

E-WALLET PAYMENT PROCESSING METHOD AND APPARATUS

TECHNICAL FIELD

[0001] The present invention relates to the field of data processing technologies,
5 and in particular, to an e-wallet payment processing method and apparatus.

BACKGROUND

[0002] At present, during international transactions in some regions, there exists a problem that an e-wallet payment experience link is excessively long, causing poor user experience.

SUMMARY

[0003] An objective of some embodiments of the present invention is to provide an e-wallet payment processing method and apparatus, a computer device, a computer-readable storage medium, and a computer program product, so as to improve user experience.

15 **[0004]** According to a first aspect, the present invention provides an e-wallet payment processing method, where the e-wallet payment processing method is applied to a payment gateway side and includes: receiving a payment request uploaded by a merchant side; determining an e-wallet available for payment based on the payment request, and pushing the available e-wallet to a user client; receiving a user-selected e-wallet and user identity certificate data that are uploaded by the user client, and sending
20 the user identity certificate data and the payment request to a user-selected e-wallet side; and receiving transaction result data returned by the user-selected e-wallet side, and sending the transaction result data to the merchant side.

[0005] According to a second aspect, the present invention provides an e-wallet
25 payment processing apparatus, located on a payment gateway side, including: a payment request receiving module, configured to receive a payment request uploaded by a merchant side; an e-wallet push module, configured to: determine an e-wallet available for payment based on the payment request, and push the available e-wallet to

a user client; a payment and identity data forwarding module, configured to: receive a user-selected e-wallet and user identity certificate data that are uploaded by the user client, and send the user identity certificate data and the payment request to a user-selected e-wallet side; and a transaction result data forwarding module, configured to:
5 receive transaction result data returned by the user-selected e-wallet side, and send the transaction result data to the merchant side.

[0006] According to a third aspect, the present invention provides an e-wallet payment processing method, where the e-wallet payment processing method is applied to an e-wallet side and includes: receiving user identity certificate data and a payment
10 request that are sent by a payment gateway side; determining the user account information based on the user identity certificate data; performing payment processing based on the user account information and the payment request to obtain payment transaction result data; and returning the payment transaction result data to the payment gateway side.

[0007] According to a fourth aspect, the present invention provides an e-wallet payment processing apparatus, located on an e-wallet side, including: a payment and identity data receiving module, configured to receive user identity certificate data and a payment request that are sent by a payment gateway side; an account information confirmation module, configured to determine user account information based on the
20 user identity certificate data; a payment processing module, configured to perform payment processing based on the user account information and the payment request to obtain payment transaction result data; and a transaction result data returning module, configured to return the payment transaction result data to the payment gateway side.

[0008] According to a fifth aspect, the present invention provides an e-wallet payment processing method, where the e-wallet payment processing method is applied to a user client and includes: receiving an available e-wallet pushed by a payment gateway side, and displaying the available e-wallet to a user; receiving an e-wallet selection instruction and a user identity certificate data submission instruction of the user, to obtain a user-selected e-wallet and user identity certificate data; and sending
25 the user-selected e-wallet and the user identity certificate data to the payment gateway side.
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[0009] According to a sixth aspect, the present invention provides an e-wallet payment processing apparatus, located on a user client, including: an e-wallet display module, configured to: receive an available e-wallet pushed by a payment gateway side,

and display the available e-wallet to a user; a user selection receiving module, configured to receive an e-wallet selection instruction and a user identity certificate data submission instruction of the user, to obtain a user-selected e-wallet and user identity certificate data; and a user selection forwarding module, configured to send the user-selected e-wallet and the user identity certificate data to the payment gateway side.

[0010] According to a seventh aspect, the present invention provides a computer device, located on a server, including a processor and a storage device that are suitable for implementing instructions, where the storage device stores a plurality of instructions, and the instructions are suitable for being loaded and executed by the processor to perform the e-wallet payment processing method according to the first aspect, the third aspect, and the fifth aspect.

[0011] According to an eighth aspect, the present invention provides a computer-readable storage medium, where the computer-readable storage medium stores a computer program, and the computer program is configured to perform the e-wallet payment processing method according to the first aspect, the third aspect, and the fifth aspect.

[0012] According to a ninth aspect, the present invention provides a computer program product, where the computer program product includes a computer program, and the computer program is executed by a processor to implement the e-wallet payment processing method according to the first aspect, the third aspect, and the fifth aspect.

[0013] The e-wallet payment processing method provided in some embodiments of the present invention is applied to a payment gateway side and includes: receiving a payment request uploaded by a merchant side; determining an e-wallet available for payment based on the payment request, and pushing the available e-wallet to a user client; receiving a user-selected e-wallet and user identity certificate data that are uploaded by the user client, and sending the user identity certificate data and the payment request to a user-selected e-wallet side; and receiving transaction result data returned by the user-selected e-wallet side, and sending the transaction result data to the merchant side. The payment gateway side implements data exchange between the user client, the merchant side, and the e-wallet side to implement transaction payment. In addition, the user identity certificate data is sent to the user-selected e-wallet side. Compared with an existing method in which a user logs in to an e-wallet and then

invokes the e-wallet to complete payment, a payment experience link is reduced, and user experience is improved.

BRIEF DESCRIPTION OF DRAWINGS

[0014] The following accompanying drawings are intended merely to give an example description and explanation of the present invention, and not to limit the scope of the present invention.

