

[DESCRIPTION]

[Title of Invention] ENVIRONMENTAL CONTROL SYSTEM,
ENVIRONMENTAL CONTROL METHOD, AND PROGRAM

[Technical Field]

5 [0001]

The present invention relates to an environmental control system, an environmental control method, and a program.

[Background Art]

[0002]

10 Patent Literature (PTL) 1 discloses an illumination control device. This illumination control device determines, on the basis of the working speeds of persons staying in an illumination area detected by human information detection means, whether a plurality of sectional regions previously obtained by dividing the illumination
15 area into sections are each either a stay region where persons are staying or a non-stay region. Then, an illumination control means performs illumination control on lighting equipment placed in the sectional regions, in accordance with the determination result.

[Citation List]

20 [Patent Literature]

[0003]

[PTL 1]

Japanese Unexamined Patent Application Publication No.
2013-109876

25 [Summary of Invention]

[Technical Problem]

[0004]

The present invention provides an environmental control system, an environmental control method, and a program that help
30 improve user satisfaction.

[Solution to Problem]

[0005]

An environmental control system according to one aspect of the present invention includes a first acquirer and a controller. The
35 first acquirer acquires first user information that includes at least one

of vital information or preference information on a user. The controller that controls environments of a plurality of spaces that are in a one-to-one correspondence with a plurality of groups, by controlling one or more environment providing devices allocated to each of the plurality of groups in accordance with the first user information acquired by the first acquirer. The one or more environment providing devices include at least a device other than a blower.

[0006]

An environmental control method according to one aspect of the present invention involves first acquiring and controlling. The first acquiring includes acquiring first user information that includes at least one of vital information or preference information on a user. The controlling includes controlling environments of a plurality of spaces that are in a one-to-one correspondence with a plurality of groups, by controlling one or more environment providing devices allocated to each of a plurality of groups in accordance with the first user information acquired in the acquiring of the first user information. The one or more environment providing devices include at least a device other than a blower.

[0007]

A program according to one aspect of the present invention causes one or more processors to execute the environmental control method described above.

[Advantageous Effects of Invention]

[0008]

The environmental control system, the environmental control method, and the program according to the present invention have the advantage of helping improve user satisfaction.

[Brief Description of Drawings]

[0009]

[FIG. 1]

FIG. 1 is a plan view illustrating an overview of an office using an environmental control system according to an embodiment.

[FIG. 2]

FIG. 2 is a block diagram illustrating a functional configuration of the environmental control system according to the embodiment.
[FIG. 3]

FIG. 3 is an explanatory diagram for describing a specific
5 example of operations performed in the environmental control system according to the embodiment.
[FIG. 4]

FIG. 4 is a flowchart showing an example of the operations performed in the environmental control system according to the
10 embodiment.
[FIG. 5]

FIG. 5 is a block diagram illustrating a functional configuration of an environmental control system according to a variation of the embodiment.
15 [Description of Embodiment]
[0010]

Hereinafter, an embodiment will be described with reference to the drawings. Note that the embodiment described below illustrates one generic or specific example. Numerical values, shapes,
20 materials, constituent elements, configuration positions and connection forms of constituent elements, steps, sequences of steps, and so on in the following embodiment are merely one example, and do not intend to limit the scope of the present invention. Among the constituent elements described in the following embodiment, those
25 that are not recited in any independent claim are described as arbitrary constituent elements.
[0011]

Note that each figure is a schematic diagram and is not always illustrated in precise dimensions. Moreover, constituent elements
30 that are substantially the same are given the same reference signs throughout the drawings, and their detailed description may be omitted or simplified.

[0012]

[Embodiment]

35 [Configuration]

First, a configuration of environmental control system 100 according to an embodiment will be described. FIG. 1 is a plan view illustrating an overview of office 3 using environmental control system 100 according to the embodiment. FIG. 2 is a block diagram illustrating a functional configuration of environmental control system 100 according to the embodiment.

[0013]

Environmental control system 100 according to the embodiment is a system that may be used in an environment such as an office that enables users to freely select workplaces depending on work that the users want to do, and is also a system used to control such an environment. According to the embodiment, environmental control system 100 is assumed to be used in an activity-based working (ABW) office. The "ABW" as used herein refers to the way of working that enables users (e.g., staff) to select, for example, workplaces or work desks depending on work contents. In the ABW office, the users are able to select relatively low-noise places when performing jobs that require attention or to select relaxing places such as sofas when making arrangements.

[0014]

Note that environmental control system 100 may be used not only in an ABW office but also in a free address office or in any other environment that allows users to freely select workplaces depending on work that the users want to do. For example, environmental control system 100 may be used in education facilities such as elementary schools, junior high schools, high schools, or universities, public facilities such as public halls or libraries, or stores or other commercial facilities.

[0015]

As illustrated in FIG. 2, environmental control system 100 includes first acquirer 11, second acquirer 12, controller 13, and storage 14. According to the embodiment, environmental control system 100 may include only first acquirer 11, second acquirer 12, and controller 13, and may not include storage 14.

[0016]

In the environment using environmental control system 100 (in the present example, ABW office 3), a plurality of environment providing devices 2 are placed as illustrated in FIG. 2. Environmental control system 100 may be provided in office 3, or
5 may be provided in a remote site distant from office 3.

[0017]

Each environment providing device 2 is a device for providing, to a target space, an environment that characterizes the target space. According to the embodiment, each environment providing device 2
10 is placed on the ceiling of office 3. It goes without saying that each environment providing device 2 may be placed not only on the ceiling of office 3 but also on walls, floors, or fixtures such as desks. One exemplary type of environment providing devices 2 will be described hereinafter.

15 [0018]

Environment providing devices 2 may include lighting equipment. The lighting equipment provides a lighting environment to a target space by irradiating the target space with illumination light. By way of example, the lighting environment may include
20 parameters such as illuminance of the illumination light, color temperature, and the distribution of light. As one example, the lighting equipment may be a base light serving as ambient lighting that irradiates a target space uniformly, and may include a light source that includes solid-state light emitting devices such as light
25 emitting diodes (LEDs). The light source of the lighting equipment is controlled by controller 13 so as to be capable of performing either dimming or toning or both of them. Note that the lighting equipment may be a spotlight serving as a task light.

[0019]

30 Environment providing devices 2 may include an acoustic device. The acoustic device provides an acoustic environment to a target space by outputting sounds to the target space. By way of example, the acoustic environment may include parameters such as reproducible contents and a sound level. As one example, the
35 acoustic device may be a nondirectional speaker that is controlled by

controller 13 so as to reproduce contents transmitted from controller 13. For example, the acoustic device may also be a directional speaker such as a parametric speaker, an ultrasonic speaker, or a speaker with a casing having a horn structure. The use of a directional speaker is preferable because the directional speaker is capable of easily reducing the ratio of partial sound leakage to other spaces.

