DISTRIBUTED VENDING MACHINE

객체지향개발방법론 [T2]

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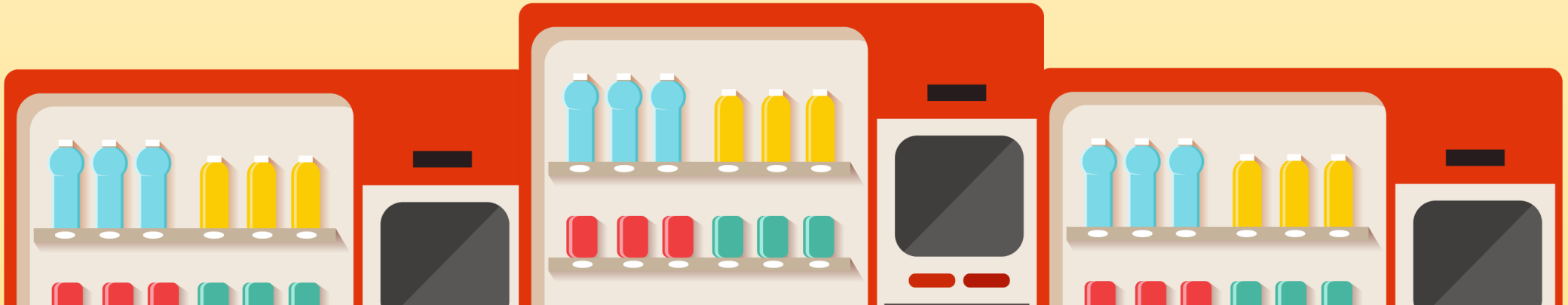

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2141 DESIGN REAL USE CASES

Use Case	**1. Main Menu Display**
Actor	System
Purpose	display main menu of the VM
Overview	System displays item types and other features upon starting the machine.
Type	Evident
Cross Reference	Functions: R 1.1
Pre-requisites	Administrator turns the machine on before User uses System.
Typical Courses of Events	(S) System (S) displays Window1(system's main window). In window-1, button A(item type display), B(admin login), and C(verification code input) is prompted.
Alternative Courses of Events	N/A
Exceptional Courses of Events	N/A

2141 DESIGN REAL USE CASES

Use Case	**2. Item Selection**	
Actor	User	
Purpose	select item User want to buy	
Overview	User selects the type and quantity of the item. System checks stock of item user chosen. If stocks are available, System goes to use case (3. Payment). Otherwise, goes to use case (4. Request Stock of Other VM).	
Type	Evident	
Cross Reference	Function R 1.2	
Pre-requisites	Function R 1.1 needs to be executed before.	
Typical Courses of Events	(U) User (S) System (U) presses A in Window1. (S) displays Window2. In Window2, button A(quantity select), B(go home), C(next step) is prompted.	(U) selects quantity with A, and presses B. (S) checks the stock of selected item in System. (S) If stocks are available, goes to use case (3. Payment) [E1].
Alternative Courses of Events	(U) selects quantity with A, and presses B. (S) checks the stock of selected item in System. (S) If stocks are unavailable, goes to use case (4. Request Stock of Other VM) .	
Exceptional Courses of Events	[E1](S) If stocks are not available (after use case (4. Request Stock of Other VM), sends error message to User and System goes to Window1	

2141 DESIGN REAL USE CASES

Use Case	**3. Payment**
Actor	User
Purpose	proceed payment on VM
Overview	System displays order sheet. User types card info, then System checks card’s validity and if validation is successful, completes the payment.
Type	Evident
Cross Reference	Function R 2.1
Pre-requisites	Function R 1.1 to 1.2 need to be executed before.
Typical Courses of Events	(U) User (S) System (S) displays Window3-1. (U) presses A in Window3-1. (S) displays Window4. (U) types card info and presses A in Window4. (S) checks card's validity[E1] and completes the payment[E2] and displays Window5.
Alternative Courses of Events	N/A
Exceptional Courses of Events	[E1] System shows message to user “Error in card's validity. Please try again”. If validity failure happened more than three times, return to Window1. [E2] System shows message to user “Error in payment. Please try again”. If payment failure happened more than three times, return to Windo1.

2141 DESIGN REAL USE CASES

Use Case	**4. Request Stock of Other VM**
Actor	System
Purpose	request stock of other VM to check stock availability.
Overview	As System does not have the stock user chose, requests stock from the other VM.
Type	Hidden
Cross Reference	Function R 3.1
Pre-requisites	Executed as Alternative Courses of Events of use case (2. Item Selection)
Typical Courses of Events	(S) System (OVM) Other VM (S) sends stock message of selected item. (OVM) responds message of stock information. (S) receives message.
Alternative Courses of Events	N/A
Exceptional Courses of Events	N/A

2141 DESIGN REAL USE CASES

Use Case	**5. Provide Stock Information to Other VM**
Actor	Other VM
Purpose	provide stock information to Other VM
Overview	Other VM sends stock check message to System. System sends message if has stock of requested item.
Type	Evident
Cross Reference	Function R 3.2
Pre-requisites	N/A
Typical Courses of Events	(S) System (OVM) Other VM (OVM) sends stock message to System. (S) If System has stock of requested items, sends message[E1].
Alternative Courses of Events	N/A
Exceptional Courses of Events	[E1] If System doesn't have stock of requested item, System doesn't send message.

2141 DESIGN REAL USE CASES

Use Case	**6. Provide Product Information to Other VM**
Actor	Other VM
Purpose	provide product information to the Other VM.
Overview	Other VM sends product check message to System. System sends message if has product data of requested item.
Type	Evident
Cross Reference	Function R 3.3
Pre-requisites	N/A
Typical Courses of Events	(S) System (OVM) Other VM (OVM) sends product check message to System. (S) If System has product data of requested items, sends message[E1].
Alternative Courses of Events	N/A
Exceptional Courses of Events	[E1] If System doesn't have any product data, System doesn't send message.

2141 DESIGN REAL USE CASES

Use Case	**7. Provide Prepayment Information to Other VM**
Actor	System
Purpose	provide prepayment information to other VM
Overview	After prepayment happens and verification was made, send info of prepayment.
Type	Hidden
Cross Reference	Function R 3.4
Pre-requisites	Function R 4.1 need to be executed before.
Typical Courses of Events	(S) System (S) sends verification and item info to Other VM.
Alternative Courses of Events	N/A
Exceptional Courses of Events	N/A

2141 DESIGN REAL USE CASES

Use Case	**8. Prepayment**
Actor	User
Purpose	User can prepay items they wanted to buy at other VM.
Overview	System gives options to user to prepay the stocks they chose which are available at other VM. User may proceed with prepayment if they agree to proceed with the transaction.
Type	Evident
Cross Reference	Function R 4.1, R 4.3
Pre-requisites	Function R 3.1 need to be executed before.
Typical Courses of Events	(U) User (S) System (S) displays Window3-2. (U) presses A in Window3-2. (S) displays Window4. (U) types card info and presses A in Window4[E1]. (S) checks card's validity[E1] and completes the payment[E2] and creates verification for this order and displays Window5
Alternative Courses of Events	N/A
Exceptional Courses of Events	[E1] System shows message to user “Error in card's validity. Please try again”. If validity failure happened more than three times, return to Window1. [E2] System shows message to user “Error in payment. Please try again”. If payment failure happened more than three times, return to Window1.

2141 DESIGN REAL USE CASES

Use Case	**9. Synchronize Information of Prepayment**
Actor	Other VM
Purpose	synchronize prepayment information.
Overview	If Other VM sends prepayment information, System synchronizes prepayment information.
Type	Evident
Cross Reference	Function R 4.2
Pre-requisites	N/A
Typical Courses of Events	(OVM) Other VM (S) System (OVM) sends prepayment information. (S) synchronizes stock information[E1].
Alternative Courses of Events	N/A
Exceptional Courses of Events	[E1] If stock is unavailable, makes the prepayment information invalid.

2141 DESIGN REAL USE CASES

Use Case	**10. Go Main**
Actor	User
Purpose	Return to the main page when User want to go to the main page.
Overview	After the User click the home button, System displays main page
Type	Evident
Cross Reference	Function R 6.1
Pre-requisites	User must know the location of the back button on display screen.
Typical Courses of Events	(U) User (S) System (U) Click back button. Back button is available on every windows. (S) go back to main page(Window1).
Alternative Courses of Events	N/A
Exceptional Courses of Events	N/A

2141 DESIGN REAL USE CASES

Use Case	**11. Confirm Verification**
Actor	User
Purpose	give out items legitimately and successfully
Overview	User inputs the Verification and System checks it if it is correct or not.
Type	Evident
Cross Reference	Function R 4.4
Pre-requisites	Function R 4.1 and 4.3 need to be executed first
Typical Courses of Events	(U) User (S) System (U) presses C in Window1 and types the verification and presses C in Windows6. (S) verifies that it is the same as in the local storage [E1]. (S) If verification is successful, removes the verification code and item comes out[E2].
Alternative Courses of Events	N/A
Exceptional Courses of Events	[E1] If the User enters an incorrect verification, System displays to the user "Your verification is incorrect, please enter again", and returns to Window6. [E2] If the User enters a correct verification but prepayment is impossible due to lack of stock, System cancels it and returns to Window1.

2141 DESIGN REAL USE CASES

Use Case	**12. Administrator Login**
Actor	Administrator
Purpose	let administrator to login to the system.
Overview	Administrator may choose to login to the system by clicking a login button on the screen.
Type	Evident
Cross Reference	Function R 5.1
Pre-requisites	1. Administrator must know the location of the login button. 2. Administrator must have login password to access the system.
Typical Courses of Events	(A) Administrator (S) System (A) presses B in Window1 to login. (S) displays Windows7. (A) types password and presses C in Window7. [E1] (S) If the login password match with the administrator's login password in the local storage, Window8 will be displayed.
Alternative Courses of Events	N/A
Exceptional Courses of Events	[E1] If the login password does not match with the administrator's login password in the local storage, System sends an error message. The process is repeated three times. if login failed on the third time, System goes to Window1.

2141 DESIGN REAL USE CASES

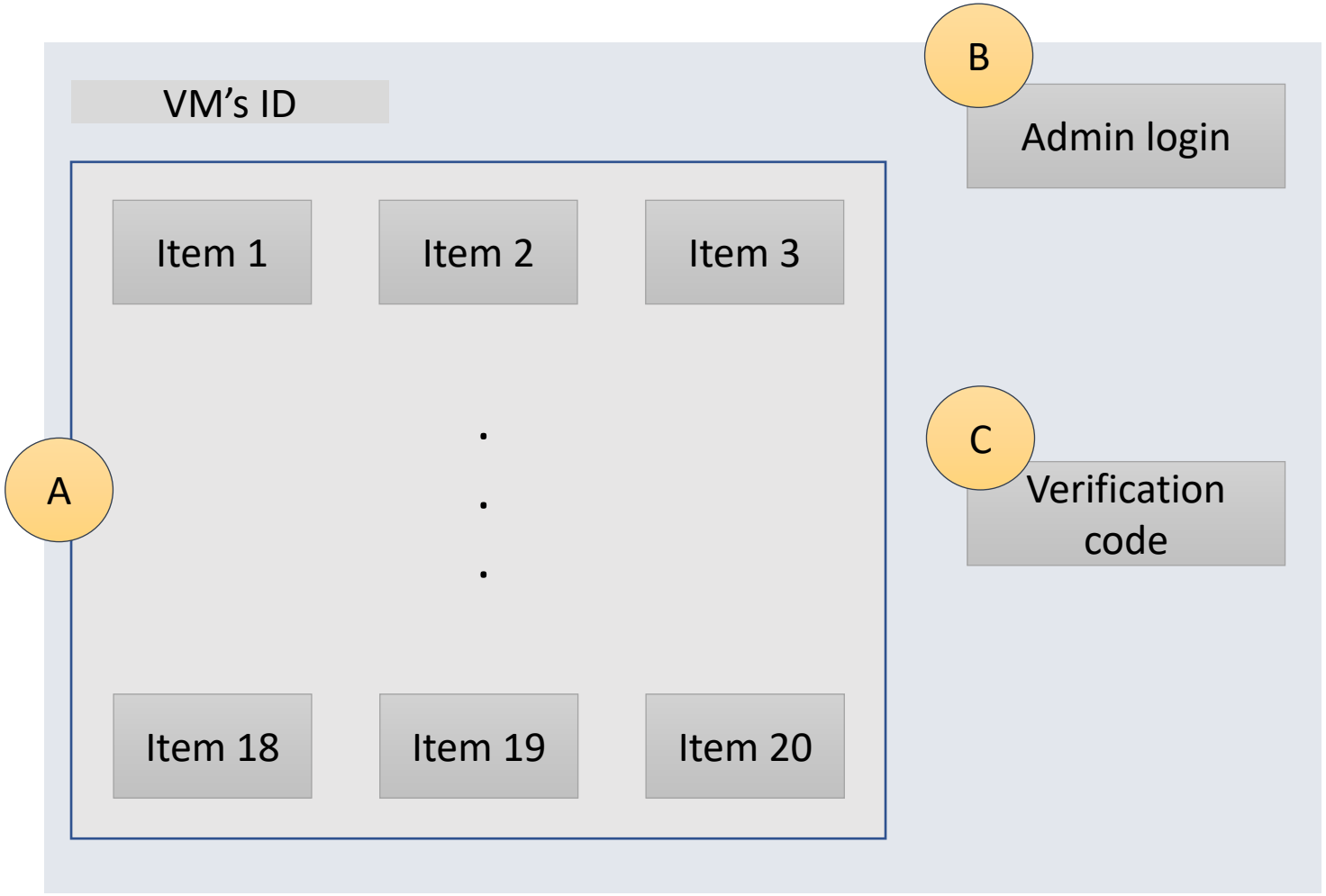
Use Case	**13. Administrator Logout**
Actor	Administrator
Purpose	let administrator to logout of the system.
Overview	Administrator choose to logout of the system by clicking a logout button on the screen.
Type	Evident
Cross Reference	Function R 5.2 Use case 1. Main Menu display
Pre-requisites	1. Function R 5.1 needs to be executed first. 2. Administrator must know the location of the logout button.
Typical Courses of Events	(A) Administrator (S) System (A) presses button C in Window8 to logout. (S) display Window1.
Alternative Courses of Events	N/A
Exceptional Courses of Events	N/A

