

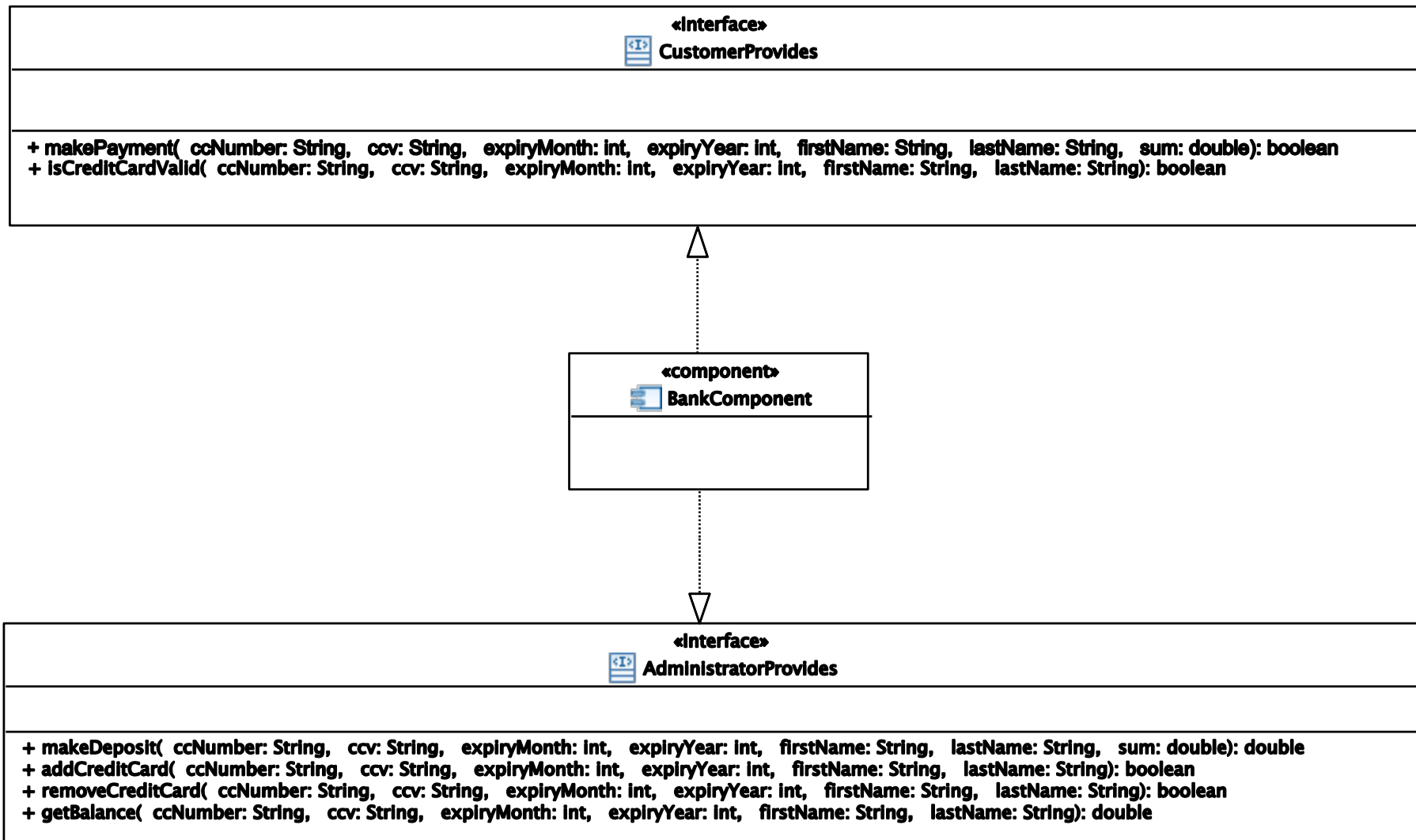
Model-Driven Software Development

Lecture 8

Sequence Diagrams – In Context

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Banking component



System operation

isCreditCardValid(*ccNumber:String, ccv:String, expiryMonth:int, expiryYear:int, firstName:String, lastName:String*) → *boolean*

Description: Given a credit card number, a ccv (checksum) number, the expiry date (month and year) of the credit card and the full name of the credit card owner, this operation returns true if the information corresponds to a valid credit card and false otherwise. Valid means that the credit card is known to the bank and not expired. The operation also returns false if any erroneous information is provided (e.g. null parameters, invalid month/year values).