[0015] FIG. 1 is a schematic interaction flowchart of an e-wallet payment processing method that uses an e-wallet payment processing system according to some embodiments of the present invention;

[0016] FIG. 2 is a schematic diagram of an implementation process of an e-wallet payment processing method applied to a payment gateway side according to some embodiments of the present invention;

[0017] FIG. 3 is a schematic diagram of a specific implementation process of step 202 according to some specific embodiments of the present invention;

[0018] FIG. 4 is a schematic diagram of an implementation process of an e-wallet payment processing method applied to an e-wallet side according to some embodiments of the present invention;

[0019] FIG. 5 is a schematic diagram of an implementation process of an e-wallet payment processing method applied to a user client according to some embodiments of the present invention;

[0020] FIG. 6 is a schematic structural diagram of an e-wallet payment processing apparatus located on a payment gateway side according to some embodiments of the present invention;

[0021] FIG. 7 is a schematic structural diagram of an e-wallet payment processing apparatus located on an e-wallet side according to some embodiments of the present invention; and

[0022] FIG. 8 is a schematic structural diagram of an e-wallet payment processing apparatus located on a user client according to some embodiments of the present invention.

DESCRIPTION OF EMBODIMENTS

[0023] The following further describes this application in detail by using the accompanying drawings and some embodiments. These descriptions make features and advantages of this application clearer and more explicit.

5 **[0024]** The word "example" specially used herein indicates "used as an example or embodiment, or illustrative". Any embodiment described as "example" herein is not necessarily interpreted as superior to or better than other embodiments. Various aspects of some embodiments illustrated in the accompanying drawings may not be necessarily drawn to scale, unless otherwise specified.

10 **[0025]** In addition, technical features included in different implementations of this application described below may be combined with each other provided that they do not conflict with each other.

[0026] Before solutions provided in some embodiments of the present invention are described, technical nouns related to some embodiments of the present invention are first described.

15 **[0027]** Online cashier: similar to a cashier in real life. In some embodiments of the present invention, the online cashier means that after a user purchases a product and places an order over the Internet, the user enters a page on which a payment operation needs to be performed.

20 **[0028]** Payment scenario: an entire experience scenario in which a user performs a payment operation.

[0029] E-wallet: An e-wallet is a payment tool commonly used by a user for online shopping. An APP is a common form of the e-wallet.

[0030] Unified payment: Regardless of which e-wallet APP the user uses, the payment experience is consistent.

25 **[0031]** During current cross-region international transactions such as traveling abroad, payment transactions need to be conducted locally. For such cross-border online transactions, users can make payment by using international credit cards. However, there are limitations on the use of credit cards, or even international credit card payments are not supported in some regions, such as Southeast Asia. In this case,
30 a user can only use a locally supported e-wallet APP to make transaction payment. However, the user needs to use one APP for each e-wallet, and needs to log in to the APP before payment. After a failure to make payment by using one e-wallet APP, the user needs to start another e-wallet APP. This process is repeatedly performed. Alternatively, the user does not know the e-wallet APP that can be used for the current

transaction, and the user needs to attempt the payment by using e-wallet APPs one by one. As a result, a problem of an excessively long payment experience link occurs in a process of payment by the user, causing poor user experience.

[0032] To resolve the foregoing problem, some embodiments of the present invention provide an e-wallet payment processing system. FIG. 1 is a schematic interaction flowchart of an e-wallet payment processing method that uses an e-wallet payment processing system. As shown in the figure, the system includes a merchant 01, a user 02, a payment gateway 03, and an e-wallet 04. The merchant and the user generally refer to terminal devices used, for example, terminal devices such as a smartphone, a computer, and an intelligent device. The payment gateway is an interface between a financial network system such as a bank and an Internet network, and is configured to process payment information of a merchant, a payment instruction of a customer, and the like.

[0033] As shown in FIG. 1, the method includes:

[0034] Step 101: A merchant side uploads a payment request.

[0035] Step 102: A payment gateway side receives the payment request uploaded by the merchant side, and the payment gateway side determines an e-wallet available for payment based on the payment request, and pushes the available e-wallet to a user client.

[0036] Step 103: The user client receives an available e-wallet pushed by the payment gateway side, and displays the available e-wallet to a user.

[0037] Step 104: The user client receives an e-wallet selection instruction and a user identity certificate data submission instruction of the user, to obtain a user-selected e-wallet and user identity certificate data, and sends the user-selected e-wallet and the user identity certificate data to the payment gateway side.

[0038] Step 105: The payment gateway side receives a user-selected e-wallet and user identity certificate data that are uploaded by the user client, and sends the user identity certificate data and the payment request to a user-selected e-wallet side.

[0039] Step 106: The e-wallet side receives the user identity certificate data and the payment request that are sent by the payment gateway side; the e-wallet side determines user account information based on the user identity certificate data; and the e-wallet side performs payment processing based on the user account information and the payment request to obtain payment transaction result data.

[0040] Step 107: The e-wallet side returns the payment transaction result data to the payment gateway side.

[0041] Step 108: The payment gateway side receives the transaction result data returned by the user-selected e-wallet side, and sends the transaction result data to the

5 merchant side.

[0042] An e-wallet payment processing system including a payment gateway is constructed, and data exchange between a merchant side, a user client, and an e-wallet side is uniformly processed. An aggregated and unified payment interface is constructed, so that a unified payment function can be provided, and a user can implement transaction payment without logging in to the e-wallet, thereby reducing operation complexity for the user and improving user experience.

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[0043] In some specific embodiments, first, the merchant side uploads a payment request, that is, information about the current transaction payment, such as account information of a payee (a merchant) and a payment amount.

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[0044] Next, the payment gateway side receives the payment request uploaded by the merchant side, determines an e-wallet available for payment based on the payment request, and pushes the available e-wallet to the user client. Based on the payment request, all available e-wallets are pushed to the user client for use by the user, so as to ensure that the user has a maximum selection space, support a plurality of payment tools, and facilitate user payment to the greatest extent.