2141 DESIGN REAL USE CASES

Use Case	**14. Change Stock Quantity**
Actor	Administrator
Purpose	change the stock quantity sold in the VM.
Overview	Administrator can add any available stock to the VM or remove any expired stock from the VM.
Type	Evident
Cross Reference	Function R 5.3
Pre-requisites	1. Function 5.1 needs to be executed first. 2. Administrator must login successfully into System to execute this use case.
Typical Courses of Events	(A) Administrator (S) System (S) displays Window8. (A) changes the stock quantity in the VM by updating item's quantity list on Window8-A. (A) presses button B to confirm changes. (S) updates the change to the local storage of System.
Alternative Courses of Events	N/A
Exceptional Courses of Events	N/A

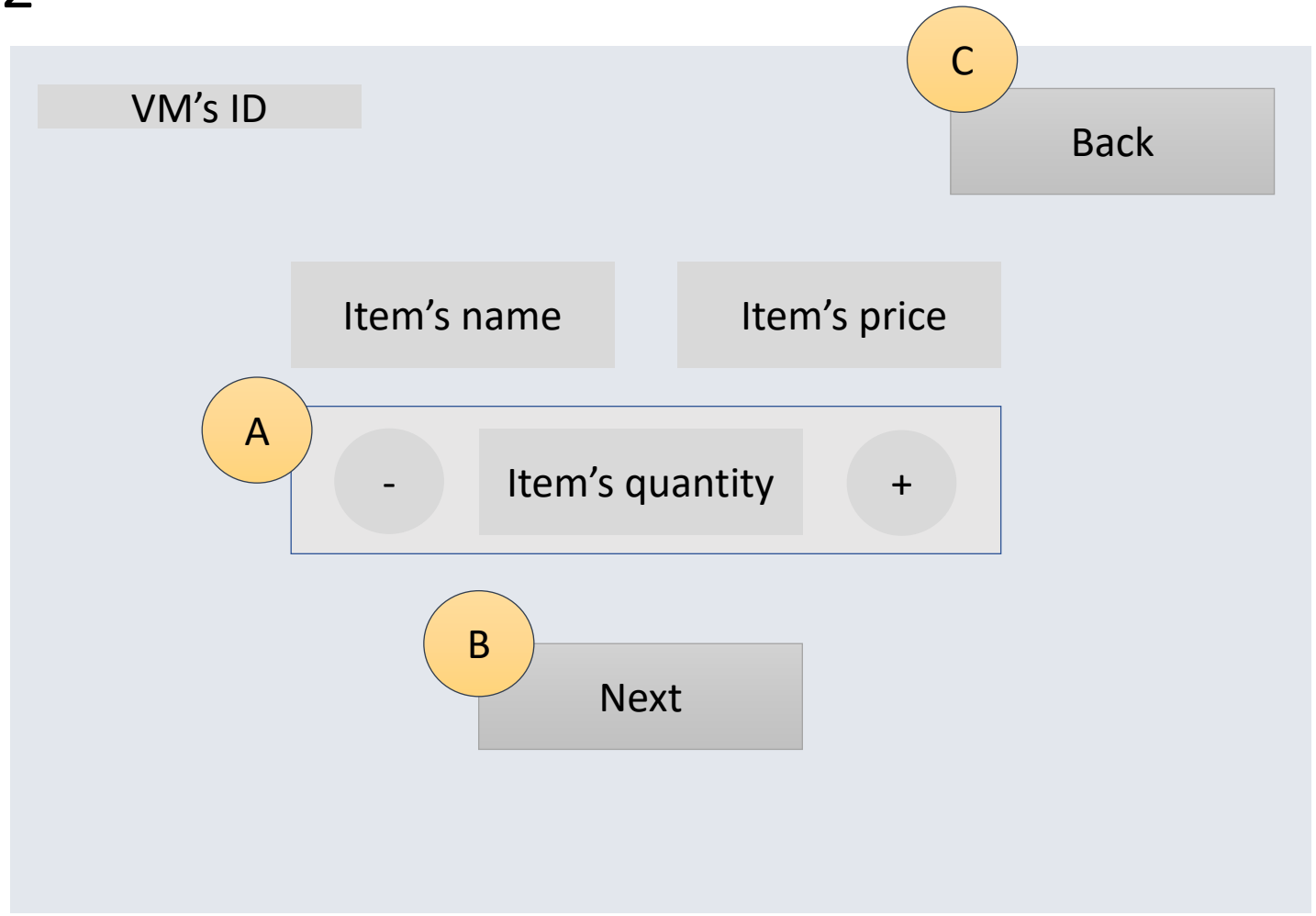
2142 DEFINE REPORTS, UI, AND STORYBOARDS

- Window-1



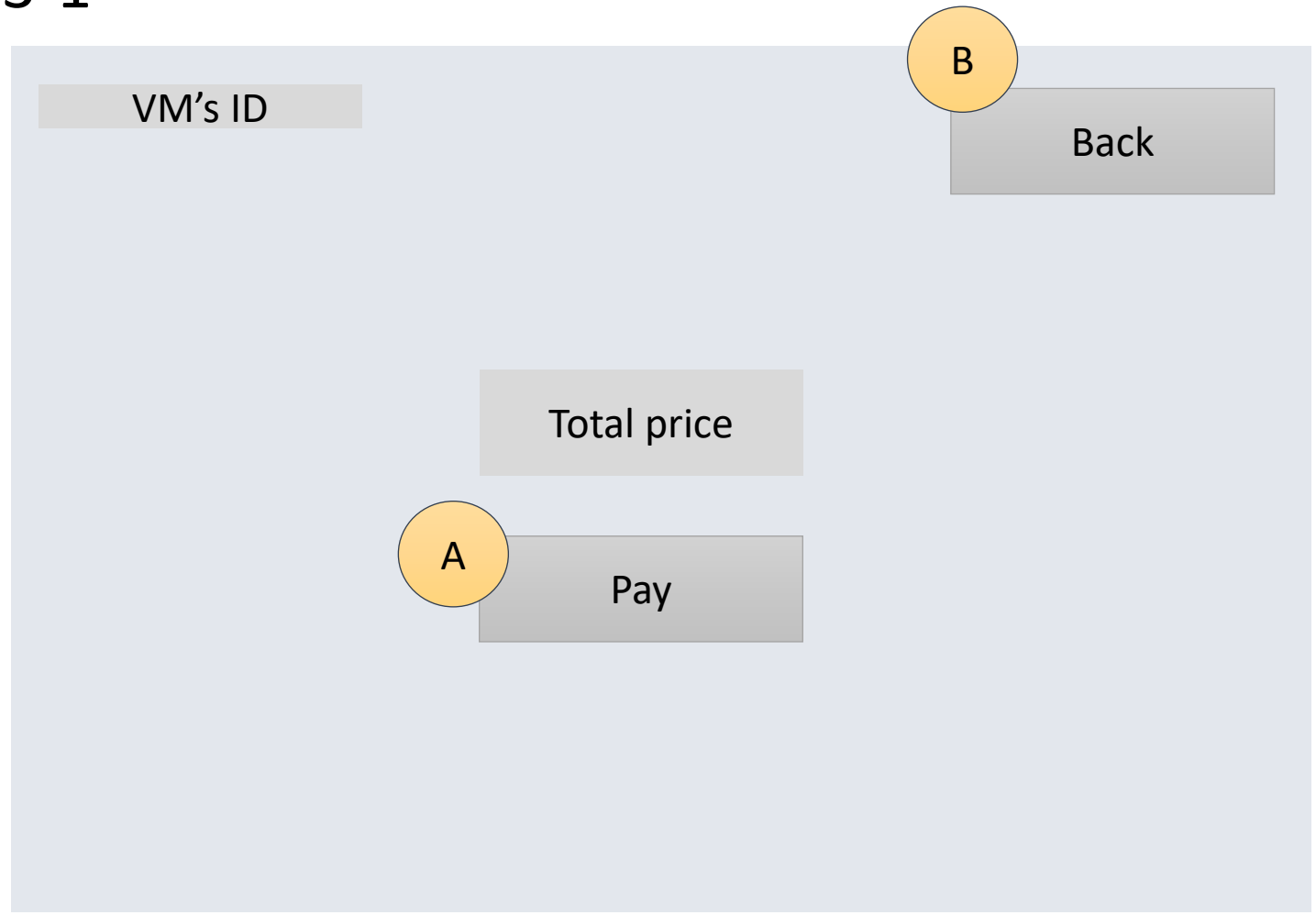
2142 DEFINE REPORTS, UI, AND STORYBOARDS

- Window-2



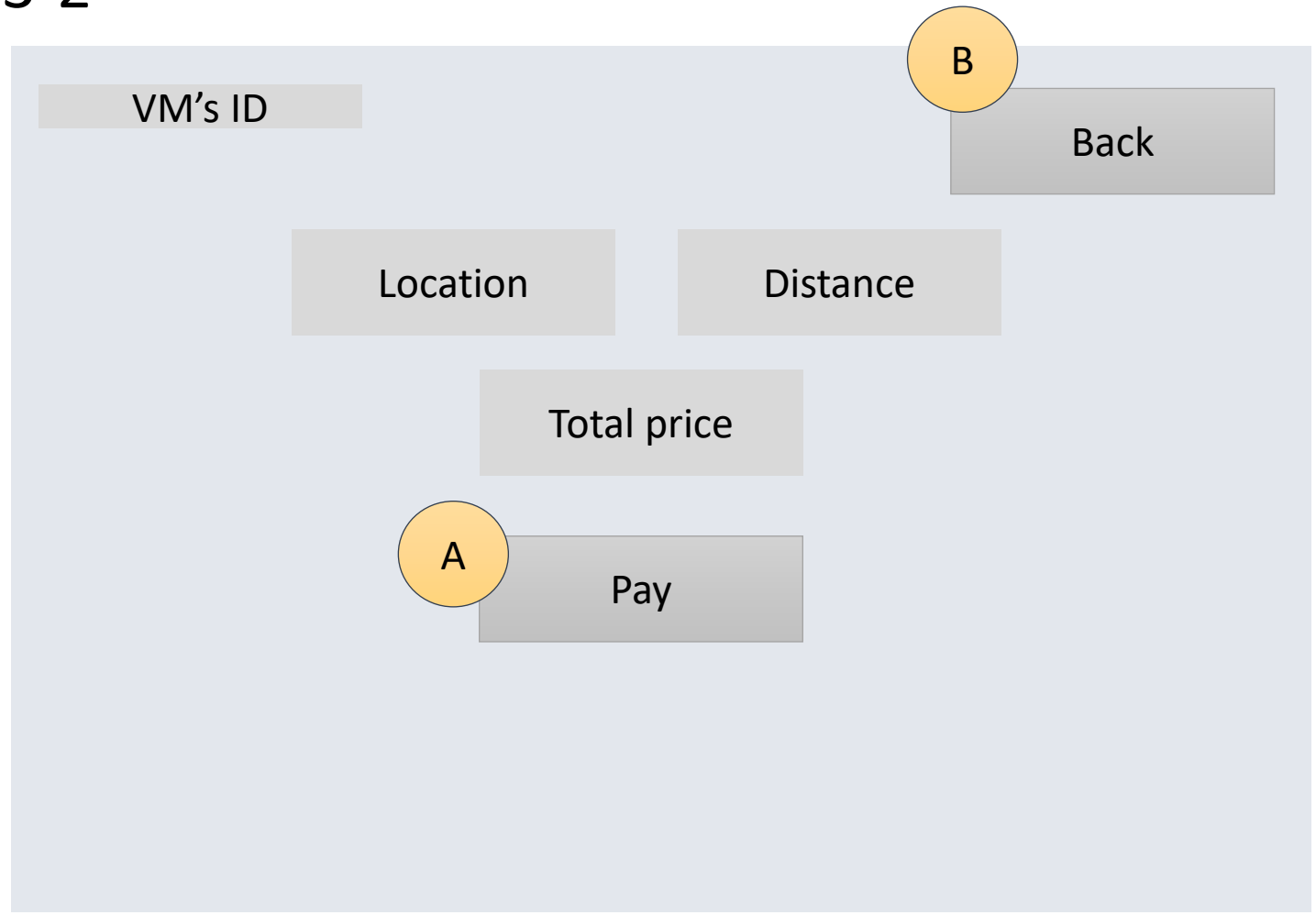
2142 DEFINE REPORTS, UI, AND STORYBOARDS

