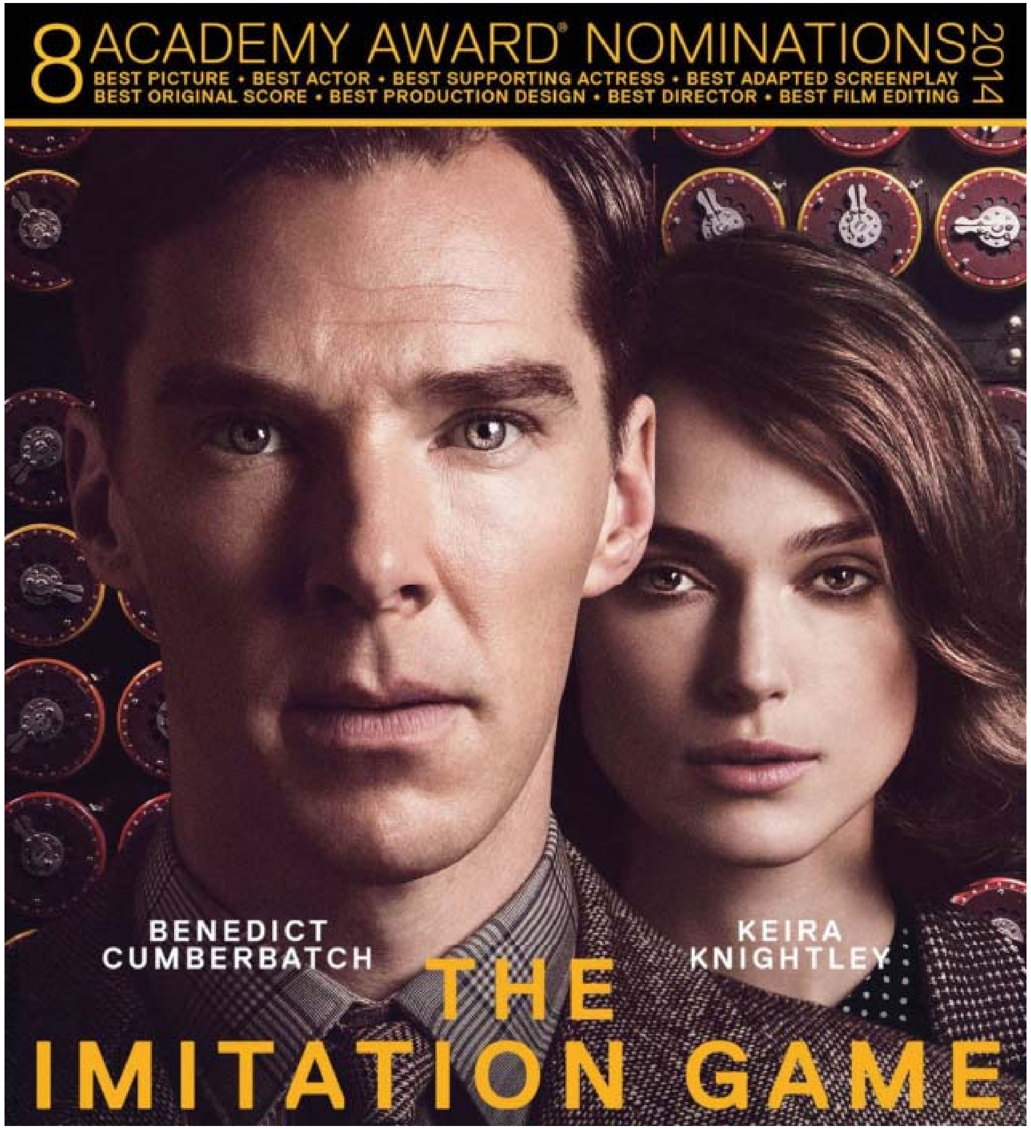
模仿遊戲

2014

班奈狄克·康柏拜區

綺拉·奈特莉


8 ACADEMY AWARD® NOMINATIONS 2014
BEST PICTURE • BEST ACTOR • BEST SUPPORTING ACTRESS • BEST ADAPTED SCREENPLAY
BEST ORIGINAL SCORE • BEST PRODUCTION DESIGN • BEST DIRECTOR • BEST FILM EDITING
BENEDICT CUMBERBATCH
KEIRA KNIGHTLEY
THE IMITATION GAME

Enigma
恩尼格瑪

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德軍了不起的對稱式加密裝置

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運算裝置Bombe
來協助破解

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- 在計畫幾乎被軍方停下的時候, Turing 在酒吧裡聽到那個 “女朋友” 故事時, 徹夜想到的密碼破解方法 – 我們現在稱為 **Known Plaintext Attack (已知明文攻擊)**, 如果知道每天某一時間一定會送出來的密文所對應的明文, 破解相同鑰匙加密的密文的難度大幅度降低

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➢ Alan Turing 提出了一個 **判斷機器是否具有智慧** 的方法 – **Turing Test** – 在人工智慧領域裡是很有趣的概念

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- 這個方法的精神在 80 年代搖身一變成為 定義密碼系統安全性 的基本方法, 一直沿用到現在

