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(54) Air conditioner and operating method thereof

(57) Provided are an air conditioner and an operating method thereof, in which a plurality of schedules can be effectively set for each of a plurality of units in an air conditioner with a schedule conflict by making time periods reserved for existing schedules unavailable for new schedules or by either incorporating conflicting schedules, if any, into a single schedule or selecting one of the conflicting schedules. Therefore, it is possible to improve the safety of the control of an air conditioner by effectively controlling schedules set for each unit in an air conditioner while preventing a schedule conflict. In addition, it is possible to control an air conditioner in a sophisticated manner involving the application of a plurality of schedules and thus to improve user convenience.

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Description

FIELD OF THE INVENTION

[0001] The present invention relates to an air conditioner and an operating method thereof, and more particularly, to an air conditioner and an operating method thereof which can effectively adjust a plurality of schedules set for each of a plurality of units in an air conditioner if there is a schedule conflict and can thus efficiently drive the units according to corresponding schedules.

BACKGROUND

[0002] An air conditioner includes various units for performing cooling, heating and air purification in order to establish a fine indoor environment. An air conditioner ejects cool or warm air into a room and purifies a room. An air conditioner may be divided into an indoor unit including an indoor heat exchanger and an outdoor unit including a compressor and an outdoor heat exchanger and may be driven by controlling power supplied to the compressor or the indoor or outdoor heat exchanger.

[0003] An air conditioner may include a plurality of outdoor units and a plurality of indoor units, which are connected to the outdoor units. In this case, one or more of the outdoor units may be driven according to the number of indoor units being driven, and may perform a cooling or heating operation according to a requested operating state.

[0004] An air conditioner may also include a remote control which monitors and controls one or more units included in the air conditioner. The remote control sets a schedule for each of the units of the air conditioner and thus controls a corresponding unit to be driven according to the schedule. The remote control, however, may not properly respond to the situations when it is impossible to set a plurality of schedules at the same time and when there is a schedule conflict.

SUMMARY OF THE INVENTION

[0005] The present invention provides an air conditioner and an operating method thereof, in which a plurality of schedules can be effectively set for each of a plurality of units in an air conditioner with a schedule conflict by making time periods reserved for existing schedules unavailable for new schedules or by either incorporating conflicting schedules, if any, into a single schedule or selecting one of the conflicting schedules.

[0006] According to an aspect of the present invention, there is provided an air conditioner including at least one outdoor unit; a plurality of indoor units which are connected to the outdoor unit; and a remote control which sets a schedule for at least one of the indoor units, wherein, if a second schedule corresponding to a second time period is input for one of the indoor units for which a first schedule corresponding to a first time period is set in advance and the first and second time periods at least partially overlap with each other, the remote control creates a third schedule based on the first and second schedules and controls the corresponding indoor unit to be driven according to the third schedule.

[0007] The remote control may create the third schedule by incorporating the first and second schedules.

[0008] The remote control may select one of the first and second schedules and set the selected schedule as the third schedule.

[0009] According to another aspect of the present invention, there is provided an operating method of an air conditioner, in which schedules set for a plurality of indoor units are controlled, the operating method including setting a first schedule corresponding to a first time period for one of the indoor units; if a second schedule corresponding to a second time period is input for the indoor unit for which the first schedule is set and the second time period at least partially overlaps with the first time period, creating a third schedule based on the first and second schedules; and controlling the corresponding indoor unit to be driven according to the third schedule..