- Window-3-1



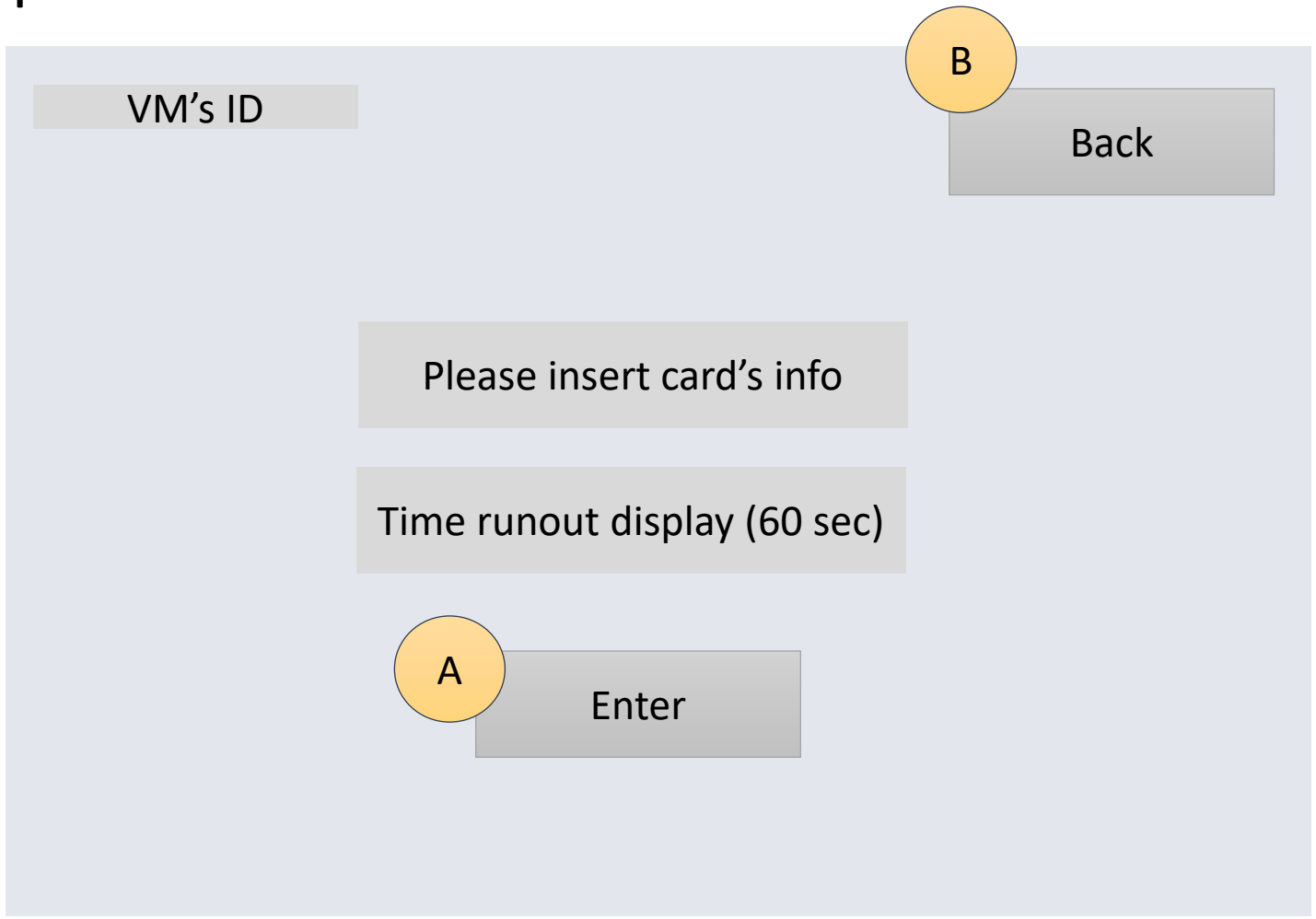
2142 DEFINE REPORTS, UI, AND STORYBOARDS

- Window-3-2



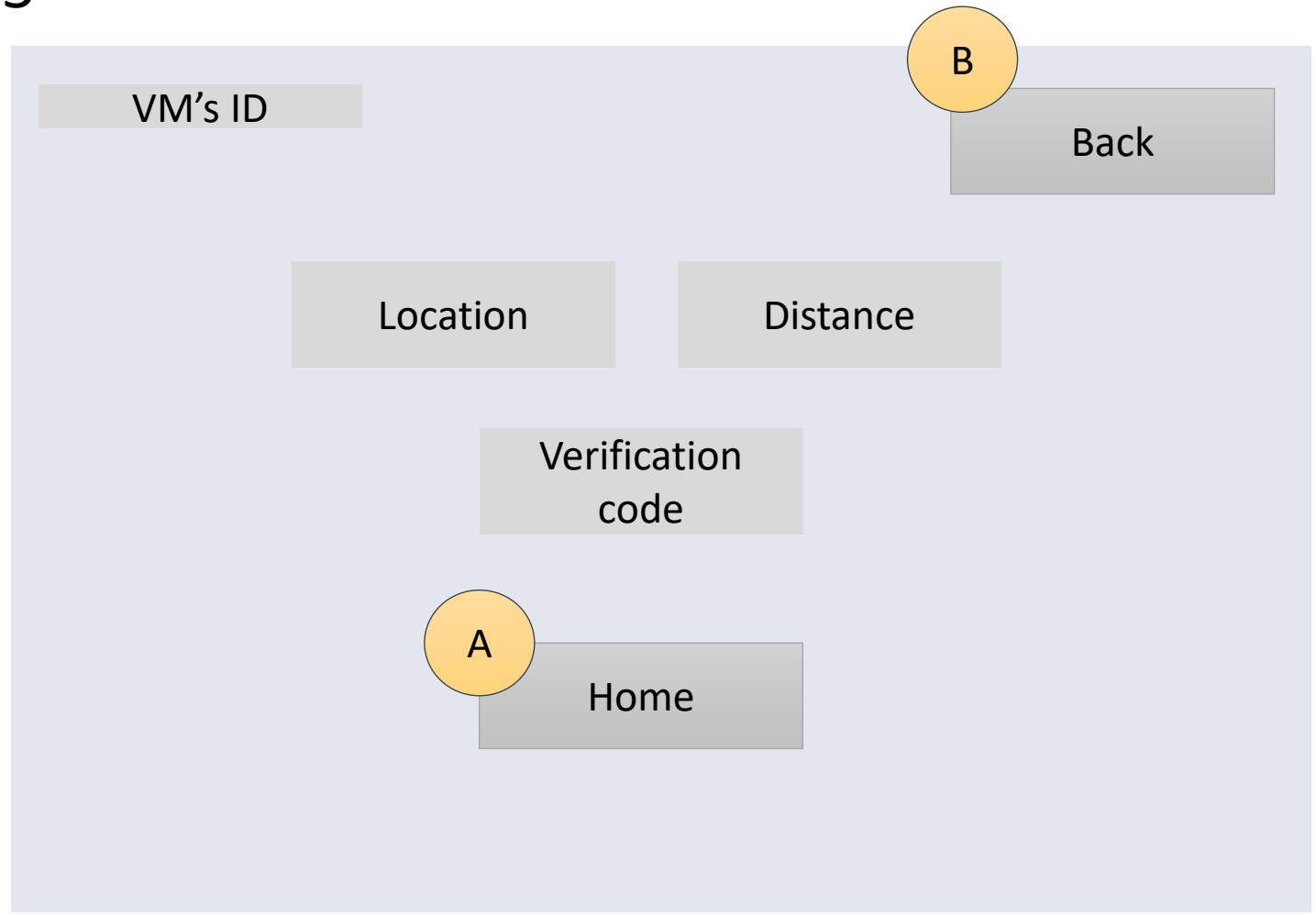
2142 DEFINE REPORTS, UI, AND STORYBOARDS

- Window-4



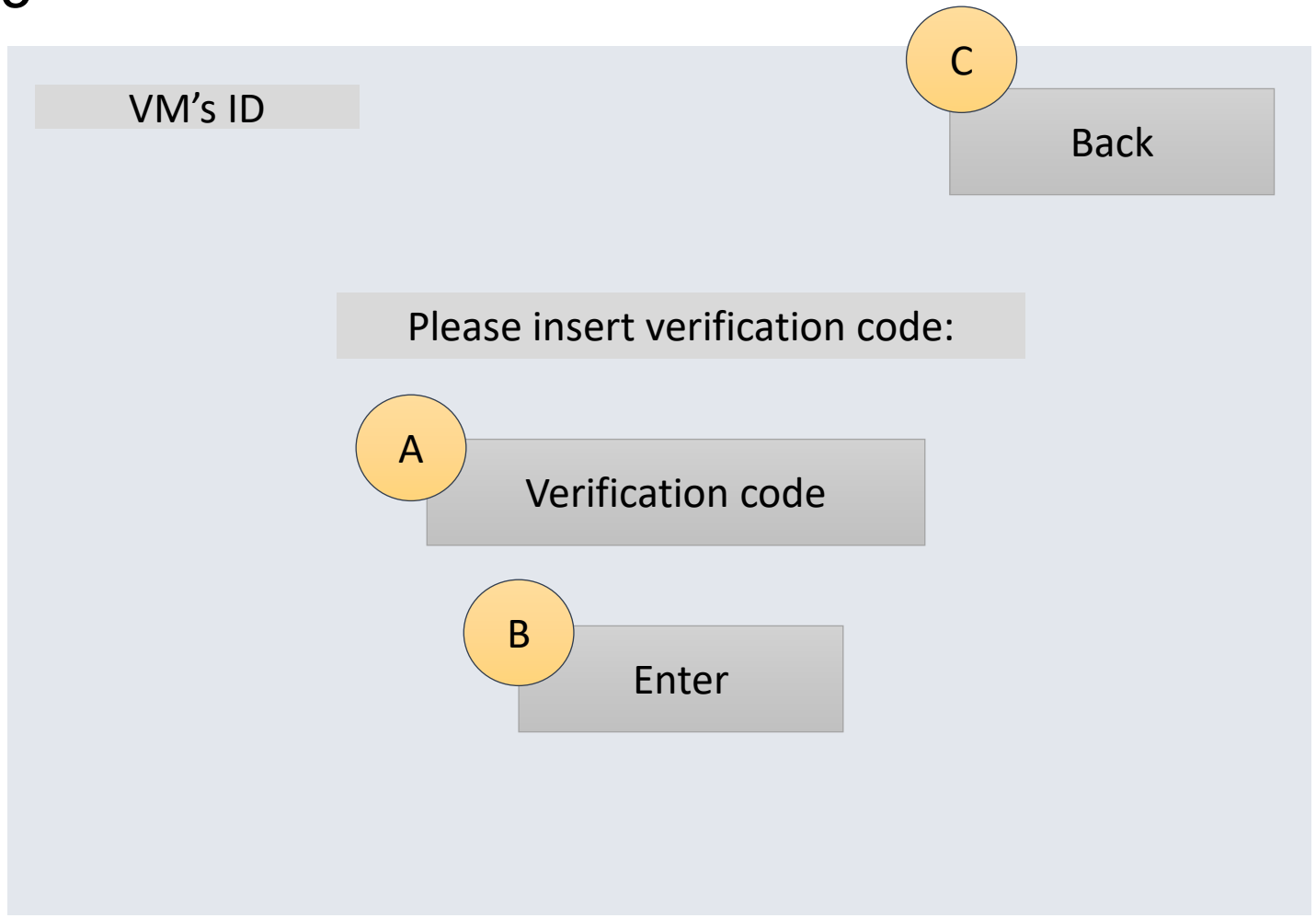
2142 DEFINE REPORTS, UI, AND STORYBOARDS

