# Multi-input Inner-Product Functional Encryption from Pairings



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Romain Gay, ENS

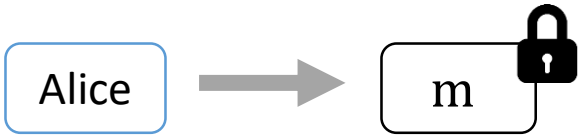
Mariana Raykova, Yale University

Hoeteck Wee, CNRS and ENS



# Functional Encryption

[Boneh, Sahai, Waters 11]



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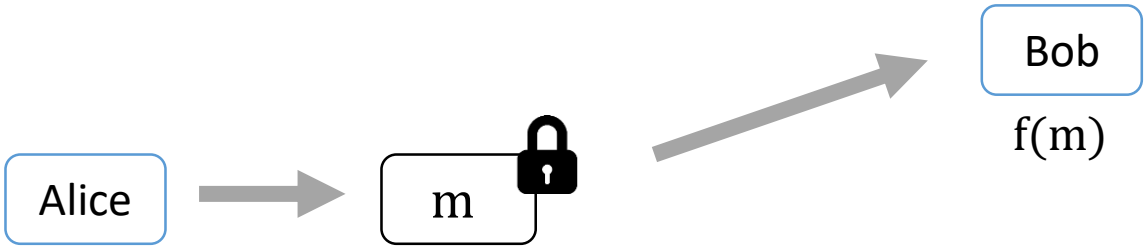

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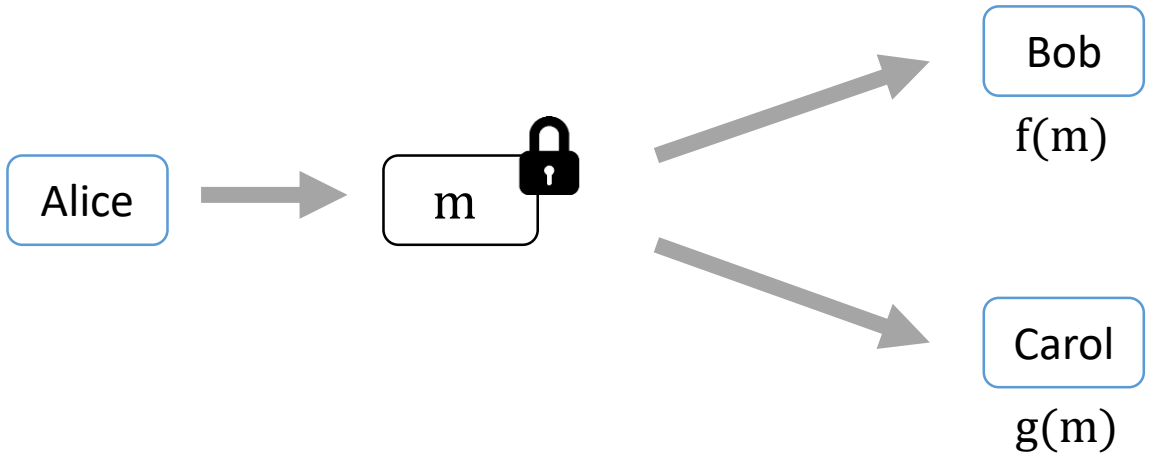

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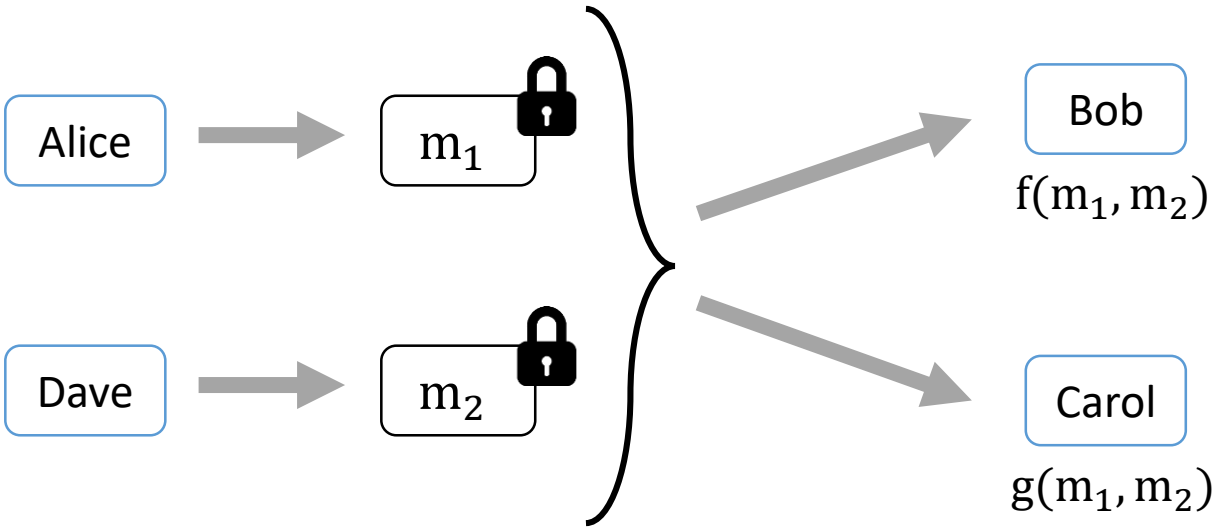

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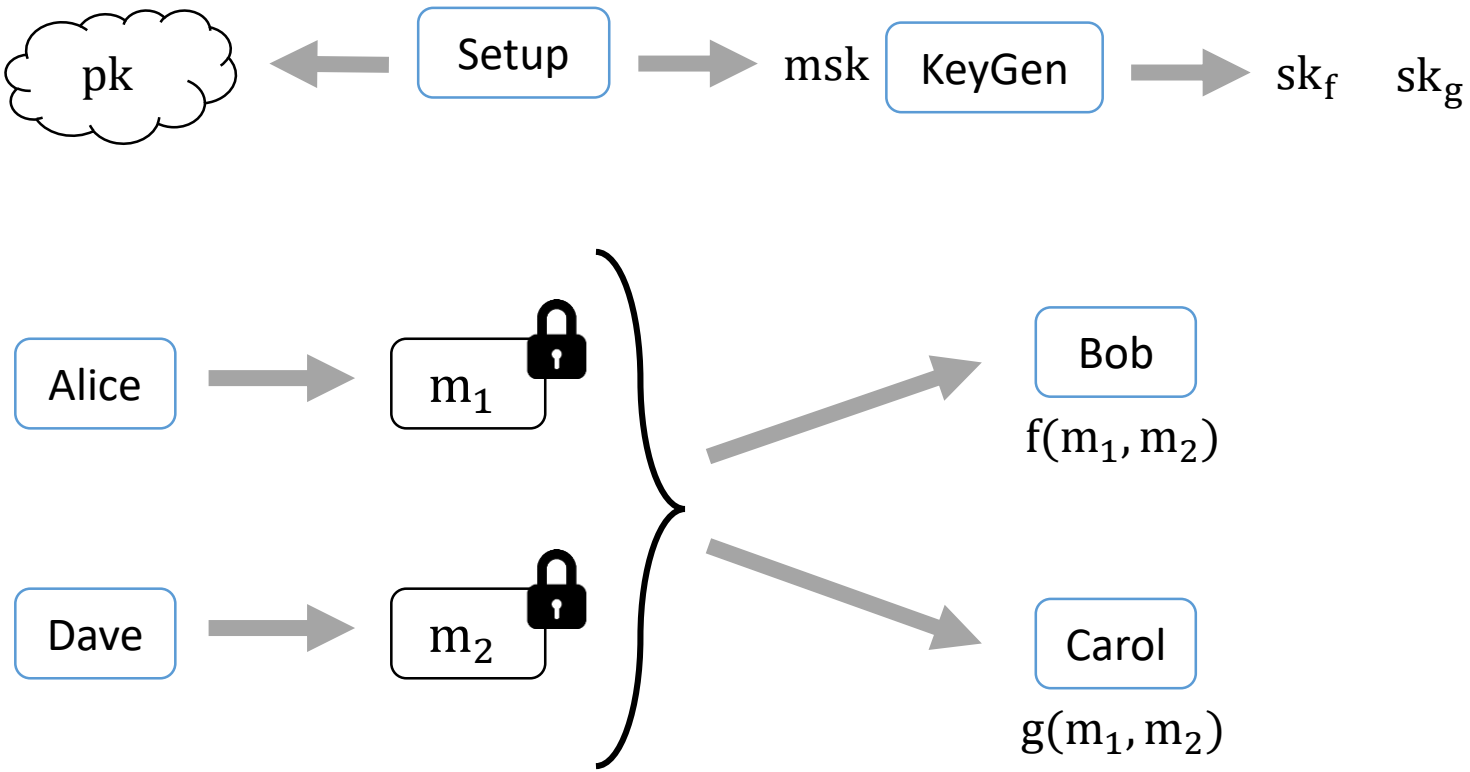

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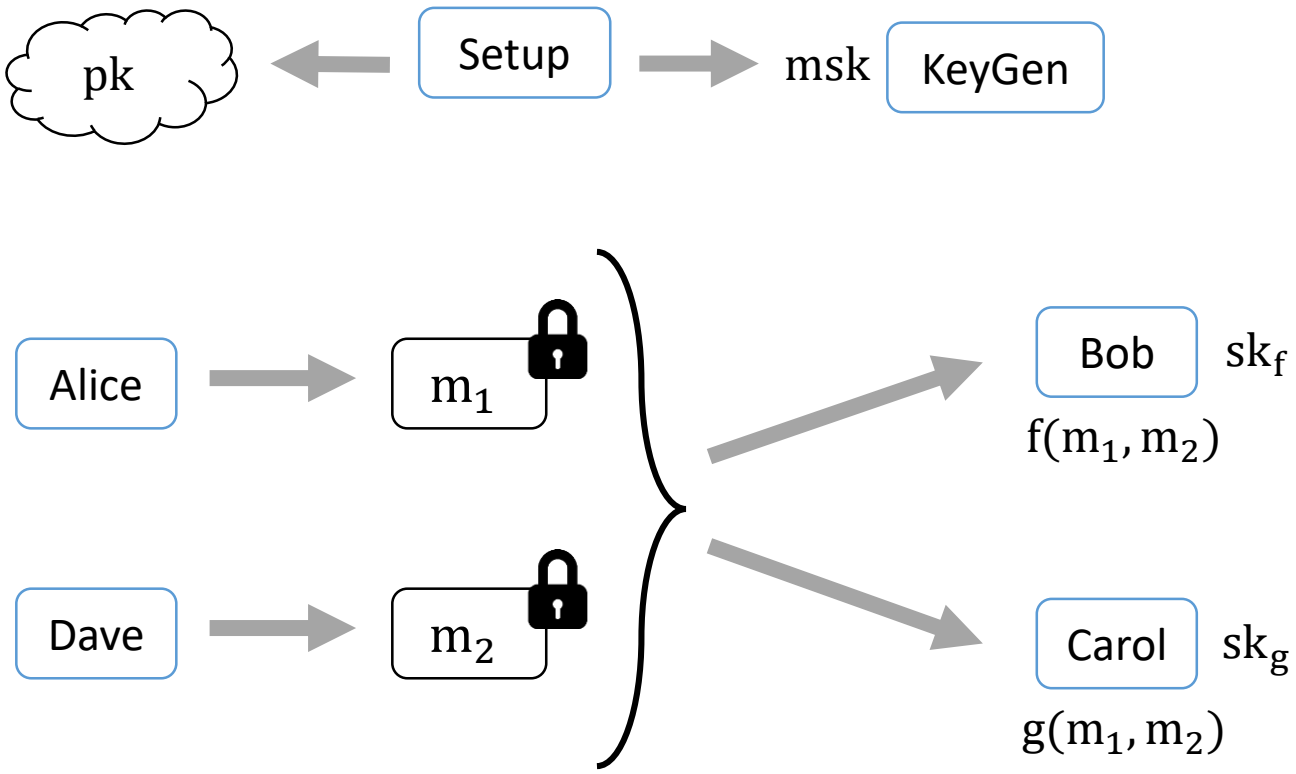

