real card number based on the virtual card number changed in real time, while not providing the identification information about a user or a device corresponding to the real card number.

SUMMARY

[0006] The inventive concept provides a method and a system for providing a financial transaction using an empty card that search for a real card number registered in the empty card from a virtual card number generated based on empty card data, without the exposure of real card information, which is used in a financial transaction at a finance company (e.g., a card issuer or a bank).

[0007] Moreover, the inventive concept provides a method and a system for providing a financial transaction using an empty card that provides a virtual card number that is newly generated at a unit count interval while not being generated redundantly, whenever the payment using the empty card is requested.

[0008] Furthermore, the inventive concept provides a method and a system for providing a financial transaction using an empty card that employ the selected one as one empty card, and performs a financial transaction by using the empty card such that a real credit card number is not exposed at all after a user selects one of among a plurality of credit cards held by a user.

[0009] The technical objects of the inventive concept are not limited to the above-mentioned ones, and the other unmentioned technical objects will become apparent to those skilled in the art from the following description.

[0010] In accordance with an aspect of the inventive concept, there is provided a method for providing a financial transaction using an empty card comprising receiving, by a server, a virtual card number generated by a program included in a user terminal,

searching, by the server, for an empty card storage location at which the empty card is registered, in a storage location search algorithm based on the virtual card number, searching, by the server, for a real card number storage space linked to a user identification (UID) assigned to the found empty card storage location, extracting, by the server, a real card number stored in the real card number storage space, and performing, by the server, a financial transaction progress or a financial transaction progress request with the extracted real card number. The virtual card number is generated by a virtual card number generating function in the program, based on empty card data provided from the empty card of a user through wireless communication, and the empty card includes specific empty card data provided given at a time of manufacture. The storage location search algorithm is matched to the virtual card number generating function, and searches for the empty card storage location based on at least one detailed code in the virtual card number.

[0011] In accordance with another aspect of the inventive concept, there is provided a program for providing a financial transaction using an empty card, which is coupled to a computer that is a piece of hardware and is stored in a medium to execute the method.

[0012] In accordance with another aspect of the inventive concept, there is provided a virtual card number generating device using an application comprising a detailed code generating unit generating one or more detailed codes based on empty card data provided through wireless communication from an empty card of a user, a virtual card number generating unit generating a virtual card number by combining the one or more detailed codes using a virtual card number generating function, and a virtual card number providing unit transmitting the generated virtual card number to a server to make a payment request. The virtual card number is generated based on time data in which the empty card data is received from the empty card or time data in which the payment request is made, and a combination serial number obtained by combining an empty card serial number included

in the empty card data and an application serial number included in the application, and the server is configured to search for an empty card storage location, at which the empty card is registered, in a storage location search algorithm matched to the virtual card number generating function based on the virtual card number provided by the virtual card number providing unit, to search for a real card number storage space linked to a UID assigned to the empty card storage location, and to extract a real card number stored in the real card number storage space to perform a financial transaction progress or a financial transaction progress request.

[0013] In accordance with another aspect of the inventive concept, there is provided a virtual card number verifying device providing a financial transaction by using a real card number extracted based on a virtual card number comprising a virtual card number receiving unit receiving the virtual card number from a user terminal, a detailed code extracting unit extracting one or more detailed codes included in the virtual card number, a storage location search unit searching for an empty card storage location, at which the empty card is registered, in a storage location search algorithm based on the extracted one or more detailed codes, a real card number extracting unit searching for a real card number storage space linked to a UID assigned to the found empty card storage location and extracting a real card number stored in the found real card number storage space, and a financial transaction requesting unit performing a financial transaction progress or a financial transaction progress request, using the extracted real card number. the virtual card number is generated based on empty card data provided through wireless communication from an empty card of a user by a virtual card number generating function in the user terminal, and the storage location search algorithm is matched to the virtual card number generating function.

[0014] In accordance with another aspect of the inventive concept, there is provided an empty card device for a financial transaction comprising an IC chip including empty card data and a communication unit providing the empty card data to a user terminal through wireless communication. The empty card data is specific data assigned to the empty card device when the empty card device is manufactured. The user terminal is configured to generate a virtual card number based on the received empty card data, using a virtual card number generating function and to provide the generated virtual card number to a server.

[0015] The server is configured to search for an empty card storage location, at which the empty card is registered, in a storage location search algorithm matched to the virtual card number generating function based on the received virtual card number, to search for a real card number storage space linked to a UID assigned to the empty card storage location, and to extract a real card number stored in the real card number storage space to perform a financial transaction progress or a financial transaction progress request.

[0016] The other detailed items of the inventive concept are described and illustrated in the specification and the drawings.

BRIEF DESCRIPTION OF THE FIGURES

[0017] The above and other objects and features will become apparent from the following description with reference to the following figures, wherein like reference numerals refer to like parts throughout the various figures unless otherwise specified, and wherein:

[0018] FIG. 1 is a block diagram of a financial transaction providing system using an empty card, according to an embodiment of the inventive concept;

WHAT IS CLAIMED IS:

1. A method of executing a financial transaction using an empty card, the method comprising:

receiving, by a server, a registration request for the empty card, wherein the registration request includes an empty card number stored in an IC chip of the empty card;

linking one or more real card numbers to the empty card number at a real card number storage space on a server;

transmitting the empty card number stored in the IC chip of the empty card to a POS device to initiate the financial transaction;

receiving, at the server from the POS device, the empty card number with a request for the financial transaction;

searching, by the server, for one of the real card numbers linked to the empty card number;

extracting, by the server, one of the real card numbers stored in the real card number storage space linked to the empty card number; and

making a payment for the financial transaction using one of the real card numbers.

2. The method of claim 1, further comprising:

when there are a plurality of real card numbers stored in the real card number storage space, receiving, by the server, a request for setting a specific real card number of the real card numbers to a basic card,

wherein the extracting of one of the real card numbers stored in the real card

number storage space includes extracting the real card number set to the basic card, from the real card number storage space.

3. A program for providing the financial transaction, which is coupled to a computer that is a piece of hardware and is stored in a medium to execute the method of one of the preceding claims.

4. A financial transaction system, the system comprising an empty card, a POS device, and a server,

wherein the empty card includes an IC chip, the IC chip including an empty card number provided to the POS device to transmit to the server to initiate a financial transaction; and

wherein the server is configured to:

search for a real card number storage by using the empty card number, wherein the empty card number is linked to the real card number storage by a real card storage space in the server; and

extract a real card number set to the basic card, from the real card number storage space to make a payment for the financial transaction.

5. The system of claim 4, further comprising a fingerprint recognizing unit configured to recognize a fingerprint of a user, wherein the fingerprint recognizing unit is configured to:

determine whether a recognized fingerprint is the same as a preregistered fingerprint of the user;

when the two fingerprints are the same as each other, approve to make a

payment; and

when the two fingerprints are not the same as each other, reject the payment such that the payment is not made.