- Window-5



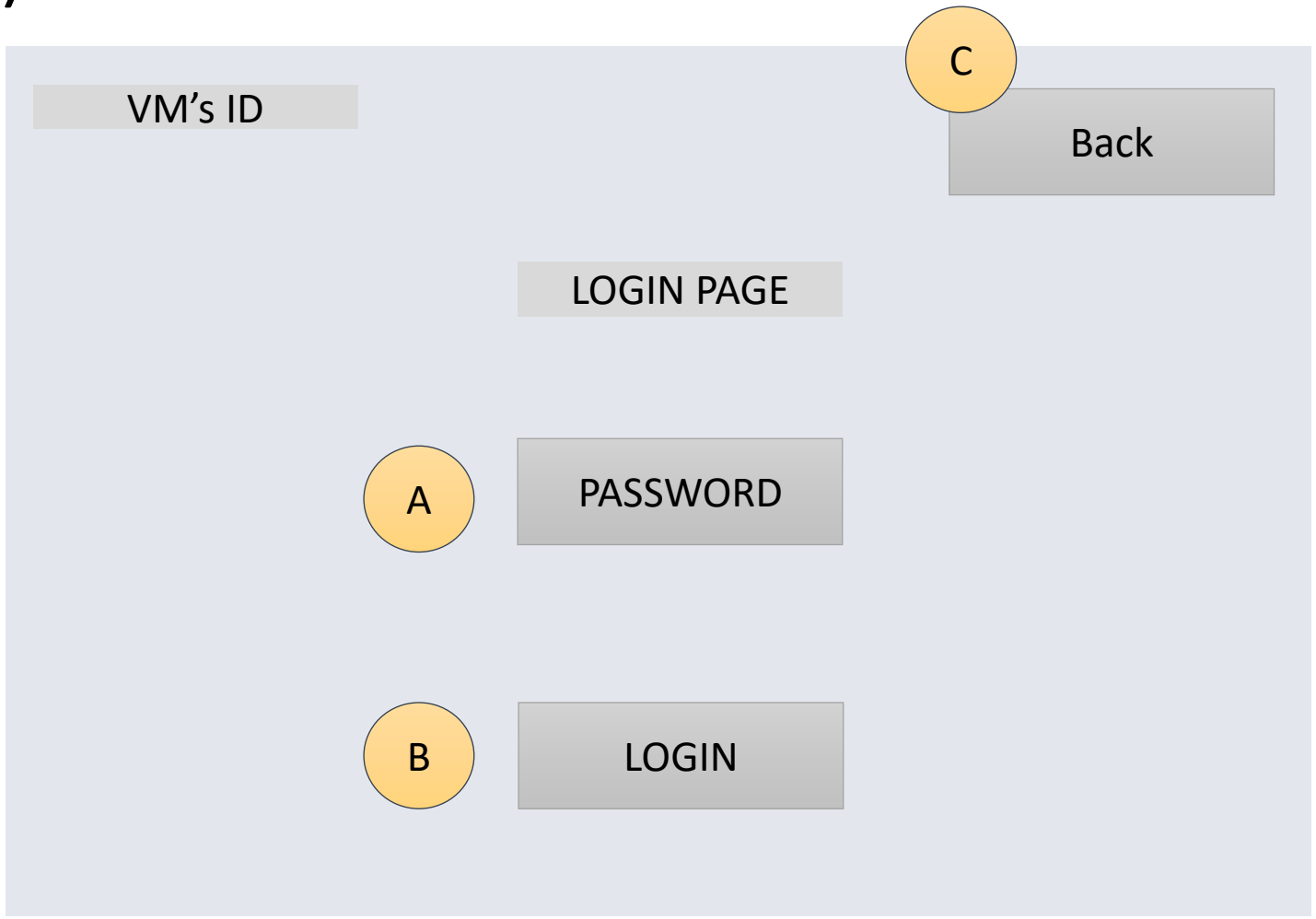
2142 DEFINE REPORTS, UI, AND STORYBOARDS

- Window-6



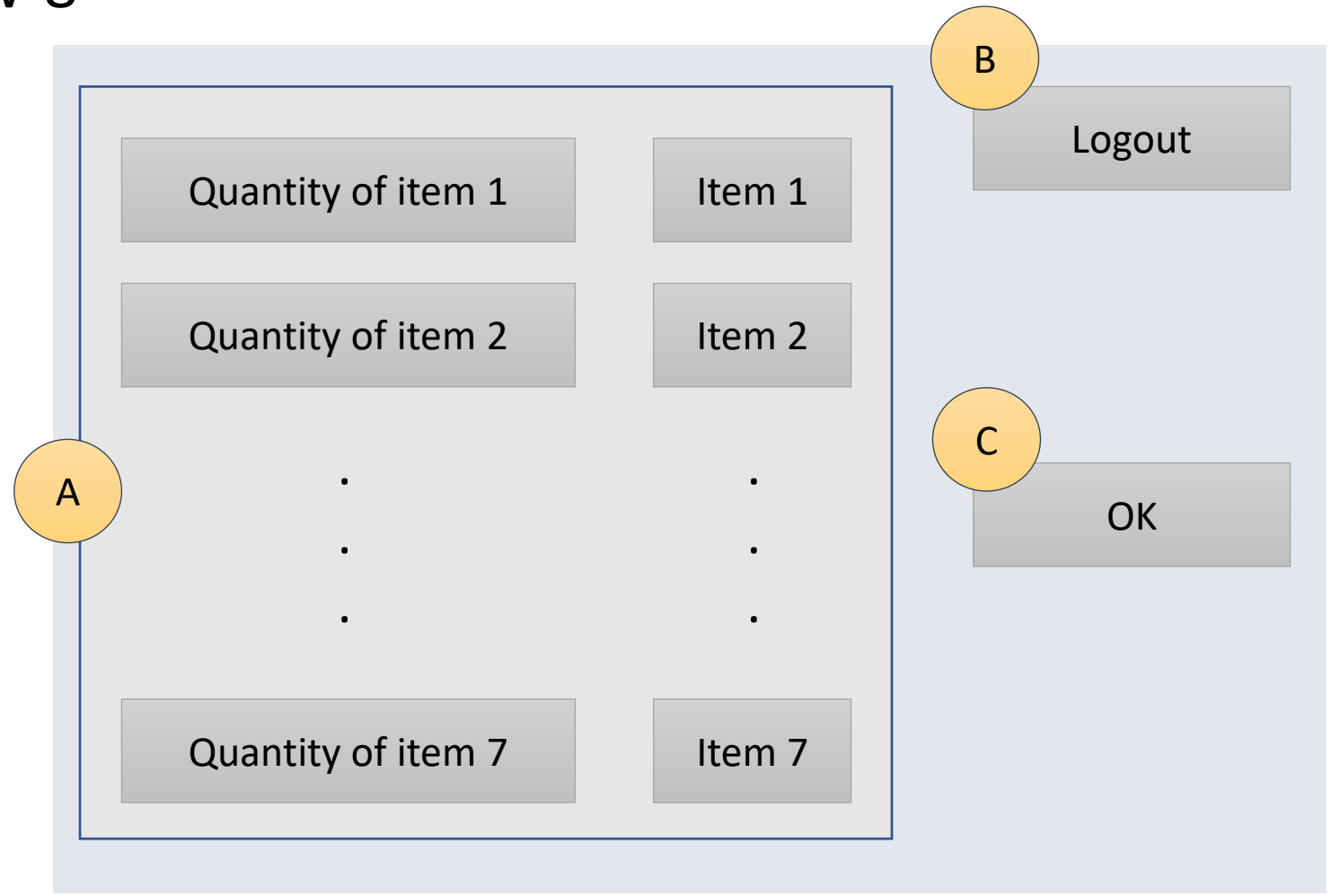
2142 DEFINE REPORTS, UI, AND STORYBOARDS

