

CONTACTLESS PAYMENT SERVICE PROCESSING METHOD, APPARATUS, AND DEVICE

[0001] This application claims priority to Chinese Patent Application No. 202411825359.2, filed with the China National Intellectual Property Administration on December 11, 2024 and
5 entitled "CONTACTLESS PAYMENT SERVICE PROCESSING METHOD, APPARATUS, AND DEVICE", which is incorporated herein by reference in its entirety.

TECHNICAL FIELD

[0002] This specification relates to the field of contactless payment technologies, and in particular, to a contactless payment service processing method, apparatus, and device.

BACKGROUND

[0003] Near field communication (NFC) is a short-distance high-frequency radio technology, and runs within a distance of 20 centimeters at a frequency of 13.56 MHz. The near field communication is evolved from non-contact radio frequency identification (RFID) and interconnection and interworking technologies, and provides a secure and fast communication
15 manner for various electronic products.

[0004] With widespread use of a smartphone that supports an NFC function, the NFC technology is also increasingly applied to the payment field. For example, if a merchant deploys an NFC device at a checkout counter, a user can pay through contactless interaction (which is usually a "tap" operation) with an NFC device by using the mobile phone that supports the NFC
20 function. This is convenient.

[0005] In some scenarios of an actual application, during an NFC payment, after "tap", a client of a payment application installed on the mobile phone pops up a payment confirmation page for confirmation by the user, and a confirmation step of the user usually adversely affects execution efficiency of an entire payment process.

[0006] In view of this, a more efficient NFC payment solution is needed, to further improve

user experience.

SUMMARY

[0007] One or more embodiments of this specification provide a contactless payment service processing method, apparatus, and device, to resolve the following technical problem: A more efficient NFC payment solution is needed, to further improve user experience.

[0008] To resolve the above-mentioned technical problem, one or more embodiments of this specification are implemented as follows:

[0009] One or more embodiments of this specification provide a contactless payment service processing method, applied to a server and/or a client of a payment application. The method includes:

in response to an operation that a mobile terminal of a user approaches a contactless device of a merchant to perform sensing, determining a payment confirmation page, and providing the payment confirmation page to the mobile terminal, so that the user initiates a confirmation request on the payment confirmation page;

before the user initiates the confirmation request, determining corresponding user payment information, and providing the user payment information to the contactless device or a merchant payment collection device connected to the contactless device, so that the merchant can initiate a payment request in advance based on the user payment information; and

triggering corresponding processing logic based on whether the payment request or the confirmation request is first received, to advance a payment process.

[0010] One or more embodiments of this specification provide a contactless payment service processing method, applied to a contactless device of a merchant. The method includes:

in response to an operation that a mobile terminal of a user approaches the contactless device of the merchant to perform sensing, triggering a server and/or a client of a payment application to determine a payment confirmation page, so that the user initiates a confirmation request to the server and/or the client on the payment confirmation page; and

receiving user payment information provided by the server and/or the client before the user initiates the confirmation request, so that the merchant can initiate a payment request in advance based on the user payment information.

[0011] A payment process is advanced by the server and/or the client by triggering corresponding processing logic based on whether the payment request or the confirmation request is first received.

[0012] One or more embodiments of this specification provide a contactless payment service processing apparatus, applied to a server and/or a client of a payment application. The apparatus includes:

a confirmation request support module, configured to: in response to an operation that a mobile terminal of a user approaches a contactless device of a merchant to perform sensing, determine a payment confirmation page, and providing the payment confirmation page to the mobile terminal, so that the user initiates a confirmation request on the payment confirmation page;

a payment request support module, configured to: before the user initiates the confirmation request, determine corresponding user payment information, and provide the user payment information to the contactless device or a merchant payment collection device connected to the contactless device, so that the merchant can initiate a payment request in advance based on the user payment information; and

a payment process advancement module, configured to trigger corresponding processing logic based on whether the payment request or the confirmation request is first received, to advance a payment process.

[0013] One or more embodiments of this specification provide a contactless payment service processing apparatus, applied to a contactless device of a merchant. The apparatus includes:

a contactless interaction triggering module, configured to: in response to an operation that a mobile terminal of a user approaches the contactless device of the merchant to perform sensing, trigger a server and/or a client of a payment application to determine a payment confirmation page, so that the user initiates a confirmation request to the server and/or the client on the payment confirmation page; and

a payment information receiving module, configured to receive user payment information provided by the server and/or the client before the user initiates the confirmation request, so that the merchant can initiate a payment request in advance based on the user payment information.

[0014] A payment process is advanced by the server and/or the client by triggering corresponding processing logic based on whether the payment request or the confirmation request

is first received.

[0015] One or more embodiments of this specification provide a contactless payment service processing device, applied to a server and/or a client of a payment application. The contactless payment service processing device includes:

- 5 at least one processor; and
- a memory communicatively connected to the at least one processor.

[0016] The memory stores instructions that can be executed by the at least one processor, and the instructions are executed by the at least one processor, so that the at least one processor can perform the following operations:

- 10 in response to an operation that a mobile terminal of a user approaches a contactless device of a merchant to perform sensing, determining a payment confirmation page, and providing the payment confirmation page to the mobile terminal, so that the user initiates a confirmation request on the payment confirmation page;

- before the user initiates the confirmation request, determining corresponding user payment information, and providing the user payment information to the contactless device or a merchant payment collection device connected to the contactless device, so that the merchant can initiate a payment request in advance based on the user payment information; and

 triggering corresponding processing logic based on whether the payment request or the confirmation request is first received, to advance a payment process.

20 **[0017]** One or more embodiments of this specification provide a contactless payment service processing device, applied to a contactless device of a merchant. The contactless payment service processing device includes:

- at least one processor; and
- a memory communicatively connected to the at least one processor.

25 **[0018]** The memory stores instructions that can be executed by the at least one processor, and the instructions are executed by the at least one processor, so that the at least one processor can perform the following operations:

- in response to an operation that a mobile terminal of a user approaches the contactless device of the merchant to perform sensing, triggering a server and/or a client of a payment application to determine a payment confirmation page, so that the user initiates a confirmation request to the server and/or the client on the payment confirmation page; and

receiving user payment information provided by the server and/or the client before the user initiates the confirmation request, so that the merchant can initiate a payment request in advance based on the user payment information.

[0019] A payment process is advanced by the server and/or the client by triggering
5 corresponding processing logic based on whether the payment request or the confirmation request is first received.

[0020] The above-mentioned at least one technical solution used in one or more embodiments of this specification can achieve the following beneficial effects: In a process of waiting for the confirmation request of the user, a merchant preparation process can be parallelized as soon as
10 possible, including: enabling the merchant to obtain the user payment information in advance, and initiating the payment request in advance. The payment application also adapts to a plurality of actually possible arrival sequences of the confirmation request and the payment request. Correspondingly, the payment process continues to be advanced by using different processing logic. Therefore, for a contactless payment scenario such as an NFC payment, execution efficiency
15 of an entire payment process is improved, user experience is further improved, and a contactless payment is better promoted.

