

SYSTEM FOR MANAGING SHARED PROPERTY ON BASIS OF SECURITY TOKEN,
AND METHOD THEREOF

BACKGROUND OF THE INVENTION

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Field of the Invention

The present disclosure relates to a system for managing a shared property, and a method thereof, wherein a security token is issued to a user, an ownership share of a property is
10 registered according to the number of tokens that a user holds, and a use right is issued.

Description of the Related Art

The demand for accommodation in independent residential
15 facilities, such as villas, resort pensions, and pool villas, has increased and is more than four times higher than the demand for accommodation in hotels, and the market size has grown rapidly. However, a user does not always reside in an independent residential facility, so costs can be reduced by
20 sharing the independent residential facility with multiple users.

In addition to providing the conventional services for sharing mobility devices, office spaces, and accommodations, new services for sharing independent residential facilities,
25 such as co-ownership villas, have been introduced.

These services involve granting rights to use properties owned by others, so there is a demand for a service that facilitates management of a user's property shared with others.

The foregoing is intended merely to aid in the understanding of the background of the present disclosure, and is not intended to mean that the present disclosure falls within the purview of the related art that is already known to those skilled in the art.

10 Document of Related Art

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SUMMARY OF THE INVENTION

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The present disclosure is directed to providing a system for managing a shared property, and a method thereof, wherein a security token is issued to a user, an ownership share of a property is registered according to the number of held tokens, and a use right is issued.

According to an embodiment of the present disclosure, there is provided a system for managing a shared property on the basis of a security token, the system including: a token management module configured to issue a first token for each property, and issue a second token in proportion to an

ownership share of each property, the first token being a non-fungible token and the second token being a fungible token; a user authentication module configured to store personal information and address information of a token wallet of a user; a real asset management module configured to store information on the property pegged to the first token; and a property registration application module configured to apply for registration of the property pegged to the first token, in proportion to a holding ratio of the second token of the user.

10 In an embodiment, a query and a transaction for the first token and the second token may be recorded in a blockchain kept in a node on a node network.

In an embodiment, the token management module may be configured to issue the first token, and then create a block in which the address information of the token wallet in which the first token is kept is recorded, and connect the block to the blockchain kept in the token management module, and then propagate data including the block to the node network.

In an embodiment, the token management module may be configured to access a property registration system to obtain property register copy data, and extract, from the property register copy data, a location, a building number, building details, an owner, and ownership share information of the property to create first metadata together with a token ID that is a unique identification number, and keep the first metadata

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in a file or a database.

In an embodiment, the token management module may be configured to stake the first token in a vault, and then issue the second token in proportion to the ownership share of a
5 property joint owner.

In an embodiment, the token management module may be configured to create second metadata including the token ID of the first token, and keep the second metadata in a file or a database.

10 In an embodiment, the token management module may be configured to extract personal information of the owner from the property register copy data, and make a request to the user authentication module for the address information of the token wallet corresponding to the extracted personal information of
15 the owner and obtain the address information of the token wallet, and then transmit the second token to an obtained address of the token wallet.

In an embodiment, the token management module may be configured to recognize the number of the second tokens kept in
20 each of a plurality of the token wallets at each period, and calculate ownership share information for each user in proportion to the number of the second tokens.

In an embodiment, the property registration application module may be configured to create property registration
25 application data including the ownership share information for

each user, and put an electronic signature on the property registration application data using a joint certificate for each user and transmit the property registration application data to a property registration system.

5 In an embodiment, the property registration application module may be configured to receive registration completion notification data from the property registration system, and the real asset management module may be configured to change property ownership information according to updated ownership
10 share information for each user.

 According to an embodiment of the present disclosure, there is provided a method of managing a shared property on the basis of a security token in a system for managing the shared property on the basis of the security token, the method
15 including: accessing, by a token management module, a property registration system to obtain property register copy data; issuing, by the token management module, a first token that is a non-fungible token corresponding to a property; staking, by the token management module, the first token in a vault, and
20 then issuing a second token that is a fungible token in proportion to an ownership share of the property; and providing, by the token management module, the second token to a token wallet of a user.

 In an embodiment, the method may further include:
25 recognizing, by the token management module, the number of the

second tokens kept in each of a plurality of the token wallets;
calculating, by the token management module, ownership share
information for each user in proportion to the number of the
second tokens; and creating, by the property registration
5 application module, property registration application data
including the ownership share information for each user, and
putting an electronic signature on the property registration
application data using a joint certificate for each user and
transmitting the property registration application data to the
10 property registration system.

The present disclosure can easily update an ownership
share of a property using a security token that a user holds,
and allows the user to use the property shared with others
without conflict.

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BRIEF DESCRIPTION OF THE DRAWINGS

The above and other objectives, features, and other
advantages of the present disclosure will be more clearly
20 understood from the following detailed description when taken
in conjunction with the accompanying drawings, in which:

FIG. 1 is a block diagram schematically illustrating a
system for managing shared property on basis of a security
token, and elements connected to the system according to a
25 first exemplary embodiment of the present disclosure;

FIG. 2 is a diagram schematically illustrating a node network in an embodiment of the present disclosure;

FIG. 3 is a diagram schematically illustrating a blockchain in an embodiment of the present disclosure;

5 FIG. 4 is a flowchart schematically illustrating a process of issuing a token in an embodiment of the present disclosure;

FIGS. 5A and 5B are diagrams each schematically illustrating a schema of metadata of a token in an embodiment of the present disclosure;

10 FIG. 6 is a flowchart schematically illustrating a process of updating a property register copy in an embodiment of the present disclosure;

FIG. 7 is a block diagram schematically illustrating a system for managing shared property on basis of a security token, and elements connected to the system according to a second exemplary embodiment of the present disclosure;

FIG. 8 is a flowchart schematically illustrating a process of issuing a property use right in an embodiment of the present disclosure;

20 FIG. 9 is a flowchart schematically illustrating a process of brokering token trading in an embodiment of the present disclosure;

FIG. 10 is a flowchart schematically illustrating a process of brokering use right trading in an embodiment of the present disclosure;

FIG. 11 is a flowchart schematically illustrating a process of reserving the use of a property in an embodiment of the present disclosure;

FIG. 12 is a block diagram schematically illustrating a
5 system for managing shared property on basis of a security token, and elements connected to the system according to a third exemplary embodiment of the present disclosure;

FIG. 13 is a flowchart schematically illustrating a process of issuing a property use right in an embodiment of the
10 present disclosure; and

FIG. 14 is a diagram illustrating an exemplary computing device 500 in which the methods described in the various embodiments of the present disclosure are realized.

15 DETAILED DESCRIPTION OF THE INVENTION

The present disclosure can be implemented with various changes without departing from the gist, and may have at least one embodiment. In addition, the embodiments described in
20 "DETAILED DESCRIPTION OF THE INVENTION" and "DRAWINGS" of the present disclosure are examples for describing the present disclosure in detail and do not limit or restrict the scope of the present disclosure.

Therefore, it can be interpreted that anything that can be
25 easily inferred from "DETAILED DESCRIPTION OF THE INVENTION"

and "DRAWINGS" of the present disclosure by those skilled in the art to which the present disclosure pertains falls within the scope of the present disclosure.

