REAL-TIME SETTLEMENT SYSTEM AND METHOD, COMPUTER SYSTEM, AND STORAGE MEDIUM

TECHNICAL FIELD

[0001] This specification relates to the field of computer technologies, and in particular, to a real-time settlement system and method, a computer system, and a storage medium.

BACKGROUND

[0002] Currently, in a user-oriented activity jointly conducted by a plurality of institutions, each participating institution of a user activity usually conducts the user activity first, and advances fund consumption caused by discount permission granted by the institution of the user activity to users in an activity process. After the user activity ends, each participating institution settles funds consumed by the user activity.

[0003] Usually, steps such as procedure collaboration between the participating institutions when the user activity is conducted and accounting and settlement after the activity is conducted result in high operating costs.

[0004] Therefore, the present invention provides a real-time settlement system and method, a computer system, and a storage medium.

SUMMARY

[0005] Embodiments of this specification provide a real-time settlement system and method, a computer system, and a storage medium, to partially resolve the above-mentioned problems in the conventional technology.

[0006] This specification provides a real-time settlement system. The system includes a settlement platform, a first institution, and a second institution. The first institution is configured to provide reserve funds for the settlement platform. The settlement platform is configured to establish a fund pool based on the reserve funds. The second institution is configured to: determine an actual fund demand in response to a fund transfer request of a user; determine first funds from

funds stored in the second institution by the user based on the actual fund demand; determine second funds from funds stored in the second institution; and transfer actual funds corresponding to the actual fund demand to the first institution based on the first funds and the second funds. The first institution is further configured to: receive the actual funds transferred by the second institution, and send a settlement request to the settlement platform. The settlement platform is further configured to: in response to the settlement request, when it is determined that a process in which the second institution transfers funds to the first institution meets a preset condition, withdraw the second funds from the fund pool, and send the second funds to the second institution.

[0007] This specification provides a real-time settlement method applied to a settlement platform. The method includes: establishing a fund pool based on reserve funds provided by the first institution; determining, in response to a settlement request sent by the first institution, whether a process in which a second institution transfers funds to the first institution meets a preset condition, where the settlement request is sent by the first institution after receiving actual funds transferred by the second institution, the actual funds include first funds determined in funds stored in the second institution by a user and second funds determined in funds stored in the second institution, the first funds and the second funds are determined based on an actual fund demand, and the actual fund demand is determined by the second institution based on a fund transfer request sent by the user; and if the process meets the preset condition, withdrawing the second funds from the fund pool, and sending the second funds to the second institution.

[0008] This specification provides a real-time settlement method applied to a first institution. The method includes: providing reserve funds for the settlement platform, where the reserve funds are used to establish a fund pool; and sending a settlement request to the settlement platform after receiving actual funds transferred by the second institution, to determine whether a process in which the second institution transfers funds to the first institution meets a preset condition, where when the process meets the preset condition, the settlement request is responded by the settlement platform to withdraw second funds from the fund pool and send the second funds to the second institution, the actual funds include first funds determined in funds stored in the second institution by a user and second funds determined in funds stored in the second institution, the first funds and the second funds are determined based on an actual fund demand, and the actual fund demand is determined by the second institution based on a fund transfer request sent by the user.

[0009] This specification provides a real-time settlement method applied to a second

institution. The method includes: determining an actual fund demand in response to a fund transfer request of a user after the settlement platform establishes a fund pool based on reserve funds provided by the first institution; determining first funds from funds stored in the second institution by the user based on the actual fund demand, and determining second funds from funds stored in the second institution; transferring actual funds corresponding to the actual fund demand to the first institution based on the first funds and the second funds; and receiving the second funds sent by the settlement platform, where the second funds sent by the settlement platform are withdrawn, by the settlement platform from the fund pool in response to a settlement request sent by the first institution after the actual funds, when it is determined that a process in which the second institution transfers funds to the first institution meets a preset condition.

[0010] This specification provides a computer system, including a storage, a processor, and a computer program that is stored in the storage and that is capable of running on the processor. When executing the program, the processor implements the following steps: establishing a fund pool based on reserve funds provided by a first institution; determining, in response to a settlement request sent by the first institution, whether a process in which a second institution transfers funds to the first institution meets a preset condition, where the settlement request is sent by the first institution after receiving actual funds transferred by the second institution, the actual funds include first funds determined in funds stored in the second institution by a user and second funds determined in funds stored in the second institution, the first funds and the second funds are determined based on an actual fund demand, and the actual fund demand is determined by the second institution based on a fund transfer request sent by the user; and if the process meets the preset condition, withdrawing the second funds from the fund pool, and sending the second funds to the second institution.

[0011] This specification provides a computer-readable non-volatile storage medium. The storage medium stores a computer program, and when the computer program is executed by a processor, the real-time settlement method applied to a settlement platform is implemented.

[0012] At least one of the following beneficial effects can be achieved by using the above-mentioned at least one technical solution in the embodiments of this specification: Real-time accounting and real-time settlement of jointly conducting an activity by a plurality of institutions are implemented on a settlement platform serving as a third-party, to reduce time costs and risk costs of all participating institutions in the activity.

BRIEF DESCRIPTION OF DRAWINGS

[0013] The accompanying drawings described herein are used to provide a further understanding of this specification and constitute a part of this specification. The example embodiments of this specification and descriptions thereof are used to explain this specification, and do not constitute an improper limitation on this specification. In the accompanying drawings:

[0014] FIG. 1 is a schematic diagram of a procedure in which a user participates in an activity in this specification;

[0015] FIG. 2 is a schematic diagram of a real-time settlement system in this specification;

[0016] FIG. 3 is a schematic diagram of a cross-institution procedure of a fund transfer activity in this specification;

[0017] FIG. 4 is a schematic diagram of fund transfer permission in this specification;

[0018] FIG. 5 is a schematic interaction diagram of a settlement process in this specification;

[0019] FIG. 6 is a schematic interaction diagram of confirming an activity protocol in this specification;

[0020] FIG. 7 is a schematic flowchart of a real-time settlement method applied to a settlement platform in this specification;

[0021] FIG. 8 is a schematic flowchart of a real-time settlement method applied to a first institution in this specification;

[0022] FIG. 9 is a schematic flowchart of a real-time settlement method applied to a second institution in this specification; and

[0023] FIG. 10 is a schematic structural diagram of a computer system corresponding to FIG. 7 in this specification.