Brief use case

Name: Check card validity

Actors: Banking customer

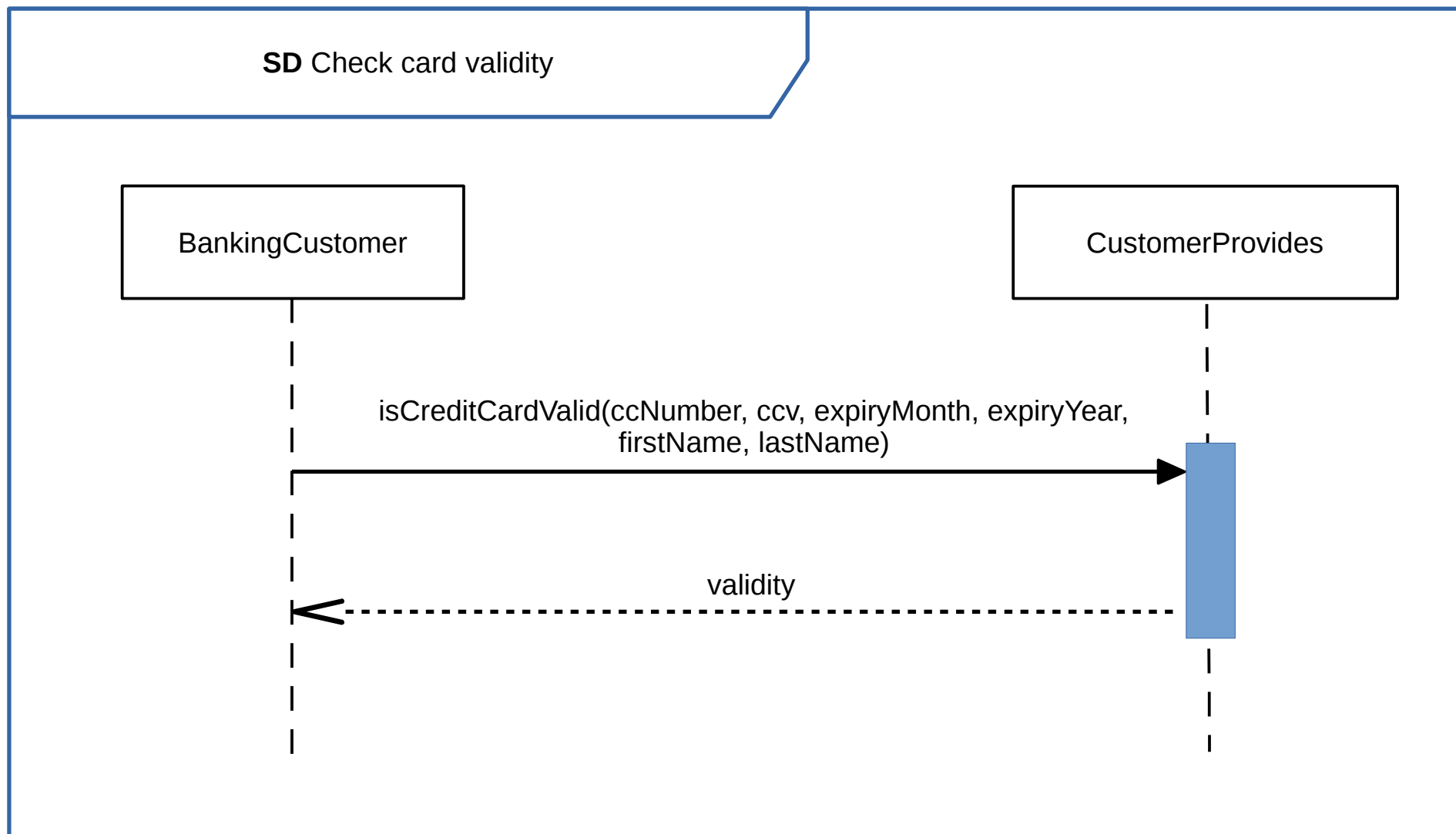
Goal: Determine whether a given credit card is valid.

Description: The customer provides identification of their card. The bank determines whether the cards is valid and notifies the customer.

Component diagram



Sequence diagram



What does each diagram type show?