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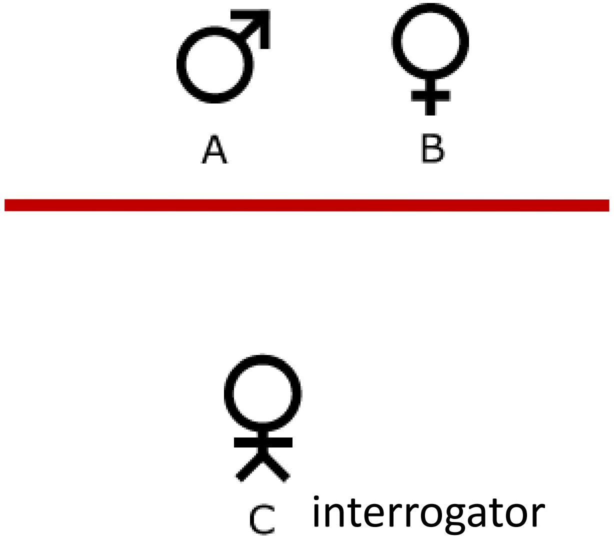

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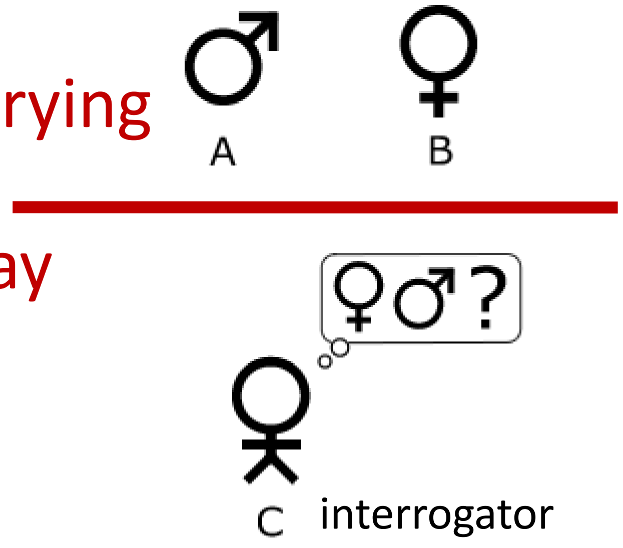

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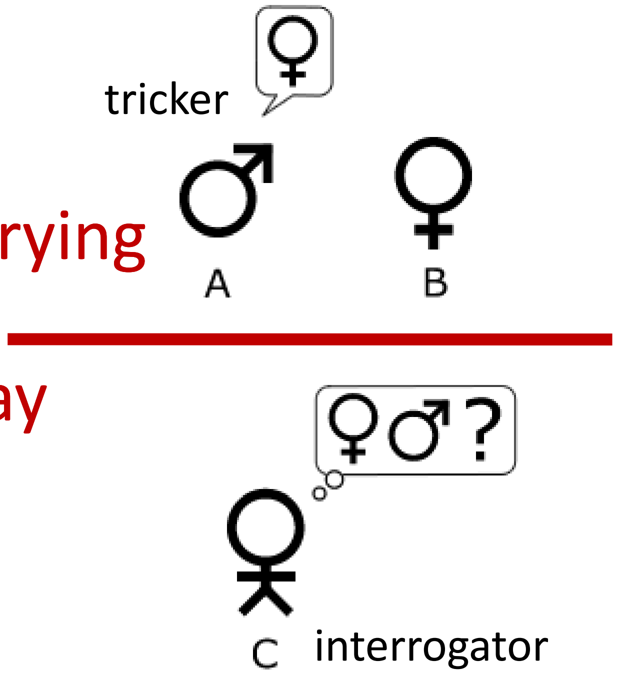

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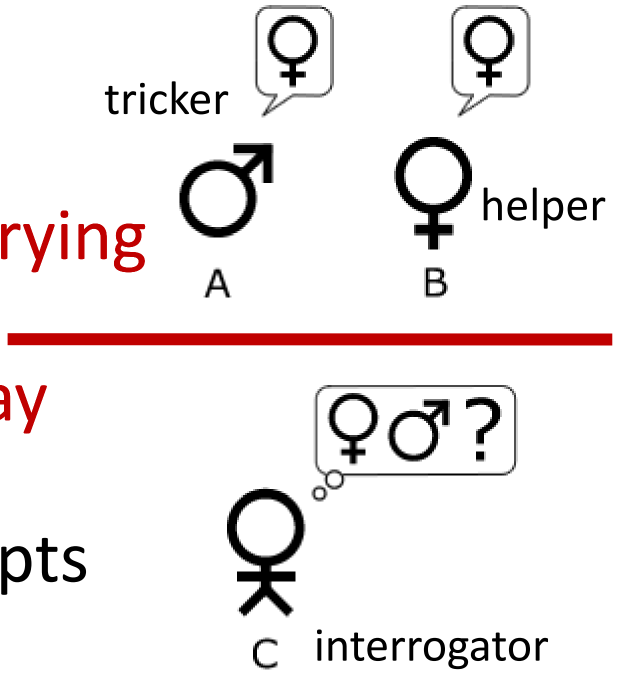