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[0045] Then, the user client receives an available e-wallet pushed by the payment gateway side, and displays the available e-wallet to the user for selection by the user. After the user completes the selection and submits the corresponding identity certificate data, the user client receives an e-wallet selection instruction and a user identity certificate data submission instruction of the user, to obtain a user-selected e-wallet and user identity certificate data, and sends the user-selected e-wallet and the user identity certificate data to the payment gateway side.

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[0046] The payment gateway side receives a user-selected e-wallet and user identity certificate data that are uploaded by the user client, and sends the user identity certificate data and the payment request to a user-selected e-wallet side. The e-wallet side receives the user identity certificate data and the payment request that are sent by the payment gateway side. The e-wallet side needs to determine the user account information based on the user identity certificate data. To ensure security of a transaction, the e-wallet needs to confirm the transaction with the user. Therefore, the

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interaction procedure of the payment processing method in some specific embodiments further includes the following steps:

[0047] Step 109: The e-wallet side determines payment information based on the payment request, and sends the payment information to a user client corresponding to a user account.

[0048] Step 110: The user client receives the payment information sent by the e-wallet side, and displays the payment information to the user.

[0049] Step 111: The user client receives a payment confirmation instruction uploaded by the user, and sends the payment confirmation instruction to the e-wallet side.

[0050] Step 112: The e-wallet side receives the payment confirmation instruction from the user client, and performs payment processing to obtain the payment transaction result data.

[0051] Then, the e-wallet side returns the payment transaction result data to the payment gateway side, and the payment gateway side receives the transaction result data returned by the user-selected e-wallet side, and sends the transaction result data to the merchant side. The merchant may choose to display the transaction result directly to the user, or send the transaction payment result to the user client. The user client displays the transaction payment result to the user, so as to ensure a smooth transaction process and a quick transaction success, and ensure a consensus of the transaction result.

[0052] To describe in more detail the e-wallet payment processing procedure provided in some embodiments, some embodiments of the present invention further provide an e-wallet payment processing method, so as to improve user experience. The method is applied to a payment gateway side. As shown in FIG. 2, the method includes the following steps:

[0053] Step 201: Receive a payment request uploaded by a merchant side.

[0054] Step 202: Determine an e-wallet available for payment based on the payment request, and push the available e-wallet to a user client.

[0055] Step 203: Receive a user-selected e-wallet and user identity certificate data that are uploaded by the user client, and send the user identity certificate data and the payment request to a user-selected e-wallet side.

[0056] Step 204: Receive transaction result data returned by the user-selected e-wallet side, and send the transaction result data to the merchant side.

[0057] In some specific embodiments, the method includes: receiving a payment request uploaded by a merchant side; determining an e-wallet available for payment based on the payment request, and pushing the available e-wallet to a user client; receiving a user-selected e-wallet and user identity certificate data that are uploaded by the user client, and sending the user identity certificate data and the payment request to a user-selected e-wallet side; and receiving transaction result data returned by the user-selected e-wallet side, and sending the transaction result data to the merchant side. The payment gateway side is disposed to implement data exchange between the user client, the merchant side, and the e-wallet side to implement transaction payment. In addition, the user identity certificate data is sent to the user-selected e-wallet side. Compared with an existing method in which a user logs in to an e-wallet and then invokes the e-wallet to complete payment, a payment experience link is reduced, and user experience is improved.

[0058] The payment gateway side receives the payment request uploaded by the merchant side, and after receiving the payment request, the payment gateway side determines an e-wallet available for payment based on the payment request, and pushes the available e-wallet to the user client. As shown in FIG. 3, a specific implementation process includes the following steps:

[0059] Step 301: Determine, based on the payment request, an Internet Protocol address (IP address) in which payment is located.

[0060] Step 302: Determine the e-wallet available for payment based on the Internet Protocol address in which payment is located.

[0061] The IP address of the current payment may be determined from the payment request, so as to determine the e-wallet that can be used for the current payment. The e-wallet available for payment is determined and then is pushed to the user client for selection by the user.

[0062] Then, the payment gateway side receives a user-selected e-wallet and user identity certificate data that are uploaded by the user client, and sends the user identity certificate data and the payment request to a user-selected e-wallet side.

[0063] In some embodiments, the user identity certificate data includes a wallet identifier, that is, a user ID number of the e-wallet. The wallet identifier is unique for each user of each e-wallet, and is a unique identifier of the e-wallet of the user. In some examples, a mobile phone number may be used as the wallet identifier. During specific implementation, the user-selected e-wallet uploaded by the user client is received, the

wallet identifier uploaded by the user client is received, and the wallet identifier and the payment request are sent to the user-selected e-wallet side. The unique wallet identifier is sent to the e-wallet side to identify the user identity without requiring the user to log in again on the user client.

5 **[0064]** In some embodiments, the user identity certificate data includes identity information token data. During specific implementation, the user-selected e-wallet uploaded by the user client is received, and a two-dimensional code corresponding to the user-selected e-wallet is displayed to the user client. The identity information token data sent by the user client is received, and the identity information token data and the
10 payment request are sent to the user-selected e-wallet side. When the user parses the two-dimensional code corresponding to the e-wallet by using the user client, identity information token data is generated to represent the user identity, and is also unique to the user. The identity information token data is sent to the e-wallet side, and the e-wallet can confirm the user identity. In this process, in a word, the payment gateway provides
15 the two-dimensional code of the e-wallet to the user, and the user can directly invoke the e-wallet through code scanning by using the terminal device. This implementation is applicable to a highly secure e-wallet. To avoid leakage of user information, the user does not want another party to know user information such as a wallet identifier of some e-wallets. Using this implementation can avoid leakage of user information, and
20 improve security of privacy information.