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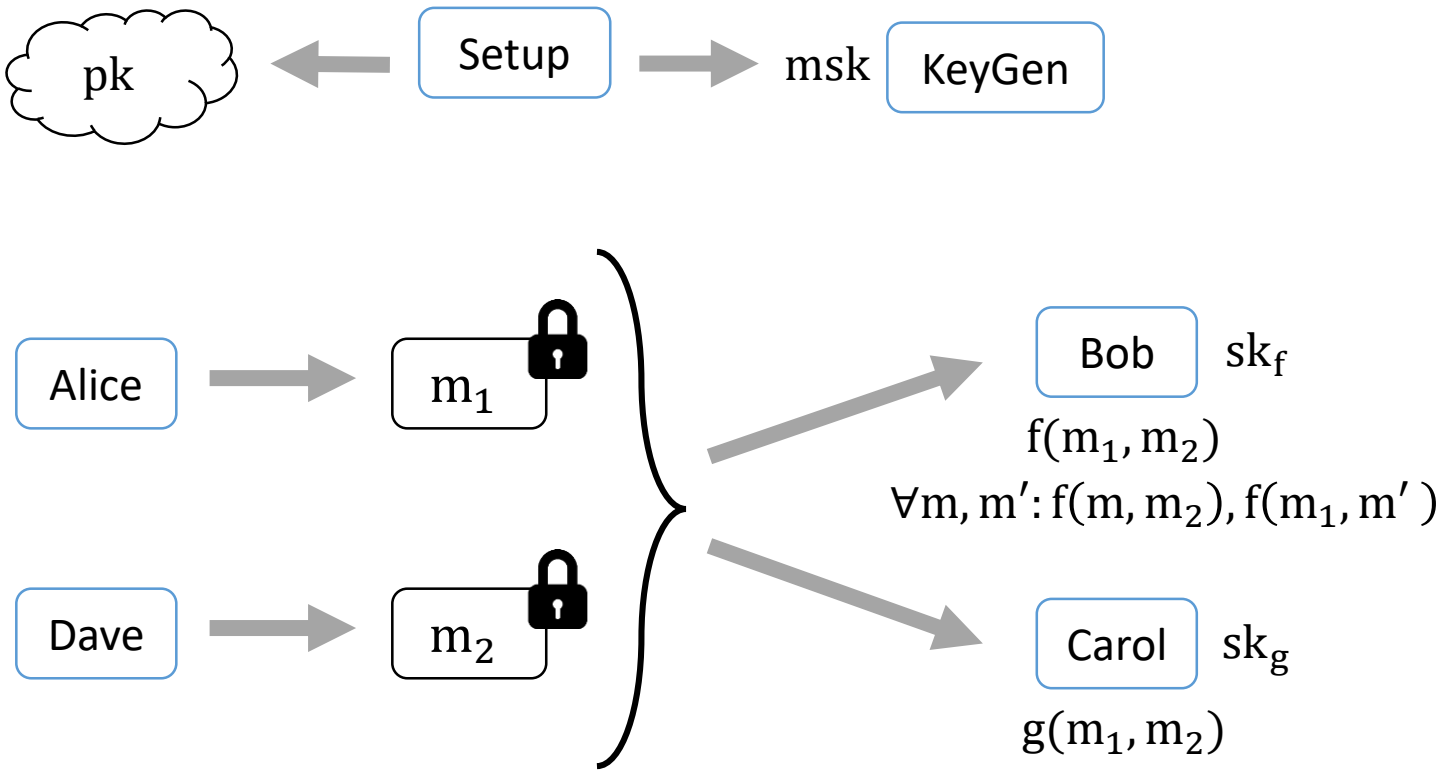

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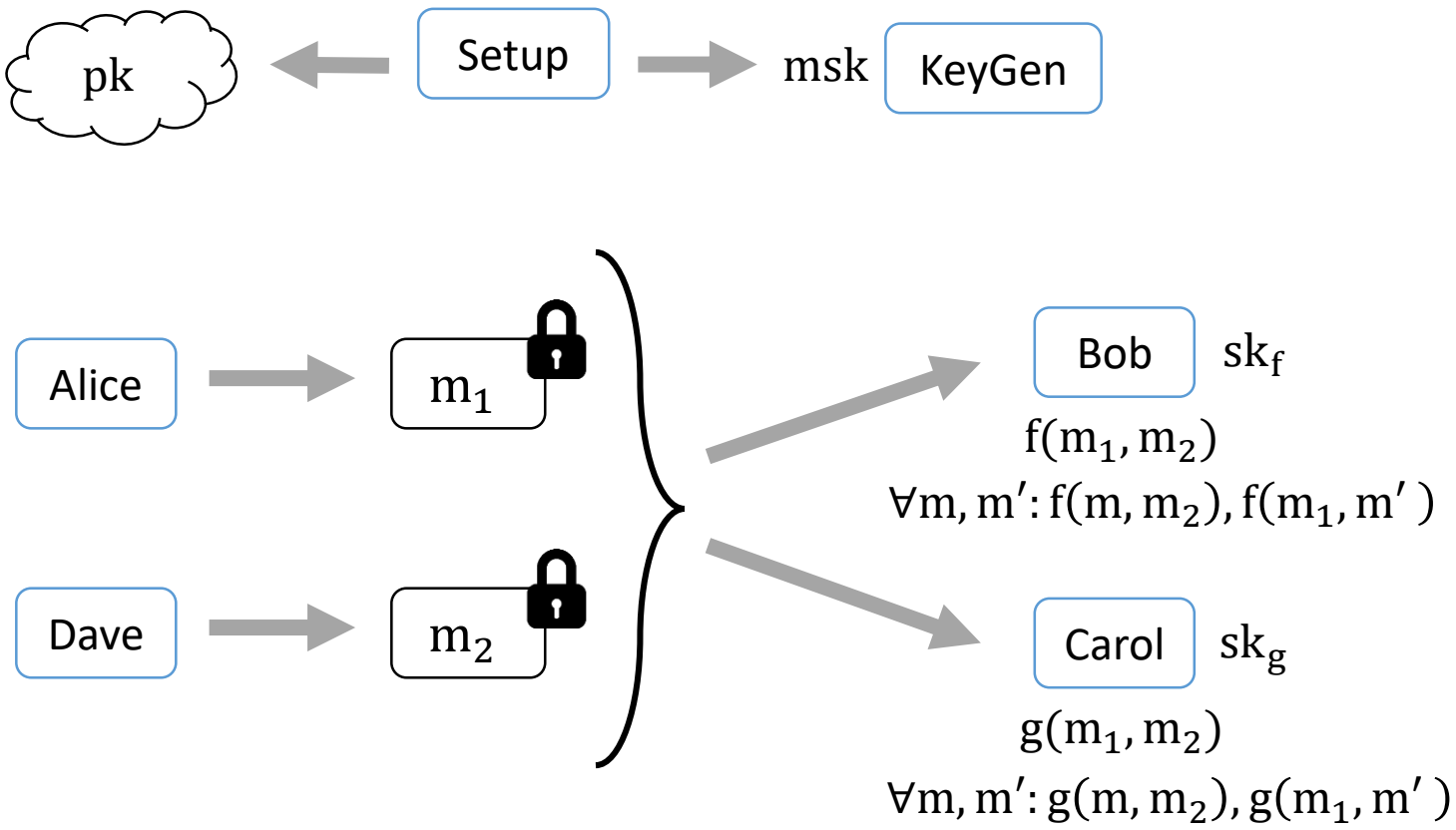

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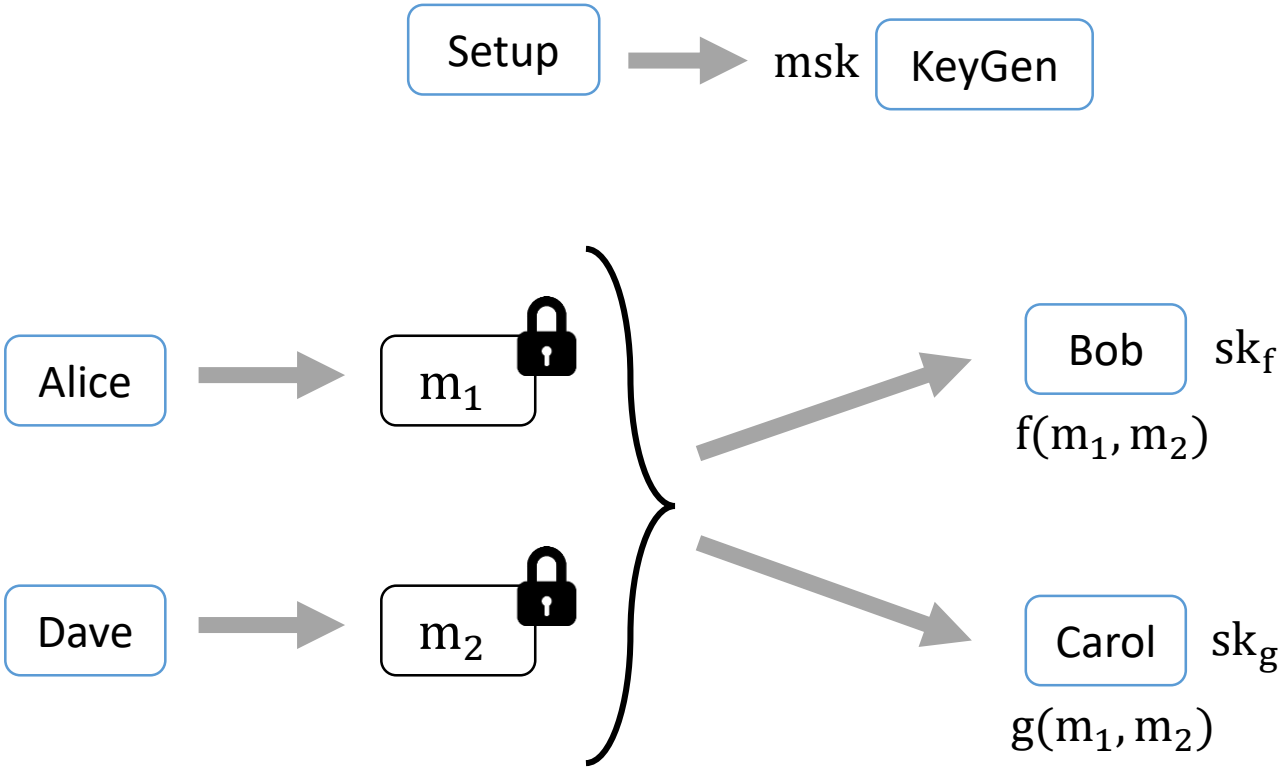

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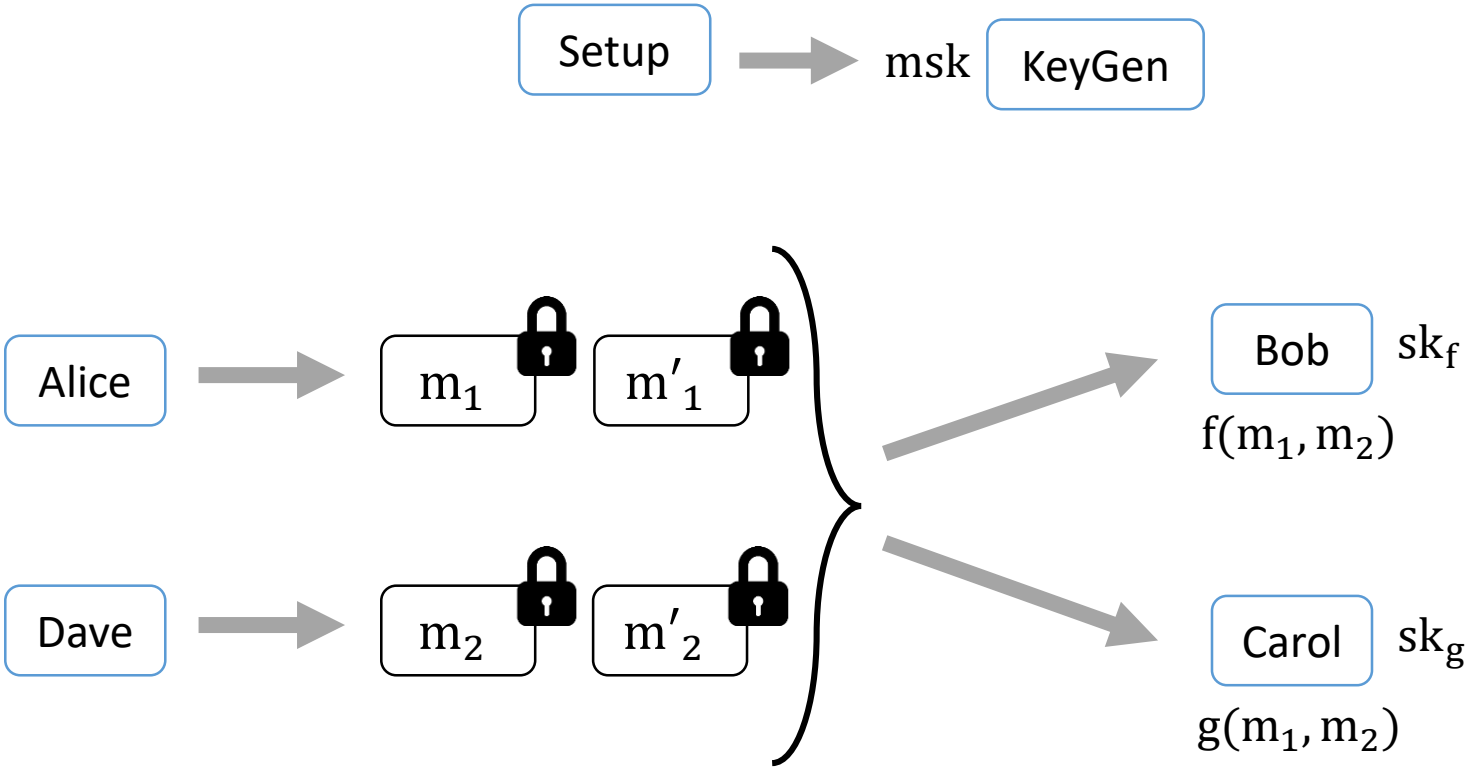