- Window-7



2142 DEFINE REPORTS, UI, AND STORYBOARDS

- Window-8

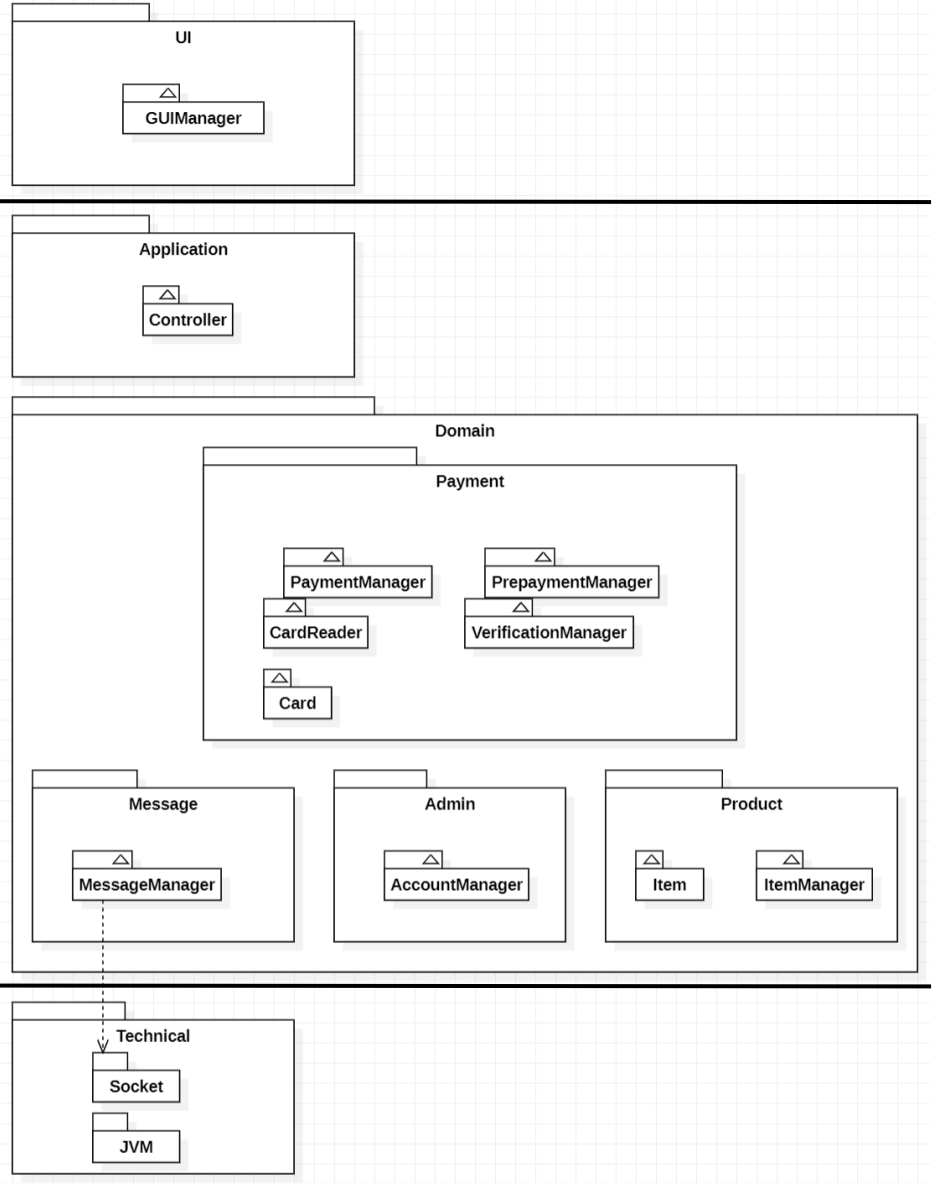


2143 REFINE SYSTEM ARCHITECTURE

User Interface Layer

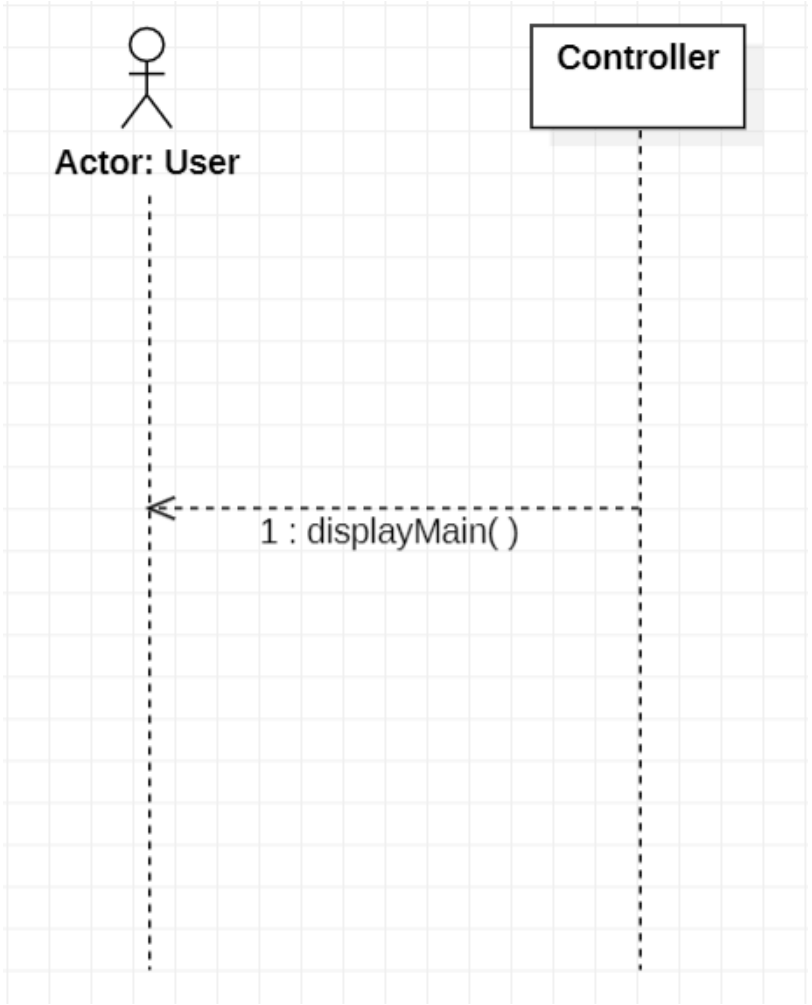
Application Logic Layer

Technical Layer



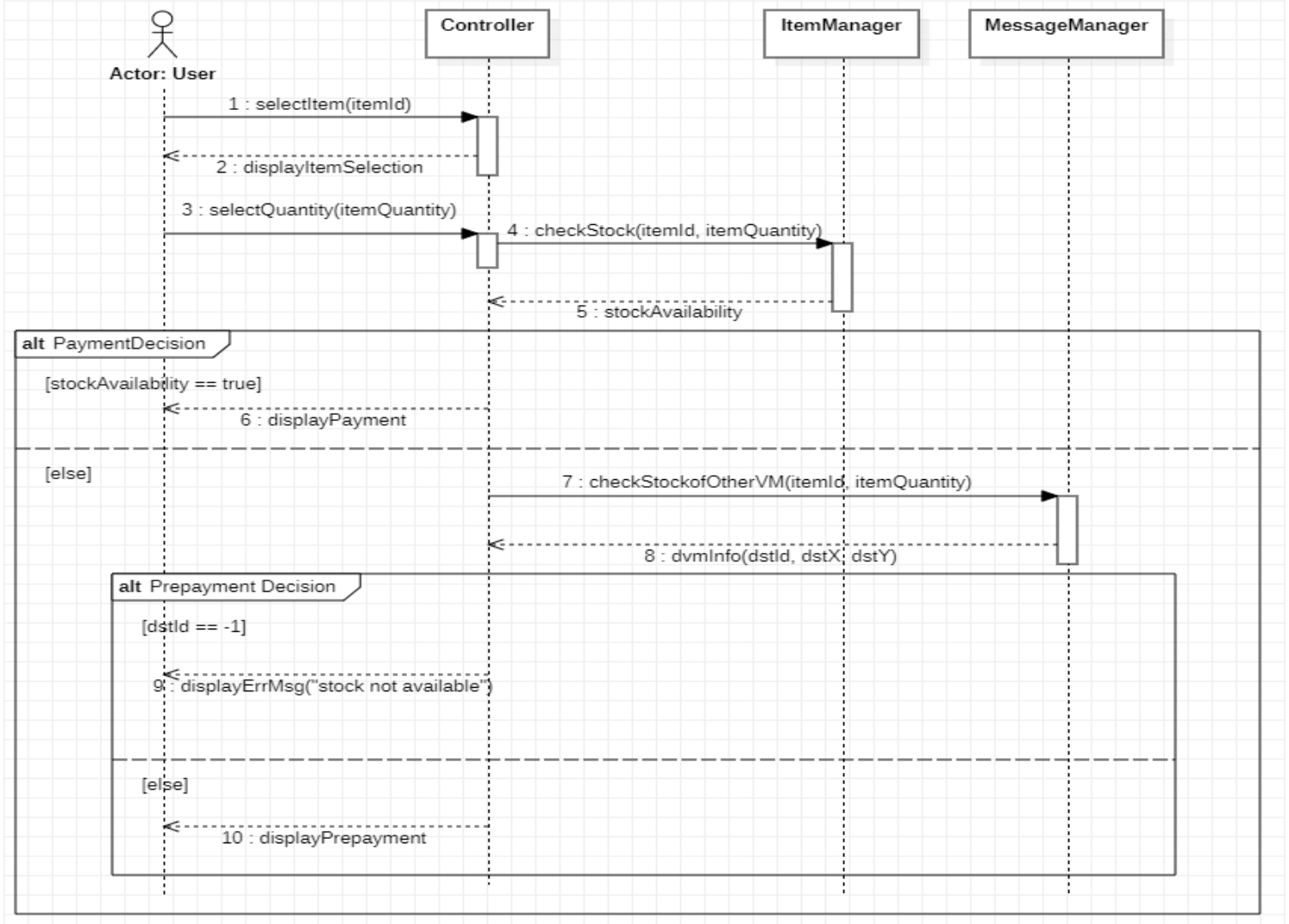
2144 DEFINE INTERACTION DIAGRAMS

- Use case 1. Main Menu Display



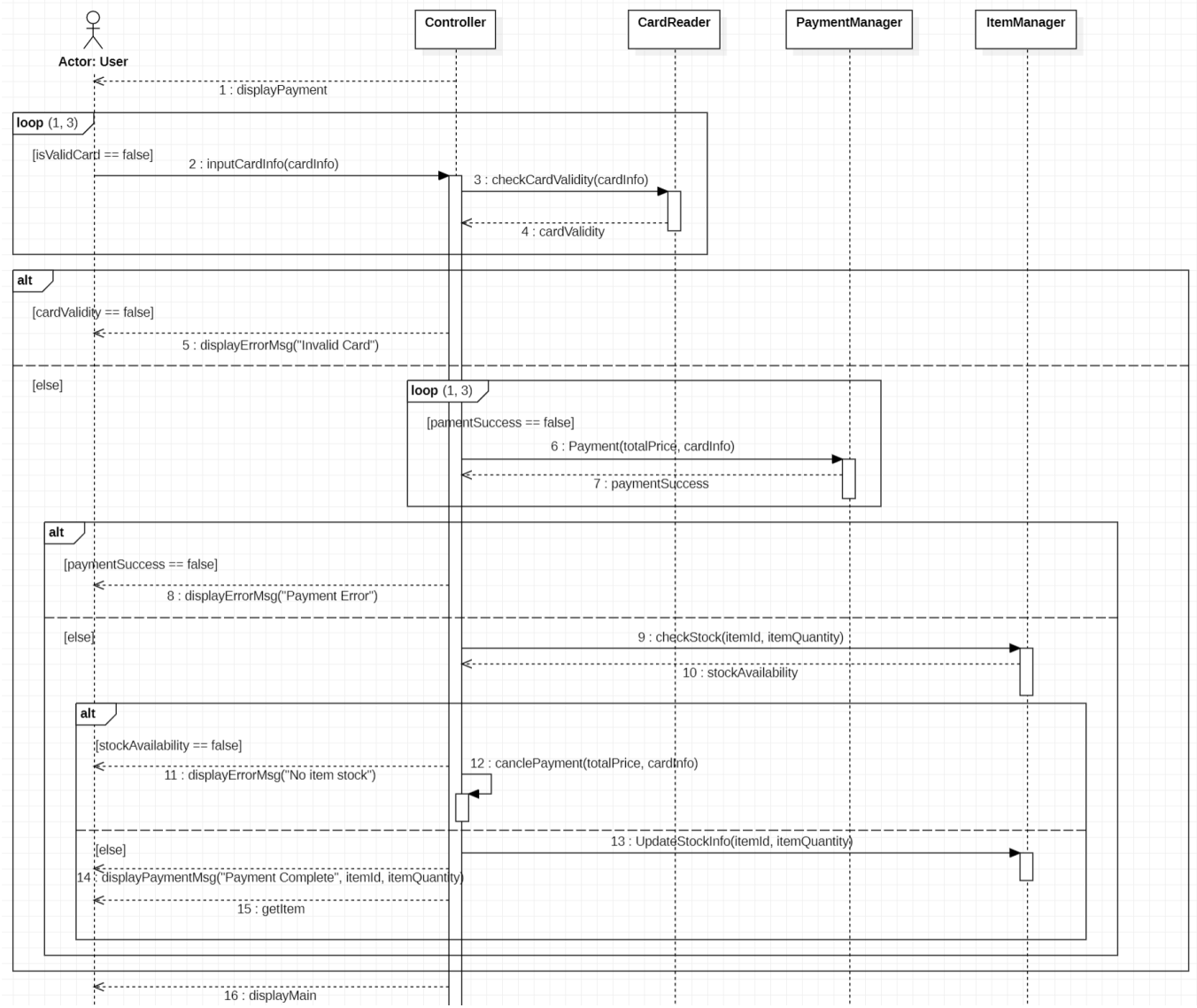
2144 DEFINE INTERACTION DIAGRAMS

- Use case 2. Item Selection



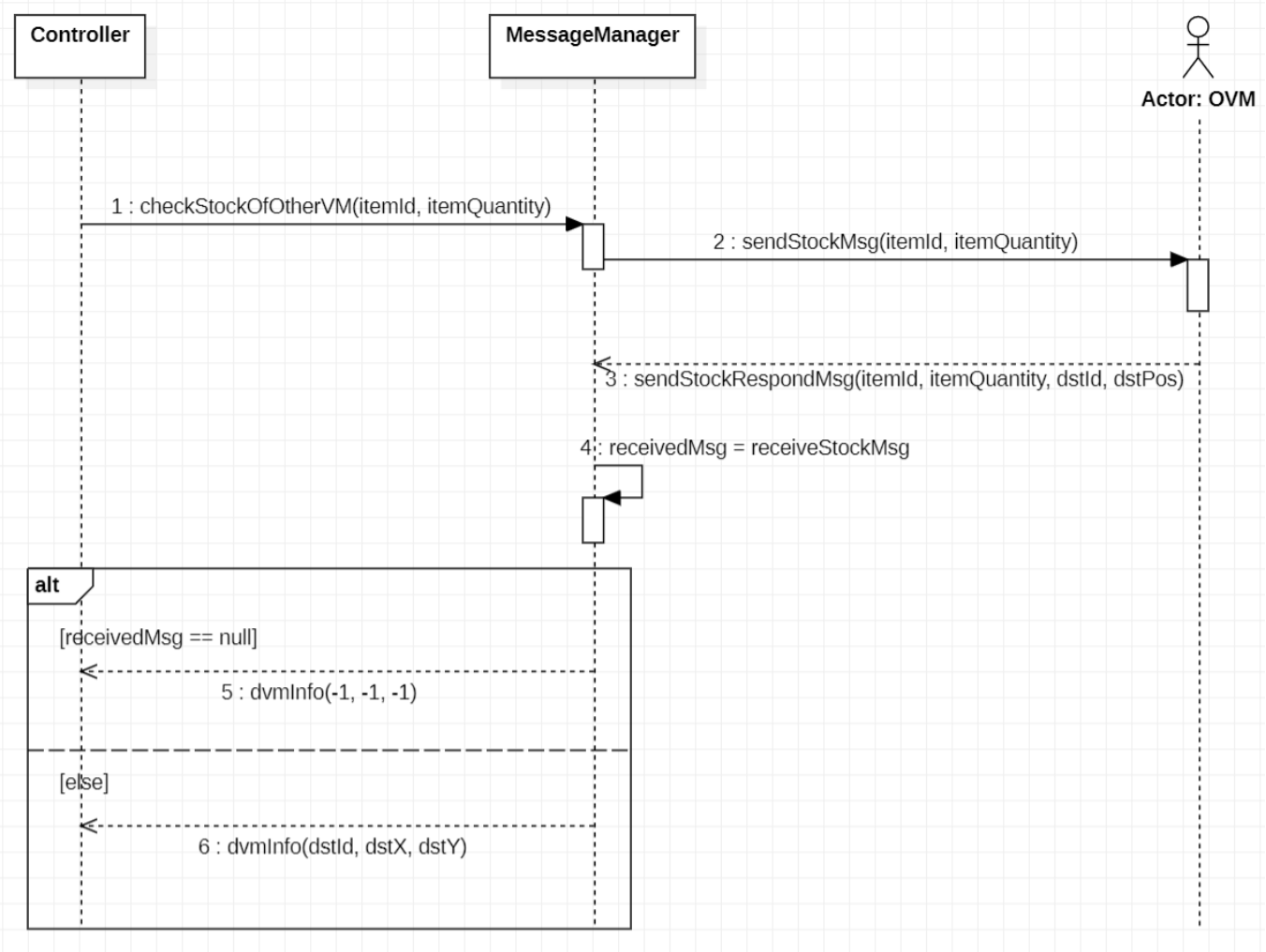