[0065] After the user identity certificate data and the payment request are sent to the user-selected e-wallet side, transaction result data returned by the user-selected e-wallet side is received, and the transaction result data is sent to the merchant side. The transaction result data refers to information about a transaction result, such as whether
25 a transaction succeeds, a total payment amount, and a failure cause if the transaction fails.

[0066] Some embodiments of the present invention further provide an e-wallet payment processing method, so as to improve user experience. The method is applied to an e-wallet side. As shown in FIG. 4, the method includes the following steps:

30 **[0067]** Step 401: Receive user identity certificate data and a payment request that are sent by a payment gateway side.

[0068] Step 402: Determine user account information based on the user identity certificate data.

[0069] Step 403: Perform payment processing based on the user account information and the payment request to obtain payment transaction result data.

[0070] Step 404: Return the payment transaction result data to the payment gateway side.

5 **[0071]** In some specific embodiments, the user identity certificate data and the payment request that are sent by the payment gateway side are received; the user account information is determined based on the user identity certificate data; payment processing is performed based on the user account information and the payment request to obtain the payment transaction result data; and the payment transaction result data is
10 returned to the payment gateway side. Transaction payment is implemented by using data sent by the payment gateway. The user identity is determined by using the unique user identity certificate data, so that transaction payment can be accurately completed without error.

[0072] During specific implementation, the user identity certificate data and the
15 payment request that are sent by the payment gateway side are received. During specific implementation, the wallet identifier sent by the payment gateway side may be received, and the user account information, such as a user account number, is determined based on the wallet identifier. The identity information token data may also be received, and the user account information, such as a user account number, is determined based on
20 the identity information token data.

[0073] Then, payment processing is performed based on the user account information and the payment request, and a corresponding payment amount is transferred from the user account to the merchant account to obtain the payment transaction result data, that is, information about the payment transaction result.

25 **[0074]** The determining user account information based on the user identity certificate data includes:

[0075] determining the user account information based on the user identity certificate data; and

[0076] determining, based on the user account information, whether a user account
30 is available.

[0077] To ensure successful transaction payment at the first time, in some specific embodiments, first, the user account information is determined based on the user identity certificate data, and whether the user account is available is determined based on the user account information. If the account is disabled or a balance is zero, a

determining result is directly returned to the payment gateway side, indicating that the user account is unavailable. The payment gateway side then notifies the user client to prompt the user to replace the payment tool.

[0078] Correspondingly, the performing payment processing based on the user account information and the payment request to obtain payment transaction result data includes: if it is determined that the user account is available, performing payment processing based on the user account information and the payment request to obtain the payment transaction result data.

[0079] To further ensure transaction security, during specific implementation, the performing payment processing based on the user account information and the payment request to obtain payment transaction result data includes:

[0080] if it is determined that the user account is available, determining payment information based on the payment request;

[0081] sending the payment information to a user client corresponding to the user account; and

[0082] receiving a payment confirmation instruction from the user client, and performing payment processing to obtain the payment transaction result data.

[0083] In other words, the user needs to confirm the payment information of the transaction. If the user does not confirm the payment information, the current transaction payment fails, and failure information is sent to the payment gateway side. Then, the payment gateway side notifies the merchant side in a timely manner.

[0084] Some embodiments of the present invention further provide an e-wallet payment processing method, so as to improve user experience. The method is applied to a user client. As shown in FIG. 5, the method includes the following steps:

[0085] Step 501: Receive an available e-wallet pushed by a payment gateway side, and display the available e-wallet to a user.

[0086] Step 502: Receive an e-wallet selection instruction and a user identity certificate data submission instruction of the user, to obtain a user-selected e-wallet and user identity certificate data.

[0087] Step 503: Send the user-selected e-wallet and the user identity certificate data to the payment gateway side.

[0088] In some specific embodiments of the present invention, the method includes: receiving an available e-wallet pushed by a payment gateway side, and displaying the available e-wallet to a user; receiving an e-wallet selection instruction and a user

identity certificate data submission instruction of the user, to obtain a user-selected e-wallet and user identity certificate data; and sending the user-selected e-wallet and the user identity certificate data to the payment gateway side. The available e-wallet is displayed to the user for selection by the user, the user identity certificate data provided
5 by the user that matches the selected e-wallet is received and forwarded to the payment gateway side to ensure that the transaction payment is accurately completed without error. The user does not need to provide complex information such as an account number and a password, thereby reducing complexity of a user operation and improving user experience.

10 **[0089]** First, after the available e-wallet pushed by the payment gateway side is received, a logo of the available e-wallet is rendered on an online cashier page for selection by the user.

[0090] The user identity certificate data may be a wallet identifier. In this case, the e-wallet selection instruction of the user is received, and an ID identifier filling page of
15 the e-wallet is displayed to the user. After the user fills in a wallet identifier, the wallet identifier filled in by the user is received, and sent to the payment gateway side.

[0091] The user identity certificate data may be identity information token data. In this case, after the e-wallet selection instruction of the user is received, a two-dimensional code for invoking the e-wallet is displayed to the user. After tapping and
20 identifying the two-dimensional code, the user directly sends generated identity information token data to the payment gateway side. A process is similar to logging in to communication software on a PC side and scanning the two-dimensional code of the PC side by using a mobile terminal, so as to implement direct login, without entering an account number and a password.

25 **[0092]** In some specific embodiments, to improve transaction security, the user further needs to confirm the transaction content again. Therefore, on the basis of the steps shown in FIG. 5, the e-wallet payment processing method provided in some specific embodiments further includes:

[0093] receiving payment information sent by an e-wallet side, and displaying the
30 payment information to the user; and

[0094] receiving a payment confirmation instruction uploaded by the user, and sending the payment confirmation instruction to the e-wallet side.