[0010] According to the present invention, it is possible to schedule various schedules for each unit in an air conditioner. According to the present invention, it is possible to prevent a schedule conflict by making time periods reserved for existing schedules unavailable for new schedules or by either incorporating conflicting schedules, if any, into a single schedule or selecting one of the conflicting schedules. Therefore, it is possible to improve the safety of the control of an air conditioner, to control an air conditioner in a sophisticated manner, involving the application of a plurality of schedules, and thus to improve user convenience. In addition, it is possible to facilitate the application of schedules and improve the efficiency of the control of an air conditioner by using schedule patterns.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] The above and other features and advantages of the present invention will become more apparent by describing in detail preferred embodiments thereof with reference to the attached drawings in which:

FIG. 1 illustrates a schematic diagram of an air conditioner according to an embodiment of the present invention;

FIG. 2 illustrates a block diagram of a remote control illustrated in FIG. 1;

FIG. 3 illustrates a diagram of a schedule management screen of the remote control illustrated in FIG. 2;

FIG. 4 illustrates a diagram of a schedule management screen when the remote control illustrated in FIG. 2 sets a plurality of schedules;

FIG. 5 illustrates diagrams for explaining how the remote control illustrated in FIG. 2 incorporates con-

flicting schedules;

FIG. 6 illustrates diagrams for explaining how the remote control illustrated in FIG. 2 selects a schedule;

FIG. 7 illustrates a diagram of a schedule management screen on which a message indicating that there is a schedule conflict is displayed;

FIG. 8(a) illustrates a diagram of a schedule management screen on which a message for allowing a user to select one of a plurality of conflicting schedules that conflict with each other is displayed;

FIG. 8(b) illustrates a diagram of a schedule management screen on which a message for allowing a user to edit one of a plurality of schedules that conflict with each other is displayed;

FIG. 9 illustrates a flowchart of the setting of a schedule according to priority levels, as performed by the remote control illustrated in FIG. 2;

FIG. 10 illustrates a flowchart of the setting of a schedule according to user input, as performed by the remote control illustrated in FIG. 2; and

FIG. 11 illustrates a flowchart of the setting of a schedule while preventing a schedule conflict, as performed by the remote control illustrated in FIG. 2.

DETAILED DESCRIPTION OF THE INVENTION

[0012] The present invention will hereinafter be described in detail with reference to the accompanying drawings in which exemplary embodiments of the invention are shown.

[0013] FIG. 1 illustrates a schematic diagram of an air conditioner according to an embodiment of the present invention. Referring to FIG. 1, the air conditioner includes one or more indoor units I11 through I13 and I21 through I23 and one or more outdoor units O1 and 02. The outdoor unit O1 is connected to the indoor units I11 through I13, and the outdoor unit 02 is connected to the indoor units I21 through I23. Each of the outdoor units O1 and O2 includes a compressor and a heat exchanger. The air conditioner also includes a remote control RC, which is connected to the outdoor units O1 and O2 and the indoor units I11 through I13 and I21 through I23 and monitors and controls the operating state of the air conditioner, and a local controller R, which is connected at least one of the indoor units I11 through I13 and I21 through I23.

[0014] The air conditioner may also include an air ventilator, a humidifier, an air purifier, and a heater. In this case, the air ventilator, the humidifier, the air purifier, and the heater may all be controlled by the remote control RC. In the embodiment, only the indoor units I11 through I13 and I21 through I23 and the outdoor units O1 and O2 are connected to the remote control RC, but the present invention is not restricted to this.

[0015] One or more indoor units may be provided to each room. The outdoor units O1 and O2 may be driven upon the request of at least one of the indoor units I11 through I13 and I21 through I23. When the indoor units I11 through I13 and I21 through I23 are driven, the cooling/heating capacity of the air conditioner varies, and thus, the number of outdoor units that need to be driven and the number of compressors that need to be driven vary.

[0016] Each of the outdoor units O1 and O2 includes a compressor which is provided with a coolant and compresses the coolant; an outdoor heat exchanger which exchanges heat between the coolant and outdoor air; an accumulator which extracts a gas coolant from a coolant supplied thereto and supplies the gas coolant to the compressor; and a 4-way valve which selects a coolant path for a heating operation. Each of the outdoor units O1 and O2 may also include a high-pressure sensor which measures the pressure of a coolant ejected from the compressor; and a low-pressure sensor which measures the pressure of a coolant supplied to the compressor. Each of the outdoor units O1 and O2 may also include a plurality of sensors, valves, and an oil collector. Detailed descriptions of the elements of each of the outdoor units O1 and O2 will be skipped.