In addition, the size and shape of each element shown in the drawings may be exaggerated to describe the embodiments and do not limit the size and shape of the element actually implemented.

Unless specifically defined, the terms used in the specification of the present disclosure may have the same meaning as generally understood by those skilled in the art to which the present disclosure pertains.

Hereinafter, the embodiments of the present disclosure will be described in detail with reference to the drawings.

FIG. 1 is a block diagram schematically illustrating a system for managing shared property on basis of a security token, and elements connected to the system according to a first exemplary embodiment of the present disclosure.

In the first exemplary embodiment of the present disclosure, the security token may be a digital asset obtained by pegging a property, such as an independent residential facility, which is a real asset, to cryptocurrency. In particular, a non-fungible token NFT is issued corresponding to a property, which is a real asset, and the non-fungible token is staked in a vault and at least one fungible token FT that is the security token is issued in return.

According to the first exemplary embodiment of the present disclosure, a system 100 for managing a shared property on the basis of a security token may include at least one computing device, or each of the elements included in the system 100 may
5 include at least one computing device. Herein, the computing device may include a processor, a memory device, an input/output device, and a system board.

The processor may process data that is input into the system 100 or output to the outside. The processor may be a
10 microprocessor including a control device, an arithmetic logic device, a register, and a cache memory. For example, the processor may be a central processing unit, a graphic processing unit, or a digital signal processor. In addition, the processor may have a multi-core structure including a
15 plurality of cores.

The memory device may keep data processed inside the system 100. The memory device may include a main memory device and an auxiliary memory device. The main memory device may include a random-access memory device or a flash memory device.
20 For example, the main memory device is a random-access memory device, and may include at least one selected from the group of static RAM (SRAM), dynamic RAM (DRAM), magneto-resistive RAM (MRAM), spin-transfer torque magneto-resistive RAM (STT-MRAM), phase change RAM (PRAM), resistive RAM (RRAM), and
25 ferroelectric RAM (FeRAM). The auxiliary memory device may

include at least one selected from the group of a hard disk drive, a solid state drive (SSD), an optical disc drive, and a magnetic tape.

The input/output device receives data into the system 100
5 and outputs data to the outside. The input/output device may include an external input/output terminal and a driver device that processes the external input/output terminal. For example, the external input/output terminal may include at least one selected from the group of a serial port, a parallel
10 port, small computer system interface (SCSI), universal serial bus (USB), IEEE 1394, external serial advanced technology attachment (e-SATA), and Thunderbolt. In addition, the input/output device may include a network interface controller. The network interface controller may be connected to a local
15 area network (LAN) based on Ethernet in a wired manner, or may be connected to a wireless local area network (WLAN) based on Wi-Fi in a wireless manner.

The system board makes connection between the processor, the memory device, and the input/output device, and provides a
20 path for data that the system 100 processes. The system board may include an address bus, a command bus, a data bus, a chipset device that controls the buses, and a power system.

The system 100 may be connected to a user terminal device A, third-party systems B1 to B3, and a node network C each over
25 a personal area network (PAN), a local area network (LAN), a

metropolitan area network (MAN), and a wide area network (WAN), and may receive data from or transmit data to the external devices A, B1 to B3, C using data communication protocols, such as transmission control protocol/internet protocol (TCP/IP),
5 server message block (SMB), common internet file system (CIFS), and network file system (NFS).

An application program or a web browser is installed on the user terminal device A, and through the application program or the web browser, an interface for the user to execute a
10 function of inquiring and managing tokens and property information is provided. The user terminal device A may be a personal device that has an input function of receiving commands from the user and an output function of displaying data. For example, the user terminal device A may be a desktop
15 computer, a laptop computer, a tablet computer, a smartphone, or a PDA.

The third-party systems B1 to B3 may include a token trading system B1, a property market price inquiry system B2, and a property registration system B3.

20 The user may access the token trading system B1 through the application program or the web browser installed on the user terminal device A. In addition, the user may entrust or deposit his or her tokens to the token trading system B1 and then may trade the tokens for assets other users hold.

25 The property market price inquiry system B2 provides a

function for reading a market price of a property and inquiring other information. The user may access the property market price inquiry system B2 using the application program or the web browser on the user terminal device A and then may inquire
5 market price information of a property.

The property registration system B3 provides a function for inquiring a property register copy and applying for registration. The user may access the property registration system B3 using the application program or the web browser on
10 the user terminal device A and then may transmit a property register copy inquiry request to receive a register copy file and may transmit a registration application request.

The node network C may be a set of multiple nodes that are connected to at least one another node and store a blockchain.
15 Each node may be a computing device, and a query and a transaction for a token may be recorded in the blockchain stored by the node.

The system 100 of the first exemplary embodiment of the present disclosure includes a token management module 110, a
20 user authentication module 120, a real asset management module 130, and a property registration application module 140.

The token management module 110 issues a token according to an ownership share of a property, which is a real asset. The token management module 110 may issue a non-fungible token
25 NFT obtained by pegging a property, which is a real asset. In

addition, the token management module 110 may stake the issued non-fungible token NFT in a vault and may issue at least one fungible token FT. For example, if A has a 60/100 ownership share of a particular property and B has 40/100, the token management module 110 may issue 100 fungible tokens (FTs) and may provide 60 FTs to A's wallet and 40 FTs to B's wallet.

In addition, the token management module 110 may transmit a request for registration application to the property registration application module 140 so that the ownership share of the property is updated according to the token holding ratio of the user of the system 100. Herein, the token management module 110 may examine the token holding ratio of the user of the system 100 at regular time intervals, and then may make a request to the property registration application module 140 for registration application.

The user authentication module 120 recognizes the identity of the user of the system 100 and stores personal information. The user authentication module 120 may recognize the identity of the user of the system 100 through a mobile phone security authentication service provided from a telecommunication company. Alternatively, the user authentication module 120 may recognize the identity of the user of the system 100 through a mobile resident registration card verification service and a mobile driving license verification service provided by public institutions. Alternatively, the user authentication module

120 may recognize the identity of the user of the system 100 by receiving a joint certificate issued by a certificate issuing organization. Alternatively, the identity of the user of the system 100 may be recognized through a decentralized identifier
5 (DID) .

The real asset management module 130 may store information on a property pegged to tokens. In addition, the real asset management module 130 provides a function of inquiring information on the use of the property and a function of
10 registering the use of the property. The user of the system 100 may use the application program or the web browser installed on the user terminal device A to inquire information on the use of the property, such as an independent residential facility, and may apply for use registration by specifying a
15 period.

The property registration application module 140 applies for registration of the property pegged to tokens on the basis of the token holding ratio of the user of the system 100. The property registration application module 140 receives a
20 property registration application request from the token management module 110 and transmits a property registration application message with identity authentication information of the user to the property registration system B3.

FIG. 2 is a diagram schematically illustrating a node
25 network in an embodiment of the present disclosure. FIG. 3 is

a diagram schematically illustrating a blockchain in an embodiment of the present disclosure.

Nodes of a node network C may be connected to one or more other nodes each over a personal area network (PAN), a local
5 area network (LAN), a metropolitan area network (MAN), and a wide area network (WAN). In addition, the nodes may receive block data from or transmit block data to other nodes using data communication protocols, such as TCP/IP, SMB, CIFS, and NFS.