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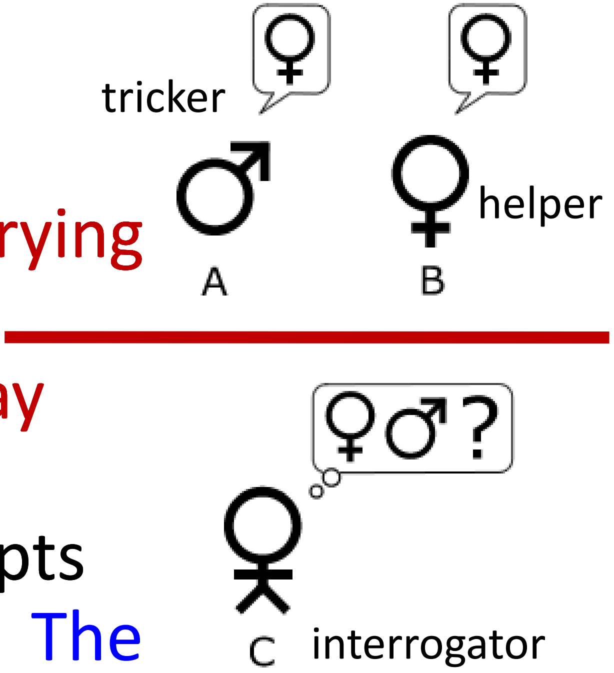
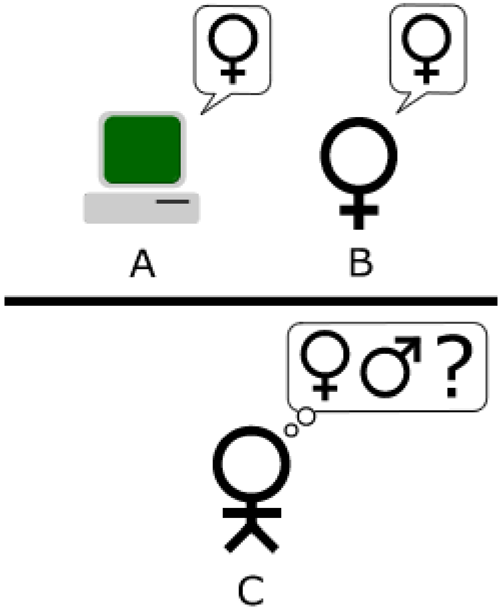


把 A 換成機器



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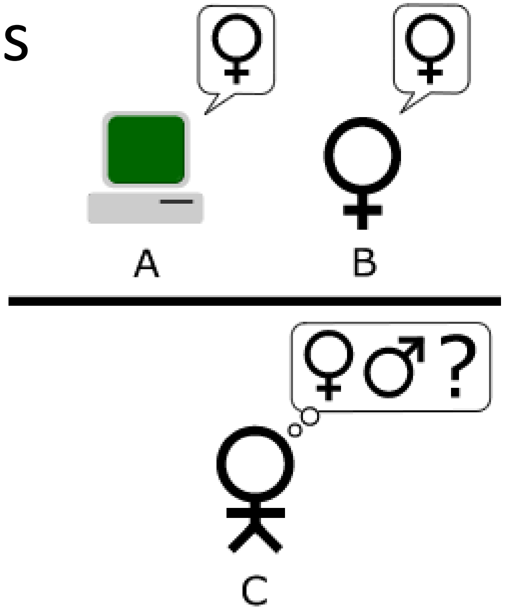

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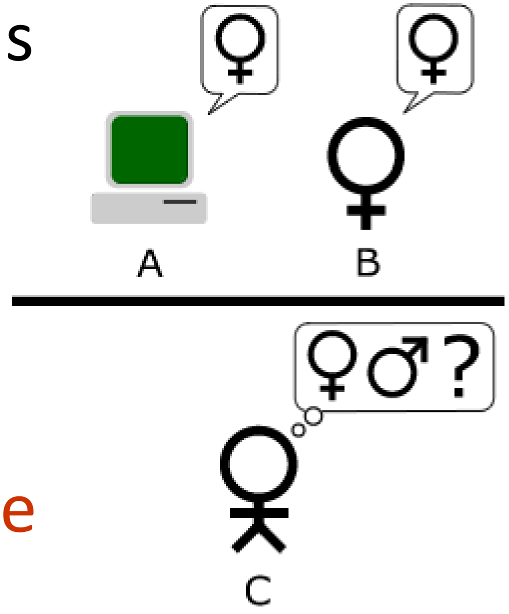

- "If the interrogator decides wrongly as often when the game is played with the computer as he does when the game is played between a man and a woman", it may be argued that the **computer is intelligent**.

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- The Turing test had been passed for the first time.

A Security Definition for $\mathrm{Enc}(\cdot)$

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- an **indistinguishability** game

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Challenger C

Adversary $\mathcal{A}$

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(pk, sk) = KeyGen(k)

