

METHOD FOR GENERATING AND CONVERTING USER VOUCHER ON ACCOUNT SIDE OF MOBILE PAYMENT

Technical Field

The present invention relates to the technical field of mobile payment, and in particular to a method and system for generating and converting a user voucher on an account side of a mobile payment, and a storage medium.

Background

At present, the account system design in the mobile payment field is divided into two types: near-field payment and remote payment, wherein the account design of the near-field payment is an NFC-oriented card-based account voucher system, NFC is not suitable in the account system design of the remote payment, and based on this, most payment institutions and banks use digital token (token) in remote payment scenes.

In this case, as various payment institutions and banks have adopted self-designed TOKEN systems and implementation methods, which brings a lot of inconvenience to interconnection and intercommunication in the Internet. In order to realize interconnection and intercommunication of various account systems, the present invention provides a simple and easy-to-use method to help different account owning sides realize production, interaction, storage and conversion.

Summary of the Invention

In view of the shortcomings of the prior art, the present invention discloses a method and system for generating and converting a user voucher on an account side of a mobile payment, and a storage medium, which are used to solve the problems that in the current remote payment account system, there are many methods for generating vouchers, which are very scattered and fragmented, and standards and specifications of which cannot be unified in a short period of time to adapt to global payment systems and user needs.

The existing user voucher design is generally based on digital coding, and the number of digits is within a range of 18 and 25. The design of digital coding is for convenience of the acceptance and transformation of a merchant side, but brings lots of improvement cost for the

merchant side in the interaction process of different account vouchers.

At the same time, the use of user vouchers in financial transactions has high requirements for security and privacy, and therefore, so there are very high requirements for technical solutions for conversion and desensitization of the user vouchers.

The present invention can be implemented through the following technical solutions:

In a first aspect, the present invention discloses a method for generating and converting a user voucher on an account side of a mobile payment, which comprises the following steps of:

step one. obtaining device information of an account B, and performing distributed computing on a user voucher of the account B;

step two. serializing the user voucher of the account B by using an agreed operation method between an account A and the account B after the user voucher of the account B is processed in the step one;

step three. encrypting the user voucher of the account B by an agreed encryption algorithm after the user voucher of the account B is serialized in the step two;

step four. performing distributed processing on a result obtained after encryption by the encryption algorithm through account information of the user;

step five. serializing data obtained after distributed processing to form a digital string; and

step six. confusing the digital string with a user voucher identifier of the account A to form a user voucher based on the account A.

Further, the user voucher of the account B is a fingerprint-related voucher, and an initial user voucher of the user B can be reversely traced through a newly generated user voucher of the account A.

Further, when the user voucher of the account B is a user fingerprint-unrelated user voucher, a random matching algorithm is used for randomly matching user vouchers of different accounts. The algorithm comprises the following steps of:

T1. pooling the user vouchers of the account A and the account B on a server side.

T2. opening up an independent storage space on the account side for communication with a server so as to establish the association between pooled digital certificate systems;

T3. performing server-side unidirectional association of digital certificates inside user voucher pools on different client sides and opposite terminals; and

T4. displaying at a front end after serializing numbers of the voucher pools on a client side;

The mutual corresponding relationship between the user vouchers of different account systems of the algorithm is a one-time unidirectional corresponding relationship, which cannot be restored or reversely restored after the use is completed.

In a second aspect, the present invention provides a system for generating and converting the user voucher on the account side of the mobile payment, and the system is used for implementing the method for generating and converting the user voucher on the account side of the mobile payment as described in a first aspect, and comprises voucher correspondence, serialization, temporary storage, security, persistence groups, connection of different account systems and voucher generation methods.

Further, the system supports account voucher conversion services with characterized ID as a system, and characterized vouchers comprise emails, telephones, ID numbers, bank card numbers or other account IDs.

Further, the system can perform display and financial transactions on different user side devices which include mobile phones, tablet personal computers, computers, devices with screens and without networking capability, and devices with screens and networking capability, and the system runs on different devices in different forms, and performs integration by means of providing application system interfaces, development tools and other means.

Further, the system is presented on account APPs and websites by means of APP embedded applications, web applications, fast easy-to-use or applets, and can be deployed and provide services among a financial institution and an account system owning side system for connecting account systems of different financial and non-financial institutions to achieve interconnection and intercommunication services.