[0017] Each of the indoor units I11 through I13 and I21 through I23 includes an indoor heat exchanger, an indoor fan, an expansion valve, which expands a coolant supplied by the outdoor unit O1 or 02, and a plurality of sensors. The outdoor units O1 and O2 and the indoor units I11 through I13 and I21 through I23 are connected by coolant pipes. A heating or cooling operation is performed according to the flow of a coolant between the outdoor units O1 and O2 and the indoor units I11 through I13 and I21 through I23. The outdoor units O1 and O2 and the indoor units I11 through I13 and I21 through I23 may transmit data to or receive data from one another by using a predetermined communication method.

[0018] The remote control RC transmits data to or receives data from the outdoor units O1 and O2 and the indoor units I11 through I13 and I21 through I23, displays the operating states of the outdoor units O1 and O2 and the indoor units I11 through I13 and I21 through I23 with the aid of a display unit, and thus enables a user to monitor the outdoor units O1 and O2 and the indoor units I11 through I13 and I21 through I23. The remote control RC generates a control command for controlling the operations of the outdoor units O1 and O2 and the indoor units I11 through I13 and I21 through I23 according to user input, and thus controls the outdoor units O1 and O2 and the indoor units I11 through I13 and I21 through I23 to be driven according to a predetermined schedule. The air conditioner may include more than one remote control RC.

[0019] The remote control RC may set a plurality of schedules for the outdoor units O1 and O2 and the indoor units I11 through I13 and I21 through I23 and control the outdoor units O1 and O2 and the indoor units I11 through I13 and I21 through I23 according to the schedules. The remote control RC may set a plurality of schedules that do not conflict with each other in the first place. Alternatively, the remote control RC may set a plurality of sched-

ules and then incorporate a number of conflicting schedules, if any, into a single schedule.

[0020] FIG. 2 illustrates a block diagram of the remote control RC illustrated in FIG. 1. Referring to FIG. 2, the remote control RC includes a control unit 11, a data unit 13, a communication unit 14, an input unit 12 and a display unit 15.

[0021] The input unit 12 may include at least one button, a touch input unit or both. The input unit 12 applies a user command, which is input to the remote control RC through the manipulation of the button or the touch input unit, to the control unit 11.

[0022] The display unit 15 includes a tool for outputting text data or images. The display unit 15 displays the user command input by the input unit 12 on a screen or a screen image corresponding to the user command input by the input unit 12 on the screen. The display unit 15 displays information regarding the operating states of the indoor units I11 through I13 and I21 through I23 on the screen. The display unit 15 also displays a menu for controlling the indoor units I11 through I13 and I21 through I23 and a menu for setting schedules on the screen.

[0023] The air conditioner may also include a speaker, which outputs alarm sounds and voice messages, and a lamp, which is turned on or off.

[0024] The data unit 13 stores data received by the input unit 12, and also stores data received from the indoor units I11 through I13 and I21 through I23 and the outdoor units O1 and O2 through the communication unit 14 and control data and setting data for controlling the indoor units I11 through I13 and I21 through I23 and the outdoor units O1 and 02. The data unit 13 also stores schedule data regarding a schedule set for each of the units in the air conditioner.

[0025] The communication unit 14 may include a plurality of communication modules which transmit data or receive data by using a predetermined communication method. The communication unit 14 may receive data from the outdoor units O1 and O2 and the indoor units I11 through I13 and I21 through I23 by using the predetermined communication method, and apply the received data to the control unit 11.

[0026] The control unit 11 controls the input and output of data by controlling data transmitted through the communication unit 14 and controlling data received by the input unit 12 to be output through the output unit 15. The control unit 11 generates a control command for controlling the operations of the indoor units I11 through I13 and I21 through I23 and the outdoor units O1 and O2 in response to a user command received by the input unit 12 and transmits the control command to the indoor units I11 through I13 and I21 through I23 and the outdoor units O1 and O2 through the communication unit 14.