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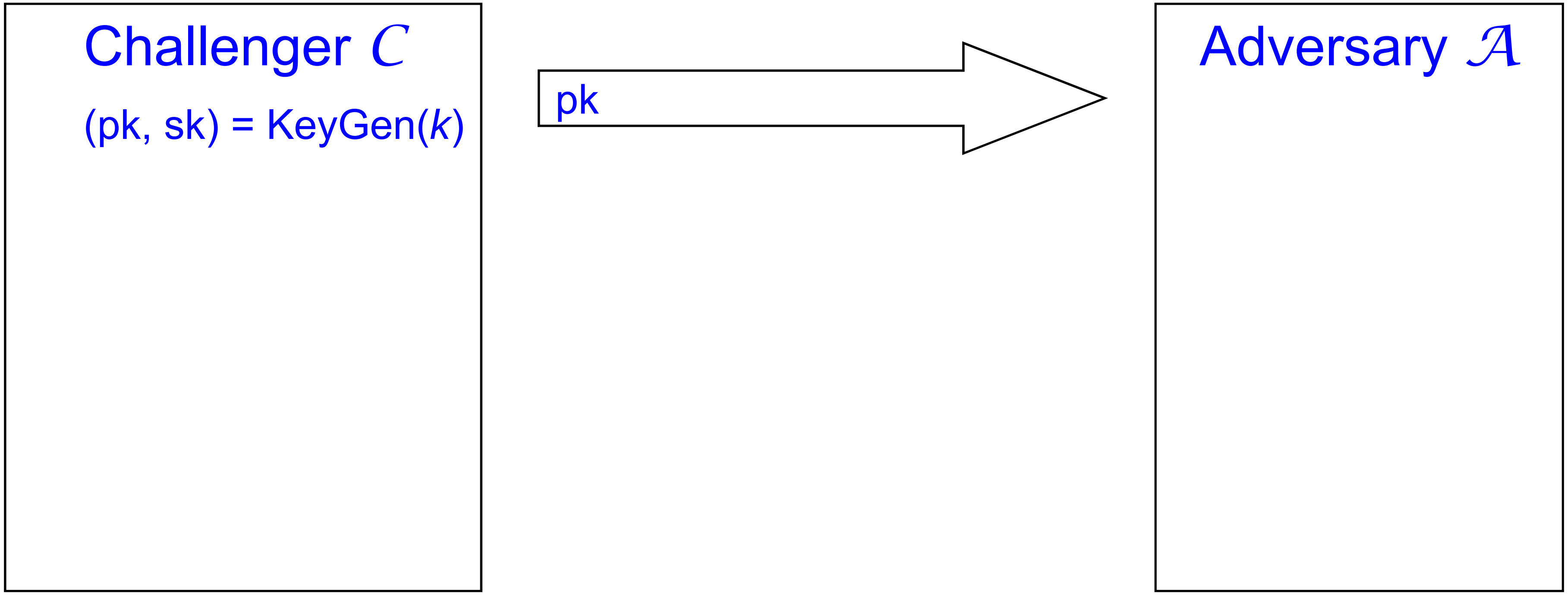

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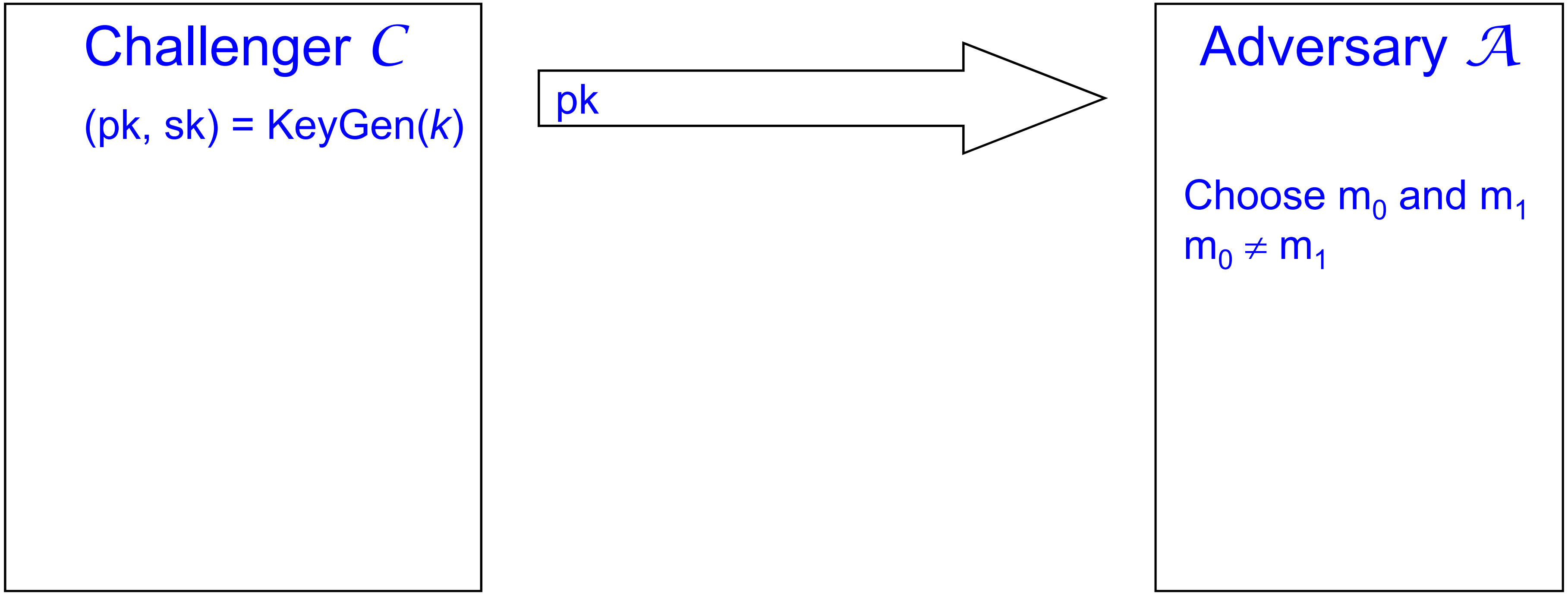