DESCRIPTION OF EMBODIMENTS

[0024] To make the objectives, technical solutions, and advantages of this specification clearer, the following clearly and comprehensively describes the technical solutions of this specification with reference to specific embodiments and corresponding accompanying drawings of this specification. Clearly, the described embodiments are merely some but not all of embodiments of this specification. All other embodiments obtained by a person of ordinary skill in the art based on the embodiment of this specification without creative efforts shall fall within the protection scope

of this specification.

[0025] The following describes in detail the technical solutions provided in the embodiments of this specification with reference to the accompanying drawings.

[0026] In a user-oriented activity jointly conducted by a plurality of institutions, user data is held by different participating institutions, and the conducted activity is usually closely related to service procedures of the participating institutions. Limited by privacy protection and another commercial factor, internal service procedures of the participating institutions cannot be disclosed to each other. As shown in FIG. 1, a user A in the figure participates in an activity in an institution A. After the user A participates in the activity, a subsequent activity procedure is executed between the institution A and an institution B. For the institution B, in this process, the institution B does not hold data of the user A or specific operation content of the user A in the institution A. If accounting needs to be performed on operating costs in an activity process, user data provided by institution A can be used for settlement only after the activity ends. In such an accounting manner, accuracy of the user data cannot be ensured, and timeliness is also lacked. Therefore, this specification provides a real-time settlement system.

[0027] FIG. 2 is a schematic diagram of a real-time settlement system in this specification. The settlement system includes a settlement platform, a first institution, and a second institution.

[0028] The first institution is configured to provide reserve funds for the settlement platform.

[0029] As described above, in an existing technical solution, settlement is usually performed after an activity ends. In the system provided in this specification, before an activity starts, the first institution can provide the reserve funds for the settlement platform in advance. A type of the reserve funds can be a currency or a virtual currency. A fund type and a fund amount of the provided reserve funds can be predetermined by each participating institution (any one of first institutions and second institutions) in the settlement system in another way, or can be determined based on an activity protocol after any participating institution in the settlement system proposes the activity protocol and each participating institution in the settlement system reviews and approves the activity protocol. This is not limited herein in this specification. A manner of providing the reserve funds to the settlement platform can be that the first institution actively transfers the reserve funds to the settlement platform, or can be that the settlement platform actively withdraws the reserve funds from the first institution. This is not limited herein in this specification.

[0030] The settlement platform is configured to establish a fund pool based on the reserve funds.

[0031] After receiving the reserve funds provided by the first institution, the settlement platform can establish the fund pool based on the received reserve funds. The fund pool is controlled by the settlement platform and is used to provide funds in real time when fund settlement is subsequently performed for the second participating institution.

[0032] The second institution is configured to: determine an actual fund demand in response to a fund transfer request of a user; determine first funds from funds stored in the second institution by the user based on the actual fund demand; determine second funds from funds stored in the second institution; and transfer actual funds corresponding to the actual fund demand to the first institution based on the first funds and the second funds.

[0033] After the settlement platform completes establishment of the fund pool, the second institution in the settlement system can determine an activity time based on the activity protocol agreed on or predetermined by each participating institution in the settlement system, and start the activity within the activity time, to be specific, receive the fund transfer request of the user. FIG. 3 is a schematic diagram of a cross-institution procedure of a fund transfer activity. After the user submits the fund transfer request in the second institution, the second institution can determine, in response to the fund transfer request, the actual fund demand for performing the fund transfer request; determine a fund discount margin for the user in this activity based on the activity protocol agreed on or predetermined by each participating institution in the settlement system; determine, based on the fund discount margin for the user, a part that needs to be provided by the user and a part that needs to be complemented in advance by the second institution in the actual fund demand; determine, based on the part that needs to be provided by the user in the actual demand, the first funds from the funds stored in the second institution by the user; determine, based on the part that needs to be complemented in advance by the institution in the actual fund demand, the second funds from the funds stored in the second institution; form the actual funds corresponding to the actual fund demand based on the withdrawn first funds and the withdrawn second funds; and transfer, based on a transfer target in the fund transfer request, the actual funds to the first institution serving as the transfer target in the settlement system. The first institution transfers a corresponding fund type and fund amount to a target user based on the actual funds and the fund transfer request when the second institution transfers the actual funds. For example, in FIG. 3, a

fund transfer request submitted by a user A is to exchange a 100-unit A currency for a 500-unit B currency. Therefore, an actual fund demand is the 100-unit A currency. Based on a fund discount margin, first funds are a 90-unit A currency (provided by the user A), and second funds are a 10-unit B currency (advanced by the second institution). After receiving the 100-unit A currency transferred by the second institution, the first institution transfers a 500-unit B currency to a specified user.

[0034] In an actual application process, because of a service procedure design of each institution and a characteristic of transferred funds, a fund exchange ratio of the first institution is usually consistent with an actual exchange rate, and it is difficult to customize or change for each fund transfer process. That is, the first institution makes a fund transfer to the target user based on the fund amount of the received actual funds and a fixed fund exchange ratio. Therefore, if there is a discount for the fund transfer request of the user, the second institution needs to complement a part of funds that are a discount for the user and make a fund transfer of the actual funds to the first institution. Based on such a service characteristic, the system provided in this specification proposes a settlement system that can perform real-time accounting and settlement.

[0035] In an embodiment of this specification, the first institution can be a collection institution for exchange, the second institution can be a payment institution for exchange, and the fund type is a different currency. The fund transfer request submitted by the user in the second institution can be an exchange request for exchange an A currency for a B currency. The fund exchange ratio can be the actual exchange rate. A fund type of the actual funds transferred by the second institution to the first institution is the currency A, and funds transferred by the first institution to the target user is the currency B.

[0036] The first institution provides the settlement platform with the reserve funds for establishing the fund pool, which can be the currency A, or can be any type of currency determined in the activity protocol agreed on or predetermined by each participating institution. In a subsequent step, when the settlement platform withdraws the second funds from the fund pool, a fund amount withdrawn by the settlement platform only needs to be equal to a currency A that is used as the second funds and that is complemented by the second institution.

[0037] Specifically, the fund transfer request submitted by the user can include information such as a fund type, a fund transfer amount, and a fund transfer target (the first institution) of a transfer.

[0038] The first institution is further configured to: receive the actual funds transferred by the second institution, and send a settlement request to the settlement platform.

[0039] As the transfer target specified by the fund transfer request of the user, the first institution can send the settlement request to the settlement platform after confirming that the actual funds transferred by the second institution are received. The settlement request can include process information of a fund transfer corresponding to the settlement request and a settlement confirmation instruction of the first institution, so that the settlement platform transfers funds to the second institution, to compensate the funds that are independently compensated by the second institution when the actual funds are transferred.