[0020]

Environment providing devices 2 may include a fragrance producer. The fragrance producer provides a fragrant environment to a target space by spraying a fragrance component to the target space. By way of example, the fragrant environment may include parameters such as the type of the fragrance component or the concentration of the fragrance component. As one example, the fragrance producer may be an aromatic oil diffuser.

[0021]

Environment providing devices 2 may include a video device. The video device provides a video environment to a target space by outputting a video image (a static image or a moving image) to the target space. By way of example, the video environment may include parameters such as reproducible contents and an output range. As one example, the video device may be a television receiver or a projector.

[0022]

Environment providing devices 2 may include a blower. The blower provides an air environment to a target space by sending a controlled airflow (i.e., wind) to the target space. By way of example, the air environment may include parameters such as the volume of the airflow, the pattern of the airflow, the temperature of the target space, the humidity of the target space, and the concentration of gas (e.g., carbon dioxide) contained in the target space. As one example, the blower may be an electric fan, a circulator, or an air cleaner.

[0023]

Environment providing devices 2 are allocated to a plurality of groups G1. In the example illustrated in FIGS. 1 and 2, environment providing devices 2 are allocated to three groups G1. Each group G1 may include one or a plurality of environment providing devices 2.

5 It goes without saying that the number of groups G1 is not limited to three, and may be two or four or more. One or more environment providing devices 2 allocated to one group G1 are basically located in the vicinity of one another. One or more environment providing devices 2 allocated to arbitrary group G1 provide an environment to
10 a space that corresponds to arbitrary group G1 in office 3.

[0024]

For example, three groups G1 are assumed to include groups "A", "B", and "C". In this case, one or more environment providing devices 2 allocated to group "A" provide an environment to space "α"
15 that corresponds to group "A" in office 3. One or more environment providing devices 2 allocated to group "B" provide an environment to space "β" that corresponds to group "B" in office 3. One or more environment providing devices 2 allocated to group "C" provide an environment to space "γ" that corresponds to group "C" in office 3.

20 [0025]

Each group G1 has one or more devices other than a blower allocated thereto, one example of the one or more devices being lighting equipment. That is, one or more environment providing devices 2 include at least a device other than a blower.

25 [0026]

Note that one or more environment providing devices 2 allocated to each group G1 may be of one type, or may be of a plurality of types. The one or more environment providing devices 2 allocated to each group G1 may differ for each group G1. For
30 example, arbitrary group G1 may have lighting equipment, an acoustic device, and a blower allocated thereto as environment providing devices 2, whereas another group G1 may have only a video device allocated thereto as environment providing device 2.

[0027]

The allocation of each environment providing device 2 to group G1 may be made in advance by, for example, the administrator of environmental control system 100. For example, the administrator may make the aforementioned allocation, using an information terminal capable of setting parameters of environmental control system 100. Examples of the information terminal may include a smartphone, a tablet terminal, and a personal computer. It goes without saying that the administrator may approximately change environment providing devices 2 that are to be allocated to each group G1 during operation of environmental control system 100.

[0028]

In office 3, adjacent spaces may be partitioned, or may not be partitioned. According to the embodiment, it is assumed that office 3 is configured of one large room and one or more small rooms, and the large room includes no other rooms partitioned by walls or fixtures. This configuration is preferable because the visibility or design of office 3 is improved. The one or more small rooms in office 3 may, for example, be temporarily used as meeting rooms. That is, users are basically staying in the large room in office 3.

[0029]

According to the embodiment, when attention is given on two adjacent spaces, in a strict sense, environment providing devices 2 placed in one of the spaces may not only have an influence on the environment of this space, but also may be tolerated to also have an influence on the environment of the other space. That is, the principal environment of an arbitrary space may be the environment provided by environment providing devices 2 allocated to the arbitrary space, and even if environment providing devices 2 allocated to different spaces other than the arbitrary space have an influence on the arbitrary space, the arbitrary space may be little affected by environment providing devices 2 allocated to different spaces. This is because environment providing devices 2 allocated to different spaces other than the arbitrary space have only a limited influence on the working environment for users staying in the arbitrary space.

[0030]

It goes without saying that the environments of adjacent spaces may be separated clearly. For example, in the case where environment providing devices 2 are lighting equipment, the lighting environment in one space out of two adjacent spaces, the lighting environment in the other space, and the lighting environment at the boundary of the adjacent spaces may be separated from one another. Specifically, it is assumed that one of the adjacent spaces may be irradiated with illumination light with a relatively low color temperature, and the other space may be irradiated with illumination light with a relatively high color temperature. In this case, the environments of the adjacent spaces are separated clearly if the lighting environment at the boundary between the adjacent spaces is either an environment irradiated with a mixture of the illumination light received from both of the adjacent spaces or an environment that is not irradiated with any illumination light received from the adjacent spaces.

[0031]

First acquirer 11 acquires first user information that includes at least one of vital information or preference information on a user. For example, the first user information may be input from a user via an information terminal and then transmitted to and accumulated in a database that manages the first user information. First acquirer 11 is capable of acquiring the first user information from this database. Alternatively, first acquirer 11 may communicate with the information terminal so as to directly acquire the first information that is input from the user via the information terminal, from the information terminal.

[0032]

The vital information includes information on the life of the user. By way of example, the vital information may include the heart rate, blood pressure, or body temperature of the user. The vital information may also include information on physical conditions subjectively evaluated by the user. For example, the vital information may include information such as feeling sick, having a

slight cold, or having a headache. It goes without saying that the vital information may include not only information on bad physical conditions subjectively evaluated by the user, but also information on good physical conditions subjectively evaluated by the user.

5 [0033]

The preference information includes information on the environment that the user prefers. In the case where environment providing devices 2 are lighting equipment, the preference information may include parameters related to lighting that the user
10 prefers (e.g., the type of lighting, the magnitude of the lighting range, the intensity of illuminance, and the magnitude of the color temperature) . In the case where environment providing devices 2 are acoustic devices, the preference information may include parameters related to acoustics that the user prefer (e.g., the type of
15 contents or the magnitude of the sound level) . In the case where environment providing devices 2 are fragrance producers, the preference information may include parameters related to fragrance that the user prefers (e.g., the type of the fragrance component or the concentration of the fragrance component). In the case where
20 environment providing devices 2 are video devices, the preference information may include parameters related to video images that the user prefers (e.g., the type of contents and the magnitude of the output range). In the case where environment providing devices 2 are blowers, the preference information may include parameters
25 related to an air blast that the user prefers (e.g., the volume of the airflow, the pattern of the airflow, the temperature of the target space, the humidity of the target space, or the concentration of gas contained in the target space).