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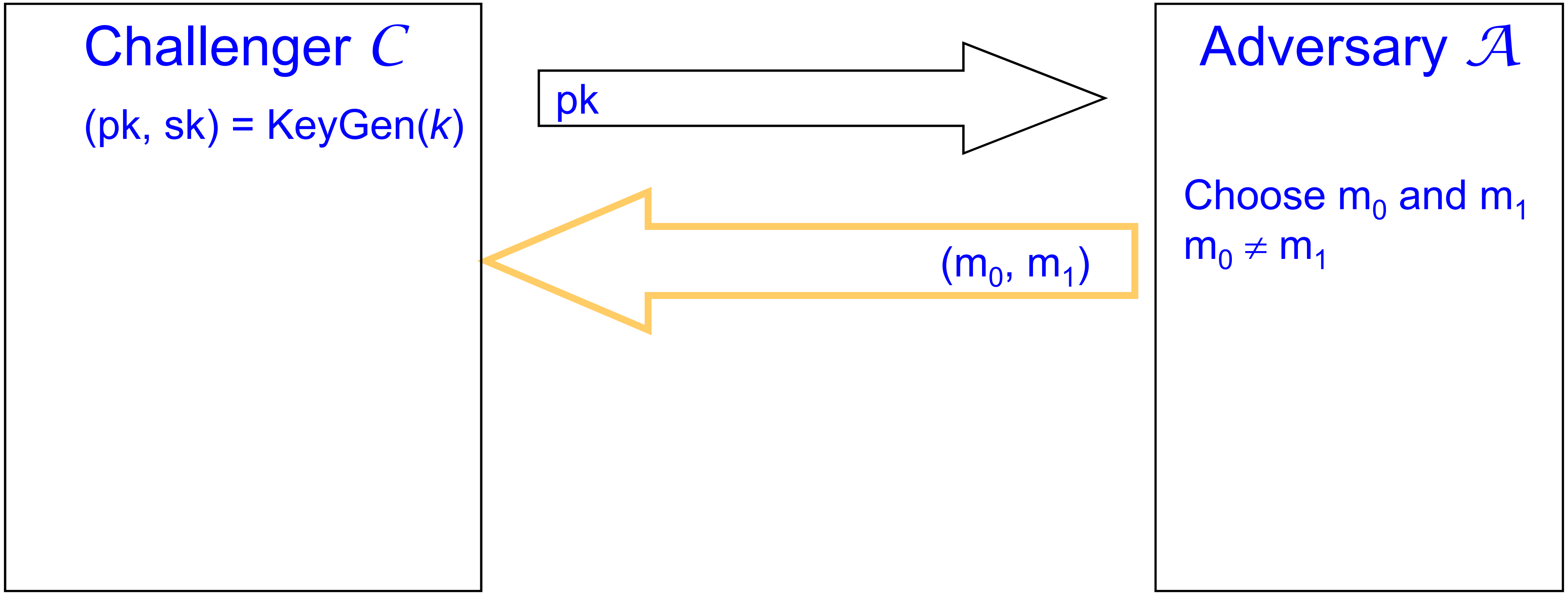

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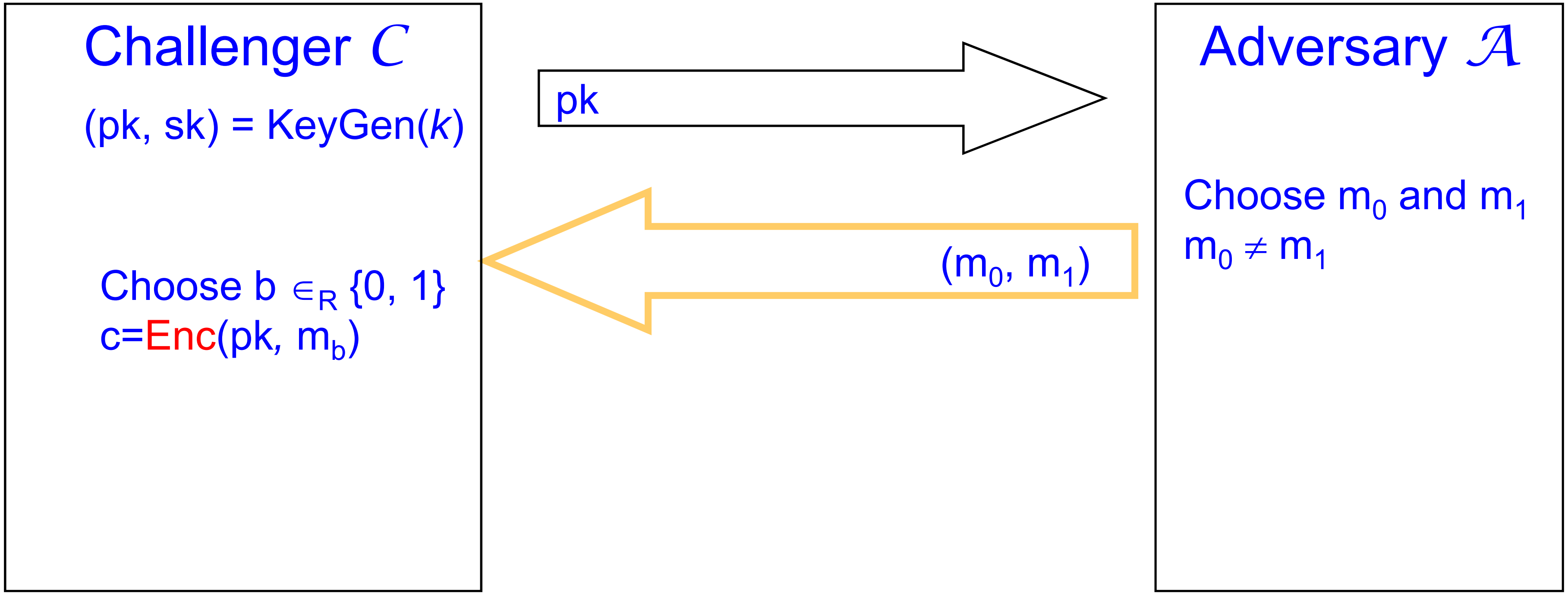