[0027] In addition, the control unit 11 sets a schedule for each of the indoor units I11 through I13 and I21 through I23 and the outdoor units O1 and O2 and transmits a control command to the indoor units I11 through I13 and I21 through I23 and the outdoor units O1 and O2 through the communication unit 15 so that the indoor units I11 through I13 and I21 through I23 and the outdoor units O1 and O2 can be driven according to respective corresponding schedules set by the control unit 11. The control unit 11 may set more than one schedule for each of the indoor units I11 through I13 and I21 through I23 and the outdoor units O1 and O2, and store schedules in the data unit 13. If there are conflicting schedules, the control unit 11 may select one of the conflicting schedules or incorporate the conflicting schedules into a single schedule. Alternatively, the control unit 11 may set a plurality of schedules that do not conflict with each other in the first place.

[0028] More specifically, if there are conflicting schedules, the control unit 11 may select whichever of the conflicting schedules is set first or last or incorporate the conflicting schedules. In addition, if there are conflicting schedules, the control unit 11 may generate a notice message indicating that there are conflicting schedules, and display the notice message with the aid of the display unit 15 so that one of the conflicting schedules can be selected according to user input received by the input unit 12.

[0029] The control unit 11 may divide the indoor units I11 through I13 and I21 through I23 into one or more schedule groups, each having one or more indoor units that are driven according to the same schedule. The number of schedules groups is not greater than the number of indoor units, and none of the indoor units I11 through I13 and I21 through I23 are classified into more than one schedule group at the same time.

[0030] The control unit 11 may set a plurality of schedules and set one of the schedules as a priority schedule. Then, the control unit 11 may control the priority schedule to be executed first. If the priority schedule conflicts with other schedules, the control unit 11 may control the indoor units I11 through I13 and I21 through I23 and the outdoor units O1 and O2 to be driven according to the priority schedule.

[0031] The remote control RC may set a plurality of schedules that do not conflict with each other in the first place. More specifically, once a schedule is set, the control unit 11 of the remote control RC may prevent the setting of a new schedule if the new schedule conflicts with the existing schedule. For example, the control unit 11 of the remote control RC may inactivate a time period reserved for the existing schedule and thus make the corresponding time period unavailable for a new schedule.

[0032] FIG. 3 illustrates a diagram of a schedule management screen of the remote control RC illustrated in FIG. 2. Referring to FIG. 3, when a schedule menu is called through the input unit 12, the remote control RC controls a schedule setting menu for setting a schedule to be displayed on the screen of the display unit 15.

[0033] The schedule setting menu includes a schedule group menu D10, which is disposed on one side of the schedule setting menu and displays a schedule group

including one or more indoor units for which a schedule is to be set. The schedule group is a group of one or more indoor units that can be driven according to the same schedule. The schedule group may be configured according to a user command regardless of how indoor units are connected to an outdoor unit and where the indoor units are located. The indoor units included in the schedule group may all perform the same function at a predefined moment of time according to a schedule set for the schedule group.

[0034] A schedule pattern menu D20 for applying a schedule pattern to the schedule group is displayed below the schedule group menu D10. A period setting menu D40 for setting a period of time during which a schedule pattern selected from the schedule pattern menu D20 is to be applied is displayed on the other side of the schedule setting menu. A time menu for selecting a certain date or setting a special schedule for a certain date may be disposed above the schedule pattern menu D20 as a calendar, but the present invention is not restricted to this. The time menu represents a date (day, week, month and year).

[0035] The schedule setting menu also includes a schedule information menu D30 which displays schedule information regarding a number of schedules set for a schedule group selected by a user or a number of schedules corresponding to a schedule pattern selected by the user and or a schedule.

[0036] FIG. 4 illustrates a diagram of a schedule management screen when a plurality of schedules is set by the remote control RC illustrated in FIG. 2. Referring to FIG. 4, when schedules A through D are set for a predetermined schedule group by the remote control RC, the control unit 11 controls the display unit 15 to display a plurality of pieces of schedule information D51 through D54 respectively corresponding to schedules A through D, i.e., in a schedule information menu.