[0034]

30 Aside from this, the preference information may be abstract information about the environment that the user prefers, instead of being information that specifically identifies environmental parameters as described above. For example, the preference information may be information indicating, for example, that the

user prefers a relaxing environment or that the user prefers an environment in which the user can easily concentrate on work.

[0035]

Note that first acquirer 11 is also capable of acquiring the preference information on the basis of a detection result received from a detector that is capable of associating identification information such as an ID assigned to the user (details will be described later) with positional information on the user. For example, it is assumed that the aforementioned sensor has detected the fact that a user with identification information indicating "001" frequently stops by at a space that provides a lighting environment with a relatively low color temperature. In this case, first acquirer 11 is capable of acquiring, on the basis of the detection result received from the aforementioned sensor, information indicating that the user prefers a lighting environment with a relatively low color temperature as the aforementioned preference information on the user. The aforementioned processing for associating the identification information and the preference information on the user on the basis of the detection result received from the sensor may be automatically performed as appropriate by an algorithm such as a computer program or artificial intelligence (AI), or may be performed by the administrator of environmental control system 100.

[0036]

Second acquirer 12 acquires second user information that includes one or more of schedule information, identification information, and positional information on the user. For example, the second user information may be input from the user via an information terminal and transmitted to and accumulated in a database that manages the second user information. Second acquirer 12 is capable of acquiring the second user information from this database. Alternatively, second acquirer 12 may communicate with the information terminal so as to directly acquire the second user information that is input from the user via the information terminal, from the information terminal. Note that second acquirer 12 may use any other means described later to acquire the

identification information and the positional information included in the second user information.

[0037]

5 The schedule information may be information that indicates the user's schedule of a stay in a space to be controlled by environmental control system 100 (in the present example, office 3), and may not include information that indicates the user's schedule of a stay in other places different from the above space. For example, the schedule information may include the user's work start time and
10 work end time. For example, in the case where the user uses a small room as a meeting room, the schedule information may include the start time and end time of the usage.

[0038]

For example, second acquirer 12 may acquire the schedule
15 information from schedule management software that is executed by operation on an operational terminal such as a personal computer or a smartphone. Alternatively, for example, second acquirer 12 may acquire the schedule information on the basis of information that is input to, for example, spreadsheet software, word processor
20 software, or presentation creation software that is executed by operation on an operational terminal.

[0039]

The identification information may, for example, be information such as an identifier (ID) that allows individual
25 identification of the user. Second acquirer 12 is capable of acquiring the identification information on the user by, for example, acquiring an image of office 3 captured by a camera placed in office 3 and performing image analysis processing as appropriate on the captured image. Alternatively, second acquirer 12 is capable of acquiring the
30 identification information on the user by, for example, acquiring the result of reading a wireless IC tag held by the user from a tag reader placed in office 3.

[0040]

The positional information may be information that indicates
35 the user's position in a space to be controlled by environmental

control system 100 (in the present example, office 3), and does not necessarily have to include information that indicates the user's position in other places different from the above space. Second acquirer 12 is capable of acquiring the positional information on the user by, for example, acquiring a detection result transmitted from a human sensing sensor such as an infrared sensor placed in office 3. That is, in the case where a detection result indicating the presence of a person within a sensing range is acquired from a human sensing sensor, second acquirer 12 is capable of acquiring the positional information on the user staying in office 3 on the basis of the position where the human sensing sensor is placed and the detection range. [0041]

Alternatively, second acquirer 12 is capable of acquiring the positional information on the user staying in office 3 by, for example, acquiring a detection result from an indoor-positional-information detection system employed in office 3 and using Bluetooth (registered trademark) low energy (BLE). Second acquirer 12 is also capable of acquiring the positional information on the user staying in office 3 by, for example, acquiring an image of office 3 captured by a camera placed in office 3 and performing image analysis processing as appropriate on the captured image. As another alternative, second acquirer 12 is also capable of acquiring the position information on the user staying in office 3 by, for example, acquiring the result of reading a wireless IC tag held by the user from a tag reader placed in office 3. [0042]

Controller 13 is capable of communicating with each environment providing device 2 and controls each environment providing device 2 by transmitting a control signal to each environment providing device 2. In other words, controller 13 controls one or more environment providing devices 2 allocated to each of groups G1 so as to control the environments of a plurality of spaces that are in a one-to-one correspondence with the plurality of groups G1.

[0043]

According to the embodiment, controller 13 transmits the same control signal to environment providing devices 2 of the same type allocated to one group G1. The communication between controller 13 and each environment providing device 2 may be cable communication or wireless communication, and there are no particular limitations on the communication standard. In a strict sense, control signals do not necessarily have to be transmitted at the same time, and a time difference in transmission of a plurality of control signals may be preferably 60 minutes or less, more preferably 30 minutes or less, and yet more preferably one minute or less. The aforementioned time difference of 60 minutes or less is preferable because manpower is more saved than in the case where the environment of the space is changed by using manpower to move a fixture or furniture.

[0044]

Control signals that are transmitted from controller 13 to environment providing devices 2 of the same type allocated to one group G1 do not necessarily have to be the same in a strict sense, and an error in the contents of control is tolerable as long as the influence given on the space is within a limited range. For example, in the case where environment providing devices 2 are lighting equipment, the tolerable range of the color temperature is within plus or minus 500K, and the tolerable range of the lighting control ratio is within plus or minus 20%.

[0045]

By in this way controlling the environments of a plurality of spaces that are in a one-to-one correspondence with the plurality of groups G1, for example, the environment can be differentiated for each space and a so-called zoning effect is expected.

[0046]

The zoning effect as used herein refers to, for example, a sense of breaks in space perception, and may include the effect of allowing the user to easily recognize the difference of a plurality of spaces in appearance. The zoning effect may also include the effect of encouraging the user to change the user's behavior or movement

line as intended by zoning with the user's recognition. For example, it is assumed that an arbitrary space is zoned with an intention of providing a space in which the user can easily do work that requires attention. In this case, if the user who has seen this space has used
5 this space for the principal purpose of doing work that requires attention, it can be said that the zoning effect has exerted its influence.