Further, serialized numbers generated by the system are displayed at a front end in a variety of means which include bar codes, two-dimensional codes, Bluetooth, NFC, acoustic waves, magnetic transmission, optical transmission, and other transmission means for transmission.

Further, vouchers generated by the system can be used in different financial terminals and scenes, at the same time, the serialized vouchers can be read by multiple front-end reading devices, and the system can be deployed on multiple forms of devices, can be containerized and serialized, and is deployed and run in multiple complex cloud environments and local environments.

Further, when a financial voucher generated by the system is transacted on different

terminals and when multiple account vouchers of a user side and a voucher supported by a merchant terminal are compared and in handshaking, a matching result preferred by both parties is selected to carry out the financial transaction. When the financial voucher generated by the system is transacted on different terminals, account voucher codes are displayed on the user side, and financial transactions are performed after manual selection and judgment.

Further, the system is docked with and implanted into existing various application forms by a variety of ways including but not limited to SDK, API, applets or rich texts, thin client sides and rich webs so as to provide services to the front end.

Further, the system can integrate multiple account vouchers systems by means of a UI design method of the user side simply and quickly, performs fast display and switching on one UI, and can be applied to different front-end technologies.

In a third aspect, the present invention discloses a storage medium, wherein a computer program is stored in the storage medium, different user vouchers are stored and confused by the storage medium, and are exchanged among different account systems, and when the computer program is executed by a processor, the method for generating and converting the user voucher on the account side of the mobile payment described in the first aspect is realized.

The present invention has the following beneficial effects:

The present invention is used for generation, conversion and interaction of user vouchers of remote payment accounts, so that the user vouchers of account systems can be interconnected and intercommunicated in different account systems simply and quickly, and the problem of secure conversion between the account vouchers is solved very well.

Brief Description of the Drawings

In order to describe the technical solutions in the examples of the present invention or the prior art more clearly, the drawings required to be used in the description of the examples or the prior art will be briefly introduced below. It is apparent that the drawings described below are only some embodiments of the present invention. Those of ordinary skill in the art may further obtain other drawings according to these drawings without creative work.

FIG. 1 is a schematic diagram of the generation and conversion of a user voucher on an account side of a mobile payment;

FIG. 2 is conversion voucher diagrams of two account systems according to an

embodiment of the present invention;

FIG. 3 is a schematic diagram of user voucher conversion based on account fingerprints according to an embodiment of the present invention;

FIG. 4 is a schematic diagram of user voucher conversion without the account fingerprints according to an embodiment of the present invention;

FIG. 5 is a schematic diagram of design based on an application program interface according to an embodiment of the present invention; and

FIG. 6 is a schematic diagram of an encapsulation mode based on a developer tool according to an embodiment of the present invention.

Detailed Description of the Preferred Embodiments

In order to make objects, technical solutions and advantages of embodiments of the present invention clearer, the technical solutions in the embodiments of the present invention are clearly and completely described below in conjunction with the accompanying drawings in the embodiments of the present invention, and it is apparent that the described embodiments are parts of embodiments rather than all embodiments of the present invention. All other embodiments obtained by a person of ordinary skill in the art based on the embodiments of the present invention without creative efforts shall fall within the protection scope of the present invention.

Embodiment I

The present invention discloses a method for generating and converting a user voucher on an account side of a mobile payment, which is characterized by comprising the following steps of:

step one. obtaining device information of an account B, and performing distributed computing on a user voucher of the account B;

step two. serializing the user voucher of the account B by means of an agreed operation method between an account A and the account B after the user voucher of the account B is processed in the step one;

step three. encrypting the user voucher of the account B by an agreed encryption algorithm after the user voucher of the account B is serialized in the step two.

step four. performing distributed processing on a result obtained after encryption by the

encryption algorithm through the account information of a user;

step five. serializing data obtained after distributed processing to form a digital string; and

step six. confusing the digital string with a user voucher identifier of the account A to form a user voucher based on the account A.

The user voucher of the account B is a fingerprint-related voucher, and an initial user voucher of the user B can be reversely traced through the newly generated user voucher of the account A.

When the user voucher of the account B is a user fingerprint-unrelated user voucher, a random matching algorithm is used for randomly matching user vouchers of different accounts.

