POSITION TRADE TRACING METHOD AND APPARATUS, AND COMPUTER SYSTEM

TECHNICAL FIELD

[0001] One or more embodiments of this specification relate to the field of computer technologies, and in particular, to a position trade tracing method and apparatus, and a computer system.

BACKGROUND

[0002] As an intermediate serving party between an institution (for example, a bank) and a client, a payment platform provides a foreign exchange-related service to the client. A foreign exchange link includes a plurality of system links from quoting to the client to hedging with the institution. The plurality of system links are decoupled from each other. Each system link retains only service information required by the system link. Therefore, a system does not have a risk correlation capability. Position trade tracing is to restore an information association relationship between all the system links. Privacy protection needs to be performed for data in each environment of trade tracing. At present, it is expected that there is an effective solution to trace a position trade in a foreign exchange trading system.

SUMMARY

[0003] One or more embodiments of this specification describe a position trade tracing method and apparatus, and a computer system, to trace a position trade in a foreign exchange trading system. Specific technical solutions are as follows:

[0004] According to a first aspect, an embodiment provides a position trade tracing method, performed by a payment platform. The payment platform includes several position book accounts related to a service, and the method includes: determining an exposure change type of a position trade based on an active/passive type of the position trade relative to a position book account of the position trade, where the exposure change type includes an in type and an out type; for several

position trades in any position book account, establishing a trade chain between an out-type trade and several corresponding in-type trades based on an exposure change type and a trade amount of the position trade; and for different position book accounts, determining margin trades that have a mirror relationship and that are of trade chains of two position book accounts, and establishing an association relationship between the margin trades with the mirror relationship.

[0005] According to a second aspect, an embodiment 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: determining an exposure change type of a position trade based on an active/passive type of the position trade relative to a position book account of the position trade, where the exposure change type includes an in type and an out type; for several position trades in any position book account, establishing a trade chain between an out-type trade and several corresponding in-type trades based on an exposure change type and a trade amount of the position trade; and for different position book accounts, determining margin trades that have a mirror relationship and that are of trade chains of two position book accounts, and establishing an association relationship between the margin trades with the mirror relationship.

[0006] According to a third aspect, an embodiment provides a position trade tracing apparatus, deployed on a payment platform. The payment platform includes several position book accounts related to a service, and the apparatus includes: an exposure operation mapping module, configured to: determine an exposure change type of a position trade based on an active/passive type of the position trade relative to a position book account of the position trade, where the exposure change type includes an in type and an out type; a single book account association module, configured to: for several position trades in any position book account, establish a trade chain between an out-type trade and several corresponding in-type trades based on an exposure change type and a trade amount of the position trade; and a multi-account association module, configured to: for different position book accounts, determine margin trades that have a mirror relationship and that are of trade chains of two position book accounts, and establish an association relationship between the margin trades with the mirror relationship.

[0007] According to a fourth aspect, an embodiment 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 method according to any implementation of the first aspect

is implemented.

[0008] In the method and apparatus provided in the embodiments of this specification, the exposure change type of the position trade is abstracted into the out type or the in type based on the active/passive type of the position trade relative to the position book account of the position trade; the out-type trade and a corresponding in-type trade are associated within the position book account, to establish the trade chain; and trade chains in different position book accounts are associated based on the mirror relationship of the margin trade, to implement an association of position trades in a plurality of book accounts in a foreign exchange trading system, and form end-to-end tracing between a client and an institution.

BRIEF DESCRIPTION OF DRAWINGS

[0009] To describe the technical solutions of the embodiments of the present invention more clearly, the following briefly describes the accompanying drawings needed for describing the embodiments. Clearly, the accompanying drawings in the following description show merely some embodiments of the present invention, and a person of ordinary skill in the art can still derive other drawings from these accompanying drawings without creative efforts.

[0010] FIG. 1 is a schematic diagram of an implementation scenario of an embodiment disclosed in this specification;

[0011] FIG. 2 is a schematic flowchart of a position trade tracing method according to an embodiment;

[0012] FIG. 3 is a schematic diagram of a message queue formed by a plurality of position trades;

[0013] FIG. 4 is a schematic diagram of an established full link;

[0014] FIG. 5 is a schematic block diagram of a position trade tracing apparatus according to an embodiment; and

[0015] FIG. 6 is a schematic structural diagram of a computer system according to an embodiment.

DESCRIPTION OF EMBODIMENTS

[0016] The following describes the solutions provided in this specification with reference to

the accompanying drawings.