10 At least one node belonging to the node network C is a mining node that verifies transactions and creates a block including a plurality of transactions. The block may include a hash value, a hash value of the previous block in the blockchain, a hash value of an uncle block abandoned as a
15 branch of the blockchain, a Bloom filter for determining whether transactions exist in the block, an address of a token wallet to receive rewards, the block creation difficulty, the number of previous blocks, the maximum fee per block, the total fee of the transactions included in the block, the block
20 creation time, a nonce, and a text description of the block, and may include state data, transaction data, and receipt data in the form of Merkle Patricia tree or trie.

A transaction in which a token is transmitted from one wallet to another wallet is created, and data including the
25 transaction is propagated to the nodes on the node network C.

A mining node verifies a transaction and transmits data including the transaction to another node connected to the mining node. A plurality of mining nodes that has received data including a transaction calculate a hash value of a block including a plurality of transactions, and the mining node that first calculates the hash value of the block creates a block and propagates the block to other nodes.

FIG. 4 is a flowchart schematically illustrating a process of issuing a token in an embodiment of the present disclosure. FIGS. 5A and 5B are diagrams each schematically illustrating a schema of metadata of a token in an embodiment of the present disclosure.

The token management module 110 accesses the property registration system B3 and obtains property register copy data of an independent residential facility in step S1100.

The token management module 110 may transmit a hypertext transfer protocol (HTTP) or HTTP secure (HTTPS) request to the property registration system B3, and the property registration system B3 may transmit the property register copy data in response. The property register copy data may be created in file formats, such as hypertext markup language (HTML), extensible markup language (XML), JavaScript object notation (JSON), and portable document format (PDF). In addition, the property register copy data may include the location of the property, the building number, building details, an owner, and

ownership share information.

The token management module 110 issues a non-fungible token NFT corresponding to the independent residential facility in step S1200.

5 A first token T1 that is the non-fungible token NFT issued by the token management module 110 has a token ID, which is a unique identification number. The token ID may be represented as an integer type of 256 bits, for example. In addition, the first token T1 may be kept in any one token wallet, and address
10 information of the token wallet in which the first token T1 is kept may be recorded in the blockchain stored by the nodes in the node network C. The address of the token wallet may be represented as a hexadecimal integer of 20 bytes, for example. The token management module 110 may store a private key of the
15 token wallet in which the first token T1 is kept.

Information on the issued first token T1 may be recorded in a block and propagated to the node network C. The token management module 110, or a mining node present in the node network C may create a block in which the address information
20 of the token wallet in which the first token T1 is kept is recorded, and may connect the created block to the blockchain kept in the token management module 110 or the mining node. In addition, the token management module 110 or the mining node may propagate data of the created block to the node network C.
25 Each node that has received the block data may connect the

block included in the received data to the blockchain kept in the node.

First metadata M1 including various information on the independent residential facility corresponds to the first token T1. The first metadata M1 may include the location of the property, the building number, the building details, the owner, and the ownership share information that are extracted from the property register copy data, and may include the token ID as a unique identification number. The token management module 110 may keep the first metadata M1 corresponding to each independent residential facility in a separate file, or may establish a database to keep the first metadata M1. Alternatively, the first metadata M1 may be stored in the node network C in a distributed manner. For example, the interplanetary file system (IPFS) may be established in the node network C, and the first metadata M1 may be split into several blocks and the several blocks may be stored in the nodes in a distributed manner.

The token management module 110 issues a fungible token FT according to an ownership share in step S1300.

The token management module 110 may include a vault for staking a non-fungible token NFT. The token management module 110 stakes the first token T1, which is a non-fungible token NFT, in the vault and then issues a second token T2, which is a fungible token FT.

The token management module 110 may issue different second tokens T2s for first tokens T1s staked in the vault. The second token T2 may be kept in any one token wallet, and information on the number of second tokens T2s held for each token wallet address may be recorded in the blockchain stored by the nodes in the node network C. The token management module 110 may store a private key of the token wallet in which the second tokens T2s are kept.

Information on the issued second token T2 may be recorded in a block and propagated to the node network C. The token management module 110, or a mining node present in the node network C may create a block in which the address information of the token wallet in which the second token T2 is kept is recorded, and may connect the created block to the blockchain kept in the token management module 110 or the mining node. In addition, the token management module 110 or the mining node may propagate data of the created block to the node network C. Each node that has received the block data may connect the block included in the received data to the blockchain kept in the node.

Second metadata M2 including various information on the first token T1 corresponds to the second token T2. The second metadata M2 may include the token ID of the first token T1. The token management module 110 may keep the second metadata M2 corresponding to each first token T1 in a separate file, or may

establish a database to keep the second metadata M2. Alternatively, the second metadata M2 may be stored in the node network C in a distributed manner. For example, the IPFS may be established in the node network C, and the second metadata
5 M2 may be split into several blocks and the several blocks may be stored in the nodes in a distributed manner.

The token management module 110 may issue the second token T2 in proportion to the ownership share of a joint owner. For example, if A has a 60/100 ownership share of a particular
10 independent residential facility and B has a 40/100 ownership share, the token management module issues 110 issues a first token T1 that is a non-fungible token NFT corresponding to the independent residential facility and stakes the first token T1 in the vault, and issues 100 second tokens T2s to give 60
15 second tokens T2s to A and 40 second tokens T2s to B.

The token management module 110 provides the second token T2 according to user information in step S1400.

The user authentication module 120 may recognize the identity of a user of the system 100 and may store personal
20 information of the user and the address information of the token wallet. The user authentication module 120 may keep the personal information of the user and the address information of the token wallet in a file, or may establish a database to keep the personal information and the address information.

25 The token management module 110 may extract personal

information of an owner from the property register copy data. For example, the token management module 110 may extract a resident registration number of an owner from the property register copy data. When there are multiple owners due to
5 joint ownership, a resident registration number of each owner may be extracted.

The token management module 110 makes a request to the user authentication module 120 for the address information of the token wallet corresponding to the extracted personal
10 information of the owner and obtains the address information. In addition, the token management module 110 transmits the issued second token T2 to the obtained address of the token wallet. When there are multiple owners due to joint ownership, the token management module 110 may obtain the address
15 information of the token wallet for each owner and then may transmit the second tokens T2s in number proportional to the ownership share to the address of the token wallet for each owner.

Information on the transmitted second tokens T2s may be
20 recorded in a block and propagated to the node network C. The token management module 110, or a mining node present in the node network C may create a block in which a transaction in which the second tokens T2s are transmitted is recorded, and may connect the created block to the blockchain kept in the
25 token management module 110 or the mining node. In addition,

the token management module 110 or the mining node may propagate data of the created block to the node network C. Each node that has received the block data may connect the block included in the received data to the blockchain kept in
5 the node.

FIG. 6 is a flowchart schematically illustrating a process of updating a property register copy in an embodiment of the present disclosure.

The token management module 110 recognizes the number of
10 second tokens T2s kept in each token wallet in step S2100.

The token management module 110 may recognize the number of second tokens T2s kept in each token wallet at each period. The period may be one month, for example.