[0037] First and second time periods P11 and P12 are reserved for schedule A, and third and fourth time periods P21 and P22 are reserved for schedule B. As a result, schedules A and B partially conflict with each other.

[0038] Schedule C does not conflict with schedule B, but conflicts with schedule A. When there are conflicting schedules set, the control unit 11 may incorporate the conflicting schedules into a single schedule.

[0039] Alternatively, the control unit 11 may set a plurality of schedules while preventing the schedules from conflicting with one another. For example, since a fifth time period P32 is reserved for schedule C, the control unit 11 may control schedule C to be able to be modified and make the fifth time period P32 unavailable for other schedules.

[0040] FIG. 5 illustrates a diagram for explaining how the remote control RC illustrated in FIG. 2 incorporates a plurality of schedules set for a schedule group including one or more indoor units when there is a conflict between the schedules. Referring to FIG. 5, a period between a zeroth time t0 and a second time t2 is reserved for a first schedule S1, and a period between a first time t1 and a third time t3 is reserved for a second schedule S2. Assuming the first schedule S1 has been set earlier than the second schedule S2, the control unit 11 may incorporate the first and second schedules S1 and S2 into a third schedule S3 while prioritizing the first schedule S1, as illustrated in FIG. 5(a). A portion of the third schedule S3 corresponding to the period between the zeroth time t0 and the second time t2 is the same as the first schedule S1, and the remaining portion of the third schedule S3 corresponding to the period between the second time t2 and the third time t3 is the same as a portion of the second schedule S2 corresponding to the period between the second time t2 and the third time t3.

[0041] Alternatively, referring to FIG. 5(b), the control unit 11 may incorporate the first and second schedules S1 and S2 into a fourth schedule S4 while prioritizing the second schedule S2. A portion of the fourth schedule S4 corresponding to the period between the zeroth time t0 and the first time t1 is the same as the first schedule S1, and the remaining portion of the third schedule S3 corresponding to the period between the second time t2 and the third time t3 is the same as a portion of the second schedule S2 corresponding to the period between the second time t2 and the third time t3.

[0042] Alternatively, referring to FIG. 5(c), the control unit 11 may create third and fourth schedules S3 and S4 based on the first and second schedules S1 and S2 and set one of the third and fourth schedules S3 and S4 according to a user command input thereto.

[0043] FIG. 6 illustrates a diagram for explaining how the remote control RC illustrated in FIG. 2 selects a schedule. Referring to FIG. 6, the remote control RC may control a plurality of schedules, including first and second schedules S1 and S2. If there is a conflict between the first and second schedules S1 and S2, the control unit 11 may select one of the first and second schedules S1 and S2, instead of incorporating the first and second schedules S1 and S2, as illustrated in FIG. 5.

[0044] That is, the control unit 11 may select the first schedule S1 over the second schedule S2, as illustrated in FIG. 6 (a), or select the second schedule S2 over the first schedule S1, as illustrated in FIG. 6(b).

[0045] FIG. 7 illustrates a diagram of a schedule management screen on which a message indicating that there is a schedule conflict is displayed. FIG. 8(a) illustrates a diagram of a schedule management screen on which a message for allowing a user to select one of a plurality of conflicting schedules that conflict with each other is displayed, and FIG. 8(b) illustrates a diagram of a schedule management screen on which a message for allowing a user to edit one of a plurality of schedules that conflict with each other is displayed.

[0046] Referring to FIG. 7, if there is a conflict between a plurality of schedules set for a predetermined schedule group, the remote control RC may display a message indicating that there is a schedule conflict on a schedule setting menu. The remote control RC may also display

a button for editing schedules along with the message so that a user can edit conflicting schedules.