[0017] As mentioned above, the solutions provided in the embodiments of this specification are technical solutions for tracing a trade in a foreign exchange trading system. FIG. 1 is a schematic diagram of an implementation scenario of an embodiment disclosed in this specification. The implementation scenario includes a client, a payment platform, and a bank. The payment platform includes a plurality of position book accounts such as position book accounts 1, 2, and 3. Position trades with various quantities and different types can occur in the position book accounts. For example, when the client needs to buy foreign exchange, the client can buy the foreign exchange on the payment platform, and the payment platform buys the foreign exchange from an institution, for example, the bank. An arrow indicates a trade flow direction during trade execution.

[0018] A trade between the client and the payment platform is referred to as a client trade (CT), a trade between the payment platform and the institution is referred to as an execution trade (ET), and the payment platform further includes an internal trade (IT). In actual applications, hedging cannot be implemented due to an upstream trade late delivery, misalignment between the payment platform and the institution, and an institution reason, and handling, hedging, etc. of a trade in an aggregation book account can be all completed through the IT.

[0019] The position is foreign exchange assets, for example, cashes, stocks, bonds, or futures. The position trade is a trade in which a currency in a local country is used to buy a currency in another country. A book is a technology related to bookkeeping in accounting work. In the embodiments of this specification, the book is an electronic account book that complies with an accounting procedure. An exposure is an imbalance between foreign exchange receipt and foreign exchange payment. In an intermediary service that the bank buys or sells foreign exchange for the client, a long position or a short position of the foreign exchange usually occurs. The long position means that a buying amount is greater than a sale amount, and the short position means that the sale amount is greater than the buying amount.

[0020] A plurality of accounts exist inside the payment platform. Different accounts correspond to different services. For example, offline code scanning payment and online shopping payment can correspond to different position book accounts. The position book account corresponds to the exposure. The exposure on the payment platform includes a client book exposure, an aggregation book exposure, a hedge book exposure, etc. A client book means that a trade is made with the client, and hedging means that a trade is made with the bank. The client

book exposure is for a client book account (for example, a position book account 1 in FIG. 1), the aggregation book exposure is for an aggregation book account (for example, a position book account 2 in FIG. 1), and the hedge book exposure is for a hedge book account (for example, a position book account 3 in FIG. 1). The aggregation book account is an account of a position trade on the payment platform. There can be one or more client book accounts, aggregation book accounts, and hedge book accounts.

[0021] In a foreign exchange service of the payment platform, different accounts are set for different services. After the client submits the CT to the payment platform, for example, the client buys 100 dollars, the payment platform summarizes a plurality of such CTs, performs IT processing on system links corresponding to different accounts on the payment platform, and finally achieves the ET for a trade with the bank. After the series of processing, the 100 dollars brought by the client are traded successfully. From the CT to the IT and then to the ET, a full link of the position trade is formed. Position trade tracing is tracing of links from the ET to the CT, and finally a correspondence between the ET and the CT is obtained. From a perspective of the book, exposure changes are mutually bound in one book and across books, to form a trace chain. A trade link passes different books. Trace links of the books can be connected head-tail.

[0022] The foreign exchange service depends on a market, and the market constantly changes. Therefore, a market situation needs to be sensed in real time based on such tracing, and a corresponding processing measure including a quick stop is made in a timely manner. In this way, a risk exposure can be reduced, and loss expansion can be avoided.

[0023] In the foreign exchange link, a plurality of system links are decoupled from each other from quoting to the client to hedging with the institution. The system links (for example, different position book accounts in FIG. 1) only retain service information respectively needed by all the system links. Therefore, the foreign exchange trading system of the payment platform naturally does not have a risk correlation capability.

[0024] In the foreign exchange trading system, a client trade does not exist on the full link, and a plurality of client trades are summarized and hedged based on a service policy, and in a link process, is replaced by another trade, and disappears in the link. Therefore, the position trade in the foreign exchange trading system cannot be traced directly.

[0025] An embodiment of this specification provides a position trade tracing method, to implement tracing of a position trade in a foreign exchange trading system. The method includes

the following steps: Step S210: Determine an exposure change type of a position trade based on an active/passive type of the position trade relative to a position book account of the position trade. Step S220: For several position trades in any position book account, establish a trade chain between an out-type trade and several corresponding in-type trades based on an exposure change type and a trade amount of the position trade. Step S230: For different position book accounts, determine margin trades that have a mirror relationship and that are of trade chains of two position book accounts, and establish an association relationship between the margin trades with the mirror relationship.