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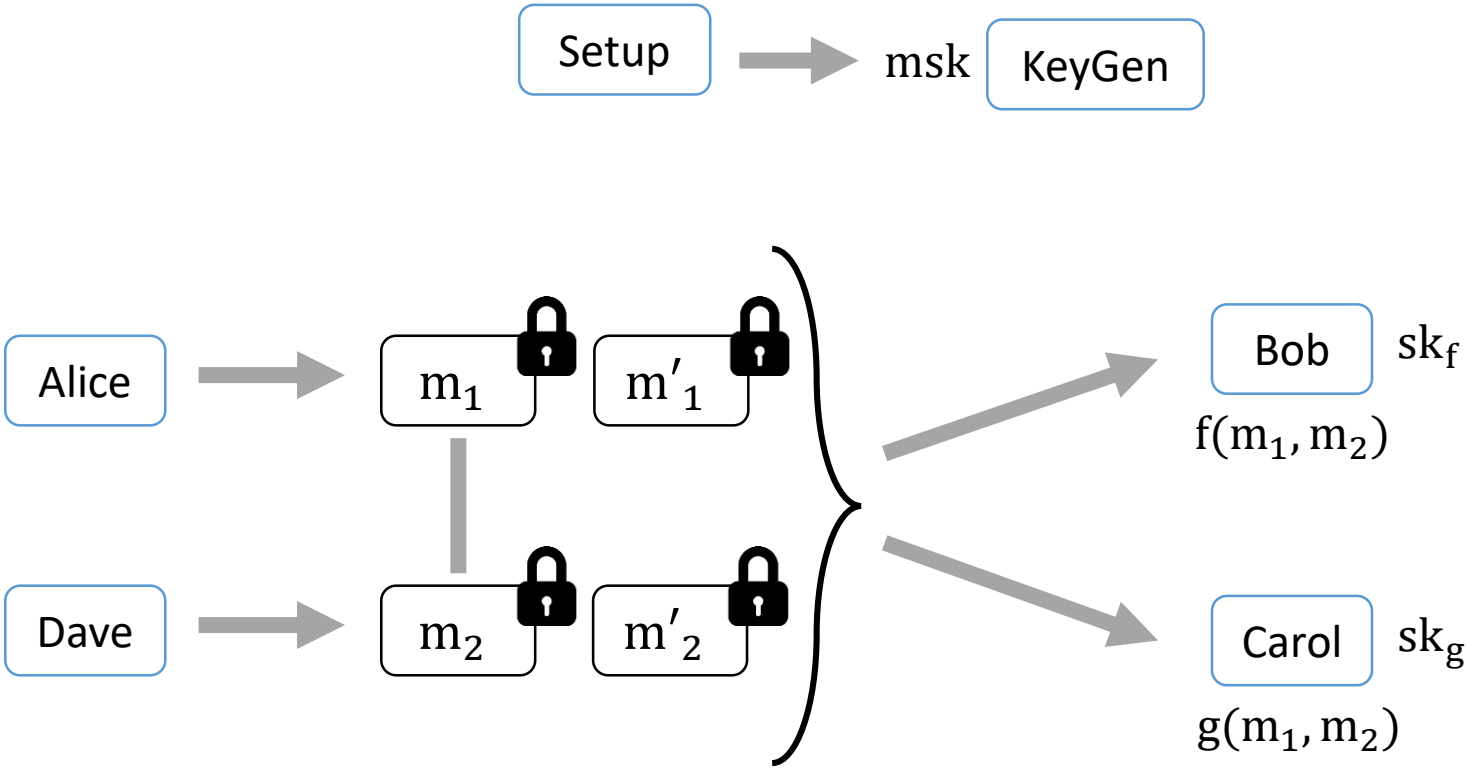

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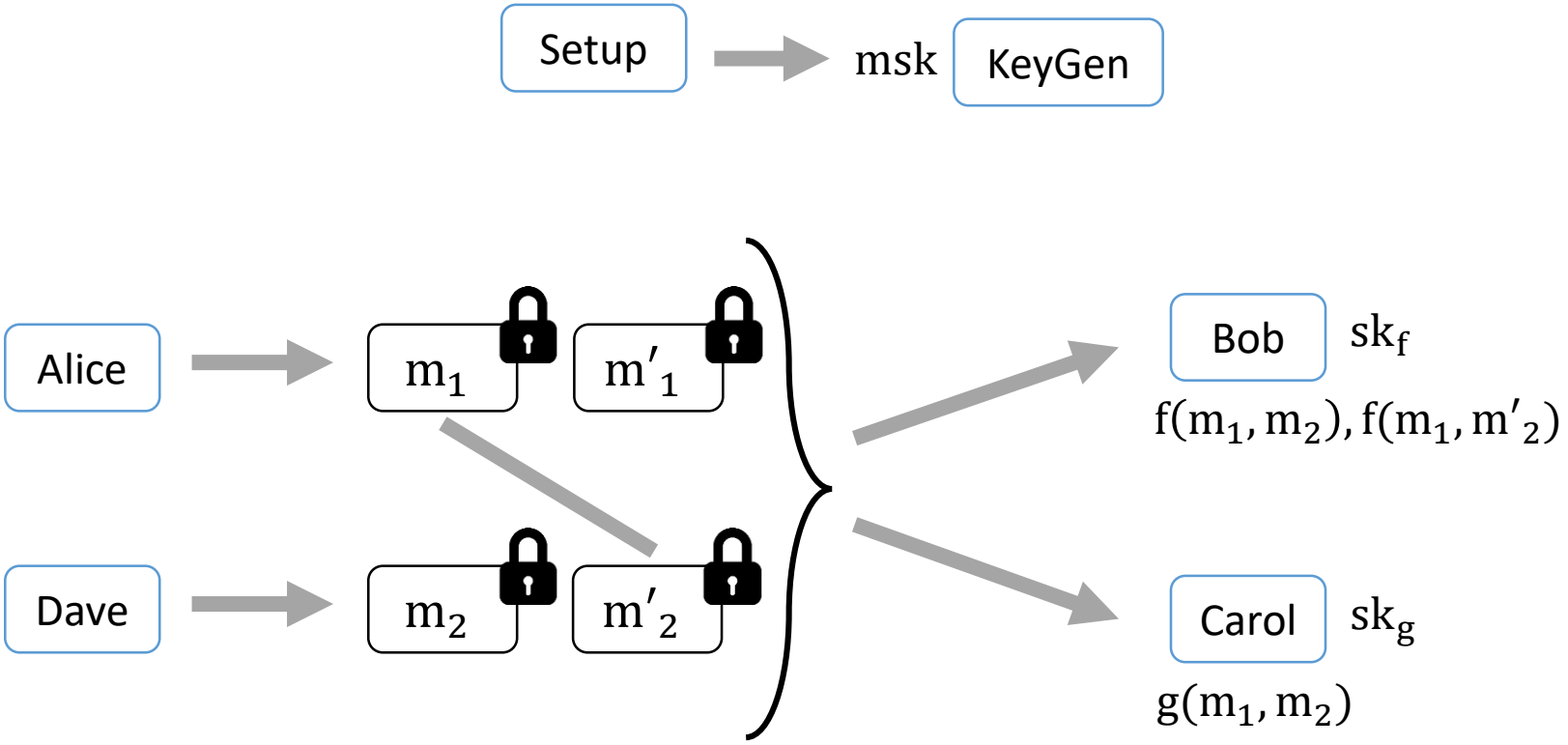

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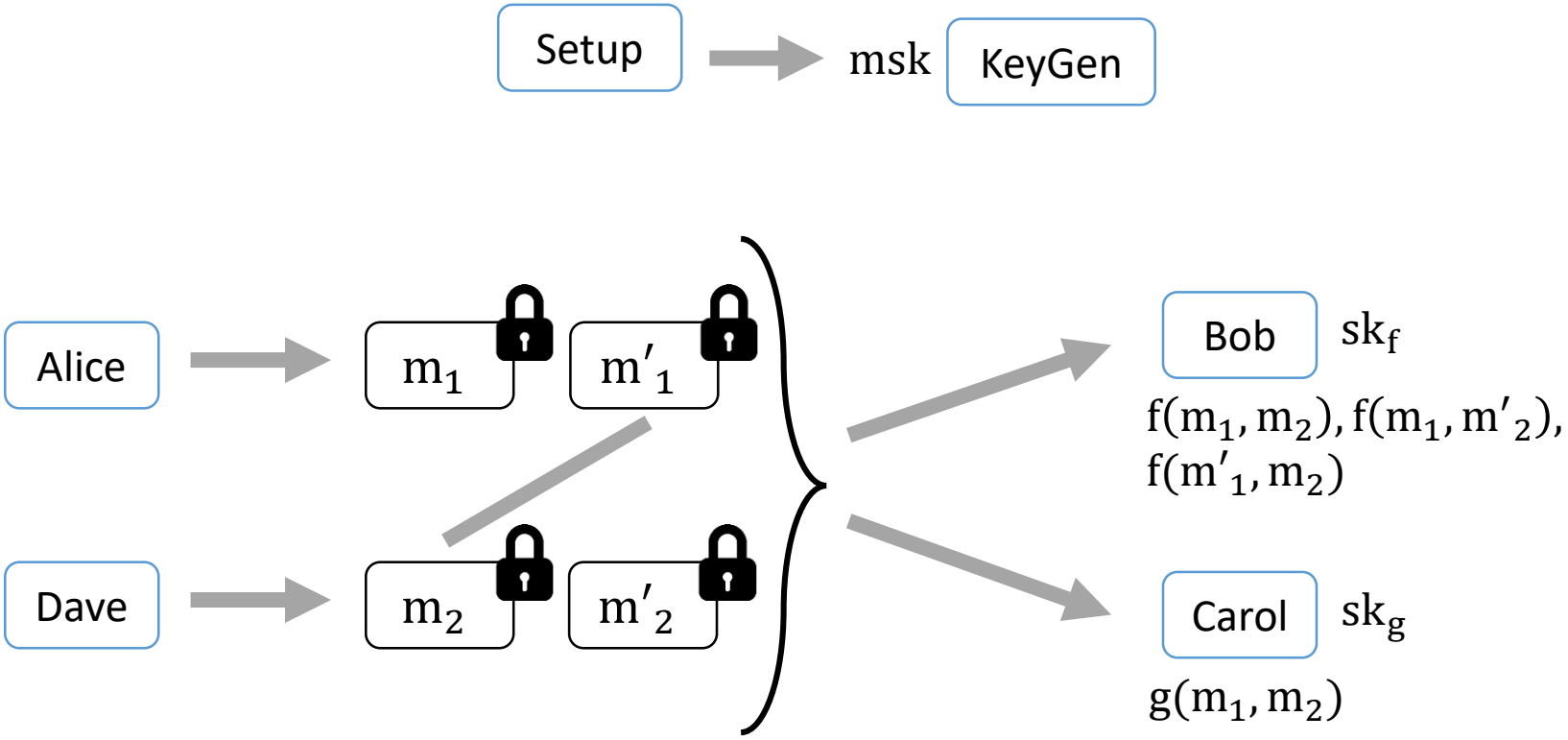