- use case – scenario without implementation
- system operation – implementation without scenario
- sequence diagram – implemented scenario

Complete use case

Name: Virtual card for online purchase

Actors: Banking customer

Goal: Create a one-time virtual credit card, for use for an online purchase

Description: The banking customer creates a virtual card, holding the amount required for the purchase.

Post-condition: *if* a virtual card could be created, and money could be deposited to it, *then* the details of the created card are returned, *else* empty card details are returned

Complete use case, cont'd.

Main flow:

1. The banking customer requests the creation of a virtual card, with a given amount of money
2. The system creates a card
3. *Assume:* card is created
4. The system deposits money to the new card
5. *Assume:* money could be deposited
6. The system provides the details of the created card to the banking customer

Complete use case, further cont'd.

Alternative flows:

3-6a. Card creation failed

1. The system provides empty card details to the banking customer

5-6a. Depositing money failed

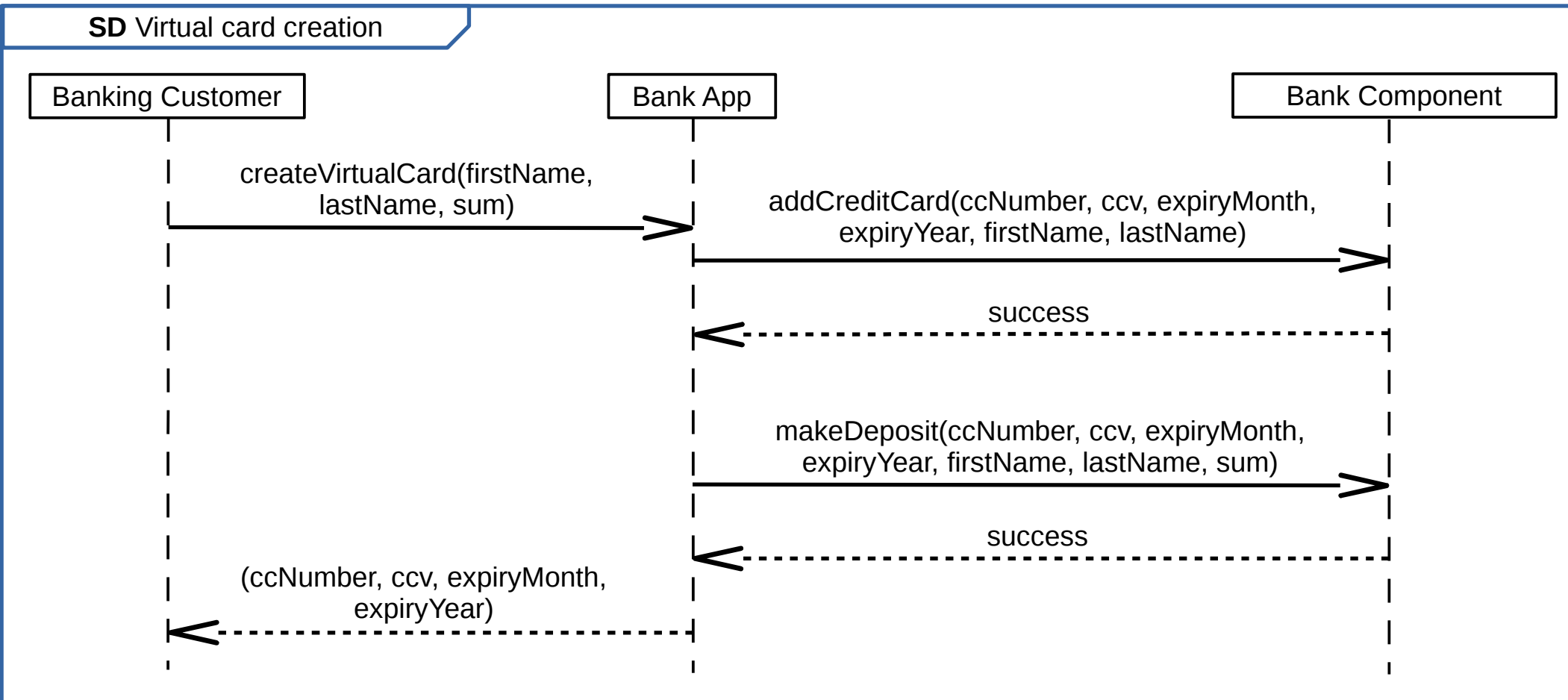
1. The system provides empty card details to the banking customer