BRIEF DESCRIPTION OF DRAWINGS

[0021] To describe the technical solutions in the embodiments of this specification or in the existing technology more clearly, the following briefly describes the accompanying drawings
20 needed for describing the embodiments or the existing technology. Clearly, the accompanying drawings in the following descriptions merely show some embodiments of this specification, and a person of ordinary skill in the art can still derive other drawings from these accompanying drawings without creative efforts.

[0022] FIG. 1 is a schematic diagram of a procedure of a contactless payment service
25 processing method according to one or more embodiments of this specification;

[0023] FIG. 2 is a schematic diagram of a service processing procedure corresponding to a case in which a payment request of a merchant arrives before a confirmation request of a user in an application scenario according to one or more embodiments of this specification;

[0024] FIG. 3 is a schematic diagram of a service processing procedure corresponding to a

case in which a confirmation request of a user arrives before a payment request of a merchant in an application scenario according to one or more embodiments of this specification;

[0025] FIG. 4 is a schematic diagram of a procedure of an automatic conversion processing solution for a payment confirmation page according to one or more embodiments of this specification;

[0026] FIG. 5 is a schematic diagram of a procedure of a solution of using different user accounts to be adapted to a request arrival sequence according to one or more embodiments of this specification;

[0027] FIG. 6 is a schematic diagram of a procedure of another contactless payment service processing method according to one or more embodiments of this specification;

[0028] FIG. 7 is a schematic structural diagram of a contactless payment service processing apparatus according to one or more embodiments of this specification;

[0029] FIG. 8 is a schematic structural diagram of another contactless payment service processing apparatus according to one or more embodiments of this specification;

[0030] FIG. 9 is a schematic structural diagram of a contactless payment service processing device according to one or more embodiments of this specification; and

[0031] FIG. 10 is a schematic structural diagram of another contactless payment service processing device according to one or more embodiments of this specification.

DESCRIPTION OF EMBODIMENTS

[0032] Embodiments of this specification provide a contactless payment service processing method, apparatus, and device, and a storage medium.

[0033] To enable a person skilled in the art to better understand the technical solutions in the specification, the following clearly and comprehensively describes the technical solutions in embodiments of this specification with reference to the accompanying drawings in embodiments of this specification. Clearly, the described embodiments are merely some rather than all of the embodiments of this specification. All other embodiments obtained by a person of ordinary skill in the art based on the embodiments of this specification without creative efforts shall fall within the protection scope of this application.

[0034] For ease of understanding, with reference to the descriptions in the background,

questions addressed by the applicant are described more specifically. In the background in which a cash payment is gradually replaced with a digital payment for offline consumption, a plurality of digital payment capabilities are continuously iterated and upgraded. In addition to a code scanning payment method, other payment methods such as sensing (mainly including NFC, which can be vividly referred to as "tap"), face scanning, and palm scanning are also continuously emerging. Tap to pay (typically including an NFC payment) gradually expands in the market due to advantages such as a zero threshold, no pre-preparation, and no information entry. To attract use by a user, tap to pay needs to further achieve better user experience based on another existing payment method such as code scanning. The user taps to pay, to truly feel more comfortable and convenient payment experience than a code scanning payment. However, due to a limitation of a speed and an information amount of an information exchange manner such as NFC or Bluetooth, to ensure fund security of the user, in some scenarios, in a solution attempted by an applicant, a client of a payment application pops up a payment confirmation page after a tap. Only after the user confirms a payment, the merchant can truly initiate a payment request to request to make a deduction from a user account. In this way, the user and the merchant may perceive that tap to pay is not as fast as expected. In other words, an efficiency problem mentioned in the background occurs.

[0035] To resolve the above-mentioned problem, the applicant designs a quick payment mode advanced based on two stages. In a case of being imperceptive to a user and a merchant, when the user stays on a payment confirmation page, a payment-related preparation is completed in advance (which may be considered as a first stage), and the merchant can initiate a payment in advance (the payment is not successful temporarily, and can be temporarily stored in a payment application); and when the user confirms the payment, the payment temporarily stored by the merchant (which can be considered as the second stage) is advanced to complete a whole transaction, thereby reducing time in which the user waits for confirmation. A time in which the user confirms the payment and a time in which the merchant initiates the payment are parallelized. In addition, in view of such a basic idea, the applicant further refines and polishes the solution based on client response smoothness and security of user-related information, to form a more specific implementation solution, which can be selected according to an actual requirement.

[0036] The following continues to describe the solutions of this application based on such an overall idea.

[0037] FIG. 1 is a schematic diagram of a procedure of a contactless payment service processing method according to one or more embodiments of this specification. The method is applied to a server and/or a client of a payment application. For ease of description, the server and the client are not distinguished, and may be collectively referred to as a payment application. The procedure can be completely executed by the server or the client, or can be partially executed by the server and partially executed the client.

[0038] The client is mainly an application client installed on a user terminal, and certainly, can be in another form such as a mini program or an application running based on a browser. In conclusion, the client is an end that runs on the user terminal.

[0039] The procedure further involves one or more devices on a merchant side. Compared with a merchant, the above-mentioned user is a consumer who performs a consumption transaction at the merchant. A merchant-side device includes at least a contactless device having a contactless function such as NFC, and a contactless capability can be integrated into a merchant payment collection device. In this case, the payment collection device is considered as the contactless device. Certainly, the payment collection device and the contactless device can alternatively be different devices that are independent. In this case, the payment collection device and the contactless device can be connected for adaption, to expand the contactless payment capability of the payment collection device.

[0040] In one or more embodiments of this specification, the contactless device is specifically an NFC device, and the payment collection device and the NFC device are provided by different service parties (which are usually independent companies, and the companies can have no cooperation relationship with each other). The payment collection device is a basic device usually used by the merchant at a checkout counter, is usually a desktop or handheld POS machine, etc., and can support one or more basic payment methods such as a bank card payment, a membership card payment, and a two-dimensional code payment. However, tap to pay based on NFC is not supported. The NFC device can be provided by a service provider of the payment application, and can provide an NFC payment support capability. The user can move a mobile terminal such as a smartphone or a smartwatch that supports the NFC function and on which the client of the payment application is installed, to approach the NFC device, perform sensing based on the NFC function, and perform a payment-related service based on near field communication. It should be noted that, for sensing, in addition to the NFC function, another short-range wireless interaction manner such

as an infrared manner or even Bluetooth may be used. This application focuses on NFC because of a requirement of a current actual service, and the solution in this application may also be applied to another contactless scenario.

[0041] The procedure in FIG. 1 includes the following steps.

5 **[0042]** S102: In response to an operation that a mobile terminal of a user approaches a contactless device of a merchant to perform sensing, determine a payment confirmation page, and provide the payment confirmation page to the mobile terminal, so that the user initiates a confirmation request on the payment confirmation page.

[0043] In one or more embodiments of this specification, the contactless device can be
10 separately deployed, or can be deployed to be connected to a merchant payment collection device (for ease of description, the latter deployment manner is mainly used as an example for description in the following embodiment). The user moves a mobile terminal such as a smartphone of the user to approach the contactless device, to prepare to perform a contactless payment. To make the user
15 be clearer about an operation occasion, the merchant side can give a more explicit prompt to the user. For example, the merchant triggers a current payment process by using the merchant payment collection device. The merchant payment collection device sends an instruction to the contactless device, and the contactless device prompts the user to tap to pay. Under such a prompt, the user can move the mobile terminal to approach the contactless device. Sensing can succeed when a distance is close enough (a tap is a reliable and simple way).