[0040] The first institution can further verify authenticity of the second institution, confirm whether the second institution is a target institution predetermined by the first institution, and send the settlement request to the settlement platform after all confirmation succeeds.

[0041] The settlement platform is further configured to: in response to the settlement request, when it is determined that a process in which the second institution transfers funds to the first institution meets a preset condition, withdraw the second funds from the fund pool, and send the second funds to the second institution.

[0042] After receiving the settlement request of the first institution, the settlement platform can determine, based on the activity protocol agreed on or predetermined by each participating institution in the settlement system, whether a fund transfer process corresponding to the settlement request meets the preset condition. When the preset condition is met, a fund amount of the second funds is withdrawn from a pre-prepared fund pool (which is equivalent to a fund amount that is independently complemented by the second institution when the second institution makes the fund transfer to the first institution) and is sent to the second institution. A settlement process of the activity is arranged on the settlement platform. Both checking of the fund transfer process and fund settlement for a participating institution (the second institution) are completed in real time by a third-party, namely, the settlement platform, instead of a process in which the first institution performs accounting based on user data provided by the second institution after the activity ends in a conventional solution. Therefore, after receiving the actual funds transferred by the second institution, the first institution can perform real-time settlement. However, because of a pre-established fund pool, the second institution does not need to worry about a delay of transferring the pre-complemented second funds by the first institution.

[0043] The preset condition herein can be that a settlement confirmation instruction in the first institution is reviewed and confirmed based on the activity protocol agreed on or predetermined by each participating institution in the settlement system; or can be another proper preset condition that it is pre-agreed that the second institution sends a transfer confirmation instruction including a fund transfer process identifier to the settlement platform after transferring the actual funds to the first institution, so that the settlement platform reviews and confirms the settlement request based on the transfer confirmation instruction after receiving the settlement request that is sent by the first institution and that includes the fund transfer process identifier; etc. This is not limited herein in this specification.

[0044] It should be noted that, in the real-time settlement system shown in FIG. 2, a quantity of first institutions and a quantity of second institutions are not limited to quantities shown in the figure, and proper quantities can be set according to a demand in an actual application process. When there are a plurality of first institutions in the settlement system, all the first institutions can jointly provide funds for establishing a fund pool; or each first institution provides funds to establish a fund pool corresponding to the first institution, to compensate, for the spent second funds, the second institution that transfers the actual funds to the first institution in a subsequent step.

[0045] In the real-time settlement system shown in FIG. 2, real-time accounting and real-time settlement of jointly conducting an activity by a plurality of institutions are implemented on the settlement platform serving as the third-party, to reduce time costs and risk costs of all participating institutions in the activity.

[0046] In one or more embodiments of this specification, the first institution is further configured to set fund transfer permission for a specified user; and the second institution is specifically configured to: determine an actual fund demand in response to a fund transfer request of a user with the fund transfer permission; determine first funds from funds stored in the second institution by the user based on the actual fund demand and the fund transfer permission; determine second funds from the funds stored in the second institution; and transfer actual funds to the first institution based on the first funds and the second funds.

[0047] It can be learned from an overall activity procedure that the first institution ultimately burdens the fund discount given to the user in the activity, namely, the second funds. To prevent an institution with a bad intention from making a profit by using the second funds, the first

institution can further set the fund transfer permission for the specified user before the activity starts, to limit a participating group of the activity. Therefore, subsequently, after the activity starts, when the user submits the fund transfer request in the second institution, the subsequent step of determining the first funds and the second funds and performing the fund transfer is performed only in response to the fund transfer request of the user with the fund transfer permission. Specifically, a specified user that can participate in the activity can be specified based on the activity protocol agreed on or predetermined by each participating institution in the settlement system. A method in which the second institution determines whether the user has the fund transfer permission can be verified by the first institution, or can be another proper determining method. This is not limited herein in this specification.

[0048] In one or more embodiments of this specification, the first institution is further configured to send user information of the specified user and permission information of the fund transfer permission to the settlement platform after setting the fund transfer permission for the specified user; the settlement platform is further configured to store the user information and the permission information that are sent by the first institution; the second institution is further configured to send a first verification request to the settlement platform in response to the fund transfer request of the user with the fund transfer permission, to verify validity of the fund transfer permission of the user; the settlement platform is further configured to: verify the fund transfer permission of the user based on the user information and the permission information in response to the first verification request, and obtain a first verification result; and the second institution is further configured to: before determining the actual fund demand, determine, based on the first verification result, that verification performed on the fund transfer permission of the user by the settlement platform succeeds.

[0049] To further reduce risk costs, after setting the fund transfer permission for the specified user, the first institution can further send the user information of the specified user and the permission information of the fund transfer permission to the settlement platform for storage, so that the second institution can send the first verification request to the settlement platform after receiving the fund transfer request of the user with the fund transfer permission, to verify the validity of the fund transfer permission of the user. Because the settlement platform pre-stores the user information and the permission information that are sent by the first institution after the first institution sets the fund transfer permission for the specified user, the settlement platform can

verify, based on the user information and the permission information corresponding to each user information that are stored on the settlement platform, the fund transfer permission that is of the user and that needs to be verified for the first verification request, to obtain the first verification result of determining whether the fund transfer permission of the user is stored valid fund transfer permission, and return the first verification result to the second institution, so that the second institution performs a subsequent fund transfer step only when verification performed on the fund transfer permission of the user by the settlement platform succeeds. This can reduce a risk that the user forges the fund transfer permission.

[0050] In one or more embodiments of this specification, the first institution is further configured to send a second verification request to the settlement platform after receiving the actual funds transferred by the second institution, to verify validity of fund transfer permission used when the second institution transfers funds; the settlement platform is further configured to: verify the fund transfer permission of the user based on the user information and the permission information in response to the second verification request, and obtain a second verification result; and the first institution is further configured to: before sending the settlement request, determine, based on the second verification result, that verification performed on the fund transfer permission of the user by the settlement platform succeeds.

[0051] Further, after receiving the actual funds transferred by the second institution, the first institution can further verify the fund transfer permission of the user based on the user information submitted when the second institution transfers the actual funds and the fund transfer permission of the user, and sends the settlement request to the settlement platform after verification succeeds. Therefore, the first institution does not need to independently store the permission information of the fund transfer permission granted by the first institution. In addition, because the user information of the specified user and the permission information are stored on the settlement platform, the settlement institution can store a record for receiving the second verification request, and the first institution cannot independently obtain and change the second verification result, to ensure a benefit of the second institution in the settlement process of the activity.