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c=Enc(pk, m_b)

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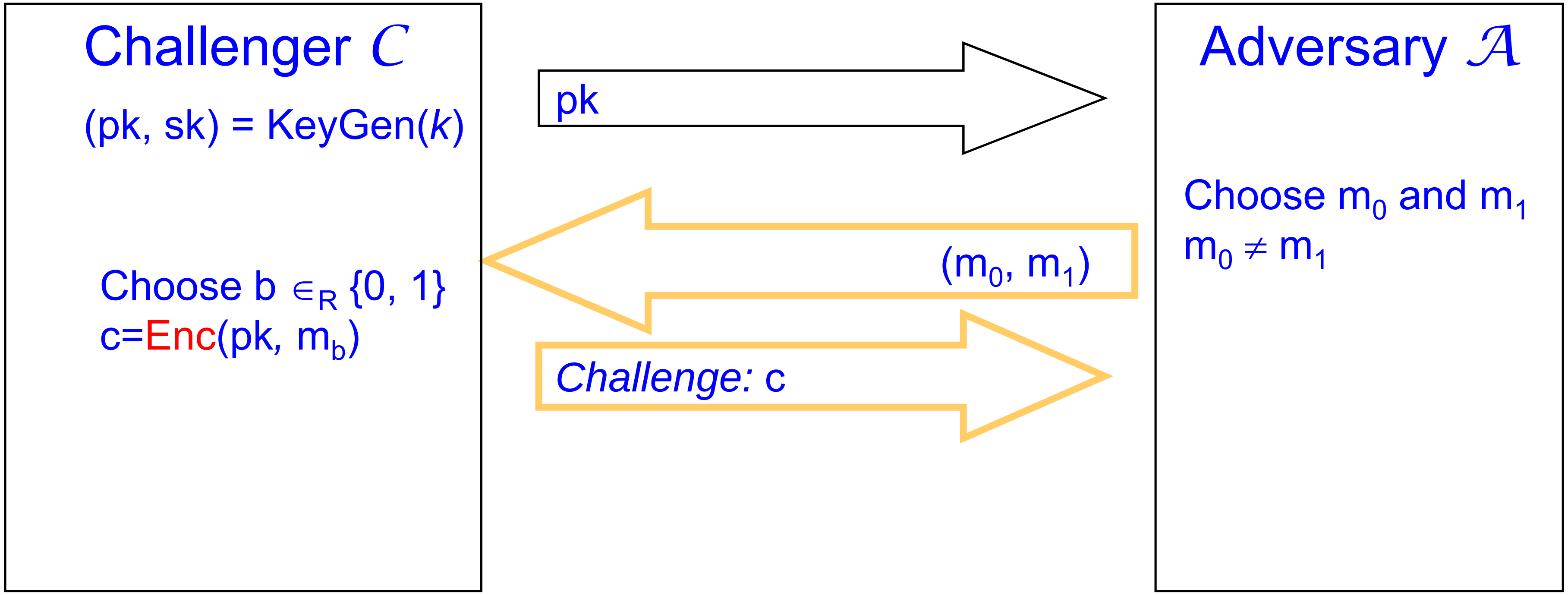

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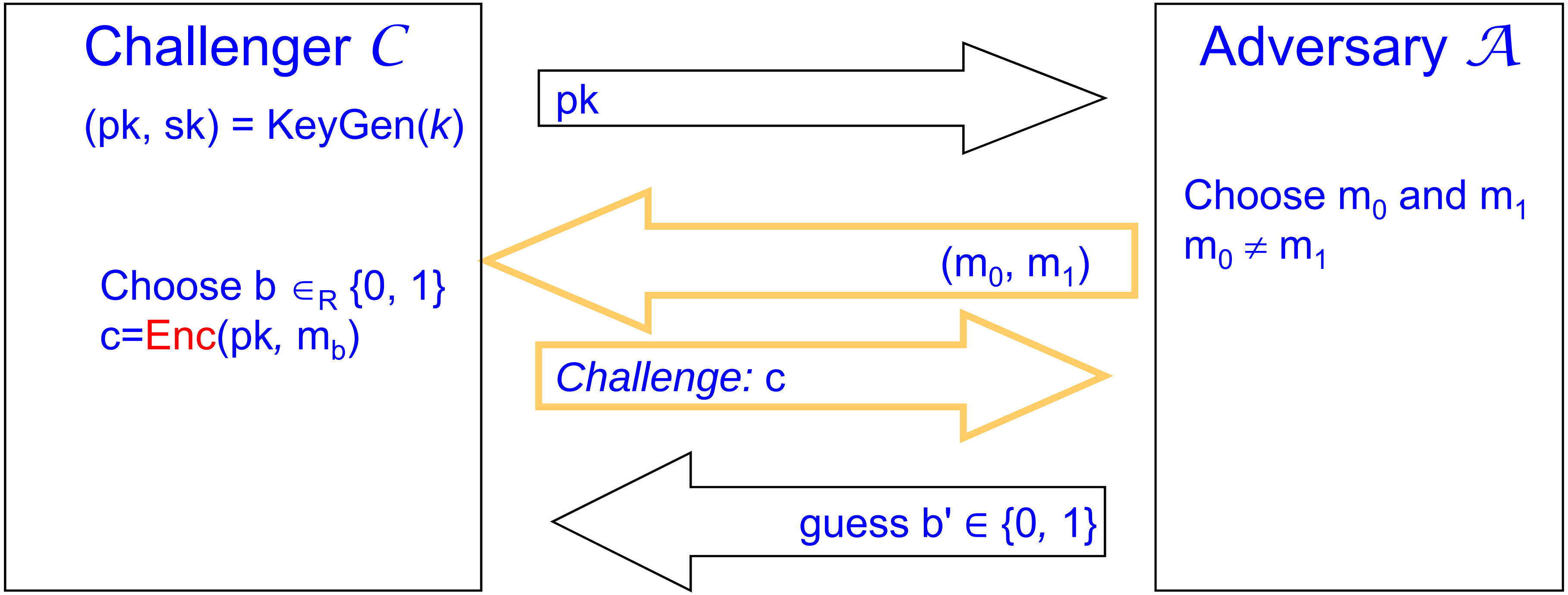