[0095] In some embodiments, to ensure that the user learns of a transaction payment result in a timely manner, the method further includes: receiving a transaction

payment result sent by a merchant side, and displaying the transaction payment result to the user.

[0096] To describe in more detail the e-wallet payment processing method provided in some embodiments of the present invention, some specific instances are provided herein for explanation and description. These specific instances are implemented based on the e-wallet payment processing system provided in some embodiments, and a payment gateway is established.

[0097] An implementation is as follows:

[0098] The payment gateway obtains an IP address of the user on an order placement page on the merchant side, and renders all available wallet logos in the current area.

[0099] To reduce information entered by the user and provide a prompt to the user, a default field of the wallet identifier is displayed in synchronization with the wallet logo. For example, when a mobile phone number is used as the eWallet ID (e-wallet identifier), an area code of the mobile phone number for the eWallet ID is directly displayed, and does not need to be entered by the user.

[0100] The payment gateway sends the e-wallet identifier to the e-wallet side to determine whether the e-wallet identifier is available. The e-wallet side identifies the user account corresponding to the eWallet ID.

[0101] The e-wallet sends a payment confirmation notification to the corresponding user account.

[0102] The user completes the payment confirmation, and completes payment through tapping.

[0103] The e-wallet side synchronizes the payment completion information to the payment gateway, and the payment gateway synchronizes the payment completion information to the merchant.

[0104] The merchant side obtains the payment success information on the payment page and displays the payment success information to the user.

[0105] Another implementation is as follows:

[0106] The payment gateway obtains an IP address of the user on an order placement page on the merchant side, and renders all available e-wallet logos in the current area.

[0107] A QR code (two-dimensional code) picture of an eWallet (e-wallet) for code scanning payment is displayed in synchronization with the e-wallet logo.

[0108] The e-wallet side renders a page displayed after the user has successfully scanned the code, so that order placement and payment information on the merchant side can be obtained, and accuracy of the payment information is confirmed with the payment gateway.

5 **[0109]** The user confirms the transaction in the e-wallet and completes payment.

[0110] The wallet side synchronizes the payment completion information to the payment gateway, and the payment gateway synchronizes the payment completion information to the merchant.

10 **[0111]** The merchant side obtains the payment success information on the payment page and displays the payment success information to the user.

[0112] In addition, to facilitate a user operation, operation procedures for two types of devices are provided. The first implementation is used as an example.

15 **[0113]** One is a payment procedure for a mobile terminal (mobile phone). After the user selects a payment gateway channel on an online cashier platform, a selection box of an e-wallet and an ID field input box are displayed by default. The user selects an e-wallet that needs to be used, and then enters a corresponding Wallet ID. After the user confirms and submits the information through tapping, an e-wallet APP page is displayed. On this page, the user confirms information such as a transaction amount through tapping. After this page learns that payment succeeds, a merchant payment
20 page is displayed to obtain a prompt indicating that payment succeeds.

[0114] The other one is a payment procedure for a PC side (web page). After the user selects a payment gateway channel on an online cashier platform, a selection box of an e-wallet and an ID field input box are displayed by default. The user selects an e-wallet that needs to be used, and then enters a corresponding Wallet ID. After the user
25 confirms and submits the information through tapping, to ensure transaction security, if the e-wallet APP has not been used on the PC side, a pop-up window is displayed on the web page to notify the user that payment confirmation needs to be performed on the mobile terminal. After receiving a notification on the mobile terminal, the user taps the notification to jump to the e-wallet APP page. On this page, the user confirms
30 information such as a transaction amount through tapping. After this page learns that payment succeeds, a merchant payment page is displayed to obtain a prompt indicating that payment succeeds, and the prompt indicating that payment succeeds is synchronously displayed on the web page.

[0115] It can be understood that, by using the payment gateway channel, the user can use a plurality of e-wallet APPs, and can provide a plurality of payment methods. A variety of application scenarios meet current habits of using a mobile wallet, and can train a payment mind of the user for using the payment gateway. The user can complete
5 payment only by filling in a simple ID field or identifying a two-dimensional code, thereby reducing operation complexity and a payment experience link, and providing better user experience.

[0116] Based on the same inventive concept, some embodiments of the present invention further provide an e-wallet payment processing apparatus. A problem
10 resolving principle of the apparatus is similar to that of the e-wallet payment processing method, and no repeated description is provided. The e-wallet payment processing apparatus is located on a payment gateway side. A specific structure is shown in FIG. 6, including:

[0117] a payment request receiving module 601, configured to receive a payment
15 request uploaded by a merchant side;

[0118] an e-wallet push module 602, configured to: determine an e-wallet available for payment based on the payment request, and push the available e-wallet to a user client;

[0119] a payment and identity data forwarding module 603, configured to: receive
20 a user-selected e-wallet and user identity certificate data that are uploaded by the user client, and send the user identity certificate data and the payment request to a user-selected e-wallet side; and

[0120] a transaction result data forwarding module 604, configured to: receive
25 transaction result data returned by the user-selected e-wallet side, and send the transaction result data to the merchant side.

[0121] In some specific embodiments, the e-wallet push module 602 is specifically configured to:

[0122] determine, based on the payment request, an Internet Protocol address in which payment is located; and

30 **[0123]** determine the e-wallet available for payment based on the Internet Protocol address in which payment is located.

[0124] In some embodiments, the user identity certificate data includes a wallet identifier; and correspondingly, the payment and identity data forwarding module 603 is specifically configured to:

[0125] send the wallet identifier and the payment request to the user-selected e-wallet side.