20 **[0044]** The merchant herein can be a clerk (for example, a cashier) of the merchant, or can be the merchant payment collection device or the contactless device (because the merchant payment collection device and the contactless device are devices of the merchant) or service logic executed on the merchant payment collection device or the contactless device, and the latter case can further include a case in which the user performs a self-service operation.

25 **[0045]** The client of the payment application is installed on the mobile terminal of the user. Before the payment confirmation page is determined, the payment application decides, based on a current situation, whether the payment confirmation page is needed at a current time. If a result of the deciding is yes, a subsequent step continues to be performed. If security is good or a current service is not important, the result of the deciding may alternatively be no. Therefore, the payment
30 confirmation page does not need to be determined or used, and the user does not need to perform confirmation (that is, initiation of a confirmation request as mentioned below). Instead, the

payment process can be directly advanced based on a payment request initiated by the merchant. For a specific decision manner, a policy can be formulated according to an actual requirement. This is not specifically limited in this application. This is not a focus of the application.

[0046] In one or more embodiments of this specification, the payment confirmation page is a page that needs to be tapped by the user for confirmation and that is determined in a contactless payment scenario when it is perceived that a security risk may exist in a user payment environment, and is provided to the user, to confirm a payment intention of the user. Specific content and a layout of the payment confirmation page can be designed according to a requirement. For example, the payment confirmation page can include a button "Confirm and pay". The page is displayed on the mobile terminal of the user or the contactless device of the merchant. The user taps the button to initiate the confirmation request, to indicate that the user really need to pay. However, if the user does not want to pay (which may be because sensing succeeds due to an approach to the contactless device by mistake, and may be because the user is originally intended to pay but temporarily changes an intention), the user may not initiate the confirmation request. In this case, a subsequent payment process is not normally completed, and can be interrupted at a proper node.

[0047] S104: Before the user initiates the confirmation request, determine corresponding user payment information, and provide the user payment information to the contactless device or a merchant payment collection device connected to the contactless device, so that the merchant can initiate a payment request in advance based on the user payment information.

[0048] In the solution previously used by the applicant, only after the user completes confirmation, the merchant is allowed to initiate the payment request. Otherwise, the merchant is not allowed to obtain the corresponding user payment information. In this case, specifically, the merchant may even need to wait for the server of the payment application (this is more reliable) to receive a confirmation request initiated by the user, and then the server or the client provides the payment information to the merchant side. Further, the merchant can initiate the payment request accordingly. However, a confirmation process of the user consumes time, and confirmation and provision of the user payment information, and an action of initiating the payment request by the merchant also need to consume some time. Because of consumption of some time, after confirmation, the user may feel that a subsequent process is not so fast. In combination with a confirmation operation performed by the user, the user may feel that an entire payment process is not smooth.

[0049] Based on this, in the solution of this application, the time is advanced as long as possible, so that a corresponding action can be performed in advance, for example, performed in parallel with a confirmation process of the user, or may be performed even earlier than a confirmation process of the user. In this way, after the user performs confirmation, a subsequent payment process can be completed faster, to avoid a delay caused by waiting for confirmation by the user. "Advancing" described in step S104 is relative to the above used solution. Advancing is performed because there is no need to wait for confirmation by the user.

[0050] In one or more embodiments of this specification, the user payment information can include a voucher used by the user for a payment, for example, at least one of a payment code value, a user account, user identity information, or user authorization information. To improve security, the information can be provided to the merchant after privacy protection, and does not need to be provided in a plaintext form. The user payment information can be remotely pushed by the server to the contactless device or the merchant payment collection device. Alternatively, if the mobile terminal of the user is still within a sensing range of the contactless device, the mobile terminal can send the user payment information to the contactless device through sensing. Further, the payment request is initiated to the server or the client on the contactless device or the merchant payment collection device, to request for a deduction from the corresponding user (that is, request the user to pay). In this way, a transaction between the merchant and the user is completed.

[0051] In one or more embodiments of this specification, the confirmation process of the user is uncontrollable due to factors such as an intention and a habit of the user. Therefore, it is mainly considered that a preparation is made in advance as much as possible from a device perspective, so that an action of the merchant side is earlier than a user action as much as possible. For example, with reference to an execution time of determining the payment confirmation page, the user payment information can be provided, as quickly as possible (for example, providing the user payment information and determining the payment confirmation page are performed simultaneously, or providing the user payment information is performed when the payment confirmation page is determined), to the contactless device or the merchant payment collection device connected to the contactless device, to trigger the merchant to automatically initiate the payment request (that is, the payment request is automatically initiated by a corresponding device, and the clerk or the user does not need to perform manual triggering) immediately based on the user payment information.

[0052] S106: Trigger corresponding processing logic based on whether the payment request or the confirmation request is first received, to advance a payment process.

[0053] In one or more embodiments of this specification, there are at least two possible cases of receiving the payment request and the confirmation request. A first case is receiving the payment request before the confirmation request. A second case is receiving the confirmation request before the payment request. For the two cases, corresponding processing logic can be separately set (logic corresponding to the two cases can be different or even greatly different, which is described by way of example later), to correctly advance the payment process. Certainly, there may be another possible case in which the payment request and the confirmation request are simultaneously received, or at least one of the payment request and the confirmation request is finally not received.

[0054] This application focuses on the two cases in which a receiving sequence is reflected. In the two cases, secure and reliable processing logic can include: receiving one request, and then temporarily waiting to receive the other request. After the two requests are received, the payment process continues to be advanced. In this way, both efficiency and security are considered. A subsequent payment process includes, for example, a deduction from the corresponding user, and can further include: verifying the confirmation request, verifying a merchant risk, etc.

[0055] An example two-stage division manner is mentioned above. Certainly, another landmark service action is also used as a demarcation line. For example, determining the payment confirmation page can also be used as a demarcation line. In this case, improvements in this application are mainly reflected in the later stage.

[0056] According to the method in FIG. 1, in a process of waiting for the confirmation request of the user, a merchant preparation process can be parallelized as soon as possible, including: enabling the merchant to obtain the user payment information in advance, and initiating the payment request in advance. The payment application also adapts to a plurality of actually possible arrival sequences of the confirmation request and the payment request. Correspondingly, the payment process continues to be advanced by using different processing logic. Therefore, for a contactless payment scenario such as an NFC payment, execution efficiency of an entire payment process is improved, and user experience is further improved. Such a quick payment method advanced based on two stages helps effectively reduce consumed time felt by the user and the merchant for one payment, and further helps better popularize the contactless payment.

[0057] Based on the method shown in FIG. 1, this specification further provides some specific

implementations and extension solutions of the method, which are further described below.

[0058] According to the above-mentioned descriptions, for ease of understanding, the following further provides a quick payment solution advanced based on two stages in an actual application scenario. In this application scenario, four parties are involved: A first party is the user, and specifically includes the user and the mobile phone of the user. A second party can be collectively referred to as the merchant, and specifically includes the clerk of the merchant and a payment collection device that is basically provided in the checkout counter of the merchant. A third party is an NFC device (which is also a device of the merchant, and is independently listed as one party for distinguishing from a conventional payment collection device), and the third party is connected to the payment collection device to expand an NFC payment capability of the payment collection device. A fourth party can be collectively referred to as the payment application, and specifically includes the client and the server of the payment application. The client is installed on the mobile phone of the user.