The token management module 110 may recognize the number
15 of second tokens T2s kept in each token wallet in the blockchain kept in the token management module 110 or in the blockchain received from a node on the node network C. In addition, the token management module 110 may recognize the number of second tokens T2s for each token wallet from the
20 state data included in the blockchain.

The token management module 110 transmit ownership share information proportional to the number of second tokens T2s to the property registration application module 140 in step S2200.

The token management module 110 makes a request to the
25 user authentication module 120 for the personal information of

the user corresponding to the address of the token wallet and obtains the personal information. In addition, the token management module 110 calculates the ownership share information for each user in proportion to the number of second
5 tokens T2s and transmits the ownership share information to the property registration application module 140.

The property registration application module 140 transmits property registration application data according to the ownership share information for each user to the property
10 registration system B3 in step S2300.

The property registration application module 140 creates the property registration application data according to the ownership share information for each user. The property registration application data may include ownership share
15 information for one independent residential facility.

The property registration application module 140 makes a request to the user authentication module 120 for a joint certificate for each user and obtains the joint certificate for each user. In addition, the property registration application
20 module 140 puts an electronic signature on the property registration application data using the joint certificate for each user and then transmits the property registration application data to the property registration system B3. When registration application is completed, the property
25 registration system B3 transmits registration completion

notification data to the property registration application module 140.

The real asset management module 130 updates ownership information of the property that is an independent residential
5 facility in step S2400.

After registration application is completed, the property registration application module 140 transmits the registration completion notification data to the real asset management module 130. The real asset management module 130 changes the
10 property ownership information according to the updated ownership share information for each user. The real asset management module 130 may keep the property ownership information in a file, or may establish a database to keep the property ownership information.

15 The real asset management module 130 transmits registration application result data to the user terminal device A in step S2500.

The registration application result data may include the registration completion notification data and the property
20 ownership information. The user terminal device A displays the registration completion notification data and the property ownership information through the application program or the web browser.

FIG. 7 is a block diagram schematically illustrating a
25 system for managing shared property on basis of a security

token, and elements connected to the system according to a second exemplary embodiment of the present disclosure.

A system 200 of the second exemplary embodiment of the present disclosure includes a token management module 210, a
5 user authentication module 220, a real asset management module 230, a property registration application module 240, and a trading brokerage module 250. The token management module 210, the user authentication module 220, the real asset management module 230, and the property registration application module
10 240 are the same as the corresponding elements of the first exemplary embodiment.

The trading brokerage module 250 brokers token trading between at least one seller and at least one buyer. In addition, the trading brokerage module 250 brokers trading in
15 property use rights between the sellers and the buyers.

FIG. 8 is a flowchart schematically illustrating a process of issuing a property use right in an embodiment of the present disclosure.

The token management module 210 issues a fungible token FT
20 according to an ownership share in step S3100.

The token management module 210 issues a third token T3, which is a fungible token FT, in association with the first token T1 staked in the vault. The token management module 210 may issue different third tokens T3s for first tokens T1s. The
25 third token T3 may be kept in any one token wallet, and

information on the number of third tokens T3s held for each token wallet address may be recorded in the blockchain stored by the nodes in the node network C. The token management module 210 may store a private key of the token wallet in which
5 the third tokens T3s are kept.

Information on the issued third token T3 may be recorded in a block and propagated to the node network C. The token management module 210, or a mining node present in the node network C may create a block in which the address information
10 of the token wallet in which the third token T3 is kept is recorded, and may connect the created block to the blockchain kept in the token management module 210 or the mining node. In addition, the token management module 210 or the mining node may propagate data of the created block to the node network C.
15 Each node that has received the block data may connect the block included in the received data to the blockchain kept in the node.

Third metadata M3 including various information on the first token T1 corresponds to the third token T3. The form of
20 the third metadata M3 may be the same as the form of the second metadata M2. The third metadata M3 may include the token ID of the first token T1. The token management module 210 may keep the third metadata M3 corresponding to each first token T1 in a separate file, or may establish a database to keep the third
25 metadata M3. Alternatively, the third metadata M3 may be

stored in the node network C in a distributed manner. For example, the IPFS may be established in the node network C, and the third metadata M3 may be split into several blocks and the several blocks may be stored in the nodes in a distributed
5 manner.

The token management module 210 may issue the third token T3 in proportion to the ownership share of a joint owner. For example, if A has a 60/100 joint owner share of a particular independent residential facility and B has a 40/100 joint owner
10 share, the token management module 210 issues a first token T1 that is a non-fungible token NFT corresponding to the independent residential facility and stakes the first token T1 in the vault, and issues 100 third tokens T3s to give 60 third tokens T3s to A and 40 third tokens T3s to B.

15 The token management module 210 provides the third token T3 according to user information in step S3200.

The token management module 210 makes a request to the user authentication module 220 for the address information of the token wallet of the user and obtains the address
20 information. In addition, the token management module 210 transmits the issued third token T3 to the obtained address of the token wallet. When there are multiple owners due to joint ownership, the token management module 210 may obtain the address information of the token wallet for each owner and then
25 may transmit the third tokens T3s in number proportional to the

ownership share to the address of the token wallet for each user.

Information on the transmitted third tokens T3s may be recorded in a block and propagated to the node network C. The token management module 210, or a mining node present in the node network C may create a block in which a transaction in which the third tokens T3s are transmitted is recorded, and may connect the created block to the blockchain kept in the token management module 210 or the mining node. In addition, the token management module 210 or the mining node may propagate data of the created block to the node network C. Each node that has received the block data may connect the block included in the received data to the blockchain kept in the node.

The user of the system 200 uses the user terminal device A to set the number n1 of third tokens T3s required to use the property in step S3300.

The user terminal device A transmits information on the number n1 of tokens set by the user to the real asset management module 230, and the real asset management module 230 stores information on the number n1 of third tokens T3s required to use a property for each independent residential facility. The real asset management module 230 may store the information on the number n1 of third tokens T3s required for the use of each property in a file, or may establish a database to store the information.

In the meantime, herein, it is described that the number
n1 of third tokens T3s required to use the property is set
using the user terminal device A, but the scope of the present
disclosure is not limited thereto. For example, the number n1
5 of third tokens T3s required to use the property may be a value
initially set on the system 200 or may be a value separately
preset by the operator of the system 200.

The user of the system 200 uses the user terminal device A
to make a request for staking the third tokens T3s in step
10 S3400.

The user terminal device A transmits, to the token
management module 210, information on the number n2 of third
tokens T3s requested by the user to be staked. The token
management module 210 makes a request to the real asset
15 management module 230 to obtain the information on the number
n1 of third tokens T3s required to use a property for each
independent residential facility. The token management module
210 determines whether the number n2 of third tokens T3s
requested to be staked is equal to or greater than the number
20 n1 of third tokens T3s required to use a property for each
independent residential facility. When the number n2 of third
tokens T3s required to be staked is less than the number n1 of
third tokens T3s required to use the property, the token
management module 210 transmits a message to the user terminal
25 device A indicating that the number n2 of third tokens T3s

required to be staked is insufficient.

When the number n_2 of third tokens T3s requested to be staked is equal to or greater than the number n_1 of third tokens T3s required to use the property, the token management module 210 issues a non-fungible token NFT corresponding to the right to use the independent residential facility in step S3500.