[0047]

The zoning effect may also include the effect that, when the
10 user has actually used a zoned space, user's subjective effects and feeling or user's subjective physiological, psychological, and biological actions show tendencies responsive to the purport of the zoning. For example, it is assumed that an arbitrary space is zoned with the intention of providing a space in which the user can easily do
15 work that requires attention, and that the user has used this arbitrary space. In this case, if the user has realized that the use of this space has increased the user's concentration on work, or any indicator or data suggesting that the user has concentrated on work is obtained as a result of physiological or biological action, it can be
20 said that the zoning effect has exerted its influence.

[0048]

By controlling each environment providing device 2 as described above, it is possible to zone a space without using any fixture or furniture. This enables so-called active zoning in which
25 the design of the space is easily improved and an instantaneous change of the layout of office 3 is made possible by controlling each environment providing device 2. That is, for example, in the case where zoning is performed by lighting control of the lighting equipment serving as environment providing devices 2, the change
30 of control parameters related to dimming and toning in each space will be completed in, for example, several seconds. In this case, as a result, the layout of office 3 can be changed in several seconds. Here, if the layout of office 3 is to be changed by using manpower to move fixtures or furniture, 60 minutes, several hours, one day, or
35 even several days are necessary. From this point of view, the

aforementioned zoning by control of each environment providing device 2 may achieve an extremely noticeable effect.

[0049]

5 The active zoning enables changing the layout of office 3 in shorter cycles, such as every hour, every day, or every month, than in the conventional case in which the layout of the office is changed by changing the arrangement of fixtures or furniture.

[0050]

10 Here, controller 13 controls the environments of a plurality of spaces that are in a one-to-one correspondence with the plurality of groups G1, on the basis of the user information acquired from each of first acquirer 11 and second acquirer 12. Controller 13 may control the environments of a plurality of spaces on the basis of the first user information acquired from first acquirer 11. Alternatively, controller
15 13 may control the environments of a plurality of spaces on the basis of the first user information acquired from first acquirer 11 and the second user information acquired from second acquirer 12. Moreover, controller 13 may control the environment of each space on the basis of only either of the vital information and the preference
20 information included in the first user information, or may control the environment of each space on the basis of both the vital information and the preference information. As another alternative, controller 13 may control the environment of each space on the basis of one of the schedule information, the identification information, and the
25 positional information included in the second user information, or may control the environment of each space on the basis of two or more of the schedule information, the identification information, and the positional information.

[0051]

30 According to the embodiment, controller 13 controls the environment of each space on the basis of the user information acquired from each of first acquirer 11 and second acquirer 12 at a predetermined time every day (e.g., at 7:00 a.m., which is the time before the first user arrives at office 3). Then, controller 13
35 maintains the above control until any change is made in the user

information acquired from each of first acquirer 11 and second acquirer 12. If any change is made in the user information acquired from each of first acquirer 11 and second acquirer 12, the controller performs control so as to change the environment of each space on the basis of the changed user information. The timing when the environment of each space is changed may be immediately after the occurrence of the change in the user information, or may be after the elapse of a predetermined time after the occurrence of a change in the user information (e.g., the next day to the occurrence of the change in the user information). Basically, it is preferable that the timing of changing the environment of each space may be immediately after the occurrence of the change in the user information.

[0052]

Hereinafter, examples of first control based on the first user information and examples of second control based on the second user information, both by controller 13, are listed. Controller 13 may perform only one or more examples of the first control listed below, or may perform a combination of one or more examples of the first control and one or more examples of the second control.

[0053]

First, an example of control based on the vital information and an example of control based on the preference information are described as examples of the first control.

[0054]

In the example of control based on the vital information, controller 13 controls the environment of each space so as to provide an environment responsive to users' physical conditions. For example, in the case where there is a user who is in a bad physical condition, controller 13 performs control such that the space corresponding to any of groups G1 becomes a relatively peaceful environment. As a specific example, for group G1 with an acoustic device allocated thereto as environment providing device 2, controller 13 controls the acoustic device so as to reproduce the contents of music classified as so-called healing music. As another

specific example, for group G1 with lighting equipment allocated thereto as environment providing device 2, controller 13 controls the lighting equipment so as to lower illuminance and reduce a light stimulus. The control as described above enables the users who are
5 in bad physical conditions to use spaces that provide a relatively peaceful environment.

[0055]

In the example of control based on the preference information, controller 13 controls the environment of each space so as to provide
10 an environment responsive to users' preference. For example, controller 13 increases or decreases the number of spaces that provide an environment responsive to users' preference, depending on the number of users who have the same preference. As a specific example, if there is a large number of users who prefer music classed
15 as jazz, controller 13 increases the number of spaces that provide an acoustic environment that plays music contents classified as jazz. As another specific example, if there is only a small number of users who prefer cold color temperatures, controller 13 reduces the number of spaces that provide a lighting environment irradiated with
20 illumination light with a cold color temperature. The control as described above enables the users to use spaces that provide an environment responsive to users' preference.

[0056]

Next, an example of control based the schedule information,
25 an example of control based on the identification information, and an example of control based on the positional information will be described as examples of the second control.

[0057]

In the example of control based on the schedule information,
30 controller 13 controls the environment of each space so as to provide an environment responsive to users' schedules. For example, controller 13 increases or decreases the number of spaces that provide some sorts of environments, depending on the number of users who works at office 3 during the same time period. As a
35 specific example, in the case where the ratio of the number of users

who start to work at 9:00 a.m. at office 3 to the total number of users is low, controller 13 performs control so as to decrease, depending on the ratio, the number of spaces in which lighting equipment is turned on and to turn lighting equipment off in the other spaces. As another specific example, in the case where the ratio of the number of users who start to work at 9:00 a.m. at office 3 to the total number of users is higher than a predetermined value, controller 13 performs control so as to turn the lighting equipment on in all spaces. The control as described above enables the users to use spaces in which the lighting equipment is turned on. As yet another alternative, in the case where the ratio of users who work at office 3 to the total number of users is low, controller 13 may perform control such that, among a plurality of spaces in which the lighting equipment is turned on, the distance between each pair of adjacent spaces becomes greater than or equal to a predetermined distance. In this case, the users are able to use spaces while ensuring enough social distances. [0058]

In the example of control based on the identification information, controller 13 controls the environment of each space so as to provide an environment appropriate to a specific user. For example, in the case where the density of users staying in each space a specific user (or a specific group of users) is staying in office 3, controller 13 may control the environment of each space so as to provide a space having an environment that fits to the specific user (or the specific group of users). By way of example, the specific user may be a guest or a person such as an executive who works in a managerial position. [0059]

In the example of control based on the positional information, controller 13 controls the environment of each space so as to provide an environment responsive to users' positions. For example, if the density of users staying in each space becomes unbalanced, controller 13 controls the environment of each space so as to make uniform the density of users staying in each space. By way of example, controller 13 may control the environment of each space so

as to lower illuminance in a first space with a relatively high density of users and to raise illuminance in a second space with a relatively low density of users. In this case, it can be expected that the possibility that the users staying in the first space move to the second space may increase, and as a result, the density of users staying in each space may become uniform.