[0059] This solution mainly includes the following steps:

[0060] The clerk of the merchant taps on the payment collection device to initiate the payment process, to trigger the NFC device connected to the payment collection device to prompt the user to tap to pay.

[0061] The user takes out the mobile phone, to touch the NFC device, and automatically enter the client of the payment application on the mobile phone.

[0062] The user or the server of the payment application decides, based on the background of a current payment of the user, whether the payment confirmation page is needed.

[0063] If it is decided that the payment confirmation page is needed, the client or the server can simultaneously push the user payment information to the payment collection device, and the payment collection device or the NFC device initiates the payment request to the client or the server based on the user payment information. In parallel, the payment confirmation page is displayed to the user on the client, and the user can tap for confirmation on the payment confirmation page, to initiate the confirmation request to the client or the server.

[0064] Next, two types of possible processing logic are described with reference to FIG. 2 and FIG. 3 based on an arrival sequence of the payment request and the confirmation request of the user.

[0065] FIG. 2 is a schematic diagram of a service processing procedure corresponding to a

case in which a payment request of a merchant arrives before a confirmation request of a user in an application scenario according to one or more embodiments of this specification.

[0066] In FIG. 2, it can be learned that, before the user initiates the confirmation request, the payment application has returned the user payment information to the NFC device, and the merchant initiates the payment request in a timely manner. The payment application first receives the payment request. Further, in this case, the payment application temporarily stores the payment request. After the confirmation request of the user arrives, the payment process is advanced. Optionally, the payment process can be advanced in advance based on the payment request in a process of waiting for the confirmation request to arrive, and the payment process is completed when the confirmation request also arrives finally. This is more efficient. If the confirmation request does not arrive finally, the payment process can fall back or the current payment can be directly revoked.

[0067] Similarly, FIG. 3 is a schematic diagram of a service processing procedure corresponding to a case in which a confirmation request of a user arrives before a payment request of a merchant in an application scenario according to one or more embodiments of this specification.

[0068] In FIG. 3, a difference lies in that after the payment application decides the payment confirmation page, the user performs confirmation in a very timely manner. Consequently, the payment application receives the confirmation request of the user, then the payment application returns the user payment information to the NFC device, and the merchant initiates the payment request. Further, in this case, the payment application temporarily stores the payment confirmation request, waits for the payment request of the merchant to arrive, and advances the payment process after the payment request arrives.

[0069] In one or more embodiments of this specification, if the payment request is first received, the payment result is returned, in response to an active query of the merchant, to the contactless device or the merchant payment collection device connected to the contactless device, or a payment result is asynchronously notified, with advancement of the payment process, to the contactless device or the merchant payment collection device connected to the contactless device. For example, in FIG. 2, the payment application temporarily stores the payment request, returns a prompt of payment processing to the merchant, and asynchronously notifies the payment result to the merchant after the payment is completed.

[0070] If the confirmation request is first received, the payment result is synchronously notified, with advancement of the payment process, to the contactless device or the merchant payment collection device connected to the contactless device. For example, in FIG. 3, the payment application temporarily stores the confirmation request, and then advances the payment process after the payment request of the merchant arrives. Therefore, the payment result can be correspondingly returned to the merchant synchronously, without being asynchronously processed for the merchant.

[0071] It can be learned from some of the above-mentioned embodiments that the confirmation request of the user may arrive first. Although the merchant side can make a preparation in advance in parallel to reduce a waiting delay, from a user perspective, it may still be felt that the payment can be completed only after waiting some time after confirmation. To reduce such an unsmooth feeling of the user, one or more embodiments of this specification provide a schematic diagram of a procedure of an automatic conversion processing solution for a payment confirmation page, as shown in FIG. 4.

[0072] The procedure in FIG. 4 includes the following steps.

[0073] S402: The payment application determines a payment confirmation page including a conversion script, and provides the payment confirmation page to the mobile terminal.

[0074] In one or more embodiments of this specification, the conversion script is used to: after the payment confirmation page is provided to the mobile terminal and the user initiates the confirmation request on the payment confirmation page, convert the payment confirmation page into a payment success prompt page by executing the conversion script on the mobile terminal, to directly prompt the user of a payment success.

[0075] Attention needs to be paid to an occasion of the payment success. This prompt is actually executed in advance. The payment does not actually succeed when the prompt is provided. Specifically, how to determine the occasion can be determined based on some essential elements required for the payment success. The following solution is used as an example.

[0076] S404: After the user initiates the confirmation request on the payment confirmation page, if the mobile terminal is still within the sensing range of the contactless device, execute the conversion script on the mobile terminal in response to that the contactless device triggers the mobile terminal through sensing.

[0077] In step S404, after the user payment information is provided to the contactless device

or the merchant payment collection device connected to the contactless device, the merchant has a condition for initiating the payment request, and therefore, there is a great probability that the payment request is normally initiated. Correspondingly, such elements are used as some necessary elements required for the payment success. Because the user also has initiated the confirmation request, although a subsequent payment process is not advanced, there is a great probability of the payment success. Therefore, the conversion script is executed, to directly prompt the user of the success in advance, without a need to additionally push a payment success page.

[0078] If the merchant has received the user payment information, the contactless device can be immediately used to attempt to trigger the mobile terminal through sensing, to trigger the mobile terminal to automatically execute the conversion script. Similarly, more reliably, such triggering can be performed in a timely manner after the merchant initiates the payment request.

[0079] Similarly, such triggering can be performed by the server. In this way, even if the mobile terminal is out of the sensing range of the contactless device, the mobile terminal can be successfully triggered. For example, triggering is performed after the server receives the payment request of the merchant, without a need to wait for completion of advancement of the payment process.

[0080] S406: The mobile terminal converts the payment confirmation page into a payment success prompt page by executing the conversion script, to directly prompt the user of the payment success.

[0081] In this way, from the user perspective, the user can feel that the payment success smoothly occurs once the user performs confirmation, and a page visual effect on the mobile terminal is very smooth, because actually no page jump occurs, but content on the same page is dynamically changed. Such a prompt is consistent with a final real result at a very great probability.

[0082] If the payment finally fails in very few cases, logic can be completed based on a specific failure reason, to avoid a user misunderstanding. Certainly, a user fund loss is not caused. For example, if the reason is the user, a current transaction can be automatically converted into a credit payment, and a deduction for settlement is delayed; or that the current transaction is revoked can be additionally prompted to the user. For another example, if the reason is the merchant, that the current transaction is revoked can be additionally prompted to the merchant. These few cases have little impact on most users. Therefore, this solution effectively improves user experience.

[0083] In some of the above-mentioned embodiments, the merchant obtains the user payment

information in advance, and can initiate the payment request in advance, and the server may advance the payment process. To further improve security, so that the solution can be implemented more flexibly, one or more embodiments of this specification further provide a schematic diagram of a procedure of a solution of using different user accounts to be adapted to a request arrival sequence, as shown in FIG. 5.