The algorithm comprises the following steps of:

T1. pooling the user vouchers of the account A and the account B on a server side;

T2. opening up an independent storage space on the account side for communication with a server so as to establish the association between pooled digital certificate systems;

T3. performing server-side unidirectional association of digital certificates inside user voucher pools on different client sides and opposite terminals; and

T4. displaying at a front end after serializing numbers of the voucher pools on a client side;

The mutual corresponding relationship between the user vouchers of different account systems of the algorithm is a one-time unidirectional corresponding relationship, and cannot be restored or reversely restored after the use is completed.

Embodiment II

The present embodiment discloses a simple and fast method for secure conversion based on different account vouchers. The rough method is specifically shown in FIG. 1. The conversion based on the account vouchers can be simply understood that the different account vouchers can be displayed between different wallets so as to realize acceptance of different accounts on the network. For example, the user vouchers of the account B can be dynamically displayed in the account A (based on mobile applications and web applications), and are interconnected and intercommunicated on the network of the account B.

Technically, the conversion between the user certificates of different accounts requires extremely high security and universality. Therefore, in the present invention, different security strategies and methods are adopted for the conversion of user vouchers of different account systems.

As shown in FIG. 2, it is assumed that in two account systems, when the account B needs to use the user voucher of the account A, the account B initiates a request to the account A to request a voucher that meets the account voucher A.

Embodiment III

The present embodiment discloses an account fingerprint-based user voucher conversion method shown in FIG. 3.

In this way, when the account B obtains the user voucher of the account A by conversion, a token based on user voucher fingerprints of the account B is generated, and at this time, the two account vouchers can be associated and restored by the user fingerprints.

The specific conversion and implementation method is as follows:

step one. performing distributed computing on the user voucher of the account B by obtaining device information of the account B (hardware serial number, timestamp);

step two. serializing the user voucher of the account B by means of an agreed operation method between the account A and the account B after the user voucher of the account B is processed in the step one, and and encrypting by an agreed encryption algorithm after serialization;

step three. performing distributed processing on a result obtained in the step two through the account information of the user (emails, or telephone numbers);

step fourth. serializing data obtained in the step three to form a digital string; and

step five. confusing the digital string with a user voucher identifier of the account A to form the user voucher based on the account A;

At the same time, the method ensures that the above steps are reversible, that is, the initial user voucher of the user B can be reversely traced through the newly generated user voucher of the account A.

Embodiment IV

The above-mentioned embodiment is an account fingerprint-related voucher conversion method. In addition to the user fingerprint-related voucher conversion method, the present embodiment discloses another user fingerprint-unrelated user voucher conversion method.

The account fingerprint-unrelated user voucher conversion method is shown in FIG. 4.

In this way, when the account B obtains the user voucher of the account A by conversion, the user vouchers of the account A and the account B are randomly matched, and at this time, the

relationship between the two account vouchers cannot be associated and restored.

In this way, a random matching algorithm is used for randomly matching the user vouchers of different accounts. The specific description is as follows:

step one. pooling the user vouchers of the account A and the account B on a server side, that is, cacheing and pooling numbers in different voucher systems;

step two. opening up an independent storage space on the account side for communication with a server so as to establish the association between pooled digital certificate systems;

step three. performing one-time unidirectional server-side association of digital vouchers inside user voucher pools on different client sides and opposite terminals, wherein the present invention can realize one-to-one unidirectional association, or one-to-many unidirectional association;

step four. displaying at a front end after serializing numbers of the voucher pools on a client side;

In this way, the mutual corresponding relationship between the user vouchers of different account systems is a one-time unidirectional corresponding relationship, and cannot be restored or reversely restored after the use is completed.

Embodiment V

The present embodiment provides a system for generating and converting the user voucher at the account side of the mobile payment, and the system is used for implementing the method for generating and converting the user voucher at the account side of the mobile payment as described in the above-mentioned embodiments, and comprises voucher correspondence, serialization, temporary storage, security, persistence groups, connection of different account systems and voucher generation methods.

The system supports account voucher conversion services with characterized ID as a system, and characterized vouchers comprise emails, telephones, ID numbers, bank card numbers or other account IDs. The system can perform display and financial transactions on different user side devices which include mobile phones, tablet personal computers, computers, devices with screens and without networking capability, and devices with screens and networking capability, and the system runs on different devices in different forms, and performs integration by means of providing application system interfaces, development tools and other means.