The token management module 210 stakes the third tokens T3s in the vault, and issues a fourth token T4, which is a non-fungible token NFT. The fourth token T4 may be kept in any one token wallet, and information on the number of fourth tokens T4s held for each token wallet address may be recorded in the blockchain stored by the nodes in the node network C. The token management module 210 may store a private key of the token wallet in which the fourth tokens T4s are kept.

Information on the issued fourth token T4 may be recorded in a block and propagated to the node network C. The token management module 210, or a mining node present in the node network C may create a block in which the address information of the token wallet in which the fourth token T4 is kept is recorded, and may connect the created block to the blockchain kept in the token management module 210 or the mining node. In addition, the token management module 210 or the mining node may propagate data of the created block to the node network C. Each node that has received the block data may connect the

block included in the received data to the blockchain kept in the node.

Fourth metadata M4 including various information on the fourth token T4 corresponds to the fourth token T4. The fourth
5 metadata M4 may include the location of the property, the building number, and the user information, and may include the token ID as a unique identification number. The token management module 210 may keep the fourth metadata M4 corresponding to each fourth token T4 in a separate file, or
10 may establish a database to keep the fourth metadata M4. Alternatively, the fourth metadata M4 may be stored in the node network C in a distributed manner. For example, the IPFS may be established in the node network C, and the fourth metadata M4 may be split into several blocks and the several blocks may
15 be stored in the nodes in a distributed manner.

The token management module 210 provides the fourth token T4 to the user who has requested staking in step S3600.

The token management module 210 makes a request to the user authentication module 220 for the address information of
20 the token wallet of the user who has requested staking. In addition, the token management module 210 transmits the issued fourth token T4 to the obtained address of the token wallet.

Information on the transmitted fourth token T4 may be recorded in a block and propagated to the node network C. The
25 token management module 210, or a mining node present in the

node network C may create a block in which a transaction in which the fourth token T4 is transmitted is recorded, and may connect the created block to the blockchain kept in the token management module 210 or the mining node. In addition, the
5 token management module 210 or the mining node may propagate data of the created block to the node network C. Each node that has received the block data may connect the block included in the received data to the blockchain kept in the node.

The token management module 210 transmits property use
10 information of the user who has provided the fourth token T4, to the real asset management module 230. The property use information may include the fourth metadata M4. In addition, the real asset management module 230 stores the property use information of the user. The user allows the given fourth
15 token T4 to be displayed on the user terminal device A, thus using the independent residential facility for a particular period of time.

FIG. 9 is a flowchart schematically illustrating a process of brokering token trading in an embodiment of the present
20 disclosure.

Users who hold tokens in their token wallets may trade second to fourth tokens T2s to T4s through the token trading system B1. The system 200 according to an embodiment of the present disclosure may broker token trading by grouping a
25 plurality of sellers holding second or third tokens T2s or T3s

or a plurality of buyers wishing who want to hold second or third tokens T2s or T3s.

A first user uses a user terminal device A1 to input the number of tokens that he or she wants to trade in step S4100.

5 The first user is a user of the system 200 and is a maker of an order book.

The first user may input the number of second tokens T2s or third tokens T3s that he or she wants to sell into an application program or a web browser running on the user terminal device A1.

Alternatively, the first user may input the number of second tokens T2s or third tokens T3s that he or she wants to buy into the application program or the web browser running on the user terminal device A1.

15 The user terminal device A1 of the first user transmits information on the number of tokens input by the first user to the trading brokerage module 250. The trading brokerage module 250 may assign priorities to the first users according to the order in which pieces of information on the number of tokens are received.

A second user uses a user terminal device A2 to input the number of tokens that he or she wants to trade in step S4200.

The second user is a user of the system 200, and is a taker who executes an order according to the order book.

25 The second user may input the number of second tokens T2s

or third tokens T3s that he or she wants to sell into an application program or a web browser running on the user terminal device A2.

Alternatively, the second user may input the number of
5 second tokens T2s or third tokens T3s that he or she wants to buy into the application program or the web browser running on the user terminal device A2.

The user terminal device A2 of the second user transmits information on the number of tokens input by the second user to
10 the trading brokerage module 250.

The trading brokerage module 250 matches the first user and the second user for trading in step S4300.

The trading brokerage module 250 may perform matching for trading by searching for a plurality of first users who sell
15 second tokens T2 or third tokens T3s of which the number is equal to or greater than the number of second tokens T2 or third tokens T3s the second user wants to buy.

Alternatively, trading brokerage module 250 may perform matching for trading by searching for a plurality of first
20 users who buy second tokens T2s or third tokens T3s of which the number is equal to or greater than the number of second tokens T2 or third tokens T3s the second user wants to sell.

For example, A, who is a second user, wants to buy 100 third tokens T3s, and B, who is a first user, wants to sell 60
25 third tokens T3s, and C, who is another first user, wants to

sell 80 third tokens T3s. B first uses the user terminal device A1 to input the number of third tokens T3 that he or she wants to sell, and the user terminal device A1 transmits information on the number of tokens for trading input by B to the trading brokerage module 250. Herein, the trading brokerage module 250 may perform matching in a manner that sells A the 60 third tokens T3s of B who has first input the information on the number of tokens for trading and later sells A the 40 second tokens T3s of C who has later input the information on the number of tokens for trading.

FIG. 10 is a flowchart schematically illustrating a process of brokering use right trading in an embodiment of the present disclosure.

A user may perform trading to exchange a non-fungible token NFT corresponding to the use right of a property that he or she owns for another user's non-fungible token NFT.

A third user uses a user terminal device A3 to register a fourth token T4 to exchange in the trading brokerage module 250 in step S5100.

The third user may select the fourth token T4 to exchange in an application program or a web browser running on the user terminal device A3, and may input information on a period of use of the property. The selected fourth token T4 may represent the use right of the property that the third user owns. The user terminal device A3 of the third user transmits

the token ID of the fourth token T4 and information on the period of use of the property to the trading brokerage module 250.

In an embodiment, the fourth token may be the use right to
5 use a first property that the third user owns, for the input period of use.

The trading brokerage module 250 may store the received token ID of the fourth token T4 and the received information on the period of use of the property in a file, or may establish a
10 database to store the received token ID and information.

A fourth user may use a user terminal device A4 to inquire a list of exchangeable use rights in step S5200.

The fourth user selects a function of inquiring the list of exchangeable use rights in an application program or a web
15 browser running on the user terminal device A4. The user terminal device A4 transmits a request to the trading brokerage module 250, and the trading brokerage module 250 obtains information on a fifth token T5 held in the fourth user's token wallet.

20 In an embodiment, the fifth token may be the use right to use a second property owned by the fourth user for a predetermined period of use.

The trading brokerage module 250 inquires, of a file or a database, other users' use rights having the same or similar
25 value as the fifth token T5 held by the fourth user. In

addition, the trading brokerage module 250 transmits information on a list of inquired use rights to the user terminal device A4 of the fourth user.

Herein, the use rights having the same or similar value
5 mean the use rights of which the value differences from the fifth token are within a critical range.