[0052] In one or more embodiments of this specification, the settlement platform is further configured to withdraw the fund transfer permission of the user after withdrawing the second funds from the fund pool and sending the second funds to the second institution.

[0053] The settlement platform can withdraw the fund transfer permission of the user after

withdrawing the second funds and sending the second funds to the second institution, to complete settlement corresponding to the fund transfer request of the user. In this way, the user cannot use the fund transfer permission again. Specifically, the fund transfer permission can be a permission use credential shown in FIG. 4. A permission use code can be submitted by the user simultaneously while the user submits the fund transfer request in the second institution, to prepare for a subsequent verification procedure. The activity time is used to indicate an available time period of the permission use code. An issuing institution is used to confirm whether an issuing institution of the fund transfer permission is the first institution in the settlement system. The user and the user identifier are used to identify the user with the fund transfer permission. The user identifier can be various identifiers such as a mobile phone, a mailbox number, or an identity certificate that can uniquely determine a user identity. An available institution specifies a second institution for which the fund transfer permission is available. The permission type and a fund discount rule impose specific limitations on a fund discount manner and the fund discount margin of the fund transfer permission. Therefore, after the activity starts, the second institution can determine the actually demanded funds, the first funds, and the second funds based on the permission type, the fund discount rule, and the fund transfer request of the user. A permission status indicates an available status of the fund transfer permission. The settlement institution can re-determine the permission status after the fund transfer permission is used or after the activity time ends, to withdraw the fund transfer permission.

[0054] Therefore, the settlement platform can independently withdraw the fund transfer permission of the user without participation of another institution.

[0055] In one or more embodiments of this specification, the settlement platform is further configured to transfer remaining funds in the fund pool to the first institution after a preset time.

[0056] In the activity protocol agreed on or predetermined by each participating institution in the settlement system, after the activity time of the activity ends, that is, after the preset time ends, if there are remaining funds in the fund pool, the settlement platform can transfer the remaining funds in the fund pool to the first institution.

[0057] In one or more embodiments of this specification, the settlement platform is specifically configured to store, in a blockchain network, the user information and the permission information that are sent by the first institution.

[0058] If the user information and the permission information are stored in the blockchain

network, the settlement platform cannot independently modify the stored user information and the stored permission information, to improve reliability of the settlement platform and further avoid a possible risk in the settlement process of the activity.

[0059] In one or more embodiments of this specification, the first institution or the second institution is configured to: preset an activity protocol, and send the activity protocol to the settlement platform; the settlement platform is configured to: store the activity protocol by using a block technology, and publish the activity protocol; the first institution and the second institution are further configured to confirm the activity protocol published on the settlement platform; the first institution is further configured to: after confirming the protocol, provide the reserve funds for the settlement platform based on the activity protocol; the settlement platform is further configured to establish the fund pool based on the reserve funds; the second institution is further configured to: in response to the fund transfer request of the user, determine the actual fund demand based on the activity protocol, determine, based on the actual fund demand, the first funds from the funds stored in the second institution by the user, determine the second funds from the funds stored in the second institution, and transfer the actual funds corresponding to the actual fund demand to the first institution based on the first funds and the second funds; the first institution is further configured to: receive the actual funds transferred by the second institution, and send the settlement request to the settlement platform; and the settlement platform is further configured to: in response to the settlement request, when determining that the process in which the second institution transfers funds to the first institution meets the preset condition, withdraw the second funds from the fund pool, and send the second funds to the second institution.

[0060] The activity protocol discloses events such as a participant of the activity, the activity time, and the activity rule, and stores the activity protocol by using the blockchain technology. Because the stored activity protocol is disclosed and cannot be changed, disputes caused by disagreement between participating institutions about the activity rule in the settlement process of the activity can be further reduced.

[0061] FIG. 5 is a schematic interaction diagram of a settlement process of a settlement platform, a first institution, and a second institution in the real-time settlement system shown in FIG. 2 according to this specification. The following steps are specifically included:

[0062] S500: The first institution provides reserve funds for the settlement platform.

[0063] S502: The settlement platform establishes a fund pool based on the reserve funds.

[0064] S504: The second institution determines an actual fund demand in response to a fund transfer request of a user; determines first funds from funds stored in the second institution by the user based on the actual fund demand; determines second funds from funds stored in the second institution; and transfers actual funds corresponding to the actual fund demand to the first institution based on the first funds and the second funds.

[0065] S506: The first institution receives the actual funds transferred by the second institution, and sends a settlement request to the settlement platform.

[0066] S508: In response to the settlement request, when it is determined that a process in which the second institution transfers funds to the first institution meets a preset condition, the settlement platform withdraws the second funds from the fund pool, and sends the second funds to the second institution.

[0067] Before step S504 shown in FIG. 5, the first institution can further set fund transfer permission for a specified user, so that in step S504 shown in FIG. 5, the second institution can determine an actual fund demand in response to a fund transfer request of a user with the fund transfer permission; determine the first funds from the funds stored in the second institution by the user based on the actual fund demand and the fund transfer permission; determine the second funds from the funds stored in the second institution; and transfer the actual funds to the first institution based on the first funds and the second funds.

[0068] Before step S504 shown in FIG. 5, the first institution can further send user information of the specified user and permission information of the fund transfer permission to the settlement platform after setting the fund transfer permission for the specified user, so that the settlement platform can further store the user information and the permission information that are sent by the first institution; in step S504 shown in FIG. 5, the second institution can further send a first verification request to the settlement platform in response to the fund transfer request of the user with the fund transfer permission, to verify validity of the fund transfer permission of the user; the settlement platform can further verify the fund transfer permission of the user based on the user information and the permission information in response to the first verification request, and obtain a first verification result; and in step S504 shown in FIG. 5, before determining the actual fund demand, the second institution can further determine, based on the first verification result, that verification performed on the fund transfer permission of the user by the settlement platform succeeds.

[0069] In step S506 shown in FIG. 5, the first institution can further send a second verification request to the settlement platform after receiving the actual funds transferred by the second institution, to verify validity of fund transfer permission used when the second institution transfers funds; the settlement platform can further verify the fund transfer permission of the user based on the user information and the permission information in response to the second verification request, and obtain a second verification result; and before sending the settlement request, the first institution can further determine, based on the second verification result, that verification performed on the fund transfer permission of the user by the settlement platform succeeds.

[0070] After step S508 shown in FIG. 5, the settlement platform can further withdraw the fund transfer permission of the user after withdrawing the second funds from the fund pool and sending the second funds to the second institution.

[0071] After step S508 shown in FIG. 5, the settlement platform can further transfer remaining funds in the fund pool to the first institution after a preset time.