[0047] The remote control RC may output a message for allowing a user to select one of a plurality of schedules that conflict with each other. For example, referring to FIG. 8(a), if there are two schedules set for indoor unit 1 and the two schedules conflict with each other, the remote control RC may allow the user to select one of the two schedules. If one of the two schedules is selected according to a user command input to the remote control RC, the remote control RC may set the selected schedule as a final schedule for indoor unit 1, instead of incorporating the two schedules into a single schedule and setting the single schedule as the final schedule for indoor unit 1.

[0048] Alternatively, the remote control RC may incorporate a plurality of schedules that conflict with each other into a single schedule. For example, referring to FIG. 8 (b), if schedules E and F conflict with each other during a period from 10 : 00 to 12 : 30, the remote control RC may control only one of schedules E and F to be set for the period from 10:00 to 12:30, while generally maintaining the setting of schedules E and F.

[0049] The operation of the remote control RC illustrated in FIG. 2 will hereinafter be described in further detail.

[0050] FIG. 9 illustrates a flowchart of the setting of a schedule according to priority, as performed by the remote control RC illustrated in FIG. 2. Referring to FIG. 9, when a schedule setting menu for setting one or more indoor units for a schedule group including one or more indoor units is called, the remote control RC displays the schedule setting menu (S210).

[0051] Then, a number of indoor units and/or a number of schedule groups that can be selected are displayed on a screen (S220). If an indoor unit or a schedule group is selected from the screen, a menu for inputting a schedule for the selected indoor unit or the selected schedule group is displayed on the screen, and a first schedule for the selected indoor unit or the selected schedule group is received through the input unit 12 in response to a user command (S230).

[0052] The control unit 11 compares the first schedule with a second schedule, which has been received earlier than the first schedule and has already been set, and determines whether there is a schedule conflict (S240).

[0053] If there is a schedule conflict and new schedules are prioritized over existing schedules (S250), incorporates the first and second schedules into a single schedule while prioritizing the first schedule over the second schedule (S280) . On the other hand, if existing schedules are prioritized over new schedules (S260), the remote control RC incorporates the first and second schedules into a single schedule while prioritizing the second schedule over the first schedule (S270). If neither new schedules nor existing schedules are prioritized, the remote control RC cancels the first schedule and allows the setting of a schedule according to a user command (S270).

[0054] If there is no schedule conflict, the remote control RC stores the first schedule (S300). Thus, the first and second schedules can both be set.

[0055] FIG. 10 illustrates a flowchart of the setting of a schedule according to user input, as performed by the remote control RC illustrated in FIG. 2. Referring to FIG. 10, when a first schedule is inputted(S310), the remote control RC determines whether there is a schedule conflict by comparing the first schedule with a second schedule, which is an existing schedule (S320). If there is a schedule conflict, the remote control RC displays a message on a screen, indicating that there is a schedule conflict (S330). If a user selects the first schedule over the second schedule, the control unit 11 sets the first schedule (S380). On the other hand, if the user selects the second schedule over the first schedule, the control unit 11 sets the second schedule (S390).

[0056] If the user selects neither the first schedule nor the second schedule and chooses to edit the first and second schedules, the remote control RC displays a menu for editing the first and second schedules on the screen and thus allows the user to edit the first and second schedules (S410). Thereafter, the remote control RC determines whether there is a conflict between the edited first and second schedules, and allows the user to choose one of the edited first and second schedules (S320 through S360).

[0057] If the user selects neither the first schedule nor the second schedule and chooses not to edit the first and second schedules, the remote control RC cancels the first schedule (S370).

[0058] If there is no conflict between the first and second schedules (S320) or if one of the first and second schedules is selected by the user (S340 or S350), the remote control RC stores the first schedule or whichever of the first and second schedules is selected by the user (S400).

[0059] FIG. 11 illustrates a flowchart of the setting of a schedule while preventing a schedule conflict, as performed by the remote control RC illustrated in FIG. 2. Referring to the method illustrated in FIG. 11, if a schedule is input (S430), the remote control RC determines whether there is a conflict between the input schedule and one or more existing schedules (S440). If there is a schedule conflict, the remote control RC outputs a message indicating that there is a schedule conflict (S450).