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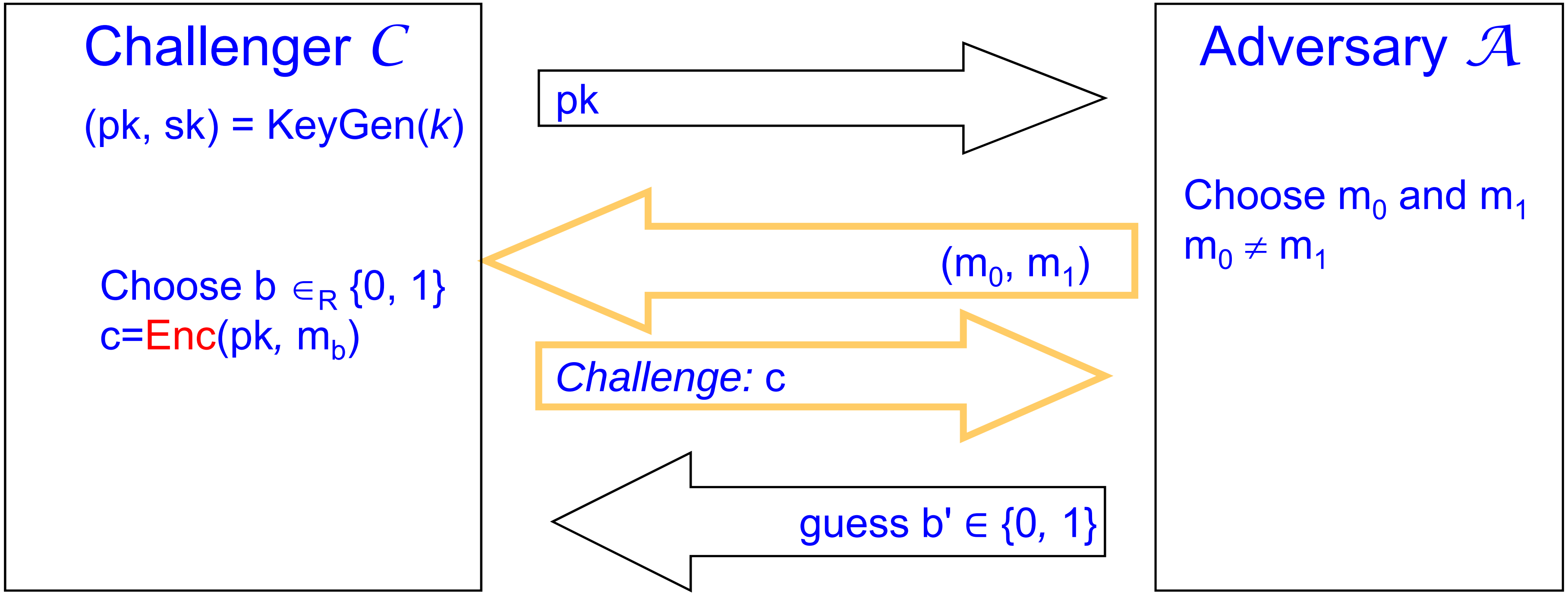