5 [0084] The procedure in FIG. 5 includes the following steps.

[0085] S502: During determining of the corresponding user payment information, determine the corresponding user payment information based on related information of a first account of the user.

10 [0086] The related information is, for example, information such as an account or a corresponding payment code value.

[0087] S504: When the payment process is advanced, advance the payment process based on the related information of the first account if the payment request is first received.

[0088] S506: If the confirmation request is first received, advance the payment process based on related information of a second account of the user associated with the first account, where the first account is separated from the second account.

15 [0089] Both the first account and the second account belong to a current user. The first account is lighter-weight (for example, a smaller amount and a lower account level) and/or less private (for example, many real information of the user is hidden or confused) than the second account.

20 Exposure of the related information of the first account is more serious for the user than exposure of the related information of the second account, and may threaten interests and security of the user. Therefore, in a case of a higher risk, it is considered that the first account is preferentially used, and in a case of a low risk, the second account can be used through intelligent and automatic switching.

25 [0090] Based on this idea, for step S504, if the payment request is first received, the confirmation request of the user is not received. Therefore, a real intention of the user is not determined, and it can be considered that the risk is higher. Therefore, the payment process is advanced based on the related information of the first account. For step S506, if the confirmation request is first received, a real intention of the user is determined, and it can be considered that the risk is low. Therefore, the payment process is automatically advanced based on the related information of the second account. In this way, a possibility of exposure of the related information

30

of the second account is effectively reduced (especially, exposure to the merchant is avoided), and processing of the payment process is not affected.

[0091] In step S508, for example, the first account is separated from the second account, or another manner may be used. For example, the user voluntarily sets an independent first account, and then associates the independent first account with the second account. For another example, the payment application generates a temporary account for the user, uses the account as the first account, and then associates the account with the second account. Isolation between the related information of the first account and the related information of the second user can be improved as much as possible, to avoid mutual impact on privacy security.

[0092] S508: After the payment process is advanced based on the related information of the first account, merge the first account and the second account after a corresponding payment success.

[0093] The second account can be an account explicitly used by the user, so that the first account is imperceptible to the user. For example, based on the solution in step S508, even if the first account is used in the process, content (for example, content such as related process prompt information and subsequent bills) actually felt by the user is related to only the second account. In this way, understanding costs of the user are reduced, and security is enhanced.

[0094] The above-mentioned descriptions are provided from a perspective of a payment application. Based on the same idea, one or more embodiments of this specification further provide a schematic diagram of a procedure of another contactless payment service processing method, which is applied to a contactless device of a merchant and described from a perspective of the contactless device, as shown in FIG. 6.

[0095] The procedure in FIG. 6 includes the following steps.

[0096] S602: In response to an operation that a mobile terminal of a user approaches the contactless device of the merchant to perform sensing, trigger a server and/or a client of the payment application to determine a payment confirmation page, so that the user initiates a confirmation request to the server and/or the client on the payment confirmation page.

[0097] S604: Receive user payment information provided by the server and/or the client before the user initiates the confirmation request, so that the merchant can initiate a payment request in advance based on the user payment information, where a payment process is advanced by the server and/or the client by triggering corresponding processing logic based on whether the

payment request or the confirmation request is first received.

[0098] Based on the above-mentioned descriptions, the procedure in FIG. 6 is understood. Details are not described herein again.

[0099] Based on the same idea, one or more embodiments of this specification further provide
5 apparatuses and devices corresponding to the above-mentioned methods, as shown in FIG. 7 to
FIG. 10. The apparatuses and the devices can correspondingly perform the above-mentioned
methods and related optional solutions.

[00100] FIG. 7 is a schematic structural diagram of a contactless payment service processing
apparatus according to one or more embodiments of this specification, applied to a server and/or
10 a client of a payment application. The apparatus includes:

a confirmation request support module 702, configured to: in response to an operation
that a mobile terminal of a user approaches a contactless device of a merchant to perform sensing,
determine a payment confirmation page, and providing the payment confirmation page to the
mobile terminal, so that the user initiates a confirmation request on the payment confirmation page;

15 a payment request support module 704, configured to: before the user initiates the
confirmation request, determine corresponding user payment information, and provide the user
payment information to the contactless device or a merchant payment collection device connected
to the contactless device, so that the merchant can initiate a payment request in advance based on
the user payment information; and

20 a payment process advancement module 706, configured to trigger corresponding
processing logic based on whether the payment request or the confirmation request is first received,
to advance a payment process.

[0100] Optionally, the operation that the mobile terminal of the user approaches the contactless
device of the merchant to perform sensing is performed after the merchant triggers the payment
25 process by using the merchant payment collection device, so that the contactless device prompts
the user to perform sensing.

[0101] Optionally, the payment request support module 704 is configured to: when the
payment confirmation page is determined, provide the user payment information to the contactless
device or the merchant payment collection device connected to the contactless device, to trigger
30 the merchant to automatically initiate the payment request immediately based on the user payment
information.

- [0102] Optionally, the payment process advancement module 706 is configured to: if the payment request is first received, temporarily store the payment request, and advance the payment process after the confirmation request arrives, or advance the payment process in advance based on the payment request in a process of waiting for the confirmation request to arrive.
- 5 [0103] Optionally, the payment process advancement module 706 is configured to: if the confirmation request is first received, temporarily store the confirmation request, and wait for the payment request to arrive; and
- advance the payment process after the payment request arrives.
- [0104] Optionally, the confirmation request support module 702 is configured to determine a
- 10 payment confirmation page including a conversion script. The conversion script is used to: after the payment confirmation page is provided to the mobile terminal and the user initiates the confirmation request on the payment confirmation page, convert the payment confirmation page into a payment success prompt page by executing the conversion script on the mobile terminal, to directly prompt the user of a payment success.
- 15 [0105] Optionally, the payment request support module 704 is configured to determine the corresponding user payment information based on related information of a first account of the user.
- [0106] The payment process advancement module 706 is configured to: advance the payment process based on the related information of the first account if the payment request is first received; or
- 20 if the confirmation request is first received, advance the payment process based on related information of a second account of the user associated with the first account.
- [0107] Optionally, the first account is separated from the second account.
- [0108] The payment process advancement module 706 is configured to: after the payment process is advanced based on the related information of the first account, merge the first account
- 25 and the second account after a corresponding payment success.
- [0109] FIG. 8 is a schematic structural diagram of another contactless payment service processing apparatus according to one or more embodiments of this specification, applied to a contactless device of a merchant. The apparatus includes:
- a contactless interaction triggering module 802, configured to: in response to an
- 30 operation that a mobile terminal of a user approaches the contactless device of the merchant to perform sensing, trigger a server and/or a client of the payment application to determine a payment

confirmation page, so that the user initiates a confirmation request to the server and/or the client on the payment confirmation page; and

a payment information receiving module 804, configured to receive user payment information provided by the server and/or the client before the user initiates the confirmation request, so that the merchant can initiate a payment request in advance based on the user payment information.

[0110] A payment process is advanced by the server and/or the client by triggering corresponding processing logic based on whether the payment request or the confirmation request is first received.