[0060]

Moreover, controller 13 is also capable of performing control using a plurality of pieces of information in combination. One example is the control using the schedule information and the preference information in combination. In this example of control, it is assumed that there is a large number of users who prefer a lighting environment with a relatively low color temperature and who are scheduled to work during a predetermined time period. In this case, controller 13 controls the environment of each space so as to increase the number of spaces that provide a lighting environment with a relatively low color temperature during the predetermined time period. In this case, even if the type and number of users who work at office 3 vary greatly on a daily basis and accordingly the desired optimal environment for office 3 varies greatly due to, for example, active adoption of teleworking outside office 3 as countermeasures against circumstances such as an outbreak of infection, the controller is capable of flexibly providing an environment that the users prefer. As a result, this control is preferable because user satisfaction is likely to improve even if the area of office 3 is relatively small.

[0061]

Moreover, controller 13 controls the environment of each space corresponding to each group G1 in accordance with the type of one or more environment providing devices 2 allocated to each group G1. In the case where a plurality of types of environment providing devices 2 are allocated to arbitrary group G1, controller 13 may control only one type of environment providing devices 2, or may control a plurality of types of environment providing devices 2. For example, it is assumed that lighting equipment and an acoustic

device are allocated as environment providing devices 2 to arbitrary group G1. In this case, controller 13 may control only the lighting equipment to provide a lighting environment to the space corresponding to arbitrary group G1, may control only the acoustic device to provide an acoustic environment to the space corresponding to arbitrary group G1, or may control both of the lighting equipment and the acoustic device to provide a complex environment to the space corresponding to arbitrary group G1.

[0062]

Specifically, one or more environment providing devices 2 allocated to each of one or more groups G1 among a plurality of groups G1 may include lighting equipment. In this case, controller 13 may control, for example, the illuminance of the illumination light, the color temperature of the illumination light, or the distribution of the illumination light so as to provide various lighting environments to the spaces corresponding to one or more groups G1 that have the lighting equipment allocated thereto.

[0063]

For example, it is assumed that controller 13 has grasped the presence of a give number of users who prefer warm color temperatures, by referencing to the first user information (here, the preference information). In this case, for any of groups G1 that have lighting equipment allocated thereto, controller 13 controls the lighting equipment so as to emit illumination light with a relatively low color temperature. This achieve a space that provides a lighting environment with a warm color temperature in office 3.

[0064]

As another example, one or more environment providing devices 2 allocated to each of one or more groups G1 among a plurality of groups G1 may include an acoustic device. In this case, controller 13 may control, for example, contents to be reproduced or the volume level so as to provide various acoustic environments to the spaces corresponding to one or more groups G1 that have the acoustic device allocated thereto.

[0065]

For example, it is assumed that controller 13 has grasped the presence of a given number of users who prefer music classified as jazz, by referencing to the first user information (here, the preference information). In this case, for any of groups G1 that have the acoustic device allocated thereto, controller 13 controls the acoustic device so as to reproduce the contents of music classified as jazz. This achieves a space that provides an acoustic environment that plays music classified as jazz in office 3.

[0066]

In the case where environment providing devices 2 are acoustic devices, contents may be stored in controller 13, may be stored in the acoustic devices, or may be stored in storage 14. For example, the contents may be stored in an electronic data medium using a format such as the WAV format or the mp3 format, but are not limited thereto, and may be stored by any commonly known method such as a compact disc (CD).

[0067]

As yet another example, one or more environment providing devices 2 allocated to each of one or more groups G1 among a plurality of groups G1 may include a fragrance producer. In this case, controller 13 may control, for example, the type of the fragrance component or the concentration of the fragrance component so as to provide various fragrant environments to the spaces corresponding to one or more groups G1 that have the fragrance producer allocated thereto.

[0068]

For example, it is assumed that controller 13 has grasped the presence of a given number of users who prefer herb fragrance, by referencing to the first user information (here, the preference information). In this case, for any of groups G1 that have the fragrance producer allocated thereto, controller 13 controls the fragrance producer so as to disperse a herb fragrance component. This achieves a space that provides a fragrant environment with herb fragrance in office 3.

[0069]

As yet another example, one or more environment providing devices 2 allocated to each of one or more groups G1 among a plurality of groups G1 may include a video device. In this case, controller 13 may control, for example, the type of contents or the output range so as to provide various video environments to the spaces corresponding to one or more groups G1 that have the video device allocated thereto.

[0070]

For example, it is assumed that controller 13 has grasped the presence of a given number of users who prefer natural video images, by referencing to the first user information (here, the preference information). In this case, for any of groups G1 that have the video device allocated thereto, controller 13 controls the video device so as to output an image of sunshine filtering through foliage. This achieve a space that provides a video environment that displays the natural video image in office 3.

[0071]

In the case where environment providing devices 2 are video devices, contents may be stored in controller 13, may be stored in the video devices, or may be stored in storage 14. For example, the contents may be stored in an electronic data medium using a format such as the JPEG format for static images or the AVI format or the mp4 format for moving images, but are not limited thereto, and may be stored by any commonly known storage method such as a digital versatile disc (DVD).

[0072]

As yet another example, one or more environment providing devices 2 allocated to each of one or more groups G1 among a plurality of groups G1 may further include a blower. In this case, controller 13 may control, for example, the volume of the airflow, the pattern of the airflow, the temperature of the target space, the humidity of the target space, and the concentration of gas contained in the target space so as to provide various air environments to the spaces corresponding to one or more groups G1 that have the blower allocated thereto.

[0073]

For example, it is assumed that controller 13 has grasped the presence of a given number of users who prefer a breeze, by referencing to the first user information (here, the preference information). In this case, for any of groups G1 that have the blower allocated thereto, controller 13 controls the blower so as to produce an airflow with a relatively small volume. This achieves a space that provides an air environment in which a breeze flows in office 3.

[0074]

Now, specific examples of control with reference to the first user information and the second user information by controller 13 will be described with reference to FIG. 3. FIG. 3 is an explanatory drawing for describing a specific example of operations performed in environmental control system 100 according to the embodiment. FIG. 3 omits an illustration of environment providing devices 2. In the example illustrated in FIG. 3, it is assumed that office 3 is dividable into five groups G1(i.e., five spaces). It is also assumed that first acquirer 11 have acquired the schedule information as the first user information, and second acquirer 12 has acquired the preference information as the second user information. The schedule information is assumed to include contents indicating that the ratio of the number of users who start to work at 9:00 a.m. at office 3 to the total number of users is approximately 60%. The preference information is assumed to include contents indicating the presence of users who prefer warm color temperatures, the presence of users who prefer cold color temperatures, and the presence of user who prefer music classified as jazz.