[0026] In this embodiment, the exposure change type of the position trade is determined based on the active/passive type of the position trade; a separate group is implemented for a trade on each exposure based on the exposure change type, that is, a trade chain of an account is established; trades on different exposures are associated for the second time; and finally, an end-to-end trade association relationship is obtained.

[0027] The following describes this embodiment in detail with reference to FIG. 2. FIG. 2 is a schematic flowchart of a position trade tracing method according to an embodiment. When a position trade is traced, tracing is usually performed in a hedging case, that is, after an ET occurs between a payment platform and an institution. The method is performed by the payment platform, and the payment platform includes several position book accounts related to a service. "Several" includes "one or more". The payment platform can be implemented by using any apparatus, device, platform, device cluster, etc. that has a computing and processing capability. Steps included in the method are specifically described as follows.

[0028] Step 210: Determine an exposure change type of the position trade based on an active/passive type of the position trade relative to a position book account of the position trade. The exposure change type includes an in type in and an out type out. For example, for a position book account 1, it is determined that an exposure change type of a position trade included in the position book account 1 is in or out; and for a position book account 2, it is determined that an exposure change type of a position trade included in the position book account 2 is in or out.

[0029] When the exposure change type of the position trade is determined, the position trade can be viewed from a perspective of each account, and the exposure change type is determined based on the active/passive type of the position trade relative to the position book account in terms of trade generation. For example, the exposure change type can be determined in the following

manner:

when the position trade is passively received by the position book account, determining that the exposure change type of the position trade is an in type; and when the position trade is actively initiated by the position book account, determining that the exposure change type of the position trade is an out type. The position book account mentioned here is the position book account of the position trade.

[0030] The in type and the out type are set in the above-mentioned manner, correspond to flow directions of the position trade relative to a position book, and include information indicating the flow directions of the position trade relative to the position book. To be specific, in indicates that the position trade flows into the position book account, and out indicates that the position trade flows out of the position book account. In other words, the exposure change type of the position trade is determined based on a trade flow direction of the position trade relative to the position book account of the position trade. When the position trade is passively received by the position book account, that is, when the position trade flows into the position book account, it is determined that the exposure change type of the position trade is the in type; and when the position trade is actively initiated by the position book account, that is, when the position trade flows out of the position book account, it is determined that the exposure change type of the position trade is the out type.

[0031] In actual applications, the out type and the in type can also be set reversely. To be specific, when the position trade is passively received by the position book account, it is determined that the exposure change type of the position trade is the out type; and when the position trade is actively initiated by the position book account, it is determined that the exposure change type of the position trade is the out type. This is also possible. In this way, out and in do not have meanings of position trade flow directions.

[0032] To avoid confusion in description, in the following content, the former type setting is used as an example for description. Based on the former example and a subsequently corresponding specific implementation, an implementation of the later type setting manner can be easily obtained. Details are omitted here for simplicity.

[0033] In a foreign exchange trade scenario, the position trade can include a client trade (CT), an internal trade (IT), an execution trade (ET), etc.

[0034] When the position trade is a client trade (CT), because the CT is actively initiated by

the client to the position book account, and is a passively received trade for the book account, it is determined that the CT is of the in type.

[0035] When the position trade is an execution trade (ET), because the ET is actively initiated by the position book account, it is determined that the ET is of the out type.

[0036] When the position trade is an internal trade (IT), the IT has two cases including that the IT is actively initiated and the IT is passively received, and needs to be separately viewed. When the IT carries an active service trade identifier, it is determined that the IT is of the in type. When the IT carries the passive service trade identifier, it is determined that the IT is of the out type.

[0037] There is a mirror relationship between an active service trade and a corresponding passive service trade.

[0038] When the internal trade (IT) is generated, whether the IT is an active service trade or a passive service trade can be determined based on a service rule, and the active service trade identifier or the passive service trade identifier is added to the IT based on a determining result. Whether the IT is actively initiated or passively received by the position book account can be determined based on the identifier.

[0039] Step S220: For several position trades in any position book account, for example, the position book account 1, establish a trade chain between an out-type trade and several corresponding in-type trades based on an exposure change type and a trade amount of the position trade. The same operation is also performed for another position book account, for example, the position book account 2. This step implements a group for a position trade of each position book account, and a plurality of position trades form one or more chains.