[0072] After step S500 shown in FIG. 5, the settlement platform can further store, in a blockchain network, the user information and the permission information that are sent by the first institution.

[0073] FIG. 6 is a schematic interaction diagram of confirming an activity protocol by a settlement platform, a first institution, and a second institution in the real-time settlement system shown in FIG. 2 in this specification. A procedure of confirming the activity protocol can be performed before step S500 shown in FIG. 5.

[0074] S600: The first institution or the second institution presets the activity protocol, and sends the activity protocol to the settlement platform.

[0075] S602: The settlement platform stores the activity protocol by using a blockchain technology, and publishes the activity protocol on the settlement platform.

[0076] S604: The first institution and the second institution are further configured to confirm the activity protocol published on the settlement platform.

[0077] After all participating institutions (all first institutions and all second institutions) of the activity protocol confirm the activity protocol, the settlement process shown in FIG. 5 can be further performed.

[0078] FIG. 7 is a schematic flowchart of a real-time settlement method applied to a settlement platform in this specification. The method can specifically include the following steps:

[0079] S700: Establish a fund pool based on reserve funds provided by the first institution.

[0080] S702: Determine, in response to a settlement request sent by the first institution, whether a process in which a second institution transfers funds to the first institution meets a preset condition, where the settlement request is sent by the first institution after receiving actual funds transferred by the second institution, the actual funds include first funds determined in funds stored in the second institution by a user and second funds determined in funds stored in the second institution, the first funds and the second funds are determined based on an actual fund demand, and the actual fund demand is determined by the second institution based on a fund transfer request sent by the user.

[0081] S704: If the process meets the preset condition, withdraw the second funds from the fund pool, and send the second funds to the second institution.

[0082] In addition, before step S702 shown in FIG. 7, after the first institution sets fund transfer permission for a specified user, user information of the specified user and permission information of the fund transfer permission that are sent by the first institution are stored; and in response to a first verification request sent by the second institution before determining the actual fund demand, the fund transfer permission of the user is verified based on the user information and the permission information, and a first verification result is obtained.

[0083] In addition, before step S702 shown in FIG. 7, in response to a second verification request sent by the first institution before sending a settlement request to the settlement platform, the fund transfer permission of the user is verified based on the user information and the permission information, and a second verification result is obtained.

[0084] The method further includes: after step S704 shown in FIG. 7, withdrawing fund transfer permission corresponding to the settlement request.

[0085] In addition, after step S704 shown in FIG. 7, remaining funds in the fund pool are transferred to the first institution after a preset time.

[0086] Alternatively, before step S700 shown in FIG. 7, the user information and the permission information that are sent by the first institution are stored in a blockchain network.

[0087] Specifically, in step S704 shown in FIG. 7, if both the first verification result and the second verification result are that verification succeeds, the second funds are withdrawn from the fund pool, and sent to the second institution.

[0088] That is, the preset condition can be that both the first verification result and the second

verification result are that verification succeeds. Therefore, each participating institution in the funds transfer process verifies the funds transfer process. A settlement behavior that the settlement platform withdraws the second funds from the fund pool and sends the second funds to the second institution can be supported by the first institution and the second institution.

[0089] Based on the real-time settlement method applied to a settlement platform provided in FIG. 7, real-time accounting and real-time settlement of jointly conducting an activity by a plurality of institutions are implemented on the settlement platform serving as the third-party, to reduce time costs and risk costs of all participating institutions in the activity.

[0090] FIG. 8 is a schematic flowchart of a real-time settlement method applied to a first institution in this specification. The method can specifically include the following steps:

[0091] S800: Provide reserve funds for the settlement platform, where the reserve funds are used to establish a fund pool.

[0092] S802: Send a settlement request to the settlement platform after receiving actual funds transferred by the second institution, to determine whether a process in which the second institution transfers funds to the first institution meets a preset condition, where when the process meets the preset condition, the settlement request is responded by the settlement platform to withdraw second funds from the fund pool and send the second funds to the second institution, the actual funds include first funds determined in funds stored in the second institution by a user and second funds determined in funds stored in the second institution, the first funds and the second funds are determined based on an actual fund demand, and the actual fund demand is determined by the second institution based on a fund transfer request sent by the user.

[0093] In addition, before step S802 shown in FIG. 8, fund transfer permission is set for a specified user.

[0094] Further, before step S802 shown in FIG. 8, user information of the specified user and permission information of the fund transfer permission are sent to the settlement platform for storage after setting the fund transfer permission for the specified user.

[0095] In addition, in step S802 shown in FIG. 8, before the settlement request is sent to the settlement platform, the second verification request is sent to the settlement platform, to verify validity of the fund transfer permission of the user, and that the verification on the fund transfer permission of the user by the settlement platform succeeds is determined based on the second verification result obtained by the settlement platform for the second verification request.

[0096] FIG. 9 is a schematic flowchart of a real-time settlement method applied to a second institution in this specification. The method can specifically include the following steps:

[0097] S900: Determine an actual fund demand in response to a fund transfer request of a user after the settlement platform establishes a fund pool based on reserve funds provided by the first institution.

[0098] S902: Determine first funds from funds stored in the second institution by the user based on the actual fund demand, and determine second funds from funds stored in the second institution.

[0099] S904: Transfer actual funds corresponding to the actual fund demand to the first institution based on the first funds and the second funds.

[0100] S906: Receive the second funds sent by the settlement platform, where the second funds sent by the settlement platform are withdrawn, by the settlement platform from the fund pool in response to a settlement request sent by the first institution after the actual funds, when it is determined that a process in which the second institution transfers funds to the first institution meets a preset condition.

[0101] In addition, in step S900 shown in FIG. 9, the actual fund demand is determined in response to a fund transfer request of a user with fund transfer permission.

[0102] Further, before step S904 described in FIG. 9, a first verification request is sent to the settlement platform, to verify validity of the fund transfer permission of the user; and that verification performed on the fund transfer permission of the user by the settlement platform succeeds is determined based on a first verification result obtained by the settlement platform for the first verification request.

[0103] The specification also provides a computer-readable non-transitory storage medium, where the storage medium stores a computer program, which, when executed by a processor, can be used to perform one or more steps of one or more methods described or illustrated herein or provides functionality described or illustrated herein. Herein, the computer-readable non-transitory storage medium or media may include one or more semiconductor-based or other integrated circuits (ICs) (such, as for example, field-programmable gate arrays (FPGAs) or application-specific ICs (ASICs)), hard disk drives (HDDs), hybrid hard drives (HHDs), optical discs, optical disc drives (ODDs), magneto-optical discs, magneto-optical drives, floppy diskettes, floppy disk drives (FDDs), magnetic tapes, solid-state drives (SSDs), RAM-drives, SECURE

DIGITAL cards or drives, any other suitable computer-readable non-transitory storage media, or any suitable combination of two or more of these, where appropriate. A computer-readable non-transitory storage medium may be volatile, non-volatile, or a combination of volatile and non-volatile, where appropriate.