2144 DEFINE INTERACTION DIAGRAMS

- Use case 3. Payment



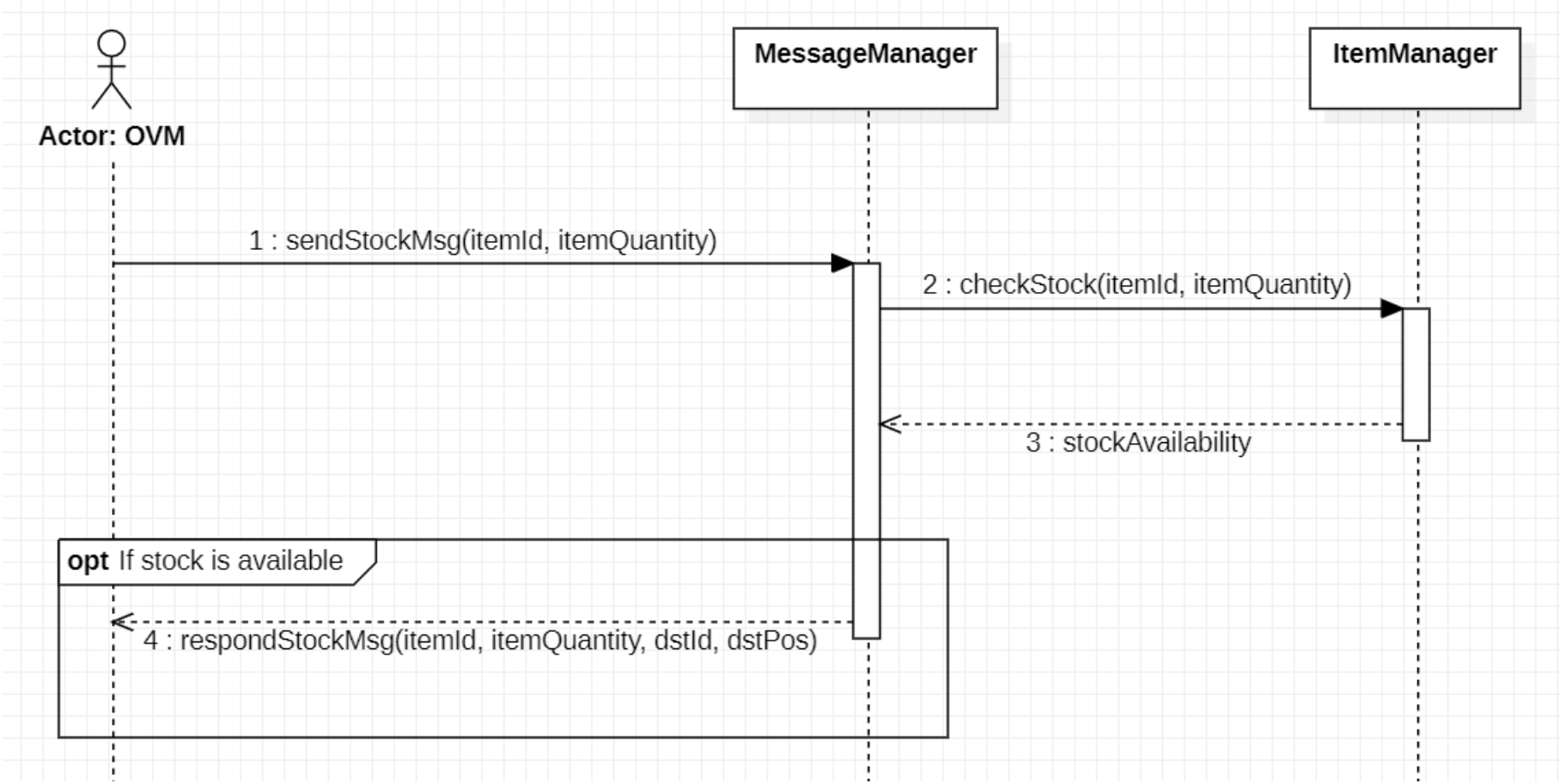
2144 DEFINE INTERACTION DIAGRAMS

- Use case 4. Request Stock of Other VM



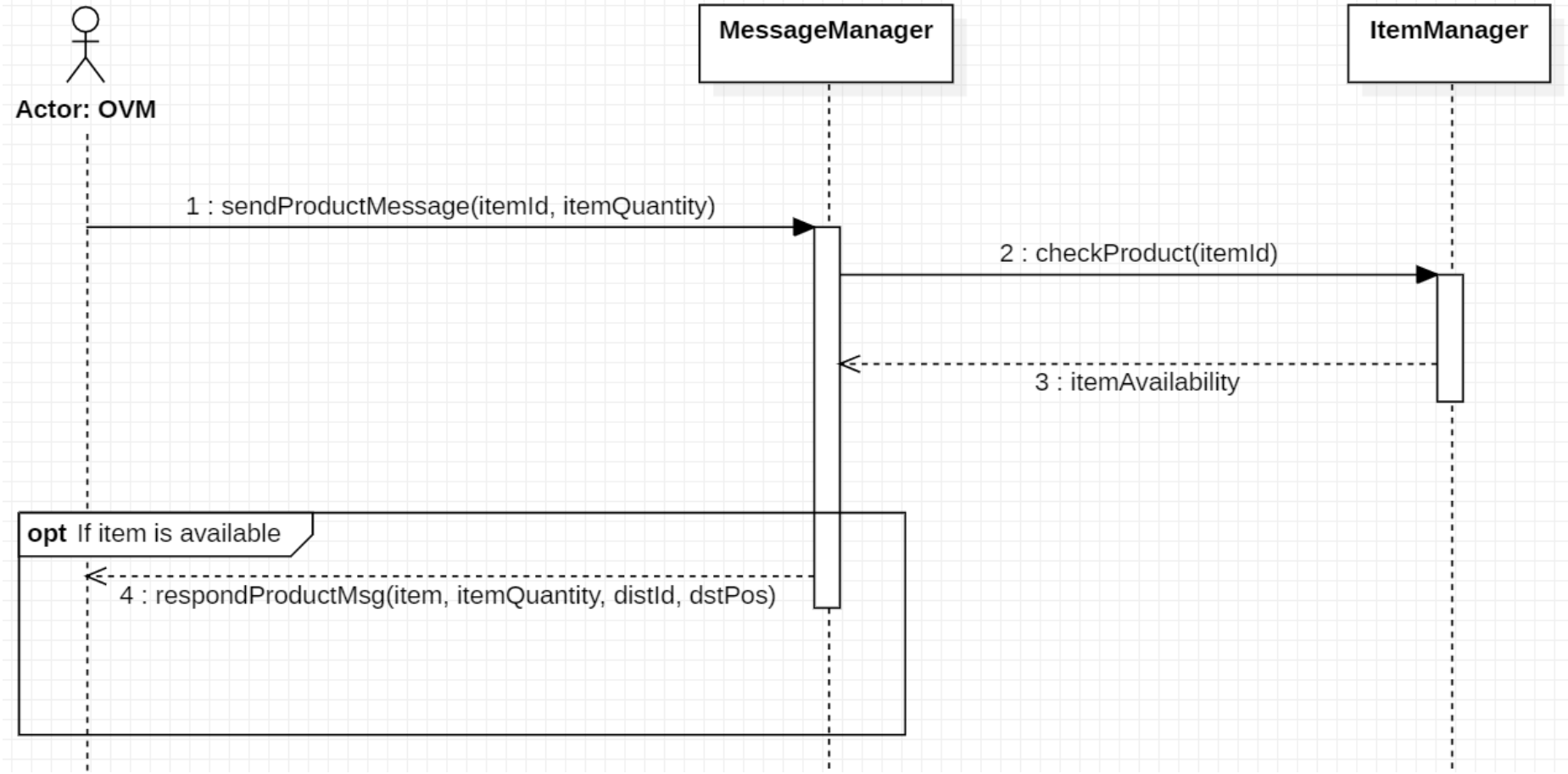
2144 DEFINE INTERACTION DIAGRAMS

- Use case 5. Provide Stock Information of Other VM



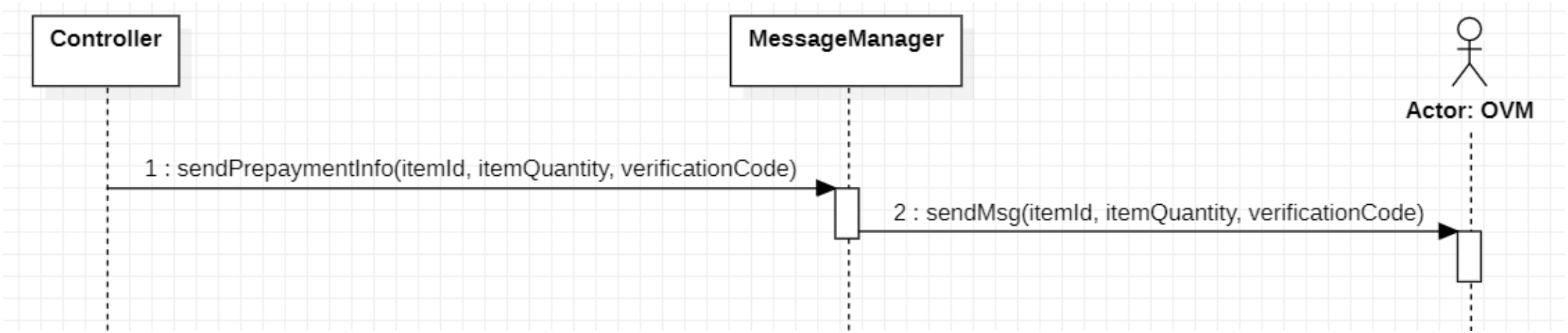
2144 DEFINE INTERACTION DIAGRAMS

- Use case 6. Provide Product Information of Other VM



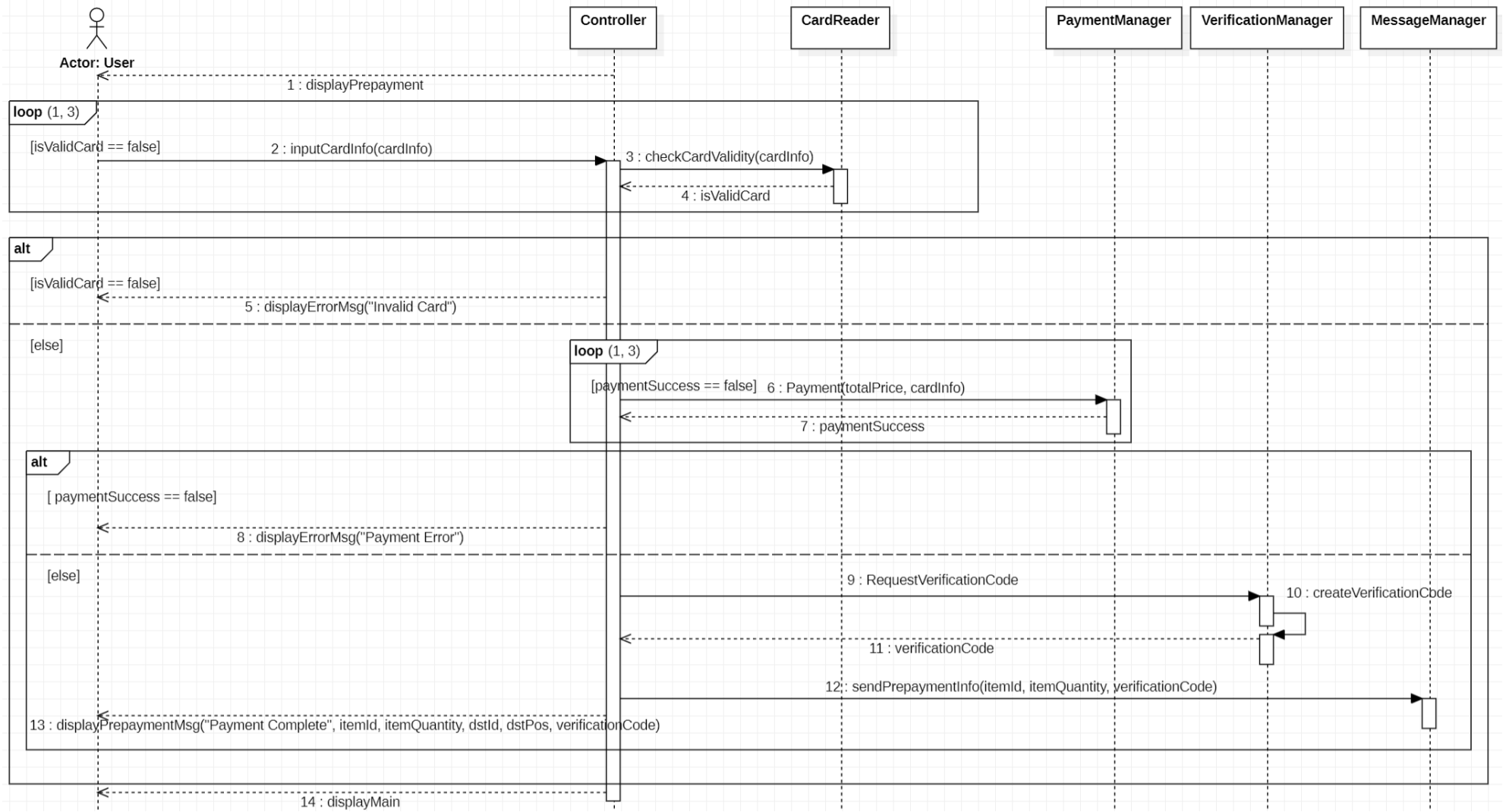
2144 DEFINE INTERACTION DIAGRAMS