[0040] For example, in FIG. 2, in the position book account 1, each position trade is marked as the in type or the out type by using an operation in step S210. In step S220, the trade chain between the out-type trade and the corresponding in-type trade is established, and the trade amount of the out-type trade in the trade chain is equal to a total trade amount of the in-type trade.

[0041] When a corresponding in-type position trade is determined for an out-type position trade, processing can be performed based on a time sequence of all position trades, and the in-type position trade corresponding to the out-type position trade is determined from the position trades; or processing can be performed in combination with a plurality of preset manners based on a time sequence. For example, the preset manner includes: a quantity of a plurality of in-type position trades are evenly allocated, and the corresponding in-type position trade is determined for the out

type in such a manner; or a principle of fully allocating a plurality of in-type position trades, in other words, several in-type position trades in which no specific in-type position trade needs to be split are found as much as possible, and are used as in-type position trades corresponding to the out type, to obtain the out-type position trade and the corresponding in-type position trade that have equal amounts. Usually, one out-type position trade corresponds to one or more in type position trades.

[0042] The trade chain established in each position book account is usually a level-1 chain including the out type and the in type.

[0043] Step S230: For different position book accounts, determine margin trades that have a mirror relationship and that are of trade chains of two position book accounts, and establish an association relationship between the margin trades with the mirror relationship, to form an external association between position book accounts. An association between margin trades of different position book accounts means an association between trade chains of different position book accounts. Such an association between accounts finally associates the CT and the ET.

[0044] When the margin trades that have the mirror relationship and that are of the trade chains of the two position book accounts are determined, the margin trades with the mirror relationship can be determined based on a mirror identifier carried in the margin trade in the trade chains of the two position book accounts.

[0045] To be specific, for any two position book accounts 1 and 2, if a margin trade 1 of the position book account 1 and a margin trade 2 of the position book account 2 have same or corresponding image identifiers, it indicates that the two margin trades have a mirror relationship. In addition, the two margin trades 1 and 2 have different exposure change types: the in type and the out type. Therefore, the association relationship between the in-type margin trade and the out-type margin trade can be established, to establish an association relationship between position trades of different accounts, and associate an entire trade chain, to form a full chain.

[0046] Another embodiment of this specification provides a more specific implementation. For each position book account, an exposure change record table is created. Any entry corresponds to one position trade. When the exposure change type of the position trade is determined in step S210, an exposure change record table of any position book account can be obtained, trade information of each position trade is obtained from the exposure change record table, and the exposure change type of the position trade is determined based on the trade information. The trade

information includes information indicating a trade flow direction, for example, includes a client trade identifier, an internal trade identifier, or an execution trade identifier.

[0047] To facilitate processing of the position trade, a position snapshot of each position trade can also be extracted from the exposure change record table. The position snapshot includes key information about the position trade, for example, a trade identifier (the CT, the IT, or the ET), a trade amount, and a trade time. After the exposure change type of the position trade is determined, the exposure change type can also be added to the position snapshot. In other words, the position snapshot can include the exposure change type in or out. The obtained position snapshot can be stored in a distributed database such as an ocean base (OB).

[0048] A message is generated based on the position snapshot of each position trade, to form a message queue for a plurality of positions trade. Messages in the message queue can be arranged in a trade time sequence. The payment platform can process each position trade based on a sequence of the messages in the message queue. FIG. 3 is a schematic diagram of a message queue formed by a plurality of position trades. Each box represents one message, the box shows an exposure change type and a trade amount of a position trade corresponding to the message, and an arrow between boxes represents a time sequence direction of the message queue.

[0049] The position trade further includes a single table and a sub-table based on a service requirement, for example, a CT sub-table, an ET single table, an IT sub-table, and an IT single table. For the IT single table and the ET single table, a single trade changes an exposure amount, and a corresponding position snapshot can be obtained for each single table. A message corresponding to the position snapshot includes only one detail. For the CT sub-table and the IT sub-table, the exposure amount is changed after a trade is approved, and the corresponding position snapshot can be obtained for the approved trade. The message corresponding to the position snapshot includes a plurality of details.

[0050] In this embodiment, when step S220 is performed, based on a time sequence of position trades, a trade chain can be specifically established when an out-type position trade occurs. Then, several target position trades whose total trade amount matches a trade amount of the out-type position trade are determined from several in-type position trades based on the time sequence of position trades; and the association relationship between the out-type position trade and the several target position trades is established.