[0104] The specification also provides a computer system. FIG. 10 illustrates an example computer system 1000. In particular embodiments, one or more computer systems 1000 perform one or more steps of one or more methods described or illustrated herein. In particular embodiments, one or more computer systems 1000 provide functionality described or illustrated herein. In particular embodiments, software running on one or more computer systems 1000 performs one or more steps of one or more methods described or illustrated herein or provides functionality described or illustrated herein. Particular embodiments include one or more portions of one or more computer systems 1000. Herein, reference to a computer system may encompass a computing device, and vice versa, where appropriate. Moreover, reference to a computer system may encompass one or more computer systems, where appropriate.

[0105] This disclosure contemplates any suitable number of computer systems 1000. This disclosure contemplates computer system 1000 taking any suitable physical form. As example and not by way of limitation, computer system 1000 may be an embedded computer system, a system-on-chip (SOC), a single-board computer system (SBC) (such as, for example, a computer-on-module (COM) or system-on-module (SOM)), a desktop computer system, a laptop or notebook computer system, an interactive kiosk, a mainframe, a mesh of computer systems, a mobile telephone, a personal digital assistant (PDA), a server, a tablet computer system, or a combination of two or more of these. Where appropriate, computer system 1000 may include one or more computer systems 1000; be unitary or distributed; span multiple locations; span multiple machines; span multiple data centers; or reside in a cloud, which may include one or more cloud components in one or more networks. Where appropriate, one or more computer systems 1000 may perform without substantial spatial or temporal limitation one or more steps of one or more methods described or illustrated herein. As an example and not by way of limitation, one or more computer systems 1000 may perform in real time or in batch mode one or more steps of one or more methods described or illustrated herein. One or more computer systems 1000 may perform at different times or at different locations one or more steps of one or more methods described or illustrated herein, where appropriate.

[0106] In particular embodiments, computer system 1000 includes processor 1002, memory 1004, storage 1006, an input/output (I/O) interface 1008, a communication interface 1010, and a bus 1012. Although this disclosure describes and illustrates a particular computer system having a particular number of particular components in a particular arrangement, this disclosure contemplates any suitable computer system having any suitable number of any suitable components in any suitable arrangement.

[0107] In particular embodiments, processor 1002 includes hardware for executing instructions, such as those making up a computer program. As an example and not by way of limitation, to execute instructions, processor 1002 may retrieve (or fetch) the instructions from an internal register, an internal cache, memory 1004, or storage 1006; decode and execute them; and then write one or more results to an internal register, an internal cache, memory 1004, or storage 1006. In particular embodiments, processor 1002 may include one or more internal caches for data, instructions, or addresses. This disclosure contemplates processor 1002 including any suitable number of any suitable internal caches, where appropriate. As an example and not by way of limitation, processor 1002 may include one or more instruction caches, one or more data caches, and one or more translation lookaside buffers (TLB s). Instructions in the instruction caches may be copies of instructions in memory 1004 or storage 1006, and the instruction caches may speed up retrieval of those instructions by processor 1002. Data in the data caches may be copies of data of 100 in memory 1004 or storage 1006 for instructions executing at processor 1002 to operate on; the results of previous instructions executed at processor 1002 for access by subsequent instructions executing at processor 1002 or for writing to memory 1004 or storage 1006; or other suitable data. The data caches may speed up read or write operations by processor 1002. The TLBs may speed up virtual-address translation for processor 1002. In particular embodiments, processor 1002 may include one or more internal registers for data, instructions, or addresses. This disclosure contemplates processor 1002 including any suitable number of any suitable internal registers, where appropriate. Where appropriate, processor 1002 may include one or more arithmetic logic units (ALUs); be a multi-core processor; or include one or more processors 1002. Although this disclosure describes and illustrates a particular processor, this disclosure contemplates any suitable processor.

[0108] In particular embodiments, memory 1004 includes main memory for storing instructions for processor 1002 to execute or data for processor 1002 to operate on. As an example

and not by way of limitation, computer system 1000 may load instructions from storage 1006 or another source (such as, for example, another computer system 1000) to memory 1004. Processor 1002 may then load the instructions from memory 1004 to an internal register or internal cache. To execute the instructions, processor 1002 may retrieve the instructions from the internal register or internal cache and decode them. During or after execution of the instructions, processor 1002 may write one or more results (which may be intermediate or final results) to the internal register or internal cache. Processor 1002 may then write one or more of those results to memory 1004. In particular embodiments, processor 1002 executes only instructions in one or more internal registers or internal caches or in memory 1004 (as opposed to storage 1006 or elsewhere) and operates only on data in one or more internal registers or internal caches or in memory 1004 (as opposed to storage 1006 or elsewhere). One or more memory buses (which may each include an address bus and a data bus) may couple processor 1002 to memory 1004. Bus 1012 may include one or more memory buses, as described below. In particular embodiments, one or more memory management units (MMUs) reside between processor 1002 and memory 1004 and facilitate accesses to memory 1004 requested by processor 1002. In particular embodiments, memory 1004 includes random access memory (RAM). This RAM may be volatile memory, where appropriate. Where appropriate, this RAM may be dynamic RAM (DRAM) or static RAM (SRAM). Moreover, where appropriate, this RAM may be single-ported or multi-ported RAM. This disclosure contemplates any suitable RAM. Memory 1004 may include one or more memories 1004, where appropriate. Although this disclosure describes and illustrates particular memory, this disclosure contemplates any suitable memory.

[0109] In particular embodiments, storage 1006 includes mass storage for data or instructions. As an example and not by way of limitation, storage 1006 may include a hard disk drive (HDD), a floppy disk drive, flash memory, an optical disc, a magneto-optical disc, magnetic tape, or a Universal Serial Bus (USB) drive or a combination of two or more of these. Storage 1006 may include removable or non-removable (or fixed) media, where appropriate. Storage 1006 may be internal or external to computer system 1000, where appropriate. In particular embodiments, storage 1006 is non-volatile, solid-state memory. In particular embodiments, storage 1006 includes read-only memory (ROM). Where appropriate, this ROM may be mask-programmed ROM, programmable ROM (PROM), erasable PROM (EPROM), electrically erasable PROM (EEPROM), electrically alterable ROM (EAROM), or flash memory or a combination of two or

more of these. This disclosure contemplates mass storage 1006 taking any suitable physical form. Storage 1006 may include one or more storage control units facilitating communication between processor 1002 and storage 1006, where appropriate. Where appropriate, storage 1006 may include one or more storages 1006. Although this disclosure describes and illustrates particular storage, this disclosure contemplates any suitable storage.