- Use case 7. Provide Prepayment Information to the Other VM



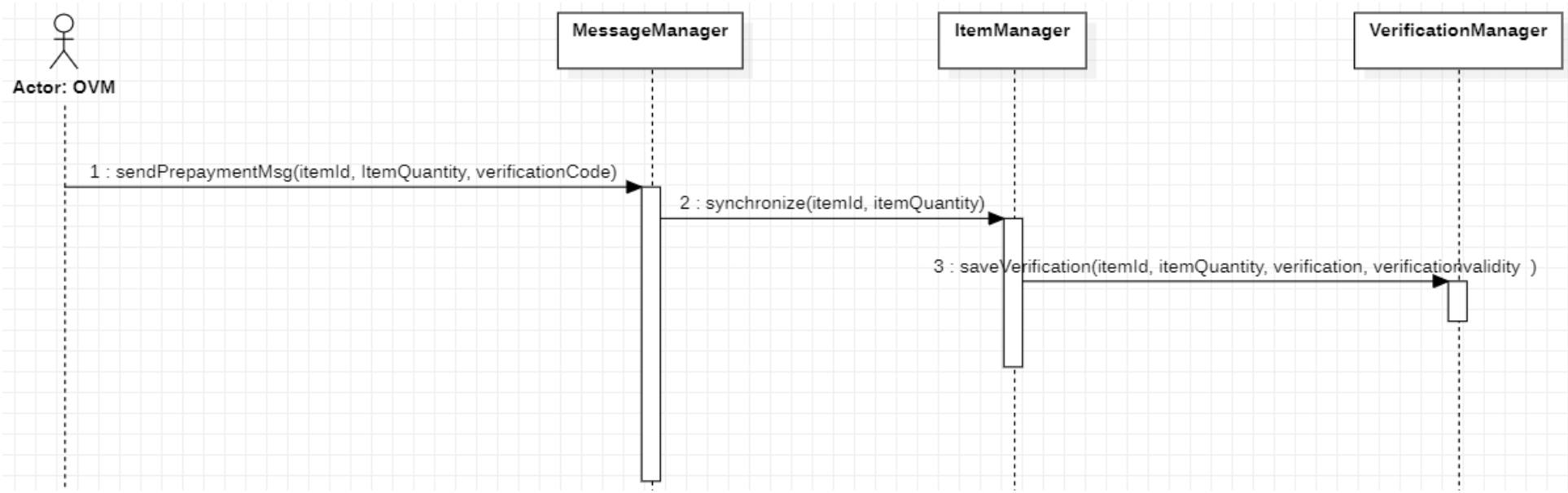
2144 DEFINE INTERACTION DIAGRAMS

- Use case 8. Prepayment



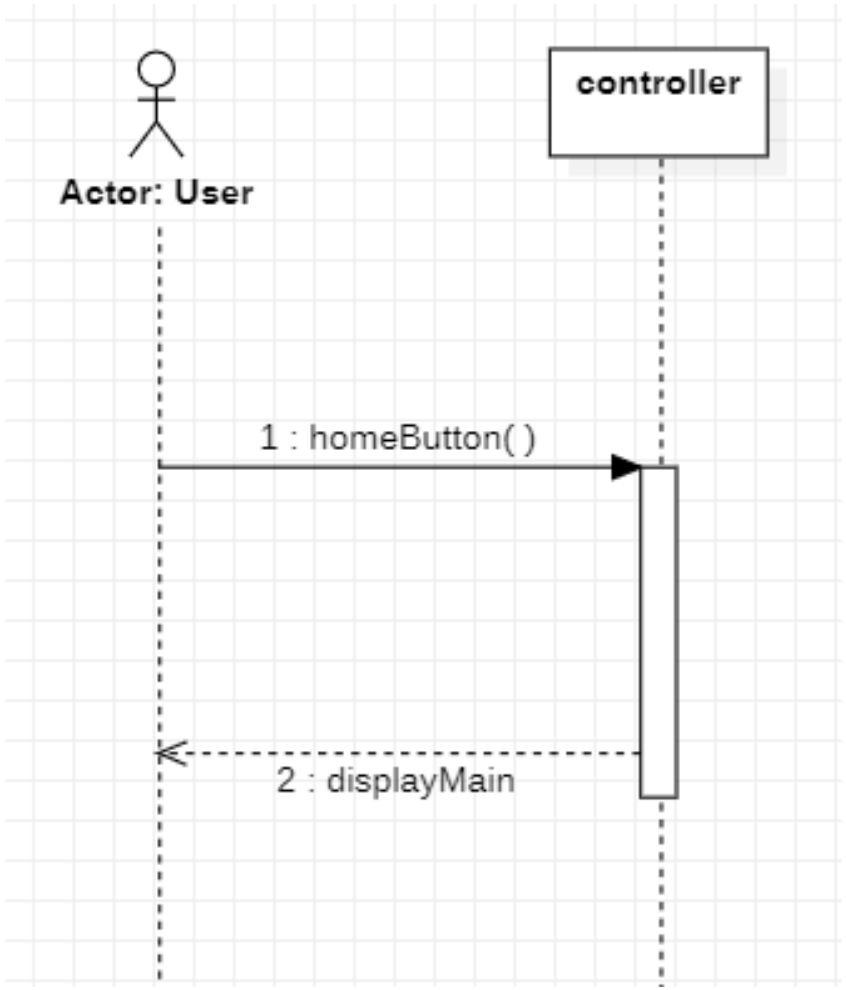
2144 DEFINE INTERACTION DIAGRAMS

- Use case 9. Synchronize Information of Prepayment



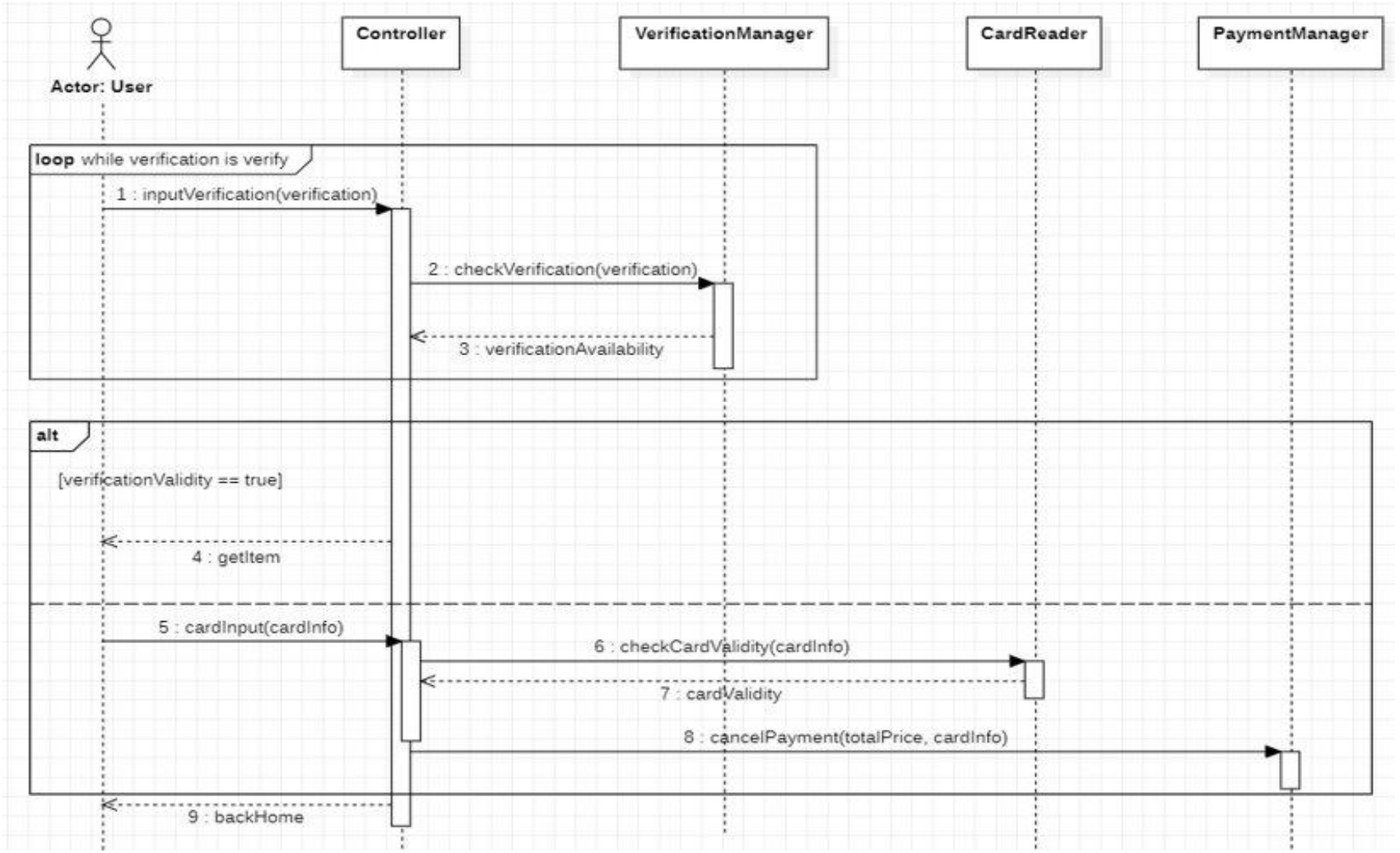
2144 DEFINE INTERACTION DIAGRAMS

- Use case 10. Go Main



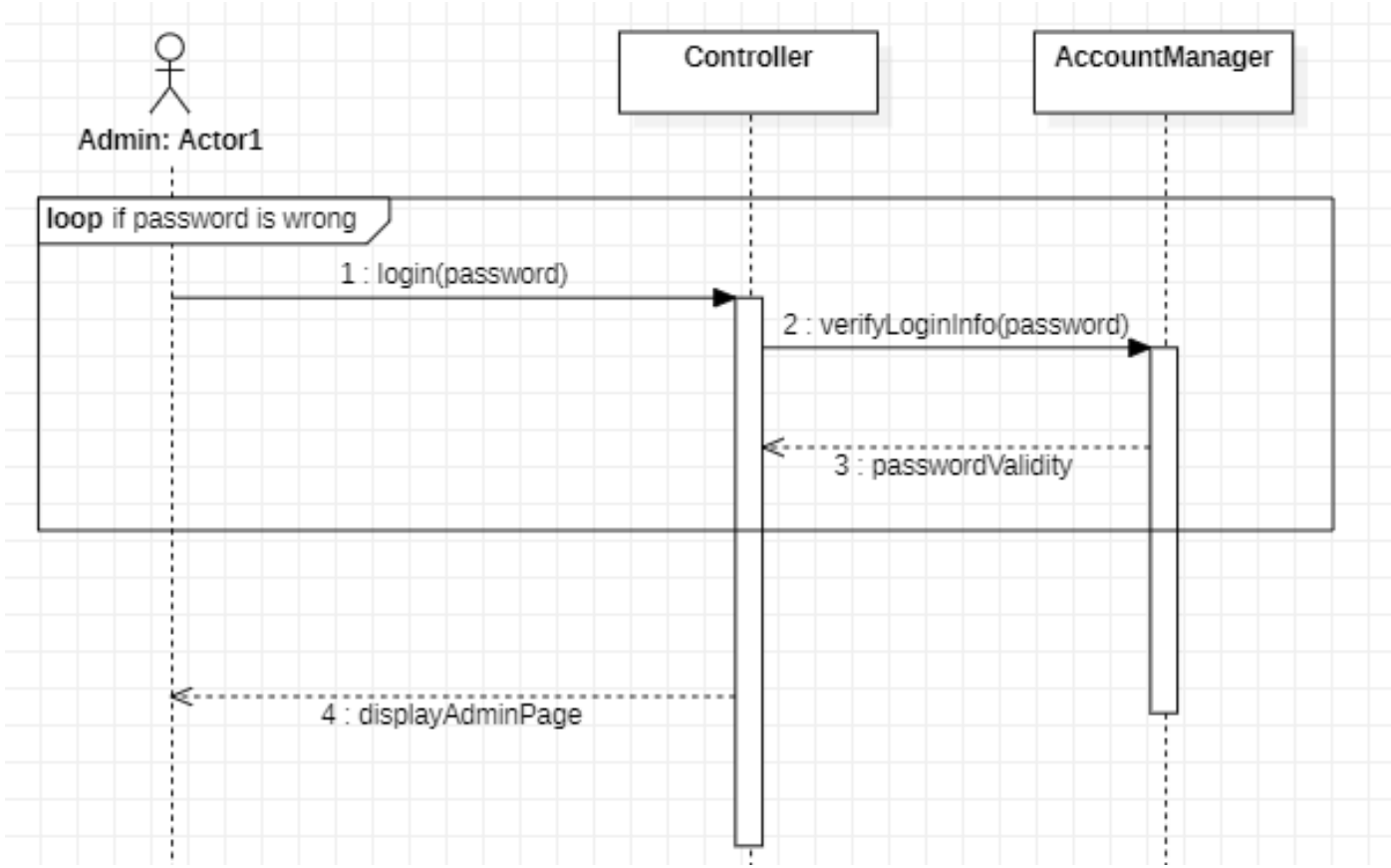
2144 DEFINE INTERACTION DIAGRAMS

- Use case 11. Confirm Verification