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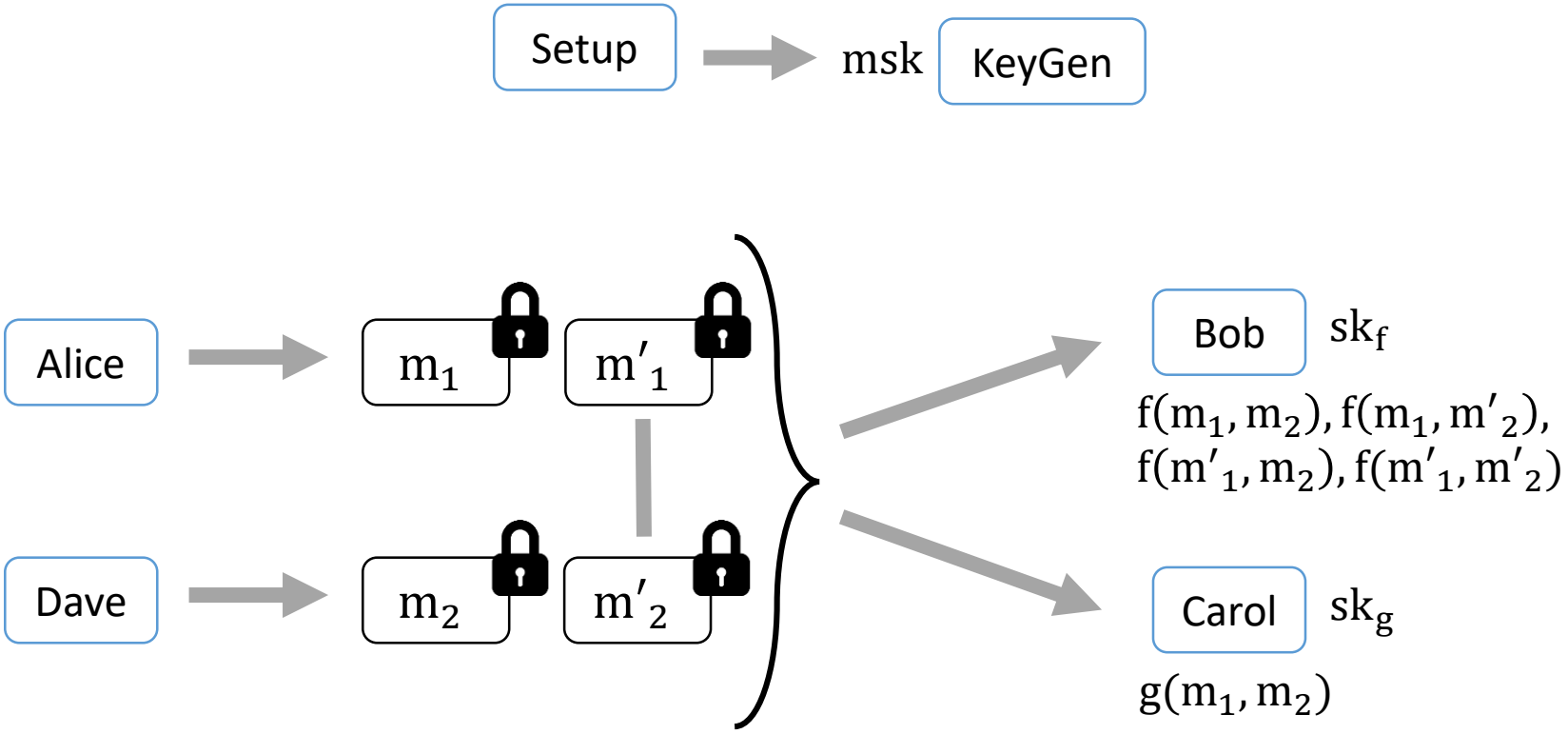

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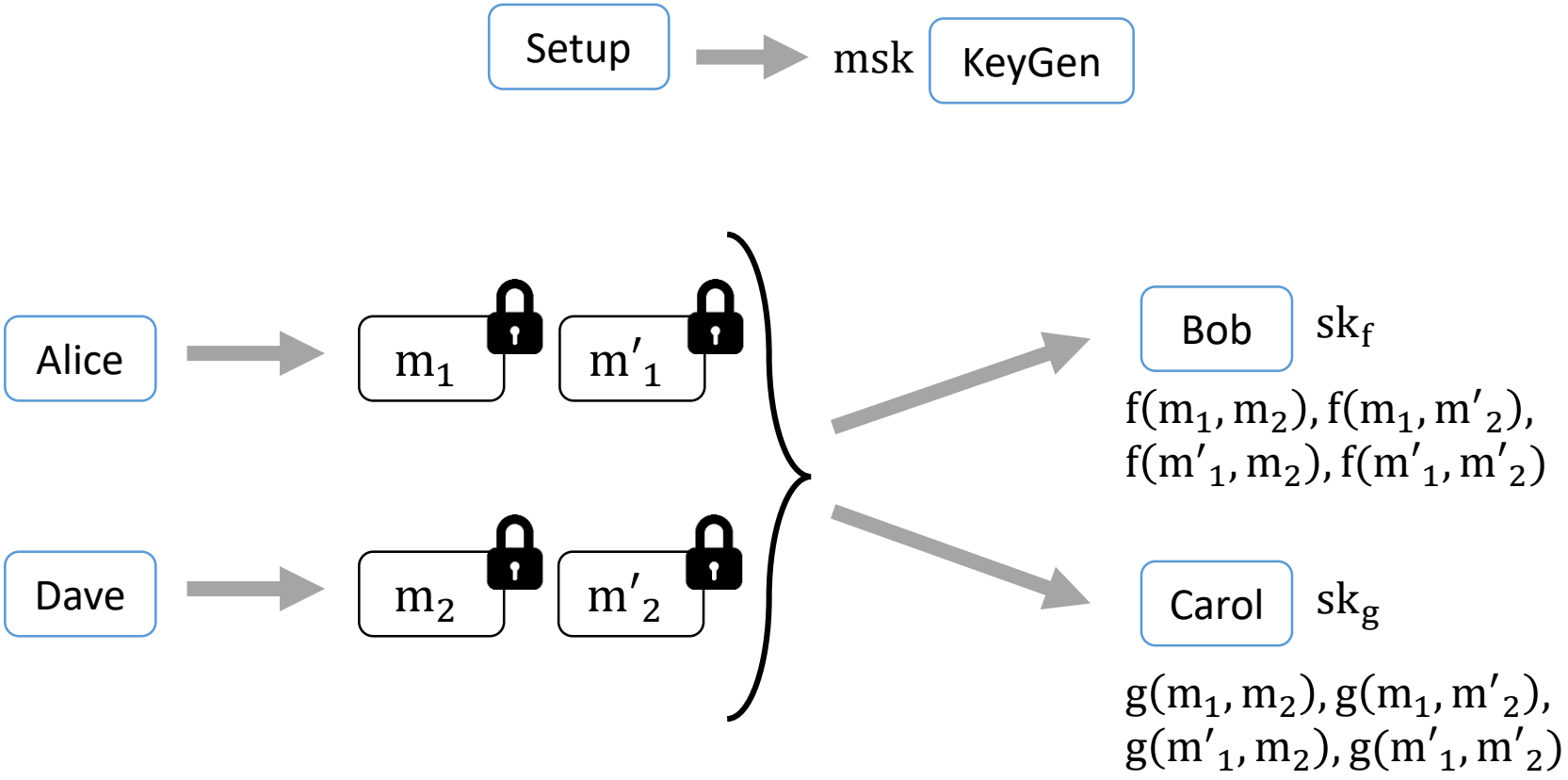

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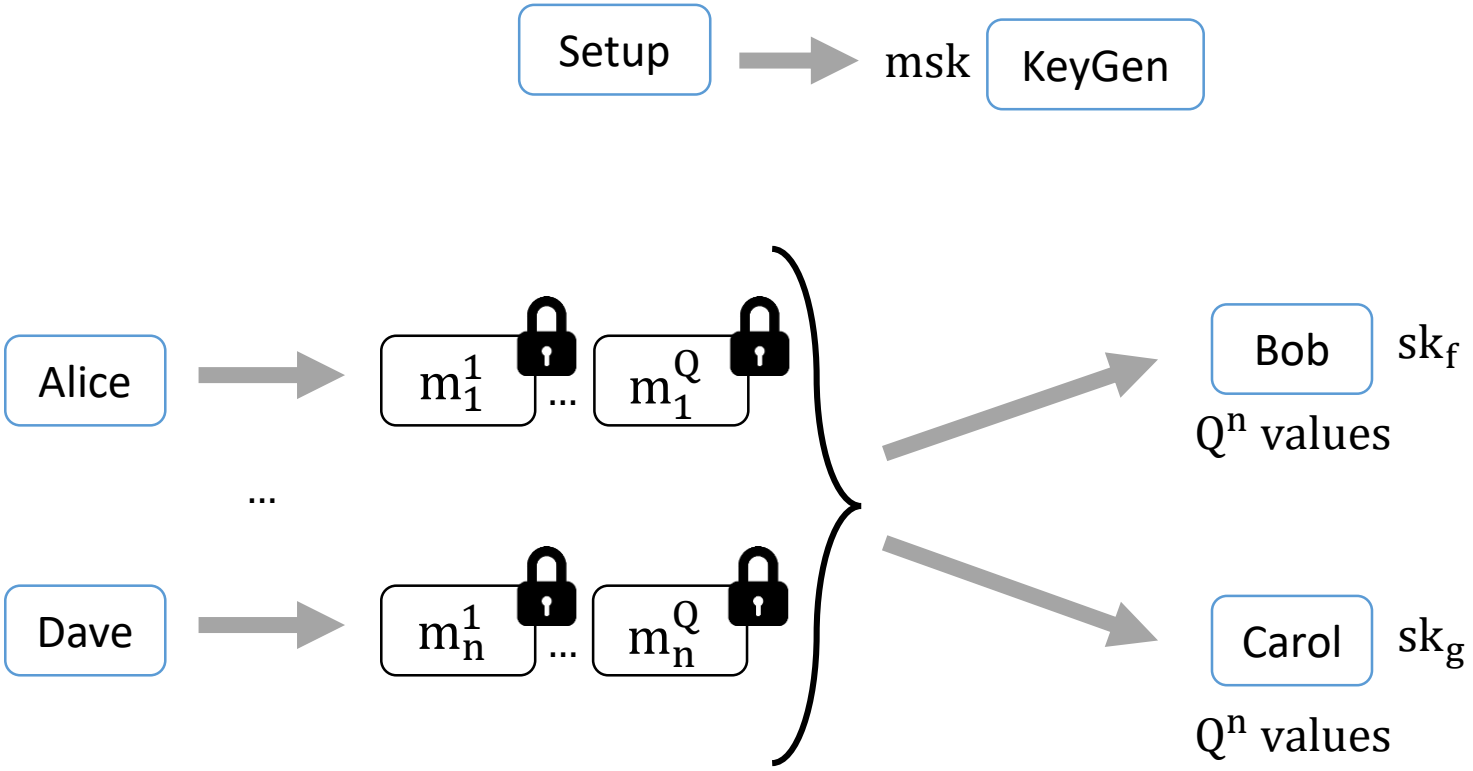