For example, trading brokerage module 250 may inquire, of a file or a database, the fourth token T4 as a use right having the same or similar value as the fifth token T5 held by the
10 fourth user, and may transmit information on a list of use rights including the inquired fourth token T4 to the user terminal device A4 of the fourth user.

In an embodiment, the value of the use right (that is, a fourth token or a fifth token) of a property held by each user
15 may be determined on the basis of a proper value evaluation amount V3 of the property calculated using a method described later with reference to FIG. 12.

For example, if the proper value evaluation amount of the first property is 100 million won, the value of the one-year
20 use right of the first property may be a first value calculated by multiplying the proper value evaluation amount by a particular ratio (e.g., 0.1), and the value of the fourth token may be a second value calculated by multiplying the value of the one-year use right of the first property by a value
25 resulting from dividing the period of use set for the fourth

token by 365 (days).

In an embodiment, the particular ratio may be a predetermined expected rate of return on the first property.

Alternatively, the value of the fourth token may be a
5 third value obtained by multiplying the second value by a
weighting corresponding to the period of use set for the fourth
token. Herein, the weighting is a value that corresponds to
peak season, shoulder season, normal season, and/or low season.
For example, when the period of use set for the fourth token
10 corresponds to peak season, the weighting may be a relatively
higher d_1 . When the period of use set for the fourth token
corresponds to low season, the weighting may be a relatively
lower d_2 ($d_1 > d_2$).

The value of the fifth token may be calculated in the same
15 as that of the fourth token. For example, the value of the
fifth token may be a fourth value calculated by multiplying the
value of the one-year use right of the second property by a
value resulting from dividing the period of use set for the
fifth token by 365 (days).

20 Alternatively, the value of the fifth token may be a fifth
value obtained by multiplying the fourth value by a weighting
corresponding to the period of use set for the fifth token.
Herein, the weighting may be a value corresponding to peak
season, shoulder season, normal season, and/or low season.

25 The user terminal device A4 of the fourth user displays

the information on the list of inquired use rights.

When there is a difference in value between the fifth token T5 of the fourth user and the inquired use right (for example, the fourth token) of another user, the trading
5 brokerage module 250 may transmit use right difference-in-amount information indicating the difference and the information on the list of inquired use rights together to the user terminal device A4 of the fourth user. Herein, the user terminal device A4 of the fourth user may display, on the basis
10 of the use right difference-in-amount information, an extra amount the fourth user needs to pay or a refund amount the fourth user will receive, which is an adjusted amount generated when use right exchange is made.

The fourth user uses the user terminal device A4 to select
15 another user's use right (for example, the fourth token) to be exchanged in step S5300.

The user terminal device A4 of the fourth user transmits information on the use right selected by the fourth user to the trading brokerage module 250. The trading brokerage module 250
20 transmits an exchange request message to the user terminal device A3 of the third user who has registered the selected use right.

The third user uses the user terminal device A3 to approve the exchange of use rights in step S5400.

25 The user terminal device A3 of the third user transmits,

to the trading brokerage module 250, a message for approving the exchange of the use right (for example, the fourth token) of the third user and the use right (for example, the fifth token) of the fourth user.

5 When the use right exchange (that is, the exchange of the fourth token and the fifth token) between the third user and the fourth user is processed, the fourth user may use the user terminal device A4 to pay (payment of the extra amount) or receive (reception of the refund amount) the adjusted amount,
10 which is the difference in amount between the value of the use right of the third user and the value of the use right of the fourth user, in step S5500.

 The trading brokerage module 250 completes the exchange of use rights (that is, the exchange of the fourth token and the
15 fifth token) in step S5600.

 The trading brokerage module 250 stores the details of the exchange of the use right of the third user and the use right of the fourth user in a file or a database.

 FIG. 11 is a flowchart schematically illustrating a
20 process of reserving the use of a property in an embodiment of the present disclosure.

 The real asset management module 230 provides information on the use of the property to the user terminal device A in step S6100.

25 The real asset management module 230 may provide the

information on the use of the property to the user terminal device A of the user who has the use right of the property. The information on the use of the property may include information on an available period, transportation, and nearby
5 facilities.

The user uses the user terminal device A to reserve the use of the property in step S6200.

The user terminal device A transmits, to the real asset management module 230, information on the period of use of the
10 property, wherein the information corresponds to the property use right the user has.

The real asset management module 230 inquires whether the property is available for the period of use indicated by the received information in step S6300.

15 When the property is available for the period of use indicated by the received information, the real asset management module 230 transmits an approval message to the user terminal device A. When it is unavailable, the real asset management module 230 transmits a rejection message to the user
20 terminal device A. In addition, the real asset management module 230 stores the received information on the period of use of the property in a file or a database.

In an embodiment, the real asset management module 230 may provide, to the user terminal device A, additional information
25 related to the use of the property with or separately from the

approval message.

For example, the real asset management module 230 may refer to the period of use of the property indicated by the received information to provide information on transportation,
5 connected to the property, available during the period of use, nearby tourist attractions, and/or nearby events taking place during the period of use as the additional information to the user terminal device A.

Alternatively, the real asset management module 230 may
10 store information on devices and miscellaneous items provided in the property, and may provide the stored information in response to a request from the user terminal device A. For example, when during the period of use of the property, the user tries out a product, such as a device, furniture, a light,
15 or an appliance, provided in the property and wants to buy the product, the user transmits information on the product to the real asset management module 230 by scanning a QR code attached to the product through the user terminal device A. Then, the real asset management module 230 may provide additional
20 information, such as price information, purchase route information, and manufacturer information of the product, to the user terminal device A. FIG. 12 is a block diagram schematically illustrating a system for managing shared property on basis of a security token, and elements connected
25 to the system according to a third exemplary embodiment of the

present disclosure.

A system 300 of the third exemplary embodiment of the present disclosure includes a token management module 310, a user authentication module 320, a real asset management module 330, a property registration application module 340, a trading brokerage module 350, and a value evaluation module 360. The token management module 310, the user authentication module 320, the real asset management module 330, the property registration application module 340, and the trading brokerage module 350 are the same as the corresponding elements of the first exemplary embodiment or the second exemplary embodiment.

The value evaluation module 360 calculates a value evaluation amount of a property that is an independent residential facility. The value evaluation module 360 may evaluate value at a point in time in the future and may include a machine learning model to do so. The machine learning model may be a multiple linear regression model or a deep neural network model.

FIG. 13 is a flowchart schematically illustrating a process of issuing a property use right in an embodiment of the present disclosure.

The value evaluation module 360 obtains information on a base value evaluation amount V1 of a property from the property market price inquiry system B2 in step S7100.

In an embodiment, the base value evaluation amount V1 may

be a value determined on the basis of at least one selected from the group of an actual trading price, a published price, and an appraised price of the property.

5 The value evaluation module 360 may periodically obtain the information on the value evaluation amount V1 of the property from the property market price inquiry system B2. For example, the information on the value evaluation amount V1 of the property may be obtained at intervals of one month or one year.

10 The value evaluation module 360 obtains information on a property usage rate and a use right exchange application rate in step S7200.