[0126] In some embodiments, the user identity certificate data includes identity information token data; and correspondingly, the payment and identity data forwarding module 603 is specifically configured to:

[0127] receive the user-selected e-wallet uploaded by the user client, and display a two-dimensional code corresponding to the user-selected e-wallet to the user client; and

[0128] receive the identity information token data sent by the user client, and send the identity information token data and the payment request to the user-selected e-wallet side.

[0129] Based on the same inventive concept, some embodiments of the present invention further provide an e-wallet payment processing apparatus. A problem resolving principle of the apparatus is similar to that of the e-wallet payment processing method, and no repeated description is provided. The e-wallet payment processing apparatus is located on an e-wallet side. A specific structure is shown in FIG. 7, including:

[0130] a payment and identity data receiving module 701, configured to receive user identity certificate data and a payment request that are sent by a payment gateway side;

[0131] an account information confirmation module 702, configured to determine user account information based on the user identity certificate data;

[0132] a payment processing module 703, configured to perform payment processing based on the user account information and the payment request to obtain payment transaction result data; and

[0133] a transaction result data returning module 704, configured to return the payment transaction result data to the payment gateway side.

[0134] During specific implementation, the account information confirmation module 702 is specifically configured to:

[0135] determine the user account information based on the user identity certificate data; and

[0136] determine, based on the user account information, whether a user account is available.

[0137] Correspondingly, the payment processing module 703 is specifically configured to:

[0138] if it is determined that the user account is available, determine payment information based on the payment request;

[0139] send the payment information to a user client corresponding to the user account; and

5 **[0140]** receive a payment confirmation instruction from the user client, and perform payment processing to obtain the payment transaction result data.

[0141] Based on the same inventive concept, some embodiments of the present invention further provide an e-wallet payment processing apparatus. A problem resolving principle of the apparatus is similar to that of the e-wallet payment processing method, and no repeated description is provided. The e-wallet payment processing apparatus is located on a user client. A specific structure is shown in FIG. 8, including:

10 **[0142]** an e-wallet display module 801, configured to: receive an available e-wallet pushed by a payment gateway side, and display the available e-wallet to a user;

[0143] a user selection receiving module 802, configured to receive an e-wallet selection instruction and a user identity certificate data submission instruction of the user, to obtain a user-selected e-wallet and user identity certificate data; and

15 **[0144]** a user selection forwarding module 803, configured to send the user-selected e-wallet and the user identity certificate data to the payment gateway side.

[0145] In some embodiments, the e-wallet payment processing apparatus further includes a payment information confirmation module, configured to:

20 **[0146]** receive payment information sent by an e-wallet side, and display the payment information to the user; and

[0147] receive a payment confirmation instruction uploaded by the user, and send the payment confirmation instruction to the e-wallet side.

25 **[0148]** In some embodiments, the e-wallet payment processing apparatus further includes a transaction payment result display module, configured to: receive a transaction payment result sent by a merchant side, and display the transaction payment result to the user.

30 **[0149]** Some embodiments of the present invention further provide a computer device, where the computer device includes a processor and a storage device that are suitable for implementing instructions, the storage device stores a plurality of instructions, and the instructions are suitable for being loaded and executed by the processor to perform the foregoing e-wallet payment processing method.

[0150] Some embodiments of the present invention further provide a computer-readable storage medium, where the computer-readable storage medium stores a computer program, and the computer program is configured to perform the foregoing e-wallet payment processing method.

5 **[0151]** Some embodiments of the present invention further provide a computer program product, where the computer program product includes a computer program, and the computer program is executed by a processor to implement the foregoing e-wallet payment processing method.

[0152] In conclusion, the technical solutions provided in some embodiments of the present invention bring the following beneficial effects:

[0153] An e-wallet payment processing method applied to a payment gateway side is provided, including: receiving a payment request uploaded by a merchant side; determining an e-wallet available for payment based on the payment request, and pushing the available e-wallet to a user client; receiving a user-selected e-wallet and user identity certificate data that are uploaded by the user client, and sending the user identity certificate data and the payment request to a user-selected e-wallet side; and receiving transaction result data returned by the user-selected e-wallet side, and sending the transaction result data to the merchant side. The payment gateway side implements data exchange between the user client, the merchant side, and the e-wallet side to
15 implement transaction payment. In addition, the user identity certificate data is sent to the user-selected e-wallet side. Compared with an existing method in which a user logs in to an e-wallet and then invokes the e-wallet to complete payment, a payment experience link is reduced, and user experience is improved.

[0154] An e-wallet payment processing method applied to an e-wallet side is provided, including: receiving the user identity certificate data and the payment request that are sent by the payment gateway side; determining the user account information based on the user identity certificate data; performing payment processing based on the user account information and the payment request to obtain the payment transaction result data; and returning the payment transaction result data to the payment gateway side. Transaction payment is implemented by using data sent by the payment gateway.
25 The user identity is determined by using the unique user identity certificate data, so that transaction payment can be accurately completed without error.

[0155] An e-wallet payment processing method applied to a user client is provided, including: receiving an available e-wallet pushed by a payment gateway side, and
30

displaying the available e-wallet to a user; receiving an e-wallet selection instruction and a user identity certificate data submission instruction of the user, to obtain a user-selected e-wallet and user identity certificate data; and sending the user-selected e-wallet and the user identity certificate data to the payment gateway side. The available
5 e-wallet is displayed to the user for selection by the user, the user identity certificate data provided by the user that matches the selected e-wallet is received and forwarded to the payment gateway side to ensure that the transaction payment is accurately completed without error. The user does not need to provide complex information such as an account number and a password, thereby reducing complexity of a user operation
10 and improving user experience.