The system is presented on account APPs and websites by means of APP embedded

applications, web applications, fast easy-to-use or applets, and can be deployed and provide services between a financial institution and an account system owning side system for connecting account systems of different financial and non-financial institutions to achieve interconnection and intercommunication services. Serialized numbers generated by the system are displayed at a front end in a variety of means which include bar codes, two-dimensional codes, Bluetooth, NFC, acoustic waves, magnetic transmission, optical transmission, and other transmission means for transmission.

The voucher generated by the system can be used in different financial terminals and scenes, at the same time, the serialized vouchers can be read by multiple front-end reading devices, and the system can be deployed on multiple forms of devices, can be containerized and serialized, and is deployed and run in multiple complex cloud environments and local environments. When a financial voucher generated by the system is transacted on different terminals and when multiple account vouchers of a user side and a voucher supported by a merchant terminal are compared and in handshaking, a matching result preferred by both parties is selected to carry out the financial transaction. When the financial voucher generated by the system is transacted on different terminals, account voucher codes are displayed on the user side, and financial transactions are performed after manual selection and judgment.

The system is docked with and implanted into existing various application forms by a variety of ways including but not limited to SDK, API, applets or rich texts, thin client sides and rich webs so as to provide services to the front end. The system can integrate multiple account vouchers systems by means of a UI design method of the user side simply and quickly, performs fast display and switching on one UI, and can be applied to different front -end technologies.

Embodiment VI

For the technical realization of the system in embodiment 5, the present embodiment discloses adoption of different implementation methods for system realization, and as shown in Figure 5, based on the design of the application program interface, the voucher system in the method can provide a complete application program interface to the account system for docking and use. According to an encapsulation mode based on developer tools as shown in FIG. 6, in addition to the application program interface, the voucher conversion system in the method can also provide developer tool interfaces based on various devices and background systems for realization of voucher conversion services. In the acceptance environment, the interaction

between an account voucher subsystem and a merchant side acceptance device is realized, the selection and activation of different account vouchers is realized, and connection methods here comprise Bluetooth, wifi or near-field communication means.

Embodiment VII

The present embodiment discloses a storage medium, wherein a computer program is stored in the storage medium, different user vouchers are stored and confused by the storage medium, and are exchanged among different account systems, and when the computer program is executed by a processor, the method for generating and converting the user voucher at the account side of the mobile payment as described in the above embodiments is realized.

In conclusion, the present invention is used for generation, conversion and interaction of user vouchers of remote payment accounts, so that the user vouchers of the account systems can be interconnected and intercommunicated in different account systems simply and quickly. In the current payment remote account system, there are many methods for generating vouchers, which are very scattered and fragmented, and standards and specifications of which cannot be unified in a short period of time to adapt to global payment systems and user needs, and therefore, the method provided by the present invention can realize conversion and intercommunication simply and quickly.

The existing user voucher design is generally based on digital coding, and the number of digits is within the range of 18 and 25. The design of digital coding is for convenience of the acceptance and transformation of a merchant side, but brings lots of improvement cost for the merchant side in the interaction process of different account vouchers, and therefore, in order to realize fast interaction and interconnection, the conversion of account vouchers is simple and economical.

At the same time, the use of user vouchers in financial transactions has very high requirements for security and privacy, and therefore, so there are very high requirements for technical solutions for conversion and desensitization of the user vouchers. The present invention solves the problem of security conversion between the account vouchers.

It should be illustrated finally that, the above embodiments are only used for illustrating the technical solutions of the present invention, and are not intended to limit the present invention; although the present invention is illustrated in detail with reference to the foregoing embodiments, it should be understood by those skilled in the art that, modifications may still be

made on the technical solutions written by the foregoing embodiments, or equivalent replacements are made on part of technical features; and these modifications or replacements do not make the essence of the corresponding technical solutions depart from the spirit and scope of the technical solution of the various embodiments of the present invention.

Claims

1. A method for generating and converting a user voucher on an account side of a mobile payment, characterized by comprising the following steps of:

step one. obtaining device information of an account B, and performing distributed computing on a user voucher of the account B;

step two. serializing the user voucher of the account B by means of an agreed operation method between an account A and the account B after the user voucher of the account B is processed in the step one;

step three. encrypting the user voucher of the account B by means of an agreed encryption algorithm after the user voucher of the account B is serialized in the step two;

step four. performing distributed processing on a result obtained after encryption by the encryption algorithm through the account information of a user of the account B;

step five. serializing data obtained after distributed processing to form a digital string; and

step six. confusing the digital string with a user voucher identifier of the account A to form a user voucher based on the account A.

