[0005]

In Patent Literature 1 described above, a food in a refrigerator is specified and is added to a list; however, which storage compartment the food should be stored in is not suggested.

[0006]

In Patent Literature 2 described above, a recipe is suggested on the basis of information regarding food ingredients in the refrigerator; however, how the food should be stored is not suggested in a case where the food is left over or a case where the food is a make-ahead meal prepared to be stored.

[0007]

The present disclosure has been made to solve such problems and aims to obtain a refrigerator that can suggest, to a user, a storage environment suited to storing a storage item in a case where the storage item is to be stored.

Solution to Problem

[0008]

A refrigerator according to an embodiment of the present disclosure includes a main body, a plurality of storage compartments provided inside the main body; a communication device provided in the main body and configured to communicate with a controller and a mobile terminal, and a first storage device in which function data ~~indicating a function~~ including types of the plurality of storage compartments of the refrigerator and setting data ~~indicating a current setting state of the refrigerator~~ including currently set temperatures for the plurality of respective storage compartments of the refrigerator and setting information including current storage modes for the plurality of respective storage compartments are stored. The controller is installed outside or inside the main body. The communication device is configured to transmit the function data and the setting data to the controller. The controller has a second storage device in which a shelf life database is stored in advance in which one or more shelf lives of one or more respective storage items are set separately for each storage environment. The controller is configured to receive the function data and the setting data from the

communication device, to extract, from the shelf life database on the basis of the function data and the setting data, ~~a storage environment~~ ones of the plurality of storage compartments suited to storing the one or more storage items and ~~a shelf life~~ shelf lives set for ~~the storage environment~~ the respective ones of the plurality of storage compartments suited to storing the one or more storage items, ~~the storage environment being suited to the function of the refrigerator and the current setting state of the~~

refrigerator and the ones of the plurality of storage compartments and the shelf lives being extracted as a storage environment in which a storage item to be stored in the refrigerator is to be stored and that is suited to the types of the plurality of storage compartments of the refrigerator, the currently set temperatures for the plurality of respective storage compartments, and the setting information including the current storage modes for the plurality of respective storage compartments, and to output the ones of the plurality of storage compartments suited to storing the one or more storage items and the shelf lives set for the respective ones of the plurality of storage compartments suited to storing the one or more storage items as the extracted storage environment and the extracted shelf life.

Advantageous Effects of Invention

[0009]

A refrigerator according to an embodiment of the present disclosure can suggest, to a user, a storage environment suited to a storage item in a case where the storage item is to be stored.

Brief Description of Drawings

[0010]

[Fig. 1] Fig. 1 is a front view illustrating the configuration of the entirety of a refrigerator 1 according to Embodiment 1.

[Fig. 2] Fig. 2 is a sectional side view illustrating the configuration of the refrigerator 1 according to Embodiment 1.

[Fig. 3] Fig. 3 is a diagram illustrating the relationship between the refrigerator 1 according to Embodiment 1 and individual communication devices.

[Fig. 4] Fig. 4 is a flow chart illustrating the procedure of processing regarding presentation of a storage environment for a storage item in the refrigerator 1 according to Embodiment 1.

[Fig. 5] Fig. 5 is a flow chart illustrating the procedure of processing regarding presentation of a storage expiry date of the storage item in the refrigerator 1 according to Embodiment 1.

[Fig. 6] Fig. 6 is a diagram illustrating storage item names 18 registered in an external network 11 according to Embodiment 1.

[Fig. 7] Fig. 7 is a diagram illustrating a shelf life database 19, which the external network 11 according to Embodiment 1 has.

[Fig. 8] Fig. 8 is a diagram illustrating an example of function data 20 regarding the refrigerator 1 according to Embodiment 1.

CLAIMS

[Claim 1]

A refrigerator comprising:

a main body;

a plurality of storage compartments provided inside the main body;

a communication device provided in the main body and configured to communicate with a controller and a mobile terminal; and

a first storage device in which function data ~~indicating a function~~ including types of the plurality of storage compartments of the refrigerator and setting data ~~indicating a current setting state of the refrigerator~~ including currently set temperatures for the plurality of respective storage compartments of the refrigerator and setting information including current storage modes for the plurality of respective storage compartments are stored,

the controller being installed outside or inside the main body,

the communication device being configured to transmit the function data and the setting data to the controller,

the controller having a second storage device in which a shelf life database is stored in advance in which one or more shelf lives of one or more respective storage items are set separately for each storage environment,