The real asset management module 330 may store the information on the property usage rate for each property
15 obtained by dividing the total period of use by a first period unit (for example, one month or one year). The trading brokerage module 350 may store the information on the use right exchange application rate for each property obtained by dividing the number of times that the use right is exchanged by
20 a second period unit (for example, one month or one year).

The value evaluation module 360 obtains the information on the property usage rate from the real asset management module 330, and obtains the information on the use right exchange application rate from the trading brokerage module 35.

25 In addition, the value evaluation module 360 may obtain

information on an accommodation fee of an accommodation facility nearby the property from the property market price inquiry system B2.

The value evaluation module 36 uses the obtained
5 information to calculate a variable value evaluation amount of the property in step S7300.

The value evaluation module 360 may calculate the variable value evaluation amount V2 of the property using the following Equation 1. The variable value evaluation amount V2 may be an
10 evaluation amount to which the use value of the property is applied.

[Equation 1]

$$V2 = V1 + (\alpha1 \times U) + (\alpha2 \times Q) + (\alpha3 \times F)$$

V1 denotes the base value evaluation amount of the
15 property obtained in step S7100, and V2 denotes the variable value evaluation amount of the property. U denotes the usage rate of the property, Q denotes the use right exchange application rate of the property, and F denotes the accommodation fee of the accommodation facility nearby the
20 property. $\alpha1$, $\alpha2$, and $\alpha3$ denote weightings each equal to or greater than 0, and the sum of $\alpha1$, $\alpha2$, and $\alpha3$ is 1.

The value evaluation module 360 calculates a proper value evaluation amount V3 of the property in step S7400.

The value evaluation module 360 may calculate the proper

value evaluation amount V3 of the property using the following Equation 2. The proper value evaluation amount V3 may be an evaluation amount to which the base value and the use value of the property are applied in a comprehensive manner.

5 [Equation 2]

$$V3 = (\beta1 \times V1) + (\beta2 \times V2)$$

V1 denotes the base value evaluation amount of the property obtained in step S7100, V2 denotes the variable value evaluation amount of the property obtained in step S7300, and
10 V3 denotes the proper value evaluation amount of the property. $\beta1$ and $\beta2$ denote weightings each equal to or greater than 0, and the sum of $\beta1$ and $\beta2$ is 1.

The value evaluation module 360 may calculate a reduced value evaluation amount V4 of the property using the following
15 Equation 3.

[Equation 3]

$$V4 = V1 - (\gamma1 \times I + \gamma2 \times R)$$

V1 denotes the base value evaluation amount of the property obtained in step S7100, and V4 denotes the reduced
20 value evaluation amount of the property. I denotes the elapsed period after step S7100, and R denotes the inflation rate for the elapsed period. $\gamma1$ and $\gamma2$ denote weightings each equal to or greater than 0.

When the reduced value evaluation amount V4 of the

property is different from the proper value evaluation amount V3 by a particular value or more, the system 300 takes steps S7100 to S7400 again to recalculate the proper value evaluation amount V3 of the property.

5 Herein, the values of at least two among weightings α_1 , α_2 , α_3 , β_1 , and β_2 of Equation 1 and/or Equation 2 are changed and steps S7100 or S7400 take place again on the basis of the changed weightings α_1 , α_2 , α_3 , β_1 , and β_2 to recalculate the proper value evaluation amount V3. By changing weightings α_1 ,
10 α_2 , α_3 , β_1 , or β_2 in this way, steps S7100 to S7400 take place repeatedly until the difference between the proper value evaluation amount V3 and the reduced value evaluation amount V4 converges to within a particular value.

 In the meantime, the value evaluation module 360 may
15 estimate a future value amount of the property on the basis of a machine learning model, and may provide the estimated future value amount of the property together with or separately from the proper value evaluation amount V3.

 To this end, the value evaluation module 360 may include a
20 machine learning model (not shown) including an artificial neural network, and may obtain the information on the accommodation fee of the accommodation facility nearby the property, information on the number of visitors to areas nearby the property, and information on a property market price for
25 each period from the property market price inquiry system B2,

and may obtain the information on the property usage rate from the real asset management module 330.

In addition, the value evaluation module 360 may set the information on the property usage rate, the information on the accommodation fee of the accommodation facility nearby the property, and the information on the number of visitors to the areas nearby the property as input variables and may set the information on the property market price for each period as a target variable to train the machine learning model.

10 In an embodiment, the machine learning model may include, but is not limited thereto, network models of the following types: a deep neural network (DNN), a recurrent neural network (RNN), a bidirectional recurrent deep neural network (BRDNN), a multilayer perceptron (MLP), convolutional neural network
15 (CNN), R-CNN, Fast R-CNN, Faster R-CNN, and mask-RCNN.

In an embodiment, the machine learning model may be trained to enable the model parameters to be adjusted in such a manner that an error between the information on the property market price for each period and an estimated value inferred on
20 the basis of the information on the property usage rate, the information on the accommodation fee of the accommodation facility nearby the property, and the information on the number of visitors to the areas nearby the property is minimized.

In addition, the value evaluation module 360 may input, to
25 the trained machine learning model, information on a property

usage rate of a property to be estimated, information on an accommodation fee of an accommodation facility nearby the property, and information on the number of visitors to areas nearby the property, and in response thereto, the machine
5 learning model may output an inferred value as a future value amount of the property to be estimated.

Hereinafter, an exemplary computing device 500 in which the methods described in the various embodiments of the present disclosure are realized will be described with reference to
10 FIG. 14. For example, the computing device 500 of FIG. 14 may be the system 100 of FIG. 1, the system 200 of FIG. 7, or the system 300 of FIG. 12.

FIG. 14 is an exemplary hardware configuration diagram illustrating the computing device 500.

15 As shown in FIG. 14, the computing device 500 may include at least one processor 510, a bus 550, a communication interface 570, a memory 530 for loading a computer program 591 executed by the processor 510, and a storage 590 in which the computer program 591 is stored. However, FIG. 14 shows only
20 elements related to the embodiments of the present disclosure. Therefore, those skilled in the art to which the present disclosure pertains will understand that other general-purpose elements may be included in addition to the elements shown in FIG. 14.

25 The processor 510 controls the overall operation of each

element of the computing device 500. The processor 510 may include at least one selected from the group of a central processing unit (CPU), a microprocessor unit (MPU), a micro controller unit (MCU), a graphic processing unit (GPU), and any
5 type of processor well known in the technical field of the present disclosure. In addition, the processor 510 may perform operations for at least one application or program to execute the methods/operations according to the various embodiments of the present disclosure. The computing device 500 may be
10 provided with at least one processor.

The memory 530 stores various types of data, commands, and/or information. The memory 530 may load at least one program 591 from the storage 590 to execute the methods/operations according to the various embodiments of the
15 present disclosure. An example of the memory 530 may be RAM, but is not limited thereto.

The bus 550 provides a function of communication between the elements of the computing device 500. The bus 550 may be realized as various types of buses, such as an address bus, a
20 data bus, and a control bus.

The communication interface 570 supports wired/wireless Internet communication of the computing device 500. The communication interface 570 may support various communication methods other than Internet communication. To this end, the
25 communication interface 570 may include a communication module

well known in the technical field of the present disclosure.