[0156] Although the present invention provides the method operation steps illustrated in the embodiments or flowcharts, more or fewer operation steps can be included, based on conventions or non-creative efforts. The sequence of steps enumerated in some embodiments is only one of a number of step execution sequences
15 and does not represent a unique execution sequence. In practice, when being executed by an apparatus or a client product, the steps may be executed sequentially or in parallel (for example, by parallel processors or in a multi-thread processing environment) based on the method illustrated in the embodiments or the accompanying drawings.

[0157] Persons skilled in the art should understand that some embodiments of this specification can be provided as methods, apparatuses (systems), or computer program products. Therefore, the embodiments of this specification can use a form of hardware only embodiments, software only embodiments, or embodiments with a combination of software and hardware. Further, the present invention can take a form of a computer program product implemented on one or more computer-usable storage media
20 (including but not limited to a disk memory, a CD-ROM, an optical memory, and the like) containing computer-usable program code.

[0158] The present invention is described with reference to the flowcharts and/or block diagrams of the method, the apparatus (system), and the computer program product according to some embodiments of the present invention. It should be
30 understood that computer program instructions can be used to implement each process and/or each block in the flowcharts and/or the block diagrams and a combination of a process and/or a block in the flowcharts and/or the block diagrams. These computer program instructions can be provided for a general-purpose computer, a dedicated computer, an embedded processor, or a processor of another programmable data

processing device to generate a machine, so the instructions executed by the computer or the processor of the another programmable data processing device generate an apparatus for implementing a specific function in one or more processes in the flowcharts and/or in one or more blocks in the block diagrams.

5 **[0159]** These computer program instructions can be stored in a computer-readable memory that can instruct the computer or the another programmable data processing device to work in a specific way, so the instructions stored in the computer-readable memory generate an artifact that includes an instruction apparatus. The instruction apparatus implements a specific function in one or more processes in the flowcharts
10 and/or in one or more blocks in the block diagrams.

[0160] These computer program instructions can alternatively be loaded onto the computer or another programmable data processing device, so that a series of operations and steps are performed on the computer or the another programmable device, thereby generating computer-implemented processing. Therefore, the instructions executed on
15 the computer or the another programmable device provide steps for implementing a specific function in one or more processes in the flowcharts and/or in one or more blocks in the block diagrams.

[0161] Some embodiments of this specification are described in a progressive way. For same or similar parts of the embodiments, mutual references can be made to the
20 embodiments. Each embodiment focuses on a difference from other embodiments. Particularly, some system embodiments are briefly described because they are basically similar to some method embodiments. For related parts, references can be made to related descriptions in some method embodiments. In this specification, relational terms such as first and second are only used to distinguish one entity or operation from another,
25 and do not necessarily require or imply that any actual relationship or sequence exists between these entities or operations.

[0162] It should be noted that, some embodiments in the present invention and the features in some embodiments can be mutually combined provided that no conflict exists. The present invention is not limited to any single aspect, is not limited to any
30 single embodiment, and is not limited to any combination and/or replacement of these aspects and/or embodiments. In addition, each aspect and/or embodiment of the present invention may be used alone or in combination with one or more other aspects and/or embodiments thereof.

[0163] Finally, it should be noted that the foregoing embodiments are merely intended for describing the technical solutions of the present invention, but not for limiting the present invention. Although the present invention is described in detail with reference to the foregoing embodiments, persons of ordinary skill in the art should
5 understand that they may still make modifications to the technical solutions described in the foregoing embodiments or make equivalent replacements to some or all technical features thereof, without departing from the scope of the technical solutions of the embodiments of the present invention. Therefore, these modifications and equivalent replacements shall all fall within the scope of the claims and the specification of the
10 present invention.

CLAIMS

What is claimed is:

1. An e-wallet payment processing method, wherein the e-wallet payment processing method is applied to a payment gateway side and comprises:

5 receiving a payment request uploaded by a merchant side;
determining an e-wallet available for payment based on the payment request, and pushing the available e-wallet to a user client;

receiving a user-selected e-wallet and user identity certificate data that are uploaded by the user client, and sending the user identity certificate data and the
10 payment request to a user-selected e-wallet side; and

receiving transaction result data returned by the user-selected e-wallet side, and sending the transaction result data to the merchant side.

2. The e-wallet payment processing method according to claim 1, wherein the determining an e-wallet available for payment based on the payment request comprises:

15 determining, based on the payment request, an Internet Protocol address in which payment is located; and

determining the e-wallet available for payment based on the Internet Protocol address in which payment is located.

3. The e-wallet payment processing method according to claim 1, wherein the user
20 identity certificate data comprises a wallet identifier; and

the sending the user identity certificate data and the payment request to a user-selected e-wallet side comprises:

sending the wallet identifier and the payment request to the user-selected e-wallet side.

25 4. The e-wallet payment processing method according to claim 1, wherein the user identity certificate data comprises identity information token data; and

the receiving a user-selected e-wallet and user identity certificate data that are uploaded by the user client, and sending the user identity certificate data and the payment request to a user-selected e-wallet side comprises:

30 receiving the user-selected e-wallet uploaded by the user client, and displaying a two-dimensional code corresponding to the user-selected e-wallet to the user client; and

receiving the identity information token data sent by the user client, and sending the identity information token data and the payment request to the user-selected e-wallet

side.

5. An e-wallet payment processing method, wherein the e-wallet payment processing method is applied to an e-wallet side and comprises:

5 receiving user identity certificate data and a payment request that are sent by a payment gateway side;

determining user account information based on the user identity certificate data;

performing payment processing based on the user account information and the payment request to obtain payment transaction result data; and

returning the payment transaction result data to the payment gateway side.