the controller being configured

to receive the function data and the setting data from the communication device,

to extract, from the shelf life database on the basis of the function data and the setting data, ~~a storage environment~~ ones of the plurality of storage compartments suited to storing the one or more storage items and ~~a shelf life~~ shelf lives set for ~~the storage environment~~ the respective ones of the plurality of storage compartments suited to storing the one or more storage items, ~~the storage environment being suited to the function of the refrigerator and the current setting state of the refrigerator and~~ the ones of the plurality of storage compartments and the shelf lives being extracted

as a storage environment in which a storage item to be stored in the refrigerator is to be stored and that is suited to the types of the plurality of storage compartments of the refrigerator, the currently set temperatures for the plurality of respective storage compartments, and the setting information including the current storage modes for the plurality of respective storage compartments, and

to output the ones of the plurality of storage compartments suited to storing the one or more storage items and the shelf lives set for the respective ones of the plurality of storage compartments suited to storing the one or more storage items as the extracted storage environment ~~and the extracted shelf life~~.

[Claim 2]

The refrigerator of claim 1, wherein

the controller is configured to communicate with the mobile terminal,

the controller is configured to transmit the extracted storage environment and the extracted shelf life to the mobile terminal, and

the mobile terminal is configured to receive the storage environment and the shelf life and to display the storage environment and the shelf life on a screen of the mobile terminal.

[Claim 3]

The refrigerator of claim 1 or 2, comprising:

~~a storage compartment that is provided inside the main body and that is for storing the storage item;~~

a door that is attached to the main body and that is for opening and closing ~~the storage compartment~~ one of the plurality of storage compartments; and

a first camera that is installed at a face of the door that faces ~~the storage compartment~~ the one of the plurality of storage compartments and that is configured to capture an image of the storage item, wherein

in the one of the plurality of storage compartments, the storage item is stored,

the communication device is configured to transmit a captured image of the storage item captured by the first camera to the controller, and

the controller is configured to recognize, by receiving the captured image of the storage item captured by the first camera, the storage item included in the captured image as the storage item to be stored in the refrigerator.

[Claim 4]

The refrigerator of any one of claims 1 to 3, wherein

the mobile terminal has a second camera configured to capture an image of the storage item, and

the controller is configured to recognize, by receiving a captured image of the storage item captured by the second camera from the mobile terminal, the storage item included in the captured image as the storage item to be stored in the refrigerator.

[Claim 5]

The refrigerator of any one of claims 1 to 4, wherein

the controller is configured

to store a storage date of the storage item,

to count the number of elapsed days or an amount of elapsed time from the storage date, and

to regularly transmit the number of elapsed days or the amount of elapsed time to the mobile terminal, and

the mobile terminal is configured to receive the number of elapsed days or the amount of elapsed time and to display the number of elapsed days or the amount of elapsed time on a screen of the mobile terminal.

[Claim 6]

The refrigerator of claim 5, wherein

the controller is configured

to store, in the second storage device, a storage location of the storage item in the refrigerator,

to extract, from the shelf life database, a shelf life set for a storage environment of the storage location,

to determine, on the basis of the number of elapsed days or the amount of elapsed time and the shelf life, whether a difference between the number of elapsed days or the amount of elapsed time and the shelf life is less than or equal to a preset threshold, and

to transmit an approaching expiry notification to the mobile terminal in a case where the difference is less than or equal to the preset threshold, and

the mobile terminal is configured to receive the approaching expiry notification and to display the approaching expiry notification on the screen of the mobile terminal.

[Claim 7]

The refrigerator of claim 5 or 6, wherein

the controller is configured

to store, in the second storage device, a storage location of the storage item in the refrigerator,

to extract, from the shelf life database, a shelf life set for a storage environment of the storage location,

to determine, on the basis of the number of elapsed days or the amount of elapsed time and the shelf life, whether a storage expiry date of the storage item is over, and

to transmit an expiry notification to the mobile terminal in a case where the storage expiry date of the storage item is over, and

the mobile terminal is configured to receive the expiry notification and to display the expiry notification on the screen of the mobile terminal.