[0111] FIG. 9 is a schematic structural diagram of a contactless payment service processing device according to one or more embodiments of this specification, applied to a server and/or a client of a payment application. The contactless payment service processing device includes:

at least one processor; and

a memory communicatively connected to the at least one processor.

[0112] The memory stores instructions that can be executed by the at least one processor, and the instructions are executed by the at least one processor, so that the at least one processor can perform the following operations:

in response to an operation that a mobile terminal of a user approaches a contactless device of a merchant to perform sensing, determining a payment confirmation page, and providing the payment confirmation page to the mobile terminal, so that the user initiates a confirmation request on the payment confirmation page;

before the user initiates the confirmation request, determining corresponding user payment information, and providing the user payment information to the contactless device or a merchant payment collection device connected to the contactless device, so that the merchant can initiate a payment request in advance based on the user payment information; and

triggering corresponding processing logic based on whether the payment request or the confirmation request is first received, to advance a payment process.

[0113] FIG. 10 is a schematic structural diagram of a contactless payment service processing device according to one or more embodiments of this specification, applied to a contactless device of a merchant. The contactless payment service processing device includes:

at least one processor; and

a memory communicatively connected to the at least one processor.

[0114] The memory stores instructions that can be executed by the at least one processor, and the instructions are executed by the at least one processor, so that the at least one processor can perform the following operations:

5 in response to an operation that a mobile terminal of a user approaches the contactless device of the merchant to perform sensing, triggering a server and/or a client of the payment application to determine a payment confirmation page, so that the user initiates a confirmation request to the server and/or the client on the payment confirmation page; and

 receiving user payment information provided by the server and/or the client before the
10 user initiates the confirmation request, so that the merchant can initiate a payment request in advance based on the user payment information.

[0115] A payment process is advanced by the server and/or the client by triggering corresponding processing logic based on whether the payment request or the confirmation request is first received.

15 **[0116]** Based on the same idea, one or more embodiments of this specification further provide a non-volatile computer storage medium, applied to a server and/or a client of a payment application. The medium stores computer-executable instructions, and the computer-executable instructions are set to:

 in response to an operation that a mobile terminal of a user approaches a contactless
20 device of a merchant to perform sensing, determining a payment confirmation page, and providing the payment confirmation page to the mobile terminal, so that the user initiates a confirmation request on the payment confirmation page;

 before the user initiates the confirmation request, determining corresponding user payment information, and providing the user payment information to the contactless device or a
25 merchant payment collection device connected to the contactless device, so that the merchant can initiate a payment request in advance based on the user payment information; and

 triggering corresponding processing logic based on whether the payment request or the confirmation request is first received, to advance a payment process.

[0117] One or more embodiments of this specification further provide another non-volatile
30 computer storage medium, applied to a contactless device of a merchant. The medium stores computer-executable instructions, and the computer-executable instructions are set to:

in response to an operation that a mobile terminal of a user approaches the contactless device of the merchant to perform sensing, triggering a server and/or a client of the payment application to determine a payment confirmation page, so that the user initiates a confirmation request to the server and/or the client on the payment confirmation page; and

5 receiving user payment information provided by the server and/or the client before the user initiates the confirmation request, so that the merchant can initiate a payment request in advance based on the user payment information.

[0118] A payment process is advanced by the server and/or the client by triggering corresponding processing logic based on whether the payment request or the confirmation request
10 is first received.

[0119] In the 1990s, whether a technical improvement is a hardware improvement (for example, an improvement to a circuit structure, such as a diode, a transistor, or a switch) or a software improvement (an improvement to a method procedure) can be clearly distinguished. However, as technologies develop, current improvements to many method procedures can be
15 considered as direct improvements to hardware circuit structures. Almost all designers program an improved method procedure to a hardware circuit, to obtain a corresponding hardware circuit structure. Therefore, a method procedure can be improved by using a hardware entity module. For example, a programmable logic device (PLD) (for example, a field programmable gate array (FPGA)) is such an integrated circuit, and a logical function of the PLD is determined by a user
20 through device programming. The designer performs programming to "integrate" a digital system into a PLD without requesting a chip manufacturer to design and produce an application-specific integrated circuit chip. In addition, at present, instead of manually manufacturing an integrated circuit chip, this type of programming is mostly implemented by using "logic compiler" software. The software is similar to a software compiler used to develop and write a program. Original code
25 needs to be written by using a particular programming language before compilation. The language is referred to as a hardware description language (HDL). There are many HDLs, such as the Advanced Boolean Expression Language (ABEL), the Altera Hardware Description Language (AHDL), Confluence, the Cornell University Programming Language (CUPL), HDCal, the Java Hardware Description Language (JHDL), Lava, Lola, MyHDL, PALASM, and the Ruby
30 Hardware Description Language (RHDL). The Very-High-Speed Integrated Circuit Hardware Description Language (VHDL) and Verilog are most commonly used at present. A person skilled

in the art should also be clear that a hardware circuit that implements a logical method procedure can be readily obtained once the method procedure is logically programmed by using several of the above-mentioned hardware description languages and is programmed to an integrated circuit.

[0120] A controller can be implemented by using any appropriate method. For example, the controller can be in a form of a microprocessor or a processor, a computer-readable medium that stores computer-readable program code (such as software or firmware) that can be executed by the microprocessor or the processor, a logic gate, a switch, an application-specific integrated circuit (ASIC), a programmable logic controller, or an embedded microcontroller. Examples of the controller include but are not limited to the following microcontrollers: ARC 625D, Atmel AT91SAM, Microchip PIC18F26K20, and Silicon Labs C8051F320. A storage controller can also be implemented as a part of control logic of a storage. A person skilled in the art also knows that in addition to implementing the controller by using only the computer-readable program code, logic programming can be performed on method steps to enable the controller to implement the same function in a form of a logic gate, a switch, an application-specific integrated circuit, a programmable logic controller, an embedded microcontroller, etc. Therefore, the controller can be considered as a hardware component, and an apparatus that is configured to implement various functions and that is included in the controller can also be considered as a structure in the hardware component. Alternatively, the apparatus configured to implement various functions can even be considered as both a software module implementing a method and a structure in the hardware component.

[0121] The system, apparatus, module, or unit illustrated in the above-mentioned embodiments can be specifically implemented by a computer chip or an entity, or can be implemented by a product having a certain function. A typical implementation device is a computer. Specifically, the computer can be, for example, a personal computer, a laptop computer, a cellular phone, a camera phone, a smartphone, a personal digital assistant, a media player, a navigation device, an email device, a game console, a tablet computer, a wearable device, or a combination of any of these devices.

[0122] For ease of description, the above-mentioned apparatus is divided into units based on functions for separate description. Certainly, when this specification is implemented, the functions of the units can be implemented in one or more pieces of software and/or hardware.

[0123] A person skilled in the art should understand that embodiments of this specification can

be provided as methods, 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. In addition, a form of a computer program product that is implemented on one or more computer-usable storage media (including
5 but not limited to a disk storage, a CD-ROM, an optical storage, etc.) that include computer-usable program code can be used in the embodiments of this specification.