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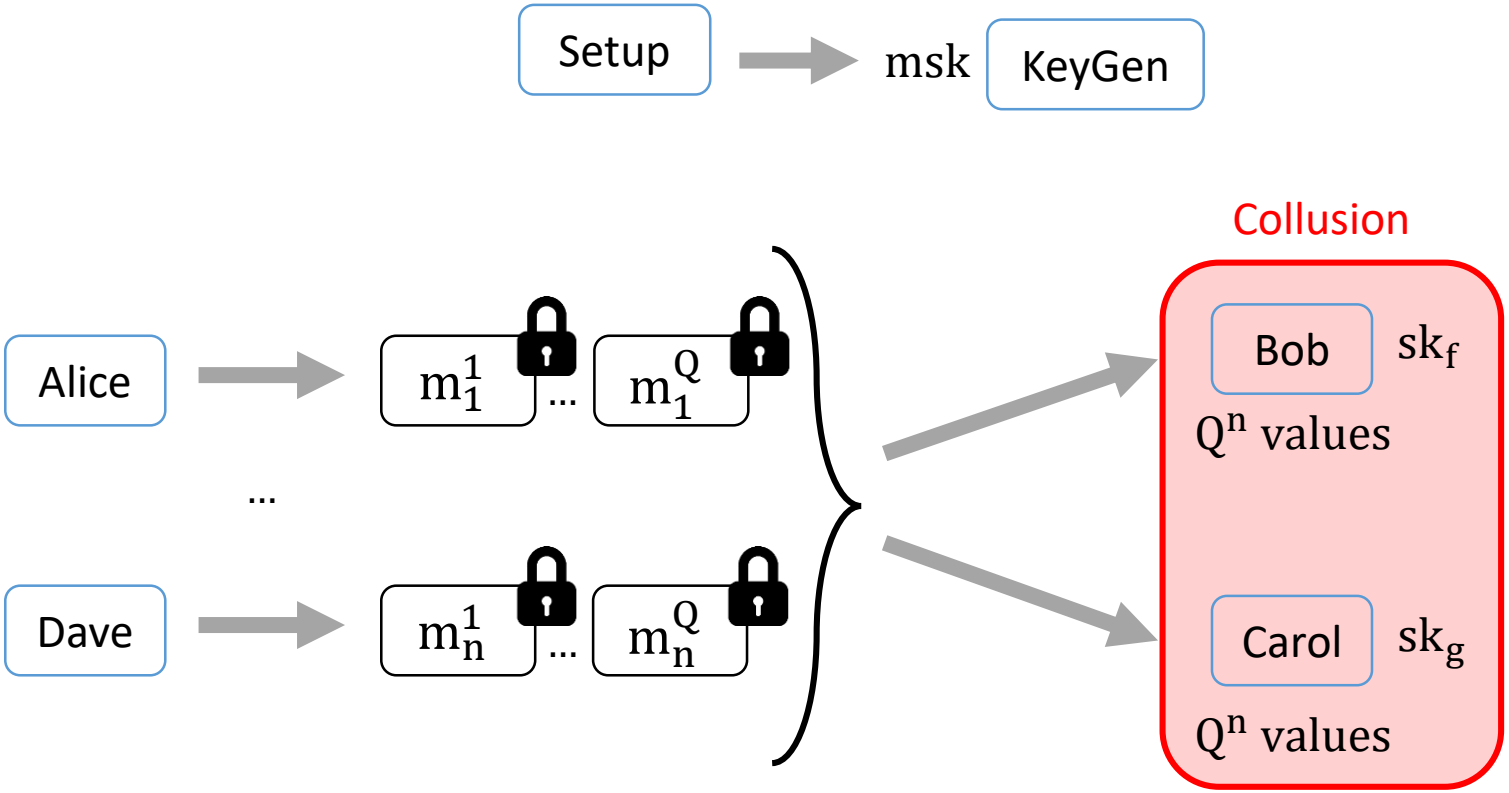

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| Construction: | Functions: | Assumption: | # slots: |
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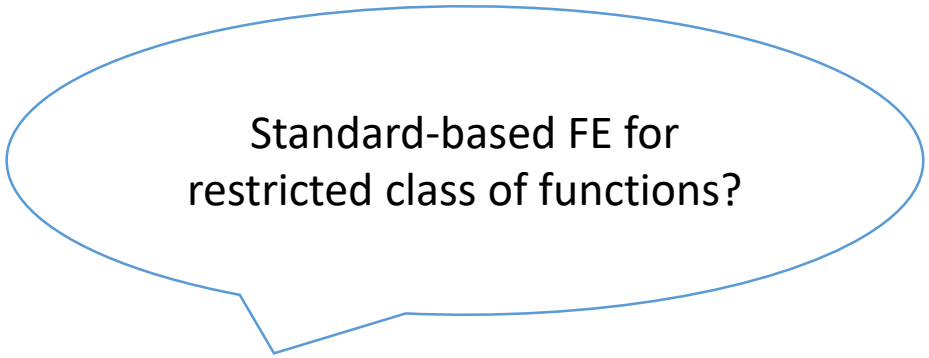

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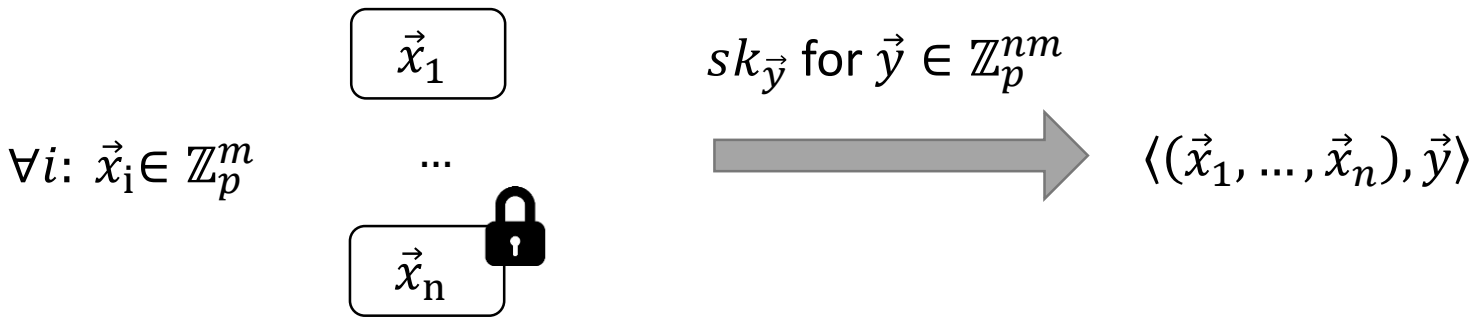

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# Our construction

**Single-input Inner Product FE**

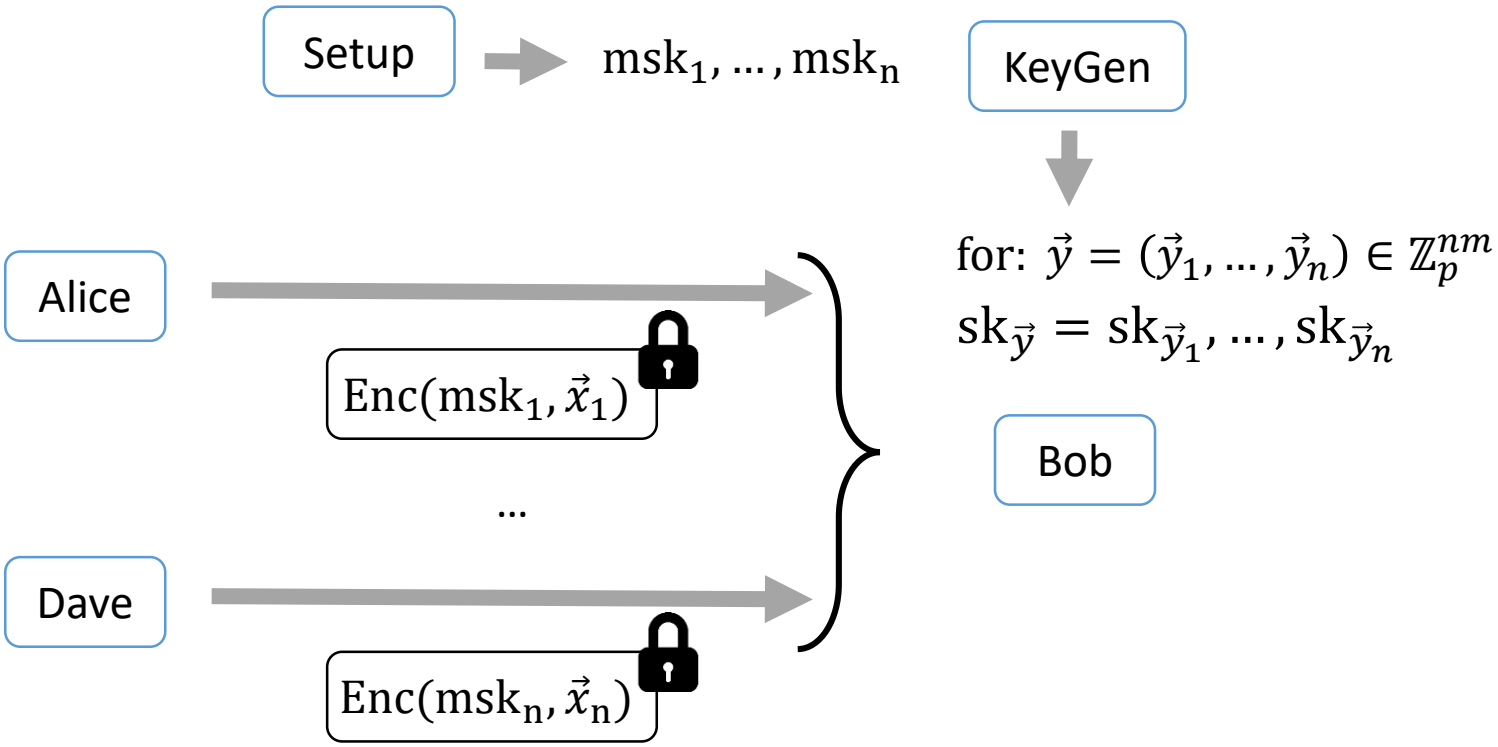
**Multi-input Inner Product FE**

1 Generic, naive

2 [Agrawal, Libert, Stehlé] single input FE

# Multi-input Functional Encryption

Naive Attempt



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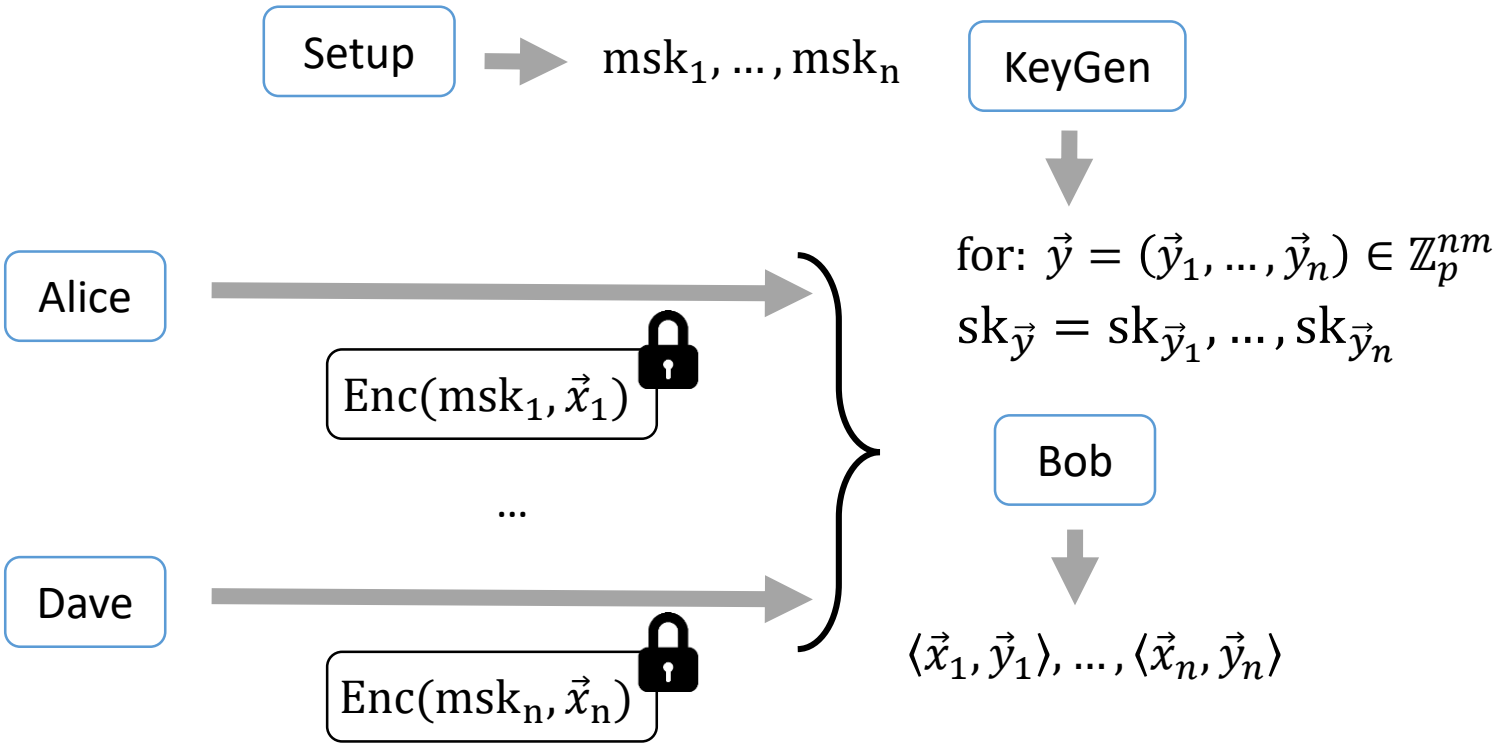