[0075]

In this case, as illustrated in FIG. 3, controller 13 controls only one or more environment providing devices 2 that are allocated to each of three groups G1 (first group G11, second group G12, and third group G13 described later) among five groups G1, and does not control one or more environment providing devices 2 that are allocated to each of two remaining groups G1. Accordingly, only the

three spaces responsive to the number of users who start to work at 9:00 a.m. at office 3 become usable among the five spaces. Controller 13 selects three groups G1 such that these three spaces are spaced a predetermined distance from one another. Accordingly, the users are able to use these three spaces while ensuring enough social distances.

[0076]

In first group G11 (upper right group G1 in office 3) among three groups G1, controller 13 controls lighting equipment (environment providing devices 2) such that the color temperature of illumination light becomes higher than a reference color temperature. In second group G12 (central left group G1 in office 3) among three groups G1, controller 13 controls lighting equipment (environment providing devices 2) such that the color temperature of illumination light becomes lower than the reference color temperature. In third group G13 (lower right group G1 in office 3) among three groups G1, controller 13 controls lighting equipment (environment providing devices 2) such that the color temperature of illumination light becomes the reference color temperature. In third group G13, controller 13 also controls an acoustic device (environment providing devices 2) so as to reproduce the contents of music classified as jazz. This enables users to use spaces appropriate to users' preference. In FIG. 3, the density of dot hatching represents high and low of the color temperature. That is, a lower density of dot hatching indicates a higher color temperature, and a higher density of dot hatching indicates a lower color temperature.

[0077]

Storage 14 is a storage device that stores information (e.g., computer programs) necessary for controller 13 to perform control. Storage 14 may be realized as, for example, a hard disk drive (HDD), or may be realized as a semiconductor memory. As another alternative, commonly known electronic information storage means may be used with no particular limitations. By way of example, storage 14 may store information that associates the user information (the first user information and the second user

information) and the contents of control of each environment providing device 2.

[0078]

5 First acquirer 11, second acquirer 12, controller 13, and storage 14 may be mounted on one substrate, or may be placed in one casing. The substrate or casing described above may be mounted on the ceiling, the wall, or the floor in office 3, or may be mounted on fixtures or furniture such as desks in office 3. This case is preferable because environmental control system 100 is reduced in
10 size.

[0079]

[Operations]

Hereinafter, one example of the operations performed in environmental control system 100 according to the embodiment will
15 be described with reference to FIG. 4. FIG. 4 is a flowchart showing an example of the operations performed in environmental control system 100 according to the embodiment. Hereinafter, it is assumed that controller 13 does not control the environment of each space before first acquirer 11 and second acquirer 12 acquire the
20 first user information and the second user information. That is, the environment of each space is assumed to be completely or almost the same before controller 13 starts to control the environment of each space.

[0080]

25 First, first acquirer 11 acquires the first user information (S1). Second acquirer 12 acquires the second user information (S2). Processing S1 corresponds to first acquisition step ST1 in an environmental control method. Note that the order of processing S1 and processing S2 is not limited to this example, and may be
30 reversed.

[0081]

Next, controller 13 controls one or more environment providing devices 2 allocated to each group G1 on the basis of the first user information and the second user information acquired
35 respectively by first acquirer 11 and second acquirer 12 (S3).

Processing S3 corresponds to control step ST2 in the environmental control method. Accordingly, the environment of each space is controlled based on the first user information and the second user information.

5 [0082]

Thereafter, if no change has been made in the user information acquired from each of first acquirer 11 and second acquirer 12 (No in step S4), controller 13 maintains the above control (S5). On the other hand, if any change has been made in any of the user
10 information acquired from each of first acquirer 11 and second acquirer 12 (Yes in step S4), controller 13 performs control so as to change the environment of each space on the basis of the changed user information (S6). Accordingly, the environment of each space is updated. Hereinafter, the series of processing described above is
15 repeated.

[0083]

[Advantages]

The advantages of environmental control system 100 according to the embodiment will be described hereinafter. In
20 environmental control system 100 according to the embodiment, one or more environment providing devices 2 allocated to each group G1 are controlled based on the user information acquired from each of first acquirer 11 and second acquirer 12. This allows environmental control system 100 according to the embodiment to easily provide, to
25 users, spaces that are controlled to provide environments desired by the users. Therefore, the environmental control system has the advantage of allowing the users to stay in environments desired by the users and thereby improving user satisfaction.

[0084]

30 In recent years, work styles of users are being diversified by, for example, adopting teleworking in view of circumstances such as an outbreak of infection. That is, users are becoming able to select either to work at office 3 or to work at their homes or places other than office 3 without commuting to and from office 3. Therefore,
35 formerly the same group of users used to work during almost the

same time period every weekday as long as a considerable change is not made in the organization, but in recent years, the group of users who work at office 3 may vary on a daily basis.

[0085]

5 With the increasing number of users who are adopting teleworking, or in other words, with the decreasing number of users who work at office 3, it is conceivable that reducing the area of office 3 from the conventional area is desired from the viewpoint of the fixed cost. However, reducing the area of office 3 narrows the
10 choice of options to use as an ABW office or as a free address office and poses problems such as difficulty in meeting the desires of users who work at office 3.

[0086]

 To address this problem, as described previously,
15 environmental control system 100 according to the embodiment enables easily providing, to users, spaces that are controlled so as to provide environments desired by the users. Therefore, environmental control system 100 according to the embodiment has the advantage of, even with office 3 that has a relatively small area,
20 enabling users to use environments that the users prefer and thereby improving user satisfaction.

[0087]

 In the case where environment providing devices 2 include lighting equipment or a video device, there are the following
25 advantages. Specifically, a lighting environment provided by controlling lighting equipment or a video environment provided by controlling a video device is such an environment that users can recognize visually. Therefore, in the above case, there is the advantage that users are able to visually grasp the environment of
30 each space and are more likely to use environments desired by the users.

[0088]

[Other Embodiments]

 While the embodiment has been described thus far, the
35 present invention is not intended to be limited to the embodiment

described above. Variations of the embodiment will be listed hereinafter. The variations described below may be combined as appropriate.