10 6. The e-wallet payment processing method according to claim 5, wherein the determining user account information based on the user identity certificate data comprises:

determining the user account information based on the user identity certificate data; and

15 determining, based on the user account information, whether a user account is available.

7. The e-wallet payment processing method according to claim 6, wherein the performing payment processing based on the user account information and the payment request to obtain payment transaction result data comprises:

20 if it is determined that the user account is available, determining payment information based on the payment request;

sending the payment information to a user client corresponding to the user account; and

25 receiving a payment confirmation instruction from the user client, and performing payment processing to obtain the payment transaction result data.

8. An e-wallet payment processing method, wherein the e-wallet payment processing method is applied to a user client and comprises:

receiving an available e-wallet pushed by a payment gateway side, and displaying the available e-wallet to a user;

30 receiving an e-wallet selection instruction and a user identity certificate data submission instruction of the user, to obtain a user-selected e-wallet and user identity certificate data; and

sending the user-selected e-wallet and the user identity certificate data to the payment gateway side.

9. The e-wallet payment processing method according to claim 8, further comprising:

receiving payment information sent by an e-wallet side, and displaying the payment information to the user; and

5 receiving a payment confirmation instruction uploaded by the user, and sending the payment confirmation instruction to the e-wallet side.

10. The e-wallet payment processing method according to claim 8 or 9, further comprising:

10 receiving a transaction payment result sent by a merchant side, and displaying the transaction payment result to the user.

11. An e-wallet payment processing apparatus, located on a payment gateway side, comprising:

a payment request receiving module, configured to receive a payment request uploaded by a merchant side;

15 an e-wallet push module, configured to: determine an e-wallet available for payment based on the payment request, and push the available e-wallet to a user client;

a payment and identity data forwarding module, configured to: receive a user-selected e-wallet and user identity certificate data that are uploaded by the user client, and send the user identity certificate data and the payment request to a user-selected e-

20 wallet side; and

a transaction result data forwarding module, configured to: receive transaction result data returned by the user-selected e-wallet side, and send the transaction result data to the merchant side.

25 12. The e-wallet payment processing apparatus according to claim 11, wherein the e-wallet push module is specifically configured to:

determine, based on the payment request, an Internet Protocol address in which payment is located; and

determine the e-wallet available for payment based on the Internet Protocol address in which payment is located.

30 13. The e-wallet payment processing apparatus according to claim 11, wherein the user identity certificate data comprises a wallet identifier; and

the payment and identity data forwarding module is specifically configured to:

send the wallet identifier and the payment request to the user-selected e-wallet side.

14. The e-wallet payment processing apparatus according to claim 11, wherein the

user identity certificate data comprises identity information token data; and
the payment and identity data forwarding module is specifically configured to:
receive the user-selected e-wallet uploaded by the user client, and display a two-dimensional code corresponding to the user-selected e-wallet to the user client; and
5 receive the identity information token data sent by the user client, and send the identity information token data and the payment request to the user-selected e-wallet side.

15. An e-wallet payment processing apparatus, located on an e-wallet side, wherein the e-wallet payment processing apparatus comprises:

10 a payment and identity data receiving module, configured to receive user identity certificate data and a payment request that are sent by a payment gateway side;

an account information confirmation module, configured to determine user account information based on the user identity certificate data;

15 a payment processing module, configured to perform payment processing based on the user account information and the payment request to obtain payment transaction result data; and

a transaction result data returning module, configured to return the payment transaction result data to the payment gateway side.

20 16. The e-wallet payment processing apparatus according to claim 15, wherein the account information confirmation module is specifically configured to:

determine the user account information based on the user identity certificate data; and

determine, based on the user account information, whether a user account is available.

25 17. The e-wallet payment processing apparatus according to claim 16, wherein the payment processing module is specifically configured to:

if it is determined that the user account is available, determine payment information based on the payment request;

30 send the payment information to a user client corresponding to the user account; and

receive a payment confirmation instruction from the user client, and perform payment processing to obtain the payment transaction result data.

18. An e-wallet payment processing apparatus, located on a user client, wherein the e-wallet payment processing apparatus comprises:

an e-wallet display module, configured to: receive an available e-wallet pushed by a payment gateway side, and display the available e-wallet to a user;

a user selection receiving module, configured to receive an e-wallet selection instruction and a user identity certificate data submission instruction of the user, to
5 obtain a user-selected e-wallet and user identity certificate data; and

a user selection forwarding module, configured to send the user-selected e-wallet and the user identity certificate data to the payment gateway side.

19. The e-wallet payment processing apparatus according to claim 18, further comprising a payment information confirmation module, configured to:

10 receive payment information sent by an e-wallet side, and display the payment information to the user; and

receive a payment confirmation instruction uploaded by the user, and send the payment confirmation instruction to the e-wallet side.

20. The e-wallet payment processing apparatus according to claim 18 or 19, further
15 comprising:

a transaction payment result display module, configured to: receive a transaction payment result sent by a merchant side, and display the transaction payment result to the user.

21. A computer device, wherein the computer device comprises a processor and a
20 storage device that are suitable for implementing instructions, the storage device stores a plurality of instructions, and the instructions are suitable for being loaded and executed by the processor to perform the e-wallet payment processing method according to any one of claims 1 to 10.

22. A computer-readable storage medium, wherein the computer-readable storage
25 medium stores a computer program, and the computer program is configured to perform the e-wallet payment processing method according to any one of claims 1 to 10.

23. A computer program product, wherein the computer program product
comprises a computer program, and the computer program is executed by a processor to implement the e-wallet payment processing method according to any one of claims
30 1 to 10.