[0124] This specification is described with reference to the flowcharts and/or block diagrams of the method, the device (system), and the computer program product according to embodiments of this specification. It is worthwhile to understand that computer program instructions can be used
10 to implement each procedure and/or each block in the flowcharts and/or the block diagrams and a combination of procedures and/or a combination of blocks in the flowcharts and/or the block diagrams. These computer program instructions can be provided for a general-purpose computer, a special-purpose computer, an embedded processor, or a processor of another programmable data processing device to generate a machine, so that the instructions executed by the computer or the
15 processor of the another programmable data processing device generate an apparatus for implementing a specific function in one or more procedures in the flowcharts and/or in one or more blocks in the block diagrams.

[0125] These computer program instructions can alternatively be stored in a computer-readable storage that can instruct the computer or the another programmable data processing
20 device to work in a specific way, so the instructions stored in the computer-readable storage generate an artifact that includes an instruction apparatus. The instruction apparatus implements a specific function in one or more procedures in the flowcharts and/or in one or more blocks in the block diagrams.

[0126] These computer program instructions can alternatively be loaded onto the computer or
25 the another programmable data processing device, so that a series of operation steps are performed on the computer or the another programmable device, thereby generating computer-implemented processing. Therefore, the instructions executed on the computer or the another programmable device provide steps for implementing a specific function in one or more procedures in the flowcharts and/or in one or more blocks in the block diagrams.

[0127] In a typical configuration, a computing device includes one or more central processing
30 units (CPU), input/output interfaces, network interfaces, and memories.

[0128] The memory can include a non-persistent storage, a random access memory (RAM), a non-volatile memory, and/or another form in a computer-readable medium, for example, a read-only memory (ROM) or a flash random access memory (flash RAM). The memory is an example of the computer-readable medium.

5 **[0129]** The computer-readable medium includes persistent, non-persistent, movable, and unmovable media that can store information by using any method or technology. The information can be a computer-readable instruction, a data structure, a program module, or other data. Examples of the computer storage medium include but are not limited to a phase-change random access memory (PRAM), a static random access memory (SRAM), a dynamic random access
10 memory (DRAM), another type of random access memory (RAM), a read-only memory (ROM), an electrically erasable programmable read-only memory (EEPROM), a flash memory or another memory technology, a compact disc read-only memory (CD-ROM), a digital versatile disc (DVD) or another optical storage, a cassette magnetic tape, a magnetic tape/magnetic disk storage or another magnetic storage device, or any other non-transmission medium. The computer storage
15 medium can be configured to store information accessible to a computing device. As described in this specification, the computer-readable medium does not include computer-readable transitory media such as a modulated data signal and a carrier.

[0130] It should be further noted that the terms "include", "comprise", or their any other variants are intended to cover a non-exclusive inclusion, so that a process, a method, a product, or
20 a device that includes a list of elements not only includes those elements but also includes other elements which are not expressly listed, or further includes elements inherent to such a process, method, product, or device. Without more constraints, an element preceded by "includes a ..." does not preclude the existence of additional identical elements in the process, method, product, or device that includes the element.

25 **[0131]** This specification can be described in the general context of computer-executable instructions executed by a computer, for example, a program module. Generally, the program module includes a routine, a program, an object, a component, a data structure, etc. executing a specific task or implementing a specific abstract data type. This specification can alternatively be practiced in distributed computing environments. In the distributed computing environments, tasks
30 are performed by remote processing devices connected through a communication network. In a distributed computing environment, the program module can be located in both local and remote

computer storage media including storage devices.

[0132] Embodiments of this specification are described in a progressive way. For same or similar parts in embodiments, references can be made to each other. Each embodiment focuses on a difference from another embodiment. Particularly, the apparatus, device, and nonvolatile
5 computer storage medium embodiments are basically similar to the method embodiment, and therefore is briefly described. For a related part, refer to some descriptions in the method embodiment.

[0133] Specific embodiments of this specification are described above. Other embodiments fall within the scope of the appended claims. In some cases, the actions or steps described in the
10 claims can be performed in an order different from that in the embodiments, and the desired results can still be achieved. In addition, the process depicted in the accompanying drawings does not necessarily require the shown particular execution order to achieve the desired results. In some implementations, multi-tasking and concurrent processing are feasible or can be advantageous.

[0134] The above-mentioned content is merely one or more embodiments of this specification,
15 and is not intended to limit this specification. A person skilled in the art knows that one or more embodiments of this specification can have various modifications and changes. Any modification, equivalent replacement, improvement, etc. made within the spirit and principle of one or more embodiments of this specification shall fall within the scope of the claims of this specification.

CLAIMS

What is claimed is:

1. A contactless payment service processing method, applied to a server and/or a client of a payment application, wherein the method comprises:

5 in response to an operation that a mobile terminal of a user approaches a contactless device of a merchant to perform sensing, determining a payment confirmation page, and providing the payment confirmation page to the mobile terminal, so that the user initiates a confirmation request on the payment confirmation page;

 before the user initiates the confirmation request, determining corresponding user payment
10 information, and providing the user payment information to the contactless device or a merchant payment collection device connected to the contactless device, so that the merchant can initiate a payment request in advance based on the user payment information; and

 triggering corresponding processing logic based on whether the payment request or the confirmation request is first received, to advance a payment process.

15 2. The method according to claim 1, wherein the operation that the mobile terminal of the user approaches the contactless device of the merchant to perform sensing is performed after the merchant triggers the payment process by using the merchant payment collection device, so that the contactless device prompts the user to perform sensing.

 3. The method according to claim 1, wherein the providing the user payment information to
20 the contactless device or a merchant payment collection device connected to the contactless device specifically comprises:

 when the payment confirmation page is determined, providing the user payment information to the contactless device or the merchant payment collection device connected to the contactless device, to trigger the merchant to automatically initiate the payment request immediately based on
25 the user payment information.

 4. The method according to claim 1, wherein the triggering corresponding processing logic based on whether the payment request or the confirmation request is first received, to advance a payment process specifically comprises:

 if the payment request is first received, temporarily storing the payment request, and
30 advancing the payment process after the confirmation request arrives, or advancing the payment

process in advance based on the payment request in a process of waiting for the confirmation request to arrive.

5. The method according to claim 1, wherein the triggering corresponding processing logic based on whether the payment request or the confirmation request is first received, to advance a

5 payment process specifically comprises:

if the confirmation request is first received, temporarily storing the confirmation request, and waiting for the payment request to arrive; and

advancing the payment process after the payment request arrives.

6. The method according to claim 1 or 4, wherein the determining a payment confirmation
10 page specifically comprises:

determining a payment confirmation page comprising a conversion script, wherein the conversion script is used to: after the payment confirmation page is provided to the mobile terminal and the user initiates the confirmation request on the payment confirmation page, convert the payment confirmation page into a payment success prompt page by executing the conversion script
15 on the mobile terminal, to directly prompt the user of a payment success.

7. The method according to claim 6, wherein the executing the conversion script on the mobile terminal specifically comprises:

after the providing the user payment information to the contactless device or a merchant payment collection device connected to the contactless device, if the mobile terminal is still within
20 a sensing range of the contactless device, executing the conversion script on the mobile terminal in response to that the contactless device triggers the mobile terminal through sensing.