[0051] During processing, the message in the message queue can be pulled into a trade buffer

pool. When the out-type position trade occurs, a chain is established, and several target position trades are determined from the message queue, so that a total trade amount of the several target position trades matches a trade amount of the out-type position trade. A trade time of the target position trade can exist before or after the trade time of the out-type position trade, or both before and after the trade time of the target position trade. To be specific, trade times of some target position trades are before the trade time of the out-type position trade, and trade times of some target position trades are after the trade time of the out-type position trade.

[0052] As shown in FIG. 3, when a message indicating that the trade amount is 300 and the type is out appears, a chain 1 is established, and a previous message indicating that the trade amount is 100 and the type is in and a previous message indicating that the trade amount is 200 and the type is in are grouped, to establish an association relationship. When a message indicating that the trade amount is 350 and the type is out appears, a chain 2 is established, and a previous message indicating that the trade amount is 50 and the type is in, a later message indicating that the trade amount is 200 and the type is in, and a later message indicating that the trade amount is 100 and the type is in are grouped, to establish an association relationship.

[0053] When a plurality of out-type position trades exist, several target position trades respectively corresponding to the plurality of out-type position trades can be determined from a plurality of in-type position trades in a preset manner. That is, each out-type position trade correspondingly has a target position trade. The preset manner can include: a manner of evenly allocating a quantity of the plurality of in-type position trades; and a manner of fully allocating a plurality of in-type position trades, namely, a manner in which splitting of the position trade is avoided as much as possible.

[0054] When an actively initiated position trade is generated in the position book account, other operation information for a position can also be recorded, for example, operation information such as freeze, unfreeze, and write-off for the position. The operation information corresponds to different states of positions in the position trade. A freezing sheet and an unfreezing sheet represent a frozen state and an unfrozen state of the position, a position snapshot of a frozen/unfrozen trade can be obtained, and a message corresponding to the position snapshot includes a plurality of details.

[0055] In actual applications, when the position trade is actively initiated by the position book account, other operation information for the position in the position trade can be further recorded,

and operations, for example, include freeze, unfreeze, and write-off. Different operations correspond to different states of the position in the position trade, that is, the frozen state, the unfrozen state, and the written-off state. When the payment platform initiates a position trade, a position in the position trade is in a frozen state. When the position trade succeeds, the position in the position trade is in a written-off state; and when the position trade fails, the position in the position trade is in the unfrozen state. For example, for the ET initiated by the payment platform to the bank, when the bank rejects the ET trade, the position in the trade is in the unfrozen state, indicating that execution of the ET fails. When the bank accepts the ET trade initiated by the payment platform, the position in the trade is in the written-off state, indicating that execution of the ET succeeds. A state of the position in the position trade also represents a state of the position trade. The state of the position can be obtained from a state record table corresponding to the position book account, and is used as the state of the position trade. For example, a state of the out-type position trade includes a frozen state, an unfrozen state, and a written-off state.

[0056] To establish the trade chain more accurately, the trade chain can be established based on the state of the out-type position trade.

[0057] For example, based on a time sequence of trades, the trade chain is established when a position trade in the frozen state occurs.

[0058] When the association relationship between the margin trades with the mirror relationship is established in step S230, and the out-type margin trade is in the unfrozen state in the two margin trades with the mirror relationship, it indicates that the margin trade fails and can be not processed, that is, an association between subsequent different accounts is not performed. When the out-type margin trade is in the written-off state in the two margin trades with the mirror relationship, it indicates that the margin trade succeeds, and the association relationship between the margin trades with the mirror relationship can continue to be established, that is, an association relationship between trade chains or position trades of different accounts is established.

[0059] Certainly, in an implementation, when a trade is traced, an unsuccessfully executed position trade can be removed in advance, and an out-type position trade that participates in trade tracing is a successfully executed trade. In this case, a state of the out type does not need to be distinguished, but trade chains are directly associated based on the out type.

[0060] FIG. 4 is a schematic diagram of an established full link. The full link includes a hedge book (HB) trace chain, an aggregation book (AB) trace chain, a client book (CB) trace chain, and

a CB late delivery trace chain. These chains form the full chain. Here, a trace chain is a trade chain. Each trace chain has a corresponding position book account. A solid-line box in FIG. 4 shows a trade type of the position trade, including the CT, the IT, and the ET, and the exposure change type is marked on an upper side of the box. Within each trace chain, the trade chain represents an association relationship between an out-type position trade and a corresponding in-type position trade. Position trades with the mirror relationship are associated with each other in different trace chains. Position trades of an account and position trades of different accounts are associated with each other, so that in this embodiment, a complete trade chain is established, and a correspondence between the ET and the CT is implemented.