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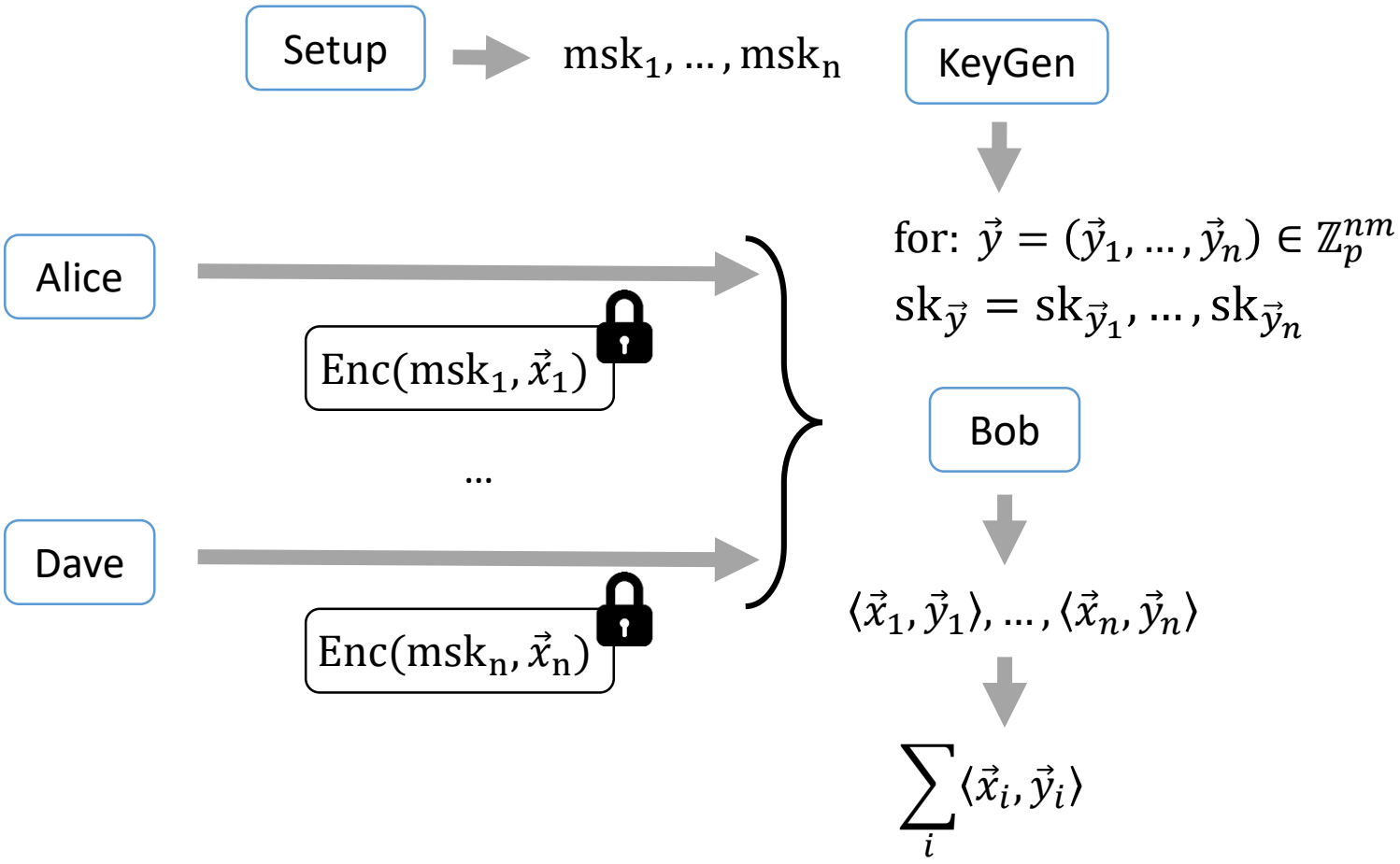

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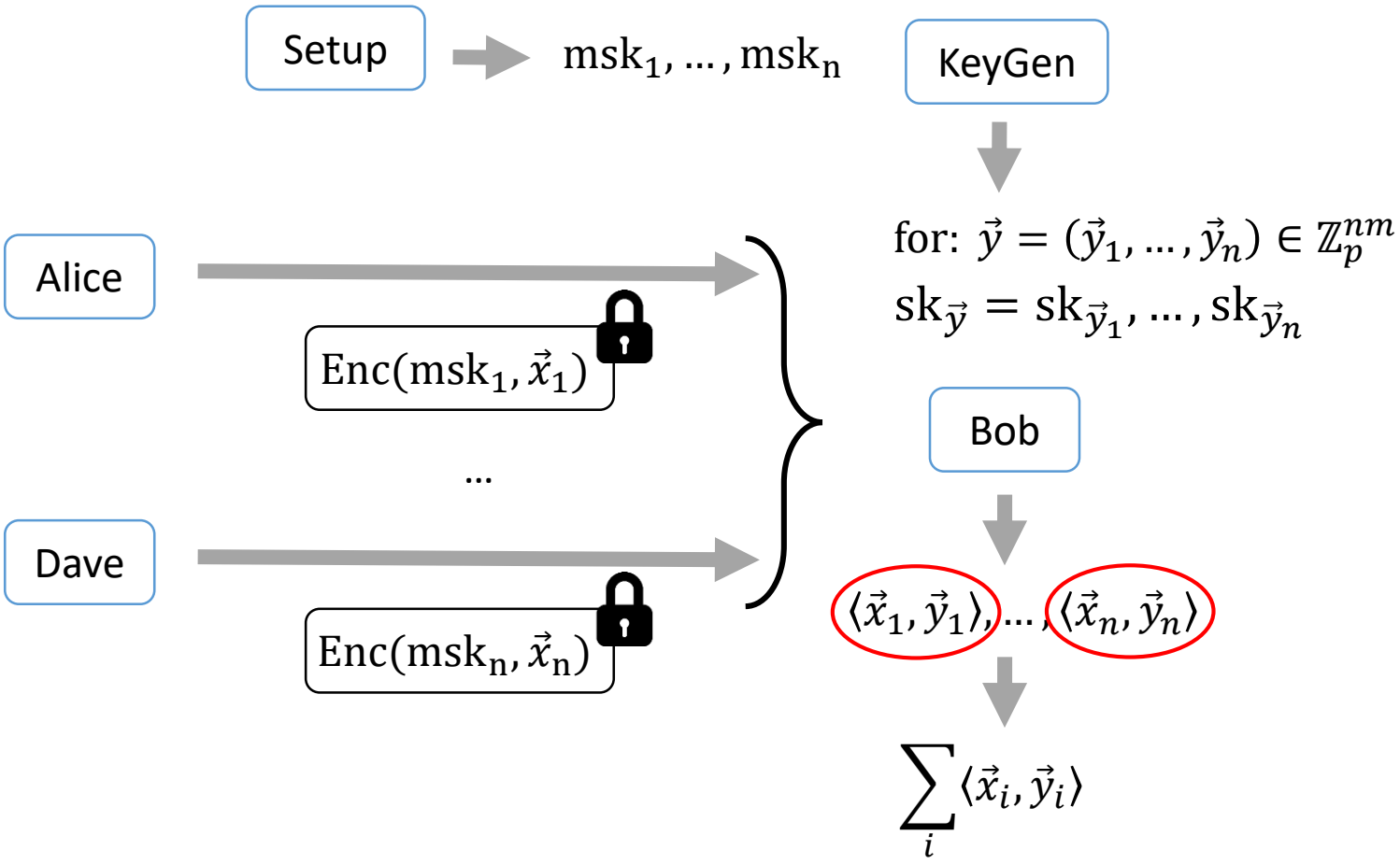

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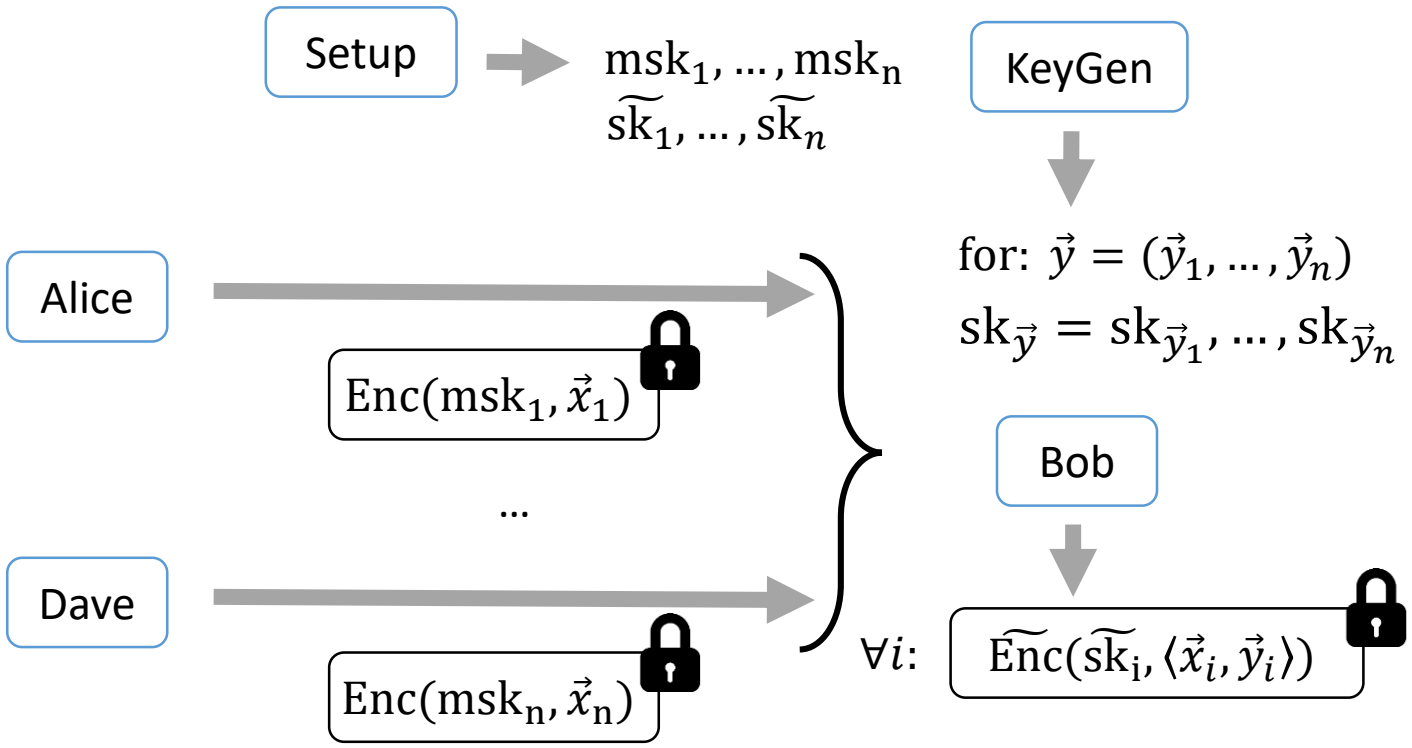