[0110] In particular embodiments, I/O interface 1008 includes hardware, software, or both, providing one or more interfaces for communication between computer system 1000 and one or more I/O devices. Computer system 1000 may include one or more of these I/O devices, where appropriate. One or more of these I/O devices may enable communication between a person and computer system 1000. As an example and not by way of limitation, an I/O device may include a keyboard, keypad, microphone, monitor, mouse, printer, scanner, speaker, still camera, stylus, tablet, touch screen, trackball, video camera, another suitable I/O device or a combination of two or more of these. An I/O device may include one or more sensors. This disclosure contemplates any suitable I/O devices and any suitable I/O interfaces 1008 for them. Where appropriate, I/O interface 1008 may include one or more device or software drivers enabling processor 1002 to drive one or more of these I/O devices. I/O interface 1008 may include one or more I/O interfaces 1008, where appropriate. Although this disclosure describes and illustrates a particular I/O interface, this disclosure contemplates any suitable I/O interface.

[0111] In particular embodiments, communication interface 1010 includes hardware, software, or both providing one or more interfaces for communication (such as, for example, packet-based communication) between computer system 1000 and one or more other computer systems 1000 or one or more networks. As an example and not by way of limitation, communication interface 1010 may include a network interface controller (NIC) or network adapter for communicating with an Ethernet or other wire-based network or a wireless NIC (WNIC) or wireless adapter for communicating with a wireless network, such as a WI-FI network. This disclosure contemplates any suitable network and any suitable communication interface 1010 for it. As an example and not by way of limitation, computer system 1000 may communicate with an ad hoc network, a personal area network (PAN), a local area network (LAN), a wide area network (WAN), a metropolitan area network (MAN), or one or more portions of the Internet or a combination of two or more of these. One or more portions of one or more of these networks may be wired or wireless. As an example, computer system 1000 may communicate with a wireless PAN (WPAN) (such as, for example, a

BLUETOOTH WPAN), a WI-FI network, a WI-MAX network, a cellular telephone network (such as, for example, a Global System for Mobile Communications (GSM) network), or other suitable wireless network or a combination of two or more of these. Computer system 1000 may include any suitable communication interface 1010 for any of these networks, where appropriate. Communication interface 1010 may include one or more communication interfaces 1010, where appropriate. Although this disclosure describes and illustrates a particular communication interface, this disclosure contemplates any suitable communication interface.

[0112] In particular embodiments, bus 1012 includes hardware, software, or both coupling components of computer system 1000 to each other. As an example and not by way of limitation, bus 1012 may include an Accelerated Graphics Port (AGP) or other graphics bus, an Enhanced Industry Standard Architecture (EISA) bus, a front-side bus (FSB), a HYPERTRANSPORT (HT) interconnect, an Industry Standard Architecture (ISA) bus, an INFINIBAND interconnect, a low-pin-count (LPC) bus, a memory bus, a Micro Channel Architecture (MCA) bus, a Peripheral Component Interconnect (PCI) bus, a PCI-Express (PCIe) bus, a serial advanced technology attachment (SATA) bus, a Video Electronics Standards Association local (VLB) bus, or another suitable bus or a combination of two or more of these. Bus 1012 may include one or more buses 1012, where appropriate. Although this disclosure describes and illustrates a particular bus, this disclosure contemplates any suitable bus or interconnect.

[0113] Certainly, in addition to software implementations, this specification does not preclude other implementations, such as a logic device or a combination of software and hardware. In other words, an execution body of the following processing procedure is not limited to each logical unit, and may be hardware or a logic device.

[0114] It should be further noted that, the terms "include", "comprise", or any other variant thereof are intended to cover a non-exclusive inclusion, so that a process, a method, a product, or 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.

[0115] The embodiments of this specification are described in a progressive way. For same or similar parts in the embodiments, references can be made to each other. Each embodiment focuses

on a difference from another embodiment. 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.

[0116] The above-mentioned descriptions are merely embodiments of this specification, and are not intended to limit this specification. A person skilled in the art can make various changes and changes to this specification. Any modification, equivalent replacement, improvement, etc. made without departing from the spirit and principle of this specification shall fall within the scope of the claims in this application.

CLAIMS

What is claimed is:

1. A real-time settlement system, wherein the system comprises a settlement platform, a first institution, and a second institution;

the first institution is configured to provide reserve funds for the settlement platform;

the settlement platform is configured to establish a fund pool based on the reserve funds;

the second institution is configured to: determine an actual fund demand in response to a fund transfer request of a user; determine first funds from funds stored in the second institution by the user based on the actual fund demand; determine second funds from funds stored in the second institution; and transfer actual funds corresponding to the actual fund demand to the first institution based on the first funds and the second funds;

the first institution is further configured to: receive the actual funds transferred by the second institution, and send a settlement request to the settlement platform; and

the settlement platform is further configured to: in response to the settlement request, when it is determined that a process in which the second institution transfers funds to the first institution meets a preset condition, withdraw the second funds from the fund pool, and send the second funds to the second institution.

2. The system according to claim 1, wherein the first institution is further configured to set fund transfer permission for a specified user; and

the second institution is specifically configured to: determine an actual fund demand in response to a fund transfer request of a user with the fund transfer permission; determine first funds from funds stored in the second institution by the user based on the actual fund demand and the fund transfer permission; determine second funds from the funds stored in the second institution; and transfer actual funds to the first institution based on the first funds and the second funds;

3. The system according to claim 2, wherein the first institution is further configured to send user information of the specified user and permission information of the fund transfer permission to the settlement platform after setting the fund transfer permission for the specified user;

the settlement platform is further configured to store the user information and the permission information that are sent by the first institution;

the second institution is further configured to send a first verification request to the settlement

platform in response to the fund transfer request of the user with the fund transfer permission, to verify validity of the fund transfer permission of the user;

the settlement platform is further configured to: verify the fund transfer permission of the user based on the user information and the permission information in response to the first verification request, and obtain a first verification result; and

the second institution is further configured to: before determining the actual fund demand, determine, based on the first verification result, that verification performed on the fund transfer permission of the user by the settlement platform succeeds.