[0089]

5 For example, in the case where office 3 is not partitioned by any wall or fixture as in the embodiment, controller 13 may control the environments of a plurality of spaces so as to provide different environments for two or more spaces. In other words, controller 13 may provide two or more spaces that are controlled to achieve
10 different zoning effects, at the same time to users.

[0090]

 For example, controller 13 may provide a space that provides the effect of easily relaxing users, by controlling directional lighting equipment and a directional acoustic device to provide a lighting
15 environment with a color temperature of 4000K or less and an acoustic environment that reproduces music classified as jazz in an arbitrary space. At the same time, controller 13 may provide a space that provides the effect of enabling users to easily concentrate on their work, by providing an acoustic environment that reproduces
20 natural environmental sounds and either a lighting environment with a color temperature of 4000K or higher or a lighting environment that gives higher illuminance on desk surfaces than in the surroundings in a space different than the above arbitrary space.

[0091]

25 In this case, even if office 3 is configured as a single large room that is not partitioned by any wall or fixture, it is possible to provide two or more spaces having different environments at the same time to users.

[0092]

30 Environmental control system 100 according to the embodiment may further include notification device 15 as illustrated in FIG. 5. FIG. 5 is a block diagram illustrating a functional configuration of environmental control system 100 according to a variation of the embodiment.

35 [0093]

Notification device 15 notifies users of the contents of control performed by controller 13. For example, notification device 15 may generate a map that is a plan view of office 3 and that shows the environment of each space corresponding to each group G1 (i.e., the contents of control performed on one or more environment providing devices 2 allocated to each group G1). Then, notification device 15 transmits the generated map to information terminals of users. Accordingly, the users are able to grasp the environment of each space by checking the map received by their information terminals.

[0094]

Notification device 15 may also transmit the generated map to a projector placed in office 3. In this case, the projector projects the received map on the screen. Accordingly, the users are able to grasp the environment of each space by checking the map projected on the screen. Note that the projector may project the map on the wall of office 3 or on the ceiling, instead of projecting the map on the screen.

[0095]

Notification device 15 may also notify users of audio contents that represents the environment of each space, instead of transmitting the map to the users. It goes without saying that notification device 15 may notify users of an appropriate combination of the map, messages, and audio contents described above.

[0096]

Since, as described above, the contents of control performed by controller 13 (i.e., the environment of each space) is notified to users, the users are able to grasp the environment of each space.

[0097]

[Other Variations]

Although environmental control system 100 according to the embodiment includes both of first acquirer 11 and second acquirer 12, the present invention is not limited to this example. For example, environmental control system 100 may include only first acquirer 11 and may not include second acquirer 12. In this case, controller 13 may control one or more environment providing devices 2 allocated

to each group G1, on the basis of only the first user information acquired by first acquirer 11.

[0098]

5 In the embodiment, if a plurality of types of environment providing devices 2 are allocated to arbitrary group G1, environment providing devices 2 may be configured separately for each type, or they may be configured integrally.

[0099]

10 In the embodiment, the number of groups G1 does not necessarily have to be a fixed number, and it may be variable. For example, there are cases in which controller 13 determines that a larger number of environments than the current number of groups G1 are necessary, on the basis of the first user information and the second user information (or only the first user information). In this
15 case, controller 13 increases the number of groups G1 up to the necessary number of environments by dividing arbitrary group G1 further into two or more groups G1, and then controls one or more environment providing devices 2 allocated to each group G1. Meanwhile, there are also cases in which controller 13 determines
20 that a smaller number of environments than the current number of groups G1 is necessary, on the basis of the first user information and the second user information (or only the first user information). In this case, controller 13 reduces the number of groups G1 down to the necessary number of environments by integrating two or more
25 arbitrary groups G1 into one group G1, and then controls one or more environment providing devices 2 allocated to each group G1.

[0100]

Although office 3 according to the embodiment is configured of one large room and one or more small rooms, the present invention
30 is not limited to this example. For example, office 3 may be configured as one large room with no other rooms, or may be configured to span a plurality of hierarchical levels.

[0101]

Although environmental control system 100 according to the
35 embodiment is intended for one office 3, the present invention is not

limited to this example. For example, environmental control system 100 may be intended for a plurality of offices 3 and may control each environment providing device 2 for each office 3.

[0102]

5 Although environment providing devices 2 according to the embodiment are not included in the constituent elements of environmental control system 100, environmental control system 100 may include environment providing devices 2 as its constituent elements.

10 [0103]

 Although environmental control system 100 according to the embodiment described above is realized by, for example, a plurality of devices, it may be realized as a single device. For example, environmental control system 100 may be realized as a single device
15 that corresponds to a server device. In the case where environmental control system 100 is realized by a plurality of devices, constituent elements of environmental control system 100 may be divided in any way for each device. For example, constituent elements of the server device according to the embodiment
20 described above may be included in an information terminal placed in an enclosed space. That is, the present invention may be realized by cloud computing, or may be realized by edge computing.

[0104]

 For example, there are no particular limitations on the method
25 of communication among devices according to the embodiment described above. The communication between devices may be implemented via a relay devices, which is not shown.

[0105]

 Each constituent element according to the embodiment
30 described above may be realized by executing a software program appropriate to the constituent element. Each constituent element may also be realized by a program execution unit such as a CPU or a processor reading and executing a software program stored in a recording medium such as a hard disk or a semiconductor memory.

35 [0106]

Each constituent element may also be realized by hardware. For example, each constituent element may be a circuit (or an integrated circuit). These circuits may configure a single circuit as a whole, or may be different circuits. These circuits may be
5 general-purpose circuits or dedicated circuits.

[0107]

Comprehensive or specific aspects of the present invention may be realized as a system, a method, an integrated circuit, a computer program, or a recording medium such as a
10 computer-readable CD-ROM. These aspects may also be realized by any combination of a system, a method, an integrated circuit, a computer program, and a recording medium.

[0108]

The present invention may, for example, be realized as an
15 environmental control method that is executed by a computer such as environmental control system 100, may be realized as a program for causing a computer to execute such an environmental control method, or may be realized as a non-transitory computer-readable recording medium that records such a program.

20 [0109]

Aside from the above, the present invention also includes forms that are obtained by making various modifications conceivable by those skilled in the art to the embodiment described above, or forms that are realized by an arbitrary combination of constituent
25 elements and functions described in the embodiment within the scope of the essence of the present invention.

[0110]

[Summary]

As described above, environmental control system 100
30 includes first acquirer 11 and controller 13. First acquirer 11 acquires the first user information that includes at least one of the vital information or the preference information on users. Controller 13 controls the environments of a plurality of spaces that are in a one-to-one correspondence with a plurality of groups G1, by
35 controlling one or more environment providing devices 2 allocated to

each group G1 on the basis of the first user information acquired from first acquirer 11. One or more environment providing devices 2 include at least a device other than a blower.