[Claim 8]

The refrigerator of any one of claims 1 to 7, comprising:

~~a storage compartment that is provided inside the main body and that is for storing the storage item;~~

a door that is attached to the main body and that is for opening and closing ~~the storage compartment~~ one of the plurality of storage compartments; and

a panel that is installed in the door or the main body and that is configured to perform screen display, wherein

in the one of the plurality of storage compartments, the storage item is stored,

the controller is configured to transmit the extracted storage environment and the extracted shelf life to the communication device of the refrigerator,

the communication device of the refrigerator is configured to receive the storage environment and the shelf life, and

the panel of the refrigerator is configured to display, on a screen of the panel, the storage environment and the shelf life received by the communication device.

[Claim 9]

The refrigerator of claim 8, wherein

the controller is configured

to store a storage date of the storage item,

to count the number of elapsed days or an amount of elapsed time from the storage date, and

to regularly transmit the number of elapsed days or the amount of elapsed time to the communication device of the refrigerator,

the communication device of the refrigerator is configured to receive the number of elapsed days or the amount of elapsed time, and

the panel of the refrigerator is configured to display, on the screen of the panel, the number of elapsed days or the amount of elapsed time received by the communication device.

[Claim 10]

The refrigerator of claim 9, wherein

the controller is configured

to store, in the second storage device, a storage location of the storage item in the refrigerator,

to extract, from the shelf life database, a shelf life set for a storage environment of the storage location,

to determine, on the basis of the number of elapsed days or the amount of elapsed time and the shelf life, whether a difference between the number of elapsed days or the amount of elapsed time and the shelf life is less than or equal to a preset threshold, and

to transmit an approaching expiry notification to the communication device of the refrigerator in a case where the difference is less than or equal to the preset threshold,

the communication device of the refrigerator is configured to receive the approaching expiry notification, and

the panel of the refrigerator is configured to display, on the screen of the panel, the approaching expiry notification received by the communication device.

[Claim 11]

The refrigerator of claim 9 or 10, wherein

the controller is configured

to store, in the second storage device, a storage location of the storage item in the refrigerator,

to extract, from the shelf life database, a shelf life set for a storage environment of the storage location,

to determine, on the basis of the number of elapsed days or the amount of elapsed time and the shelf life, whether a storage expiry date of the storage item is over, and

to transmit an expiry notification to the communication device of the refrigerator in a case where the storage expiry date of the storage item is over,

the communication device of the refrigerator is configured to receive the expiry notification, and

the panel of the refrigerator is configured to display, on the screen of the panel, the expiry notification received by the communication device.

[Claim 12]

The refrigerator of any one of claims 1 to 11, wherein

the one or more storage items are foods, and

the controller is configured

to store captured images of the foods and image capturing dates of the foods, and

to output list data regarding the foods when a browsing request is received, the list data displaying the captured images of the foods displayed separately for each image capturing date.

[Claim 13]

The refrigerator of claim 12, wherein

the controller is configured to transmit the list data regarding the foods to the mobile terminal when receiving the browsing request from the mobile terminal, the list data displaying the captured images of the foods displayed separately for each image capturing date, and

the mobile terminal is configured to receive the list data regarding the foods and to display, on a screen of the mobile terminal, the captured images of the foods displayed separately for each image capturing date in a calendar format.

[Claim 14]

The refrigerator of any one of claims 1 to 13, wherein the controller comprises an external network provided outside the refrigerator.

[Claim 15]

The refrigerator of claim 14, wherein the external network comprises a cloud server.

[Claim 16]

The refrigerator of any one of claims 1 to 13, wherein the controller comprises a main control unit provided inside the refrigerator.

[Claim 17]

The refrigerator of claim 3, wherein the first camera is configured to be moved along a guide rail by a driving device.

[Claim 18]

The refrigerator of claim 3 or 17, wherein

one of the plurality of storage compartments has a plurality of shelves in an inside of the one of the plurality of storage compartments, and

the first camera is configured to be moved between the plurality of shelves.

[Claim 19]

The refrigerator of any one of claims 1 to 13, wherein

the one or more storage items are foods, and

the second storage device is configured to store a food list in which a storage item name indicating a name of one of the foods is stored,

in the food list, at least one of a captured image of the one of the foods, an image capturing date data indicating an image capturing date of the captured image, rating data for the one of the foods, and recipe data for the one of the foods is registered for each storage item name.

[Claim 20]

The refrigerator of claim 19, wherein the second storage device is configured to store, in the food list, the recipe data for the one of the foods transmitted from the mobile terminal.

[Claim 21]

The refrigerator of claim 19, wherein the second storage device is configured to store, in the food list, the rating data for the one of the foods transmitted from the mobile terminal.