8. The method according to claim 1, wherein the determining corresponding user payment information specifically comprises:

determining the corresponding user payment information based on related information of a
25 first account of the user; and

the triggering corresponding processing logic based on whether the payment request or the confirmation request is first received, to advance a payment process specifically comprises:

advancing the payment process based on the related information of the first account if the payment request is first received; or

30 if the confirmation request is first received, advancing the payment process based on related information of a second account of the user associated with the first account.

9. The method according to claim 8, wherein the first account is separated from the second account; and

after the advancing the payment process based on the related information of the first account, the method further comprises:

5 merging the first account and the second account after a corresponding payment success.

10. The method according to claim 8 or 9, wherein the first account is lighter-weight and/or less private than the second account.

11. The method according to claim 1, wherein the triggering corresponding processing logic based on whether the payment request or the confirmation request is first received, to advance a
10 payment process specifically comprises:

if the payment request is first received, returning, in response to an active query of the merchant, a payment result to the contactless device or the merchant payment collection device connected to the contactless device, or asynchronously notifying, with advancement of the payment process, a payment result to the contactless device or the merchant payment collection
15 device connected to the contactless device; or

if the confirmation request is first received, synchronously notifying, with advancement of the payment process, a payment result to the contactless device or the merchant payment collection device connected to the contactless device.

12. The method according to claim 1, wherein before the determining a payment confirmation
20 page, the method further comprises:

deciding whether the payment confirmation page is needed at a current time, and determining that a result of the deciding is yes; and

the method further comprises:

if a result of the deciding is no, directly advancing the payment process at the current time
25 based on the received payment request, without requiring the user to initiate the confirmation request.

13. The method according to any one of claims 1 to 5, wherein the sensing is performed based on an NFC function, and the contactless device comprises an NFC device.

14. A contactless payment service processing method, applied to a contactless device of a
30 merchant, wherein the method comprises:

in response to an operation that a mobile terminal of a user approaches the contactless device

of the merchant to perform sensing, triggering a server and/or a client of a payment application to determine a payment confirmation page, so that the user initiates a confirmation request to the server and/or the client on the payment confirmation page; and

receiving user payment information provided by the server and/or the client before the user
5 initiates the confirmation request, so that the merchant can initiate a payment request in advance based on the user payment information, wherein

a payment process is advanced by the server and/or the client by triggering corresponding processing logic based on whether the payment request or the confirmation request is first received.

15 15. A contactless payment service processing apparatus, applied to a server and/or a client of a payment application, wherein the apparatus comprises:

a confirmation request support module, configured to: in response to an operation that a mobile terminal of a user approaches a contactless device of a merchant to perform sensing, determine a payment confirmation page, and providing the payment confirmation page to the mobile terminal, so that the user initiates a confirmation request on the payment confirmation page;

15 a payment request support module, configured to: before the user initiates the confirmation request, determine corresponding user payment information, and provide the user payment information to the contactless device or a merchant payment collection device connected to the contactless device, so that the merchant can initiate a payment request in advance based on the user payment information; and

20 a payment process advancement module, configured to trigger corresponding processing logic based on whether the payment request or the confirmation request is first received, to advance a payment process.

25 16. The apparatus according to claim 15, wherein the operation that the mobile terminal of the user approaches the contactless device of the merchant to perform sensing is performed after the merchant triggers the payment process by using the merchant payment collection device, so that the contactless device prompts the user to perform sensing.

30 17. The apparatus according to claim 15, wherein the payment request support module is configured to: when the payment confirmation page is determined, provide the user payment information to the contactless device or the merchant payment collection device connected to the contactless device, to trigger the merchant to automatically initiate the payment request immediately based on the user payment information.

18. The apparatus according to claim 15, wherein the payment process advancement module is configured to: if the payment request is first received, temporarily store the payment request, and advance the payment process after the confirmation request arrives, or advance the payment process in advance based on the payment request in a process of waiting for the confirmation request to arrive.

19. The apparatus according to claim 15, wherein the payment process advancement module is configured to: if the confirmation request is first received, temporarily store the confirmation request, and wait for the payment request to arrive; and

advance the payment process after the payment request arrives.

20. The apparatus according to claim 15 or 18, wherein the confirmation request support module is configured to determine a payment confirmation page comprising a conversion script, wherein the conversion script is used to: after the payment confirmation page is provided to the mobile terminal and the user initiates the confirmation request on the payment confirmation page, convert the payment confirmation page into a payment success prompt page by executing the conversion script on the mobile terminal, to directly prompt the user of a payment success.

21. The apparatus according to claim 15, wherein the payment request support module is configured to determine the corresponding user payment information based on related information of a first account of the user; and

the payment process advancement module is configured to: advance the payment process based on the related information of the first account if the payment request is first received; or if the confirmation request is first received, advance the payment process based on related information of a second account of the user associated with the first account.

22. The apparatus according to claim 21, wherein the first account is separated from the second account; and

the payment process advancement module is configured to: after the payment process is advanced based on the related information of the first account, merge the first account and the second account after a corresponding payment success.

23. A contactless payment service processing apparatus, applied to a contactless device of a merchant, wherein the apparatus comprises:

a contactless interaction triggering module, configured to: in response to an operation that a mobile terminal of a user approaches the contactless device of the merchant to perform sensing,

trigger a server and/or a client of the payment application to determine a payment confirmation page, so that the user initiates a confirmation request to the server and/or the client on the payment confirmation page; and

a payment information receiving module, configured to receive user payment information provided by the server and/or the client before the user initiates the confirmation request, so that the merchant can initiate a payment request in advance based on the user payment information, wherein

a payment process is advanced by the server and/or the client by triggering corresponding processing logic based on whether the payment request or the confirmation request is first received.

24. A contactless payment service processing device, applied to a server and/or a client of a payment application, wherein the contactless payment service processing device comprises:

at least one processor; and

a memory communicatively connected to the at least one processor, wherein

the memory stores instructions that can be executed by the at least one processor, and the instructions are executed by the at least one processor, so that the at least one processor can perform the following operations:

in response to an operation that a mobile terminal of a user approaches a contactless device of a merchant to perform sensing, determining a payment confirmation page, and providing the payment confirmation page to the mobile terminal, so that the user initiates a confirmation request on the payment confirmation page;

before the user initiates the confirmation request, determining corresponding user payment information, and providing the user payment information to the contactless device or a merchant payment collection device connected to the contactless device, so that the merchant can initiate a payment request in advance based on the user payment information; and

triggering corresponding processing logic based on whether the payment request or the confirmation request is first received, to advance a payment process.

25. A contactless payment service processing device, applied to a contactless device of a merchant, wherein the contactless payment service processing device comprises:

at least one processor; and

a memory communicatively connected to the at least one processor, wherein

the memory stores instructions that can be executed by the at least one processor, and the

instructions are executed by the at least one processor, so that the at least one processor can perform the following operations:

5 in response to an operation that a mobile terminal of a user approaches the contactless device of the merchant to perform sensing, triggering a server and/or a client of the payment application to determine a payment confirmation page, so that the user initiates a confirmation request to the server and/or the client on the payment confirmation page; and

 receiving user payment information provided by the server and/or the client before the user initiates the confirmation request, so that the merchant can initiate a payment request in advance based on the user payment information, wherein

10 a payment process is advanced by the server and/or the client by triggering corresponding processing logic based on whether the payment request or the confirmation request is first received.