[0061] In the above-mentioned embodiment, the link models in the foreign exchange trading system are summarized and abstracted, so that an association between trade documents in different phases is implemented, to form a full link, and implement tracing of the trade flow direction. A tracing process does not need to wait to be processed after the position is cleared, and can be continuously processed in a service occurrence process.

[0062] The above-mentioned content describes specific embodiments of this specification, and other embodiments fall within the scope of the appended claims. In some cases, the actions or steps described in the claims can be performed in an order different from the order in the embodiments and the desired results can still be achieved. In addition, the process depicted in the accompanying drawings does not necessarily need an illustrated particular execution order to achieve the desired results. In some implementations, multi-tasking and concurrent processing is feasible or can be advantageous.

[0063] FIG. 5 is a schematic block diagram of a position trade tracing apparatus according to an embodiment. This apparatus embodiment corresponds to the method embodiment shown in FIG. 2. The apparatus 500 is deployed on a payment platform, and the payment platform includes several position book accounts related to a service. The apparatus 500 includes: an exposure operation mapping module 510, configured to: determine an exposure change type of a position trade based on an active/passive type of the position trade relative to a position book account of the position trade, where the exposure change type includes an in type and an out type; a single book account association module 520, configured to: for several position trades in any position book account, establish a trade chain between an out-type trade and several corresponding in-type trades based on an exposure change type and a trade amount of the position trade; and a multi-

account association module 530, configured to: for different position book accounts, determine margin trades that have a mirror relationship and that are of trade chains of two position book accounts, and establish an association relationship between the margin trades with the mirror relationship.

[0064] In an implementation, the exposure operation mapping module 510 is specifically configured to: when the position trade is passively received by the position book account, determine that the exposure change type of the position trade is an in type; and when the position trade is actively initiated by the position book account, determine that the exposure change type of the position trade is an out type.

[0065] In an implementation, the apparatus 500 further includes an active/passive type determining module (not shown in the figure), configured to determine the active/passive type of the position trade in the following manner: when the position trade is a client trade, determining that the position trade is passively received by the position book account; when the position trade is an execution trade, determining that the position trade is initiated by the position book account; when the position trade is an internal trade and carries an active service trade identifier, determining that the position trade is actively initiated by the position book account; and when the position trade is an internal trade and carries a passive service trade identifier, determining that the position trade is passively received by the position book account.

[0066] In an implementation, the apparatus 500 further includes an identifier addition module (not shown in the figure), configured to: when an internal trade is generated, determine, based on a service rule, that the internal trade is an active service trade or a passive service trade; and add the active service trade identifier or the passive service trade identifier to the internal trade based on a determining result.

[0067] In an implementation, the single book account association module 520 is specifically configured to: based on a time sequence of position trades, establish a trade chain when an out-type position trade occurs; determine, from several in-type position trades based on the time sequence of position trades, several target position trades whose total trade amount matches a trade amount of the out-type position trade; and establish an association relationship between the out-type position trade and the several target position trades, to obtain a corresponding trade chain.

[0068] In an implementation, when determining the several target position trades, the single book account association module 520 is configured to: when a plurality of out-type position trades

exist, determine several target position trades respectively corresponding to the plurality of out-type position trades from a plurality of in-type position trades in a preset manner. The preset manner includes: a manner of evenly allocating a quantity of the plurality of in-type position trades; and a manner of fully allocating a plurality of in-type position trades.

[0069] In one implementation, the out-type position trade includes a frozen state, an unfrozen state, and a written-off state; and when establishing the trade chain when the out-type position trade occurs, the single book account association module 520 is configured to establish the trade chain when the out-type position trade occurs and is in the frozen state.

[0070] When establishing the association relationship between the margin trades with the mirror relationship, the multi-account association modules 530 is configured to:

skip processing when out-type margin trades with a mirror relationship is in the unfrozen state; and

establish the association relationship between the margin trades with the mirror relationship when the out-type margin trades with the mirror relationship is in the written-off state.

[0071] In an implementation, when determining the margin trades with the mirror relationship, the multi-account association modules 530 is configured to determine the margin trades with the mirror relationship based on a mirror identifier carried in the margin trade in the trade chains of the two position book accounts.