2. The method for generating and converting the user voucher on the account side of the mobile payment according to claim 1, characterized in that the user voucher of the account B is a fingerprint-related voucher, and an initial user voucher of the user B can be reversely traced through a newly generated user voucher of the account A.

3. The method for generating and converting the user voucher on the account side of the mobile payment according to claim 1, characterized in that when the user voucher of the account B is a user fingerprint-unrelated user voucher, a random matching algorithm is used for randomly matching user vouchers of different accounts and comprises the following steps of:

T1. pooling the user vouchers of the account A and the account B on a server side;

T2. opening up an independent storage space on the account side for communication with a server so as to establish the association between pooled digital certificate systems;

T3. performing server-side unidirectional association of digital certificates inside user voucher pools on different client sides and opposite terminals; and

T4. displaying at a front end after serializing numbers of the voucher pools on a client side;

4. The method for generating and converting the user voucher on the account side of the mobile payment according to claim 3, characterized in that a mutual corresponding relationship

between the user vouchers of different account systems of the random matching algorithm is a one-time unidirectional corresponding relationship, and cannot be restored or reversely restored after the use is completed.

5. A system for generating and converting the user voucher on the account side of the mobile payment, the system being used for implementing the method for generating and converting the user voucher on the account side of the mobile payment as described in any one of claims 1 to 4, characterized in that the system comprises voucher correspondence, serialization, temporary storage, security, persistence groups, connection of different account systems and voucher generation methods.

6. The system for generating and converting the user voucher on the account side of the mobile payment according to the claim 5, characterized in that the system supports account voucher conversion services with characterized ID as a system, and characterized vouchers comprise emails, telephones, ID numbers, bank card numbers or other account IDs.

7. The system for generating and converting the user voucher on the account side of the mobile payment according to the claim 5, characterized in that the system can perform display and financial transactions on different user side devices which include mobile phones, tablet personal computers, computers, devices with screens and without networking capability, and devices with screens and networking capability, and the system runs on different devices in different forms, and performs integration by means of providing application system interfaces, development tools and other means.

8. The system for generating and converting the user voucher on the account side of the mobile payment according to the claim 5, characterized in that the system is presented on account APPs and websites by means of APP embedded applications, web applications, fast easy-to-use or applets, and can be deployed and provide services between a financial institution and an account system owning side system for connecting account systems of different financial and non-financial institutions to achieve interconnection and intercommunication services.

9. The system for generating and converting the user voucher on the account side of the mobile payment according to the claim 5, characterized in that serialized numbers generated by the system are displayed at a front end in a variety of means which include bar codes, two-dimensional codes, Bluetooth, NFC, acoustic waves, magnetic transmission, optical transmission, and other transmission means for transmission.

10. The system for generating and converting the user voucher on the account side of the mobile payment according to the claim 5, characterized in that vouchers generated by the system can be used in different financial terminals and scenes, at the same time, the serialized vouchers can be read by multiple front-end reading devices, and the system can be deployed on multiple forms of devices, can be containerized and serialized, and is deployed and run in multiple complex cloud environments and local environments.

11. The system for generating and converting the user voucher on the account side of the mobile payment according to the claim 5, characterized in that when a financial voucher generated by the system is transacted on different terminals and when multiple account vouchers of a user side and a voucher supported by a merchant terminal are compared and in handshaking, a matching result preferred by both parties is selected to carry out the financial transaction, wherein when the financial voucher generated by the system is transacted on different terminals, account voucher codes are displayed on the user side, and financial transactions are performed after manual selection and judgment.

12. The system for generating and converting the user voucher on the account side of the mobile payment according to the claim 5, characterized in that the system is docked with and implanted into existing various application forms by a variety of ways including but not limited to SDK, API, applets or rich texts, thin client sides and rich webs so as to provide services to the front end.

13. The system for generating and converting the user voucher on the account side of the mobile payment according to the claim 5, characterized in that the system can integrate multiple account vouchers systems by means of a UI design method of the user side simply and quickly, performs fast display and switching on one UI, and can be applied to different front -end technologies.

14. A computer storage medium, characterized in that a computer program is stored in the storage medium, different user vouchers are stored and confused by the storage medium, and are exchanged among different account systems, and when the computer program is executed by a processor, the method for generating and converting the user voucher on the account side of the mobile payment as described in any one of claims 1 to 4 is realized.