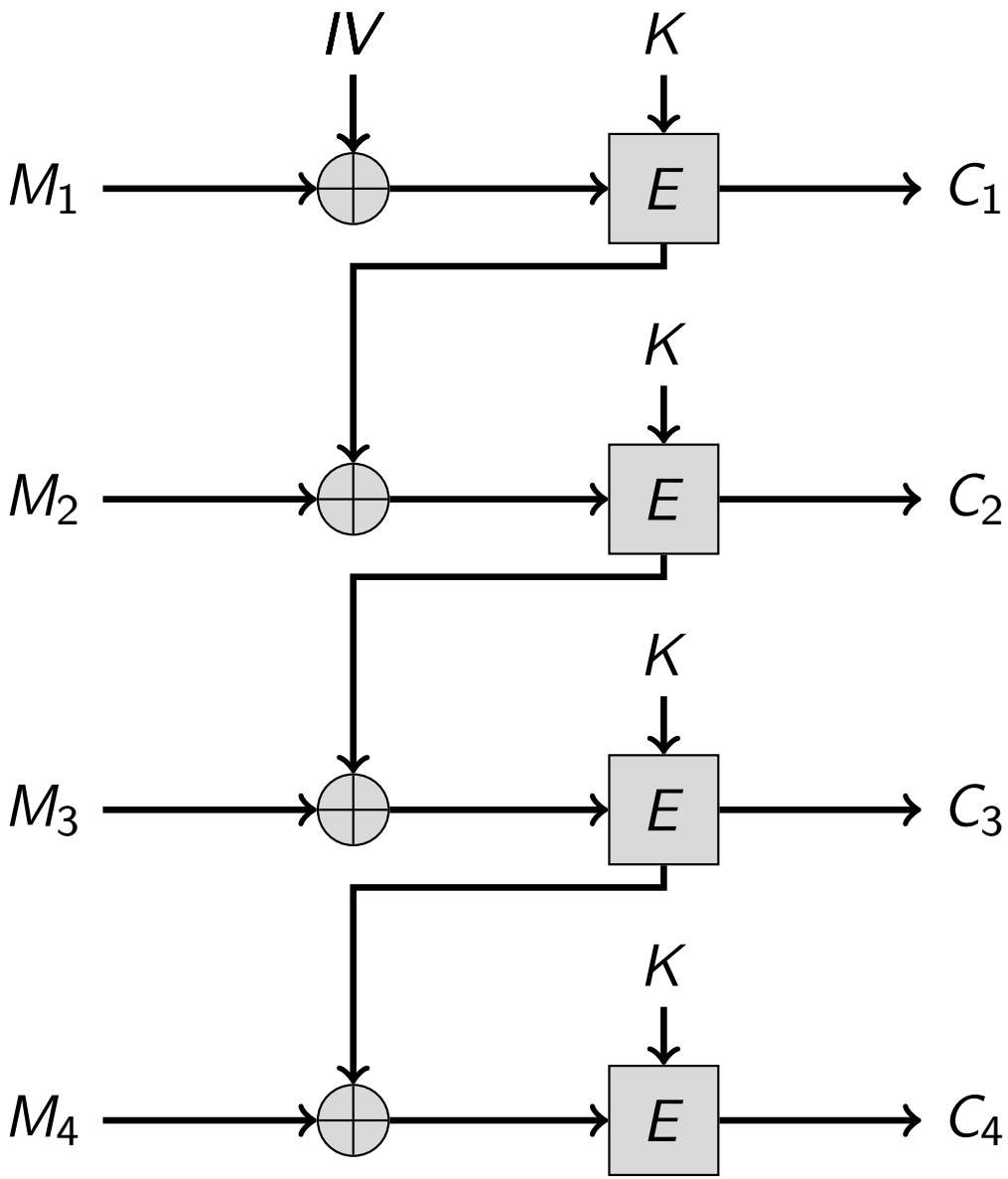

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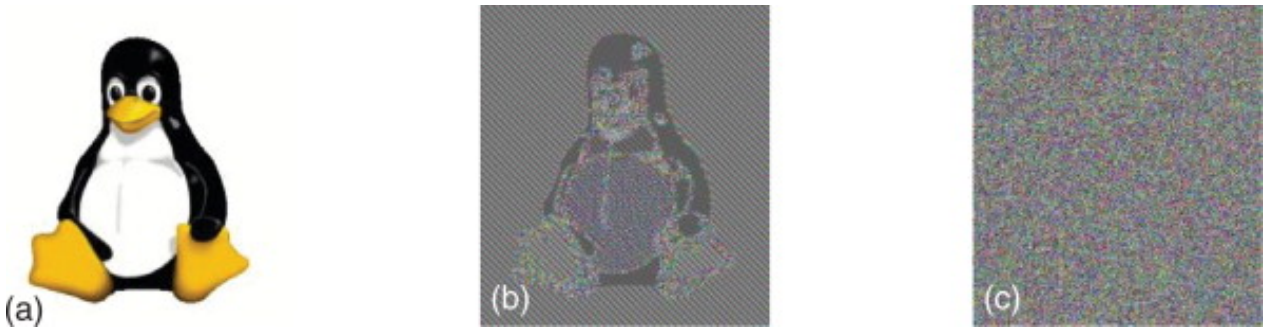
- It is best to use a random IV every message and send it with the cipher text

Image Encryption using CBC vs EBC



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    4. XOR with round key
4. Final encryption round

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    2. Shift rows: last 3 rows are cyclically shifted
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    4. XOR with round key
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