The storage 590 may non-transitorily store at least one computer program 591 therein. The storage 590 may include a non-volatile memory, such as read-only memory (ROM), erasable
5 programmable ROM (EPROM), electrically erasable programmable ROM (EEPROM), and flash memory; a hard disk; a removable disk; or any type of computer-readable recording medium well known in the technical field to which the present disclosure pertains.

The computer program 591 may include one or more
10 instructions by which the methods/operations according to the various embodiments of the present disclosure are realized.

For example, the computer program 591 may include instructions for performing the following operations: (a) accessing, by a token management module, a property
15 registration system to obtain property register copy data; (b) issuing, by the token management module, a first token that is a non-fungible token corresponding to a property; (c) staking, by the token management module, the first token in a vault, and then issuing a second token that is a fungible token in
20 proportion to an ownership share of the property; (d) providing, by the token management module, the second token to a token wallet of a user; (e) recognizing, by the token management module, the number of the second tokens kept in each of a plurality of the token wallets; (f) calculating, by the
25 token management module, ownership share information for each

user in proportion to the number of the second tokens; and/or
(g) creating, by the property registration application module,
property registration application data including the ownership
share information for each user, and putting an electronic
5 signature on the property registration application data using a
joint certificate for each user and transmitting the property
registration application data to the property registration
system.

Alternatively, the computer program 591 may include
10 instructions for performing the following operations: (a)
obtaining, by a value evaluation module, base value evaluation
amount information of a property from a property market price
inquiry system; (b) obtaining, by the value evaluation module,
property usage rate and use right exchange application rate
15 information, and accommodation fee information of an
accommodation facility nearby the property; (c) calculating, by
the value evaluation module, a variable value evaluation amount
of the property; (d) calculating, by the value evaluation
module, a proper value evaluation amount of the property; (e)
20 estimating, by the value evaluation module, a future value
amount of the property; and/or (f) providing, by the value
evaluation module, the estimated future value amount of the
property together with or separately from the proper value
evaluation amount.

25 Alternatively, the computer program 591 may include

instructions for performing the following operations by a trading brokerage module: (a) registering a fourth token that represent a use right to use a first property for a first period of use; (b) receiving, from a user terminal device, a request for inquiry about a list of use rights exchangeable for a fifth token that represents a use right to use a second property for a second period of use; (c) transmitting, in response to the request for inquiry, use right list information including the fourth token to the user terminal device; (d) transmitting, in response to the user terminal device selecting the fourth token, an exchange request message to another user terminal device; and (e) processing, in response to the user terminal device receiving the message and approving exchange of the fourth token and the fifth token, the exchange of the fourth token and the fifth token between a plurality of users.

When the computer program 591 is loaded into the memory 530, the processor 510 executes the one or more instructions to perform the methods/operations according to the various embodiments of the present disclosure.

The technical idea of the present disclosure described so far may be realized as computer-readable code on a computer-readable medium. The computer-readable recording medium may be a removable recording medium (a CD, a DVD, a Blu-ray disk, a USB storage device, or a removable hard disk) or a fixed recording medium (a ROM, a RAM, or a computer-embedded hard

disk), for example. The computer program recorded on the computer-readable recording medium may be transmitted to another computing device over a network, such as the Internet, to be installed on the computing device, thereby using the
5 computer program on the computing device.

Although the embodiments of the present disclosure have been described above with reference to the accompanying drawings, those skilled in the art to which the present disclosure pertains will understand that the present disclosure
10 can be embodied in other specific forms without changing the technical idea or essential characteristics of the present disclosure. Therefore, it should be understood that the embodiments described above are illustrative in all aspects as and not restrictive. The scope of protection of the present
15 disclosure shall be construed in accordance with the claims set forth below, and all technical ideas within the equivalent scope shall be construed to be included in the scope of rights of the technical ideas defined by the present disclosure.

Description of the Reference Numerals in the Drawings

20 100, 200, 300 : system for managing shared property on basis of security token
110, 210, 310 : token management module
120, 220, 320 : user authentication module
130, 230, 330 : real asset management module
25 140, 240, 340 : property registration application module

250, 350 : trading brokerage module

360 : value evaluation module

WHAT IS CLAIMED IS:

1. A system for managing a shared property on the basis of a security token, the system comprising:

5 a token management module configured to issue a first token for each property, and issue a second token in proportion to an ownership share of each property, the first token being a non-fungible token and the second token being a fungible token;

10 a user authentication module configured to store personal information and address information of a token wallet of a user;

 a real asset management module configured to store information on the property pegged to the first token; and

15 a property registration application module configured to apply for registration of the property pegged to the first token, in proportion to a holding ratio of the second token of the user.

20 2. The system of claim 1, wherein a query and a transaction for the first token and the second token are recorded in a blockchain kept in a node on a node network.

 3. The system of claim 2, wherein the token management module is configured to issue the first token, and then create
25 a block in which the address information of the token wallet in

which the first token is kept is recorded, and connect the block to the blockchain kept in the token management module, and then propagate data including the block to the node network.

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4. The system of claim 3, wherein the token management module is configured to

access a property registration system to obtain property register copy data, and

10 extract, from the property register copy data, a location, a building number, building details, an owner, and ownership share information of the property to create first metadata together with a token ID that is a unique identification number, and keep the first metadata in a file or a database.

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5. The system of claim 4, wherein the token management module is configured to stake the first token in a vault, and then issue the second token in proportion to the ownership share of a property joint owner.

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6. The system of claim 5, wherein the token management module is configured to create second metadata including the token ID of the first token, and keep the second metadata in a file or a database.

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7. The system of claim 6, wherein the token management module is configured to extract personal information of the owner from the property register copy data, and make a request to the user authentication module for the address information of the token wallet corresponding to the extracted personal information of the owner and obtain the address information of the token wallet, and then transmit the second token to an obtained address of the token wallet.

10 8. The system of claim 2, wherein the token management module is configured to

recognize the number of the second tokens kept in each of a plurality of the token wallets at each period, and calculate ownership share information for each user in proportion to the number of the second tokens.

9. The system of claim 8, wherein the property registration application module is configured to create property registration application data including the ownership share information for each user, and put an electronic signature on the property registration application data using a joint certificate for each user and transmit the property registration application data to a property registration system.

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10. The system of claim 9, wherein the property registration application module is configured to receive registration completion notification data from the property registration system, and

5 the real asset management module is configured to change property ownership information according to updated ownership share information for each user.

11. A method of managing a shared property on the basis of
10 a security token in a system for managing the shared property on the basis of the security token, the method comprising:

accessing, by a token management module, a property registration system to obtain property register copy data;

issuing, by the token management module, a first token
15 that is a non-fungible token corresponding to a property;

staking, by the token management module, the first token in a vault, and then issuing a second token that is a fungible token in proportion to an ownership share of the property; and

providing, by the token management module, the second
20 token to a token wallet of a user.

12. The method of claim 11, further comprising:

recognizing, by the token management module, the number of the second tokens kept in each of a plurality of the token
25 wallets;

calculating, by the token management module, ownership share information for each user in proportion to the number of the second tokens; and

creating, by the property registration application module,
5 property registration application data including the ownership share information for each user, and putting an electronic signature on the property registration application data using a joint certificate for each user and transmitting the property registration application data to the property registration
10 system.