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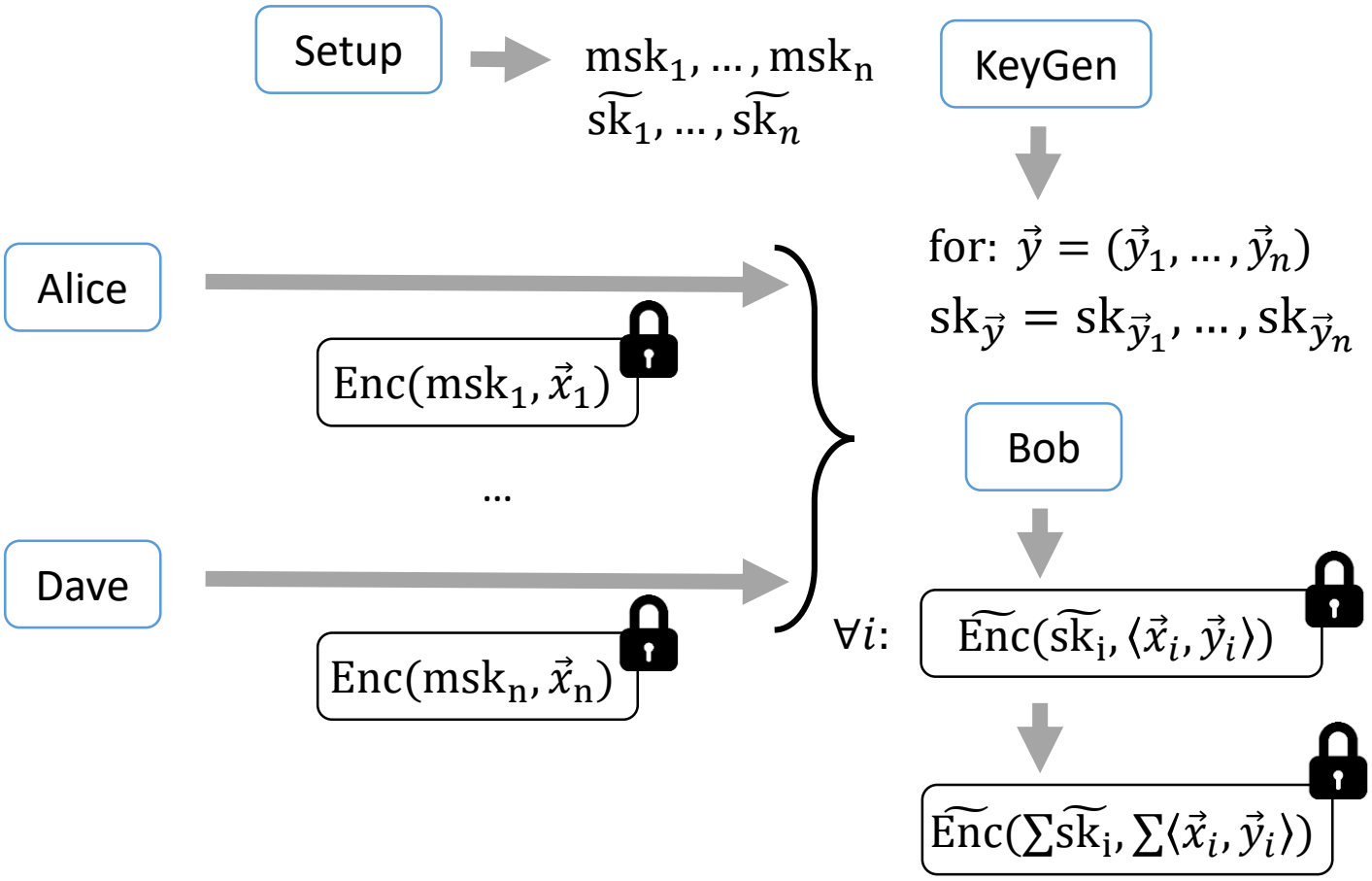

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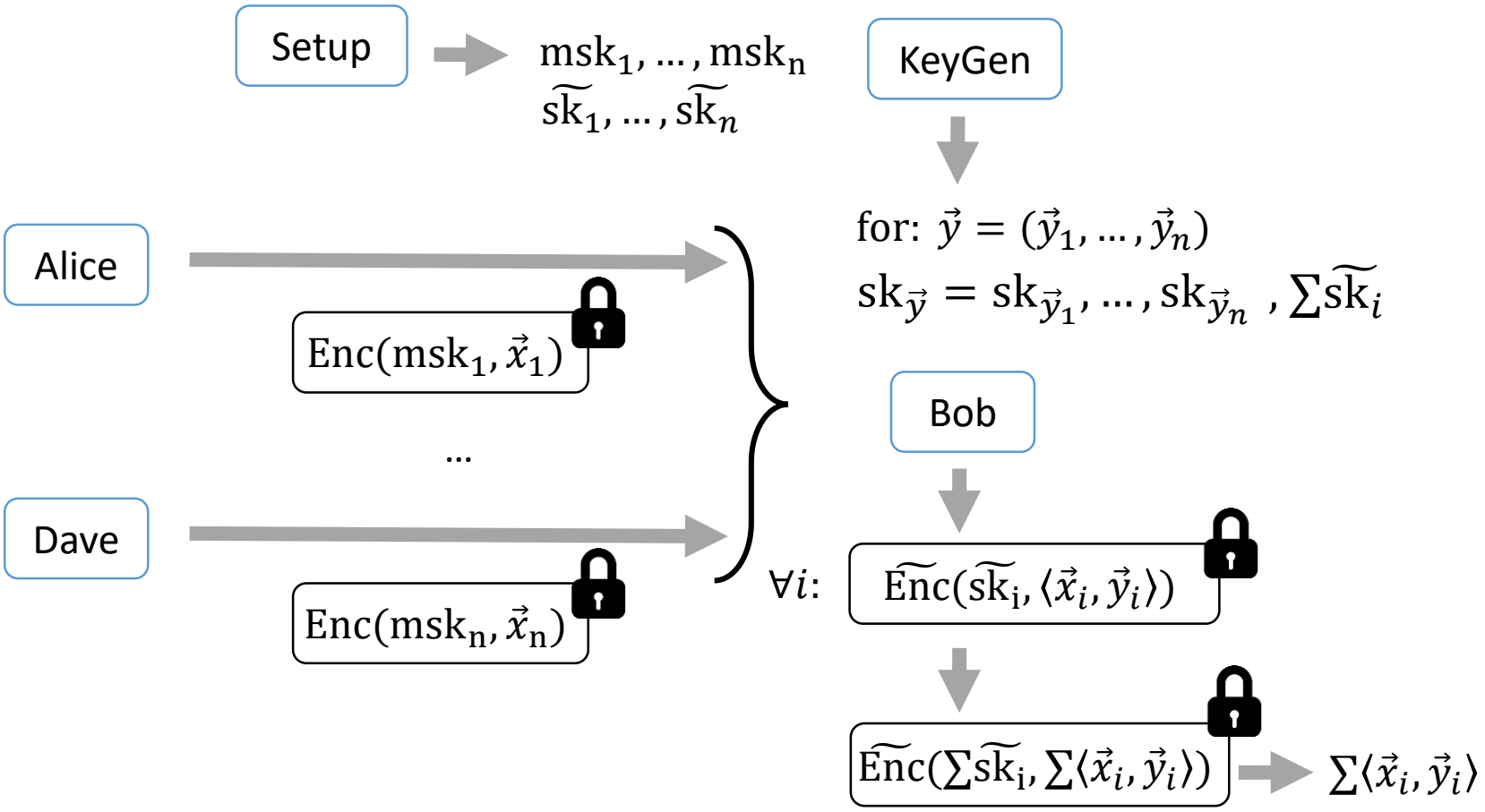

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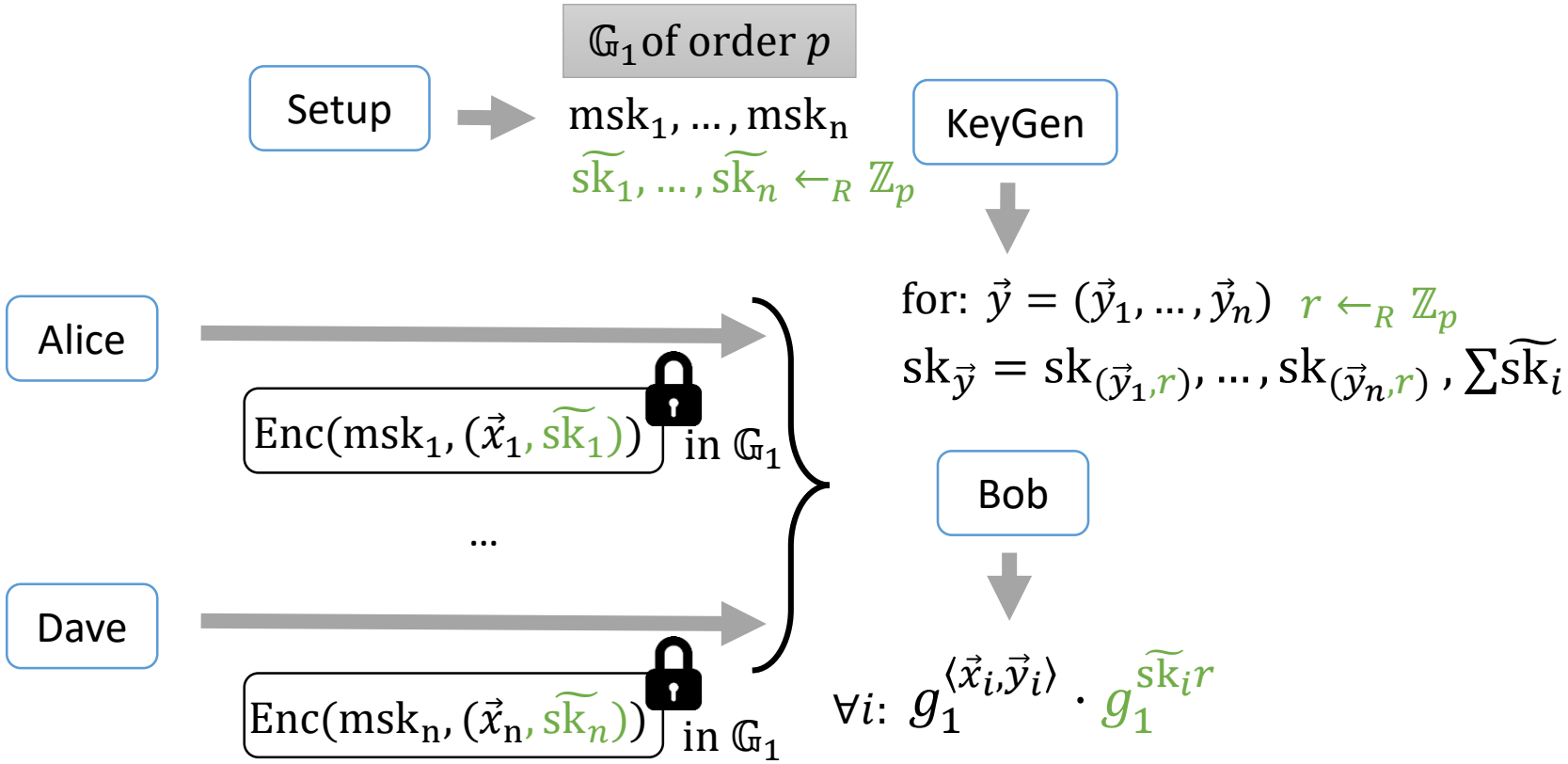

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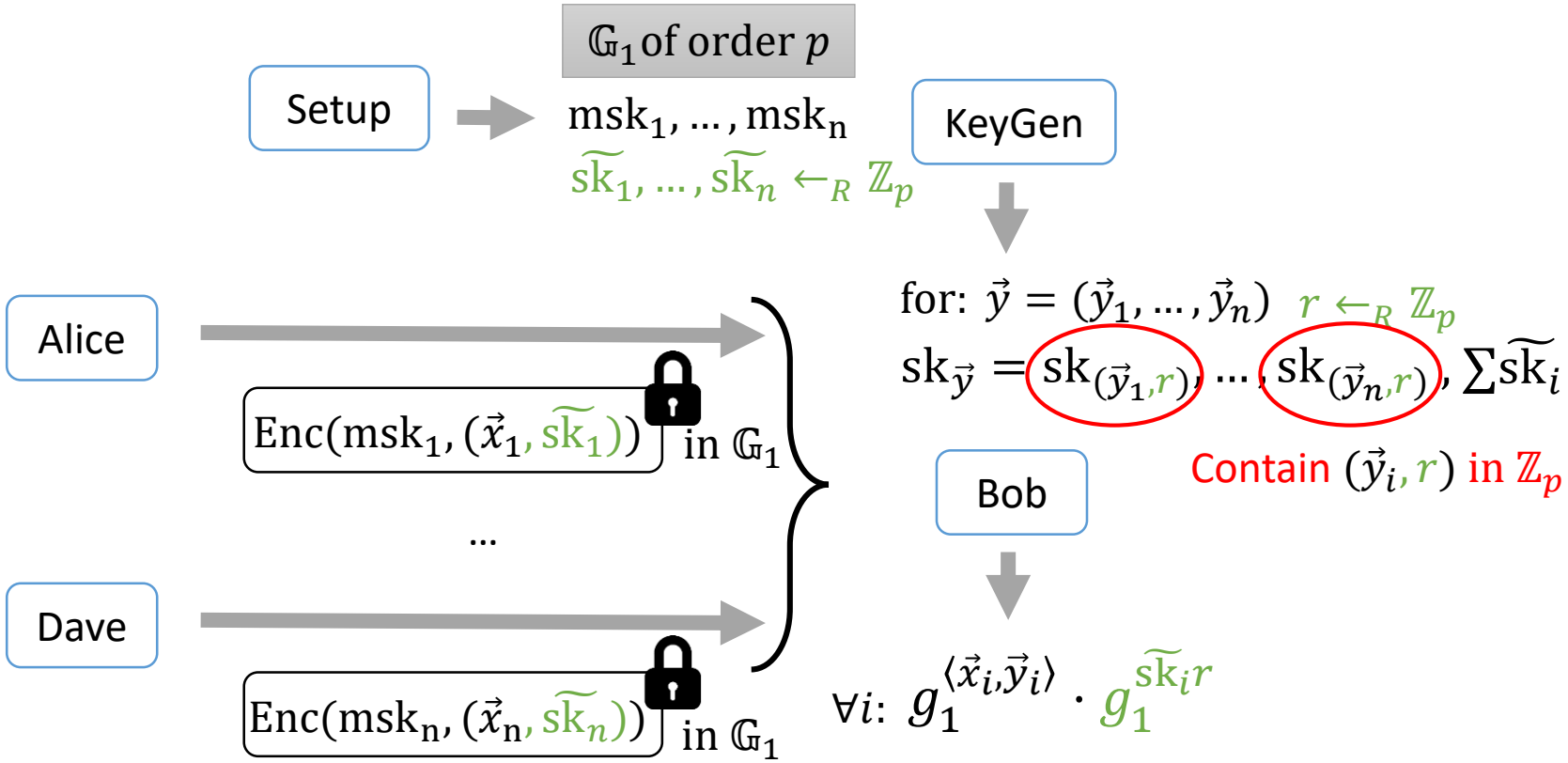