[0111]

5 Environmental control system 100 described above easily provides, to users, environments that are controlled to provide environments desired by the users, and therefore it has the advantages of enabling the users to easily stay in the environments described by the users and improving user satisfaction.

10 [0112]

 Alternatively, environmental control system 100 may further include, for example, second acquirer 12. Second acquirer 12 acquires the second user information that includes one or more of the schedule information, the identification information, and the
15 positional information on users. Controller 13 controls the environments of a plurality of spaces on the basis of the first user information acquired by first acquirer 11 and the second user information acquired by second acquirer 12.

[0113]

20 Environmental control system 100 described above has the advantage of easily controlling each of the spaces so as to provide an environment desired by the users, by referencing to the second user information.

[0114]

25 Alternatively, in environmental control system 100, one or more environment providing devices 2 allocated to each of one or more groups G1 among the plurality of groups G1 may, for example, include lighting equipment.

[0115]

30 Environmental control system 100 described above has the advantage of easily providing, to the users, a lighting environment desired by the users.

[0116]

 Alternatively, in environmental control system 100, one or
35 more environment providing devices 2 allocated to each of one or

more groups G1 among the plurality of groups G1 may, for example, include an acoustic device.

[0117]

5 Environmental control system 100 described above has the advantage of easily providing, to the users, an acoustic environment desired by the users.

[0118]

10 Alternatively, in environmental control system 100, one or more environment providing devices 2 allocated to each of one or more groups G1 among the plurality of groups G1 may, for example, include a fragrance producer.

[0119]

15 Environmental control system 100 described above has the advantage of easily providing, to the users, a fragrant environment desired by the users.

[0120]

20 Alternatively, in environmental control system 100, one or more environment providing devices 2 allocated to each of one or more groups G1 among the plurality of groups G1 may, for example, include a video device.

[0121]

25 Environmental control system 100 described above has the advantage of easily providing, to the users, a video environment desired by the users.

[0122]

30 Alternatively, in environmental control system 100, one or more environment providing devices 2 allocated to each of one or more groups G1 among the plurality of groups G1 may, for example, further include a blower.

[0123]

Environmental control system 100 described above has the advantage of easily providing, to the users, an air environment desired by the users.

[0124]

Alternatively, in environmental control system 100, controller 13 may, for example, control the environments of a plurality of spaces so as to provide different environments for two or more spaces.

5 [0125]

Environmental control system 100 described above has the advantage of enabling the users to easily stay in environments desired by the users and thereby improving user satisfaction.

[0126]

10 Alternatively, environmental control system 100 may, for example, further include notification device 15 that notifies the users of the contents of control performed by controller 13.

[0127]

15 Environmental control system 100 described above has the advantage of enabling the users to easily grasp the environment of each of a plurality of spaces.

[0128]

The environmental control method may include, for example, first acquisition step ST1 and control step ST2. First acquisition step ST1 includes acquiring the first user information that include at least one of the vital information or the preference information on users. Control step ST2 includes controlling the environments of a plurality of spaces that are in a one-to-one correspondence with a plurality of groups G1, by controlling one or more environment providing devices 2 allocated to each group G1 on the basis of the first user information acquired in first acquisition step ST1. One or more environment providing devices 2 include at least a device other than a blower.

20 [0129]

30 The environmental control method described above easily provides, to the users, an environment that is controlled so as to provide an environment desired by the users, and therefore has the advantage of enabling the users to easily stay in the environment desired by the users and thereby improving user satisfaction.

35 [0130]

The program may, for example, cause one or more processors to execute the environmental control method described above.

[0131]

5 This program facilitates providing, to users, spaces that are controlled to provide environments desired by the users, thus having the advantages of allowing the users to stay in the environments that the users want to stay in and helping improve user satisfaction.

[Reference Signs List]

[0132]

10	100	environmental control system
	11	first acquirer
	12	second acquirer
	13	controller
	15	notification device
15	2	environment providing device
	G1	group
	ST1	first acquisition step
	ST2	control step

[CLAIMS]

[Claim 1]

An environmental control system comprising:

5 a first acquirer that acquires first user information that includes at least one of vital information or preference information on a user; and

10 a controller that controls environments of a plurality of spaces that are in a one-to-one correspondence with a plurality of groups, by controlling one or more environment providing devices allocated to each of the plurality of groups in accordance with the first user information acquired by the first acquirer,

wherein the one or more environment providing devices include at least a device other than a blower.

15 [Claim 2]

The environmental control system according to claim 1, further comprising:

20 a second acquirer that acquires second user information that includes one or more of schedule information, identification information, and positional information on the user,

wherein the controller controls the environments of the plurality of spaces in accordance with the first user information acquired by the first acquirer and the second user information acquired by the second acquirer.

25

[Claim 3]

The environmental control system according to claim 1 or 2,

30 wherein the one or more environment providing devices allocated to each of one or more groups among the plurality of groups include lighting equipment.

[Claim 4]

The environmental control system according to any one of claims 1 to 3,

35 wherein the one or more environment providing devices

allocated to each of one or more groups among the plurality of groups include an acoustic device.

[Claim 5]

5 The environmental control system according to any one of claims 1 to 4,
 wherein the one or more environment providing devices allocated to each of one or more groups among the plurality of groups include a fragrance producer.

10

[Claim 6]

 The environmental control system according to any one of claims 1 to 5,
 wherein the one or more environment providing devices
15 allocated to each of one or more groups among the plurality of groups include a video device.

[Claim 7]

20 The environmental control system according to any one of claims 1 to 6,
 wherein the one or more environment providing devices allocated to each of one or more groups among the plurality of groups further include a blower.

25 [Claim 8]

 The environmental control system according to any one of claims 1 to 7,
 wherein the controller controls the environments of the plurality of spaces to provide different environments for two or more
30 spaces.

[Claim 9]

 The environmental control system according to any one of claims 1 to 8, further comprising:
35 a notification device that notifies the user of a content of

control performed by the controller.

[Claim 10]

An environmental control method comprising:

- 5 acquiring first user information that includes at least one of
vital information or preference information on a user; and
 controlling environments of a plurality of spaces that are in a
one-to-one correspondence with a plurality of groups, by controlling
one or more environment providing devices allocated to each of a
10 plurality of groups in accordance with the first user information
acquired in the acquiring of the first user information,
 wherein the one or more environment providing devices
include at least a device other than a blower.

15 [Claim 11]

A program for causing one or more processors to execute the
environmental control method according to claim 10.