4. The system according to claim 3, wherein the first institution is further configured to send a second verification request to the settlement platform after receiving the actual funds transferred by the second institution, to verify validity of fund transfer permission used when the second institution transfers funds;

the settlement platform is further configured to: verify the fund transfer permission of the user based on the user information and the permission information in response to the second verification request, and obtain a second verification result; and

the first institution is further configured to: before sending the settlement request, determine, based on the second verification result, that verification performed on the fund transfer permission of the user by the settlement platform succeeds.

5. The system according to claim 3, wherein the settlement platform is further configured to withdraw the fund transfer permission of the user after withdrawing the second funds from the fund pool and sending the second funds to the second institution.

6. The system according to claim 1, wherein the settlement platform is further configured to transfer remaining funds in the fund pool to the first institution after a preset time.

7. The system according to claim 3, wherein the settlement platform is specifically configured to store, in a blockchain network, the user information and the permission information that are sent by the first institution.

8. A real-time settlement method, wherein the method is applied to a settlement platform in a settlement system, and the settlement system further comprises a first institution and a second institution; and

for the settlement platform, the method comprises:

establishing a fund pool based on reserve funds provided by the first institution;

determining, in response to a settlement request sent by the first institution, whether a process in which the second institution transfers funds to the first institution meets a preset condition, wherein the settlement request is sent by the first institution after receiving actual funds transferred by the second institution, the actual funds comprise first funds determined in funds stored in the second institution by a user and second funds determined in funds stored in the second institution, the first funds and the second funds are determined based on an actual fund demand, and the actual fund demand is determined by the second institution based on a fund transfer request sent by the user; and

if the process meets the preset condition, withdrawing the second funds from the fund pool, and sending the second funds to the second institution.

9. The method according to claim 8, further comprising:

after the first institution sets fund transfer permission for a specified user, storing user information of the specified user and permission information of the fund transfer permission that are sent by the first institution; and

in response to a first verification request sent by the second institution before determining the actual fund demand, verifying the fund transfer permission of the user based on the user information and the permission information, and obtaining a first verification result.

10. The method according to claim 9, further comprising:

in response to a second verification request sent by the first institution before sending a settlement request to the settlement platform, verifying the fund transfer permission of the user based on the user information and the permission information, and obtaining a second verification result.

11. The method according to claim 9, wherein after the withdrawing the second funds from the fund pool, and sending the second funds to the second institution, the method further comprises:

withdrawing fund transfer permission corresponding to the settlement request.

12. The method according to claim 8, further comprising:

transferring remaining funds in the fund pool to the first institution after a preset time.

13. The method according to claim 10, specifically comprising:

storing, in a blockchain network, the user information and the permission information that are sent by the first institution.

14. The method according to claim 10, wherein if the process meets the preset condition, the

withdrawing the second funds from the fund pool, and sending the second funds to the second institution specifically comprises:

if both the first verification result and the second verification result are that verification succeeds, withdrawing the second funds from the fund pool, and sending the second funds to the second institution.

15. A real-time settlement method, wherein the method is applied to a first institution in a settlement system, and the settlement system further comprises a settlement platform and a second institution; and

for the first institution, the method comprises:

providing reserve funds for the settlement platform, wherein the reserve funds are used to establish a fund pool; and

sending a settlement request to the settlement platform after receiving actual funds transferred by the second institution, to determine whether a process in which the second institution transfers funds to the first institution meets a preset condition, wherein when the process meets the preset condition, the settlement request is responded by the settlement platform to withdraw second funds from the fund pool and send the second funds to the second institution, the actual funds comprise first funds determined in funds stored in the second institution by a user and second funds determined in funds stored in the second institution, the first funds and the second funds are determined based on an actual fund demand, and the actual fund demand is determined by the second institution based on a fund transfer request sent by the user.

16. The method according to claim 15, further comprising:

setting fund transfer permission for a specified user.

17. The method according to claim 16, wherein after the setting fund transfer permission for a specified user, the method further comprises:

sending user information of the specified user and permission information of the fund transfer permission to the settlement platform for storage.

18. The method according to claim 17, wherein before the sending a settlement request to the settlement platform, the method further comprises:

sending a second verification request to the settlement platform, to verify validity of the fund transfer permission of the user; and

determining, based on a second verification result obtained by the settlement platform for the

second verification request, that verification performed on the fund transfer permission of the user by the settlement platform succeeds.

19. A real-time settlement method, wherein the method is applied to a second institution in a settlement system, and the settlement system further comprises a settlement platform and a first institution; and

for the second institution, the method comprises:

determining an actual fund demand in response to a fund transfer request of a user after the settlement platform establishes a fund pool based on reserve funds provided by the first institution;

determining first funds from funds stored in the second institution by the user based on the actual fund demand, and determining second funds from funds stored in the second institution;

transferring actual funds corresponding to the actual fund demand to the first institution based on the first funds and the second funds; and

receiving the second funds sent by the settlement platform, wherein the second funds sent by the settlement platform are withdrawn, by the settlement platform from the fund pool in response to a settlement request sent by the first institution after the actual funds, when it is determined that a process in which the second institution transfers funds to the first institution meets a preset condition.

20. The method according to claim 19, wherein the determining an actual fund demand in response to a fund transfer request of a user specifically comprises:

determining the actual fund demand in response to a fund transfer request of a user with fund transfer permission.

21. The method according to claim 20, wherein before the determining an actual fund demand, the method further comprises:

sending a first verification request to the settlement platform, to verify validity of the fund transfer permission of the user; and

determining, based on a first verification result obtained by the settlement platform for the first verification request, that verification performed on the fund transfer permission of the user by the settlement platform succeeds.

22. A computer system, comprising a storage, a processor, and a computer program that is stored in the storage and that is capable of running on the processor, wherein when executing the program, the processor implements the following steps:

establishing a fund pool based on reserve funds provided by a first institution;

determining, in response to a settlement request sent by the first institution, whether a process in which a second institution transfers funds to the first institution meets a preset condition, wherein the settlement request is sent by the first institution after receiving actual funds transferred by the second institution, the actual funds comprise first funds determined in funds stored in the second institution by a user and second funds determined in funds stored in the second institution, the first funds and the second funds are determined based on an actual fund demand, and the actual fund demand is determined by the second institution based on a fund transfer request sent by the user; and

if the process meets the preset condition, withdrawing the second funds from the fund pool, and sending the second funds to the second institution.

23. A computer-readable non-volatile storage medium, wherein the storage medium stores a computer program, and when the computer program is executed by a processor, the method according to any one of claims 8 to 14 is implemented.