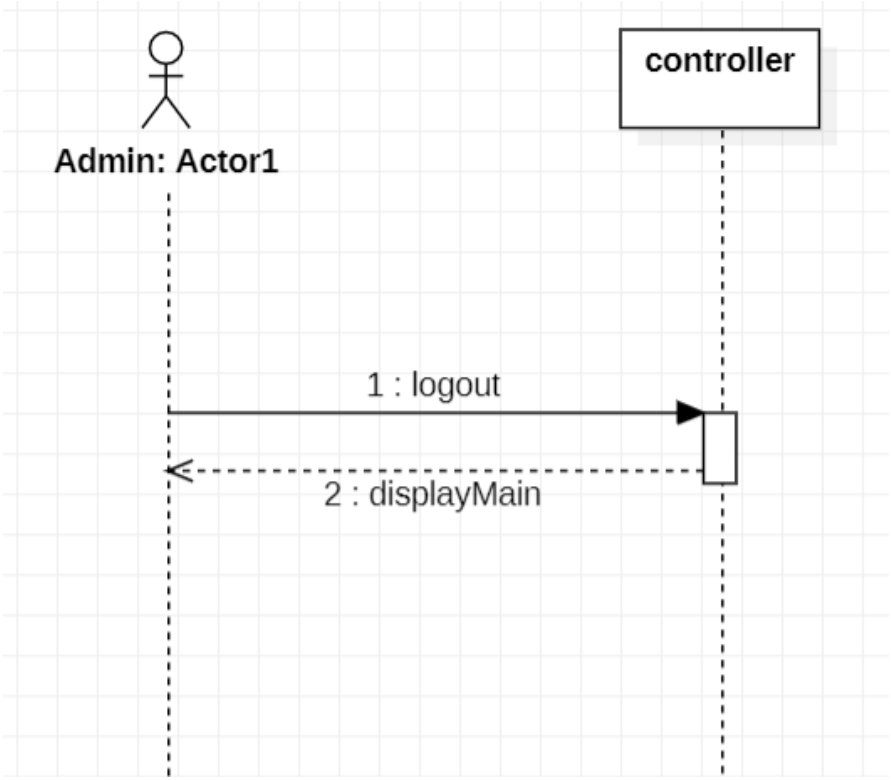
2144 DEFINE INTERACTION DIAGRAMS

- Use case 12. Administrator Login



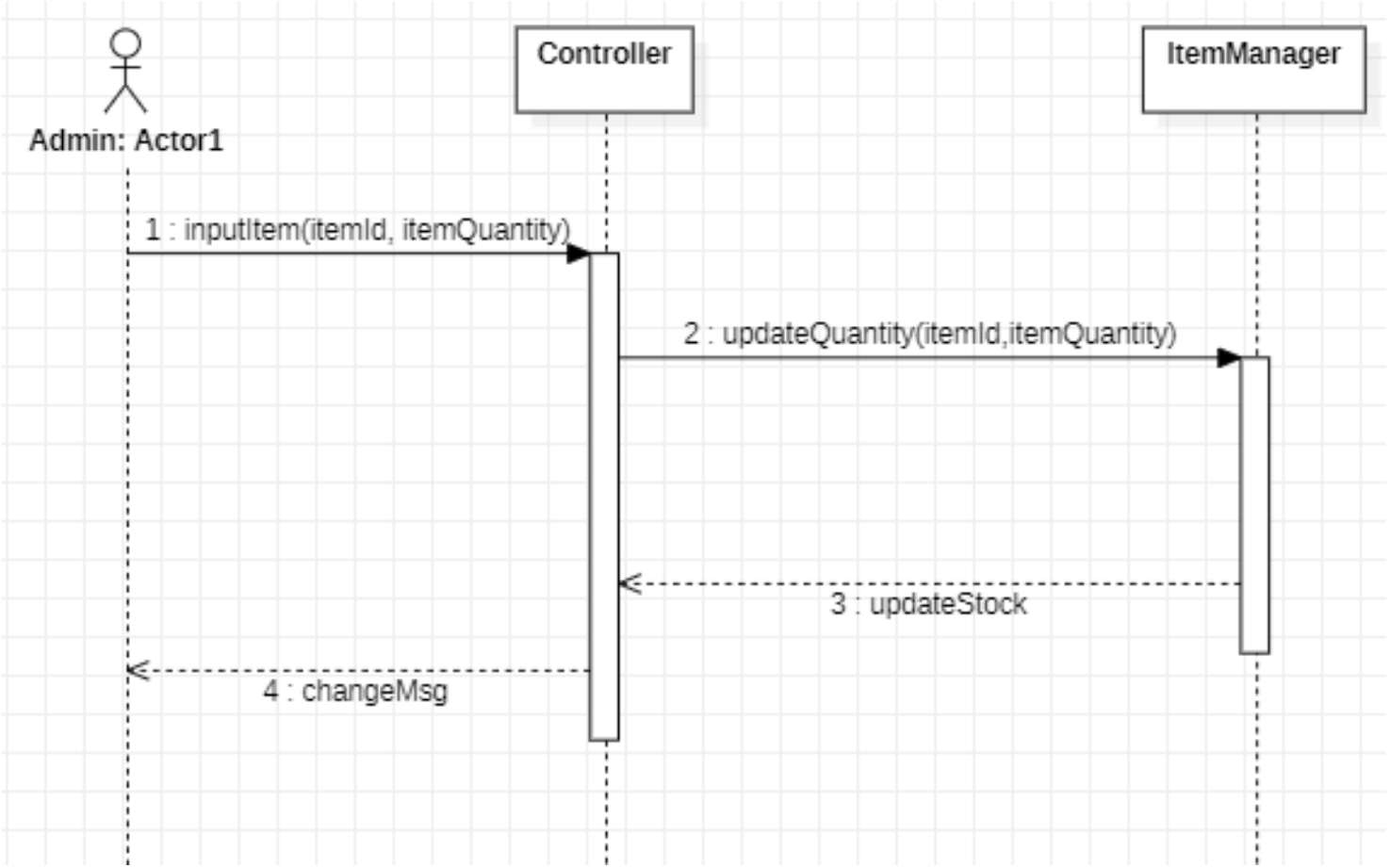
2144 DEFINE INTERACTION DIAGRAMS

- Use case 13. Administrator Logout

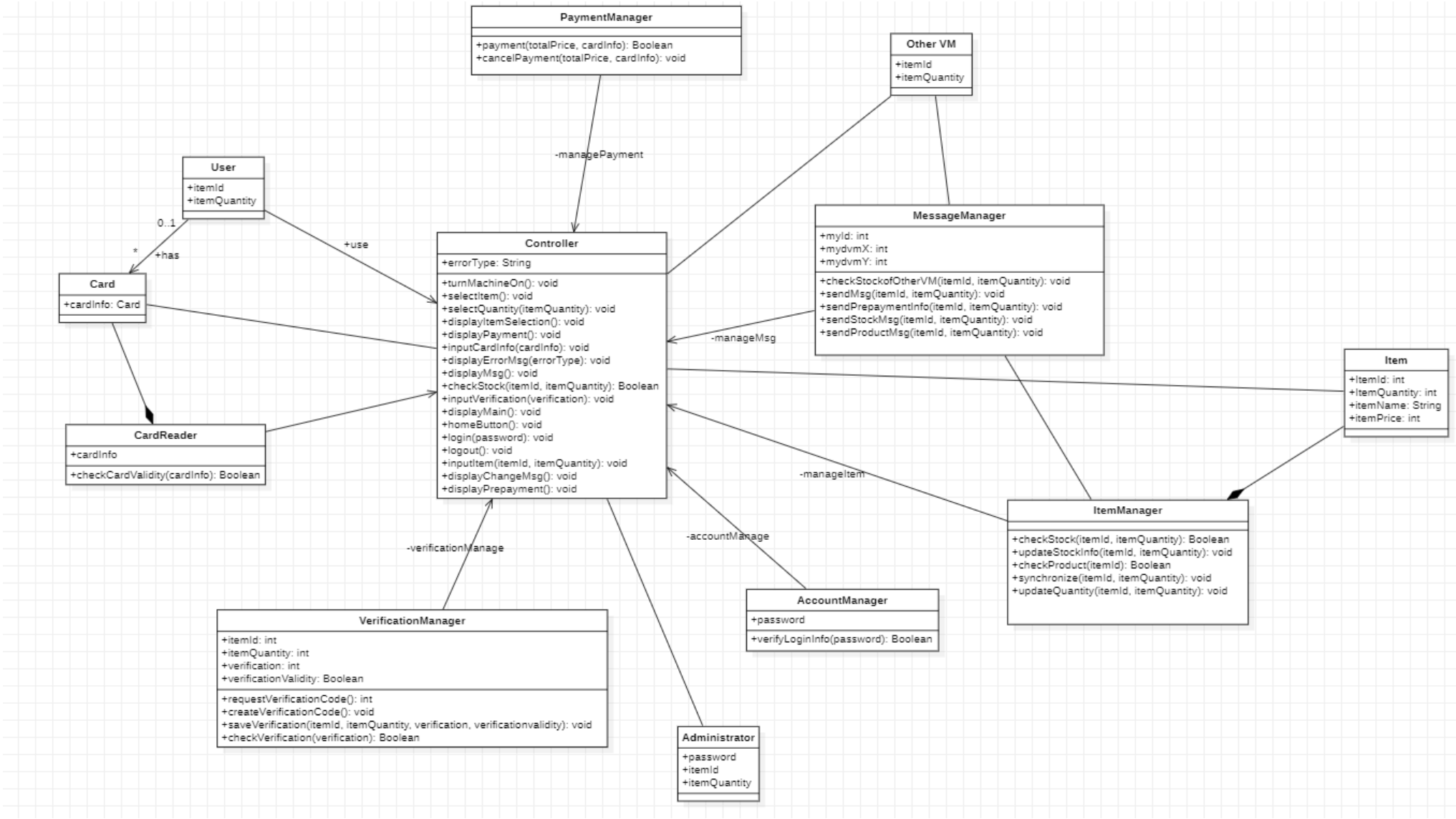


2144 DEFINE INTERACTION DIAGRAMS

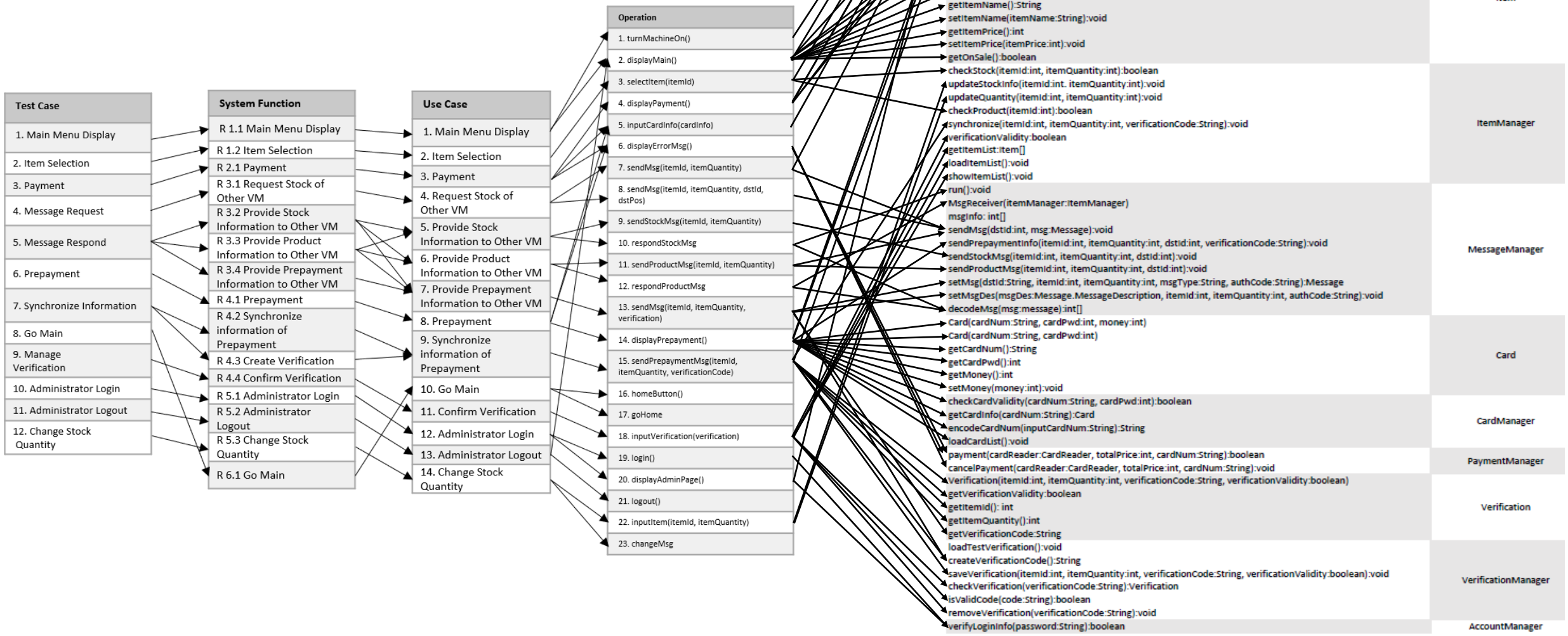
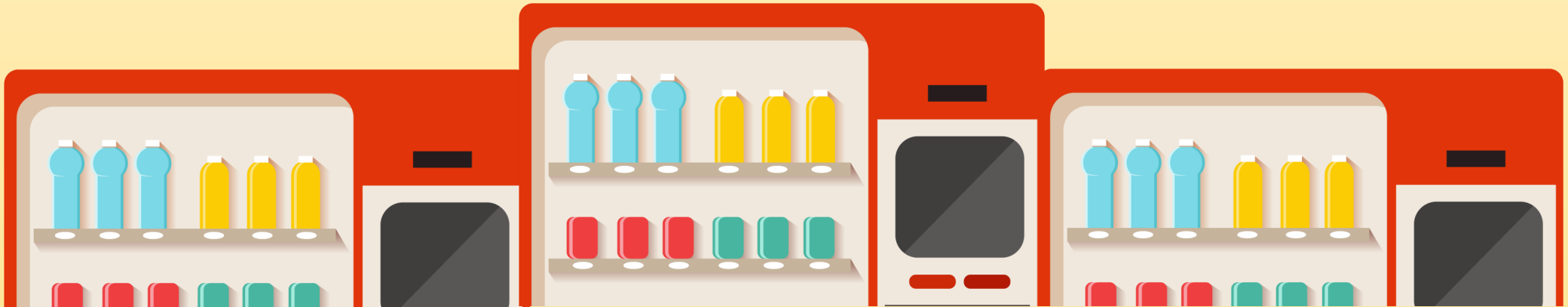
- Use case 14. Change Stock Quantity



2145 DEFINE DESIGN CLASS DIAGRAMS



TRACEABILITY TABLE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