[0072] The above-mentioned apparatus embodiment corresponds to the method embodiment. For specific descriptions, references can be made to some descriptions of the method embodiment. Details are omitted here for simplicity. The apparatus embodiment is obtained based on a corresponding method embodiment, and has a same technical effect as the corresponding method embodiment. For specific descriptions, refer to the corresponding method embodiment.

[0073] 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.

[0074] The specification also provides a computer system. FIG. 6 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.

[0075] 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.

[0076] In particular embodiments, computer system 1000 includes a 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.

[0077] 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 80 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.

[0078] 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.

[0079] 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.

[0080] 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.

[0081] 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.

[0082] 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.

[0083] 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. In particular, the embodiments of the storage medium and the computing device are basically similar to the method embodiment, and therefore are described briefly. For related parts, references can be made to related descriptions in the method embodiment.

[0084] A person skilled in the art should be aware that in the one or more examples, functions described in embodiments of the present invention may be implemented by hardware, software, firmware, or any combination thereof. When the present disclosure is implemented by software, the functions can be stored in a computer readable medium or transmitted as one or more instructions or code in the computer readable medium.

[0085] The above-mentioned specific implementations further describe the objectives,

technical solutions, and beneficial effects of the embodiments of the present invention in detail. It should be understood that the foregoing descriptions are merely specific implementations of embodiments of the present invention, but are not intended to limit the protection scope of the present invention. Any modification, equivalent replacement, or improvement made based on the technical solutions of the present invention shall fall within the protection scope of the present invention.

CLAIMS

What is claimed is:

1. A position trade tracing method, performed by a payment platform, wherein the payment platform comprises several position book accounts related to a service, and the method comprises:

determining an exposure change type of a position trade based on an active/passive type of the position trade relative to a position book account of the position trade, wherein the exposure change type comprises an in type and an out type;

for several position trades in any position book account, establishing a trade chain between an out-type trade and several corresponding in-type trades based on an exposure change type and a trade amount of the position trade; and

for different position book accounts, determining margin trades that have a mirror relationship and that are of trade chains of two position book accounts, and establishing an association relationship between the margin trades with the mirror relationship.

2. The method according to claim 1, wherein the step of determining an exposure change type of a position trade comprises:

when the position trade is passively received by the position book account, determining that the exposure change type of the position trade is an in type; and

when the position trade is actively initiated by the position book account, determining that the exposure change type of the position trade is an out type.

3. The method according to claim 2, wherein the active/passive type of the position trade is determined in the following manner:

when the position trade is a client trade, determining that the position trade is passively received by the position book account;

when the position trade is an execution trade, determining that the position trade is initiated by the position book account;

when the position trade is an internal trade and carries an active service trade identifier, determining that the position trade is actively initiated by the position book account; and

when the position trade is an internal trade and carries a passive service trade identifier, determining that the position trade is passively received by the position book account.

4. The method according to claim 3, further comprising:

when an internal trade is generated, determining, based on a service rule, that the internal trade is an active service trade or a passive service trade; and

adding the active service trade identifier or the passive service trade identifier to the internal trade based on a determining result.

5. The method according to claim 1, wherein the step of establishing a trade chain between an out-type trade and several corresponding in-type trades comprises:

based on a time sequence of position trades, establishing a trade chain when an out-type position trade occurs;

determining, from several in-type position trades based on the time sequence of position trades, several target position trades whose total trade amount matches a trade amount of the out-type position trade; and

establishing an association relationship between the out-type position trade and the several target position trades, to obtain a corresponding trade chain.

6. The method according to claim 5, wherein when the several target position trades whose total trade amount matches the trade amount of the out-type position trade are determined from several in-type position trades based on the time sequence of position trades, the method comprises:

when a plurality of out-type position trades exist, determining several target position trades respectively corresponding to the plurality of out-type position trades from a plurality of in-type position trades in a preset manner.

7. The method according to claim 6, wherein the preset manner comprises:

a manner of evenly allocating a quantity of the plurality of in-type position trades; and

a manner of fully allocating a plurality of in-type position trades.

8. The method according to claim 5, wherein the out-type position trade comprises a frozen state, an unfrozen state, and a written-off state; and when the out-type position trade occurs, the step of establishing a trade chain comprises:

establishing the trade chain when the out-type position trade occurs and is in the frozen state; and

the step of establishing an association relationship between the margin trades with the mirror relationship comprises:

skipping processing when out-type margin trades with a mirror relationship is in the unfrozen state; and

establishing the association relationship between the margin trades with the mirror relationship when the out-type margin trades with the mirror relationship is in the written-off state.