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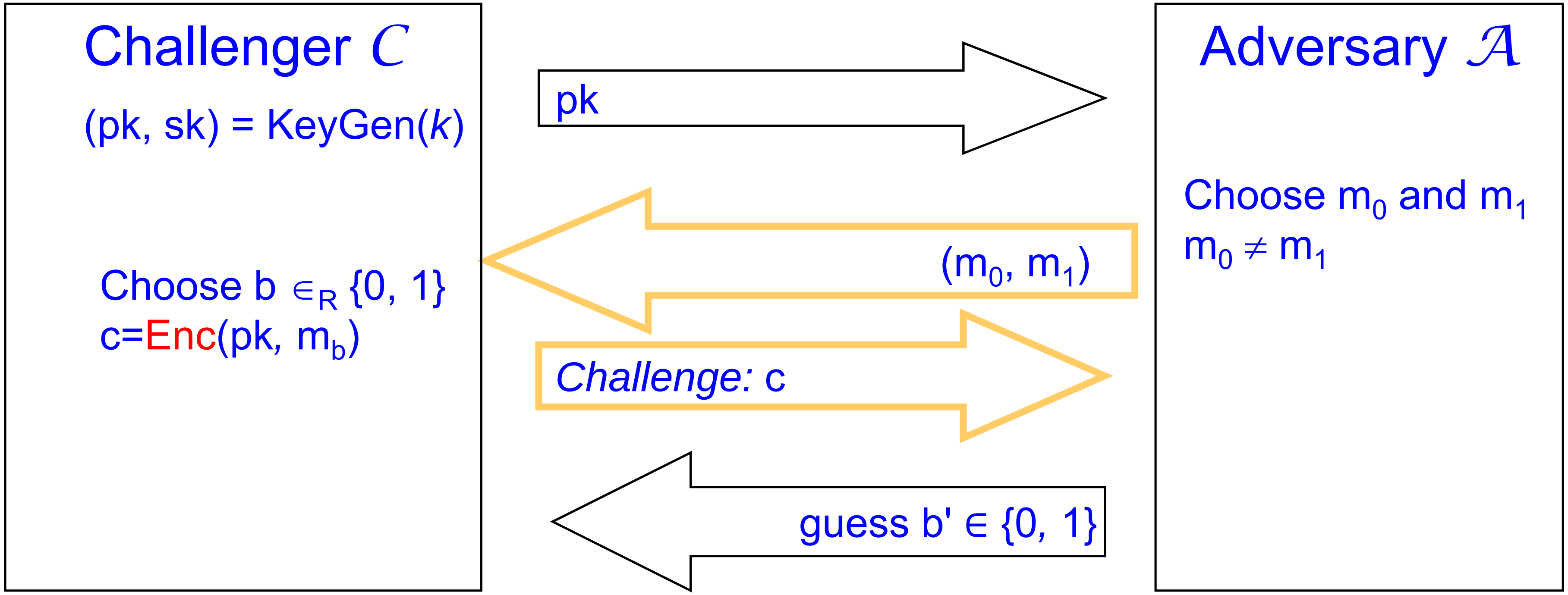

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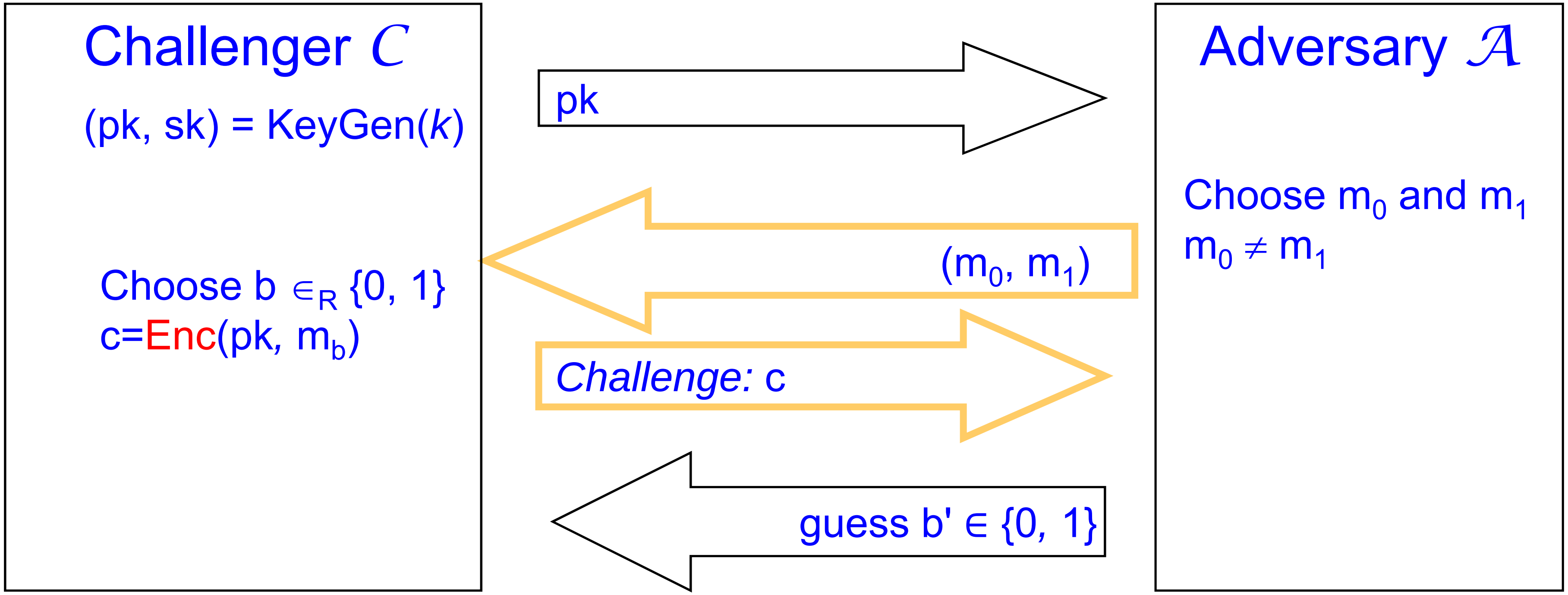

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Enc(·) is secure if $\mathrm{Adv}_{\mathcal{A}}(k)$ is negligible

不可分辨性