Interface specification – Bank app

createVirtualCard(*firstName: String, lastName: String, sum: double*) →
(*ccNumber: String, ccv: String, expiryMonth: int, expiryYear: int*)

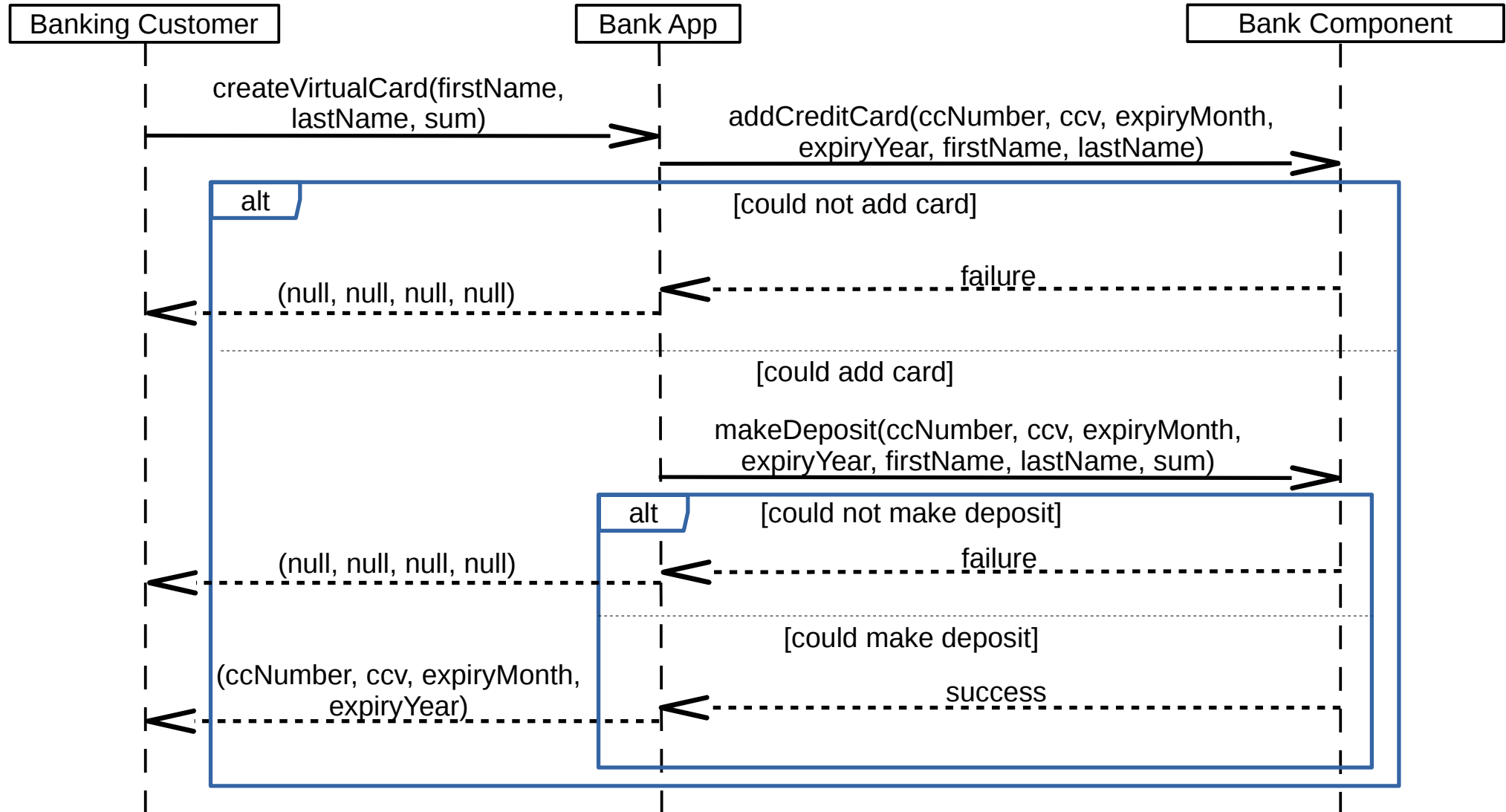
Description: Given the full name of the credit card owner, and a non-negative amount, a virtual credit card is, if possible, created, with the given amount as balance. On success, the details of the newly created card are returned; on failure, null is returned for all values.

Sequence diagram



Sequence diagram with alternatives

SD Virtual card creation



Component diagram