9. The method according to claim 1, wherein the step of determining margin trades that have a mirror relationship and that are of trade chains of two position book accounts comprises:

determining the margin trades with the mirror relationship based on a mirror identifier carried in the margin trade in the trade chains of the two position book accounts.

10. 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:

determining an exposure change type of a position trade based on an active/passive type of the position trade relative to a position book account of the position trade, wherein the exposure change type comprises an in type and an out type;

for several position trades in any position book account, establishing a trade chain between an out-type trade and several corresponding in-type trades based on an exposure change type and a trade amount of the position trade; and

for different position book accounts, determining margin trades that have a mirror relationship and that are of trade chains of two position book accounts, and establishing an association relationship between the margin trades with the mirror relationship.

11. The computer system according to claim 10, wherein the step of determining an exposure change type of a position trade comprises:

when the position trade is passively received by the position book account, determining that the exposure change type of the position trade is an in type; and

when the position trade is actively initiated by the position book account, determining that the exposure change type of the position trade is an out type.

12. The computer system according to claim 11, wherein the active/passive type of the position trade is determined in the following manner:

when the position trade is a client trade, determining that the position trade is passively received by the position book account;

when the position trade is an execution trade, determining that the position trade is initiated by the position book account;

when the position trade is an internal trade and carries an active service trade identifier,

determining that the position trade is actively initiated by the position book account; and

when the position trade is an internal trade and carries a passive service trade identifier, determining that the position trade is passively received by the position book account.

13. The computer system according to claim 12, further comprising:

when an internal trade is generated, determining, based on a service rule, that the internal trade is an active service trade or a passive service trade; and

adding the active service trade identifier or the passive service trade identifier to the internal trade based on a determining result.

14. The computer system according to claim 10, wherein the step of establishing a trade chain between an out-type trade and several corresponding in-type trades comprises:

based on a time sequence of position trades, establishing a trade chain when an out-type position trade occurs;

determining, from several in-type position trades based on the time sequence of position trades, several target position trades whose total trade amount matches a trade amount of the out-type position trade; and

establishing an association relationship between the out-type position trade and the several target position trades, to obtain a corresponding trade chain.

15. The computer system according to claim 14, wherein when the several target position trades whose total trade amount matches the trade amount of the out-type position trade are determined from several in-type position trades based on the time sequence of position trades, the method comprises:

when a plurality of out-type position trades exist, determining several target position trades respectively corresponding to the plurality of out-type position trades from a plurality of in-type position trades in a preset manner.

16. The computer system according to claim 15, wherein the preset manner comprises:

a manner of evenly allocating a quantity of the plurality of in-type position trades; and

a manner of fully allocating a plurality of in-type position trades.

17. The computer system according to claim 14, wherein the out-type position trade comprises a frozen state, an unfrozen state, and a written-off state; and when the out-type position trade occurs, the step of establishing a trade chain comprises:

establishing the trade chain when the out-type position trade occurs and is in the frozen state;

and

the step of establishing an association relationship between the margin trades with the mirror relationship comprises:

skipping processing when out-type margin trades with a mirror relationship is in the unfrozen state; and

establishing the association relationship between the margin trades with the mirror relationship when the out-type margin trades with the mirror relationship is in the written-off state.

18. The computer system according to claim 10, wherein the step of determining margin trades that have a mirror relationship and that are of trade chains of two position book accounts comprises:

determining the margin trades with the mirror relationship based on a mirror identifier carried in the margin trade in the trade chains of the two position book accounts.

19. A position trade tracing apparatus, deployed on a payment platform, wherein the payment platform comprises several position book accounts related to a service, and the apparatus comprises:

an exposure operation mapping module, configured to: determine an exposure change type of a position trade based on an active/passive type of the position trade relative to a position book account of the position trade, wherein the exposure change type comprises an in type and an out type;

a single book account association module, configured to: for several position trades in any position book account, establish a trade chain between an out-type trade and several corresponding in-type trades based on an exposure change type and a trade amount of the position trade; and

a multi-account association module, configured to: for different position book accounts, determine margin trades that have a mirror relationship and that are of trade chains of two position book accounts, and establish an association relationship between the margin trades with the mirror relationship.

20. 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 1 to 9 is implemented.