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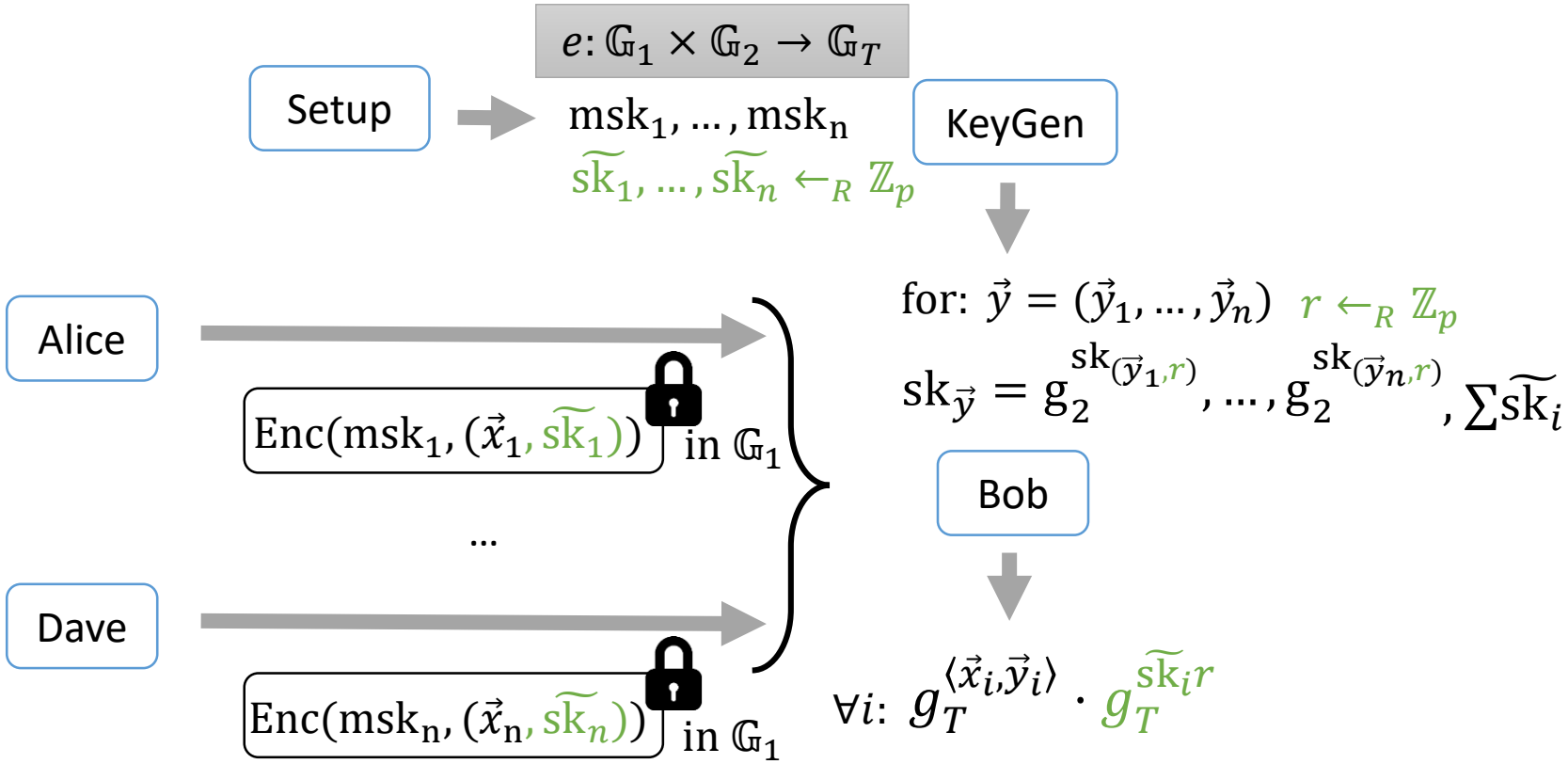

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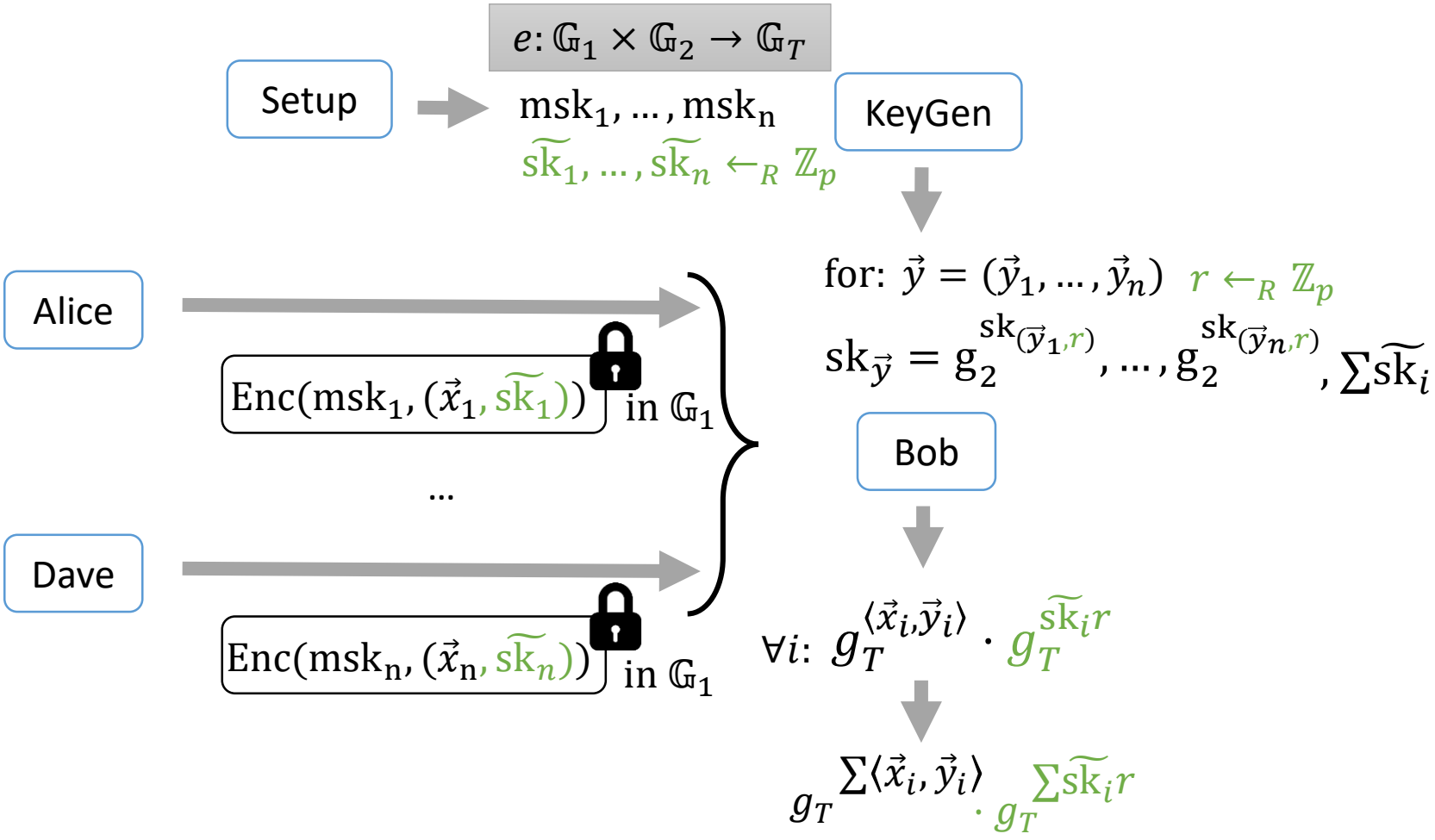

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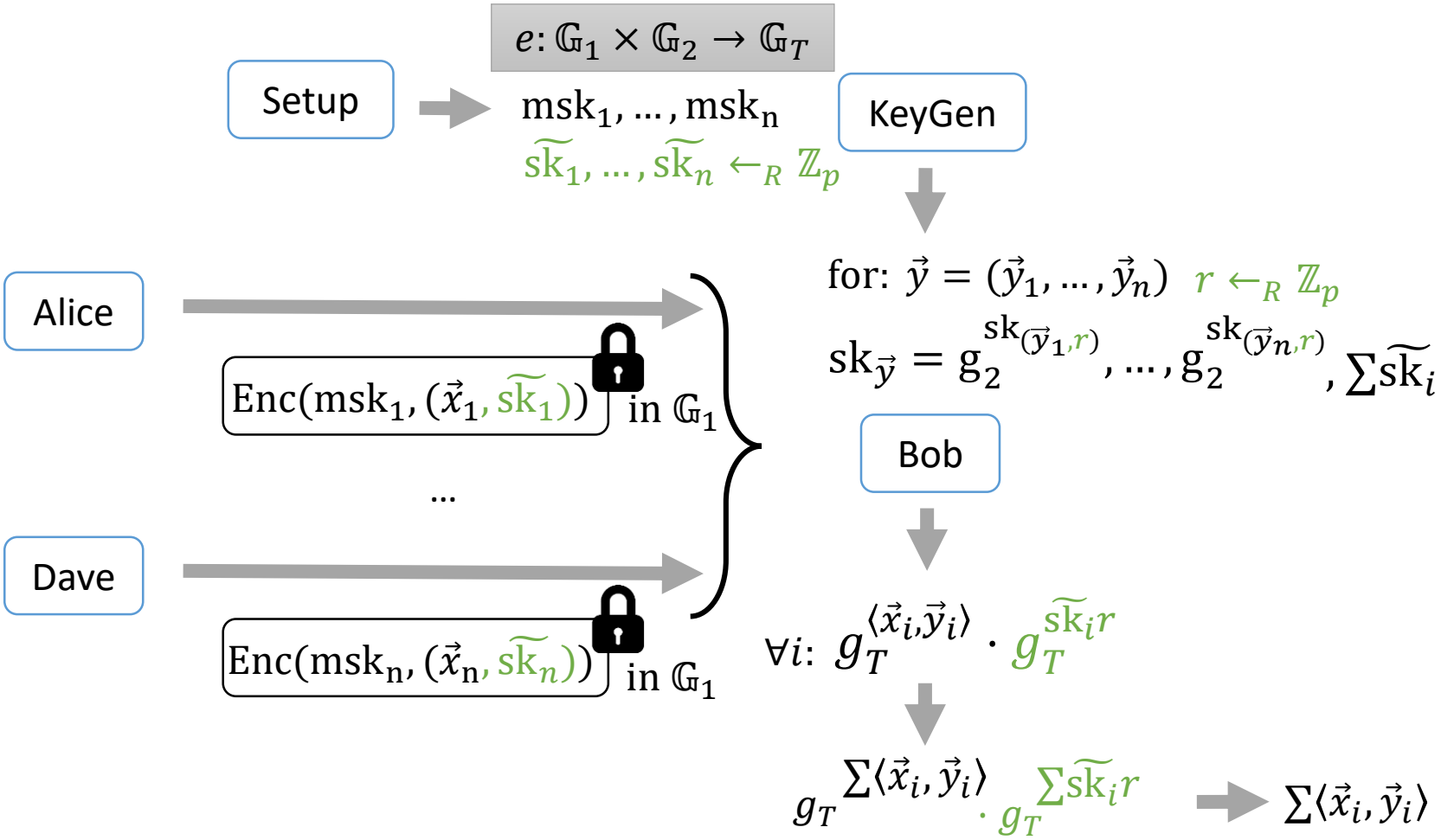

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