[0060] If a user chooses to input a new schedule (S460), the method returns to operation S430. If there is no schedule conflict, the remote control RC sets and stores the input schedule (S480). If the user chooses not to input a new schedule, the remote control RC cancels the input schedule (S470).

[0061] In short, if there is a conflict between the input schedule and the existing schedules, the remote control RC requires the user to input a new schedule or cancels the input schedule.

[0062] In addition, the remote control RC may prevent

a new schedule from being set if the new schedule conflicts with any one of the existing schedules. That is, the remote control RC may inactivate time periods reserved for the existing schedules so that a new schedule can be prevented from being set for any one of the time periods.

[0063] While the present invention has been particularly shown and described with reference to exemplary embodiments thereof, it will be understood by those of ordinary skill in the art that various changes in form and details may be made therein without departing from the scope of the present invention as defined by the following claims.

Claims

1. An air conditioner comprising:

at least one outdoor unit O1, 02;
a plurality of indoor units I11 to I13, I21 to I23 which are connected to the outdoor unit; and
a remote control RC which sets a schedule for at least one of the indoor units,
wherein, if a second schedule S2 corresponding to a second time period is input for one of the indoor units for which a first schedule S1 corresponding to a first time period is set in advance and the first and second time periods at least partially overlap with each other, the remote control RC creates a third schedule S3, S4 based on the first and second schedules and controls the corresponding indoor unit to be driven according to the third schedule.

2. The air conditioner of claim 1, wherein the remote control RC creates the third schedule by incorporating the first and second schedules.

3. The air conditioner of claim 1, wherein the remote control RC selects one of the first and second schedules and sets the selected schedule as the third schedule.

4. The air conditioner of claim 1, wherein the remote control RC outputs a first message indicating an overlapping time period of the first and second time periods when the second schedule is input.

5. The air conditioner of claim 4, wherein the remote control RC outputs a second message for allowing the user to select one of the first and second schedules after outputting the first message, and sets whichever of the first and second schedules is selected according to a user command as the third schedule.

6. The air conditioner of claim 1, wherein the remote control RC cancels the second schedule and allows the user to input a fourth schedule that does not conflict with the first schedule.

7. The air conditioner of claim 6, wherein the remote control RC inactivates the first time period and activates time periods yet to be reserved for schedules.

8. The air conditioner of claim 1, wherein, if a priority schedule is input for the indoor unit for which the first schedule is set, the remote control RC ignores the first schedule or the third schedule and controls the corresponding indoor unit to be driven according to the priority schedule.

9. The air conditioner of claim 1, wherein the remote control RC divides the indoor units into a number of schedule groups, each comprising one or more indoor units that are driven according to the same schedule, and the number of schedule groups is smaller than the number of indoor units included in the air conditioner.

10. An operating method of an air conditioner, in which schedules set for a plurality of indoor units I11 to I13, I21 to I23 are controlled, the operating method comprising:

setting a first schedule corresponding to a first time period for one of the indoor units;
if a second schedule corresponding to a second time period is input for the indoor unit for which the first schedule is set and the second time period at least partially overlaps with the first time period, creating a third schedule based on the first and second schedules; and
controlling the corresponding indoor unit to be driven according to the third schedule.

11. The operating method of claim 10, wherein the creating the third schedule, comprises creating the third schedule by incorporating the first and second schedules.

12. The operating method of claim 10, wherein the creating the third schedule, comprises selecting one of the first and second schedules and setting the selected schedule as the third schedule.

13. The operating method of claim 10, further comprising outputting a first message indicating an overlapping time period of the first and second time periods after the second schedule is input.

14. The operating method of claim 13, further comprising, after the outputting the first message, outputting a second message for allowing the user to select one of the first and second schedules,
wherein the creating the third schedule, comprises

setting whichever of the first and second schedules is selected according to a user command as the third schedule.

Fig.1

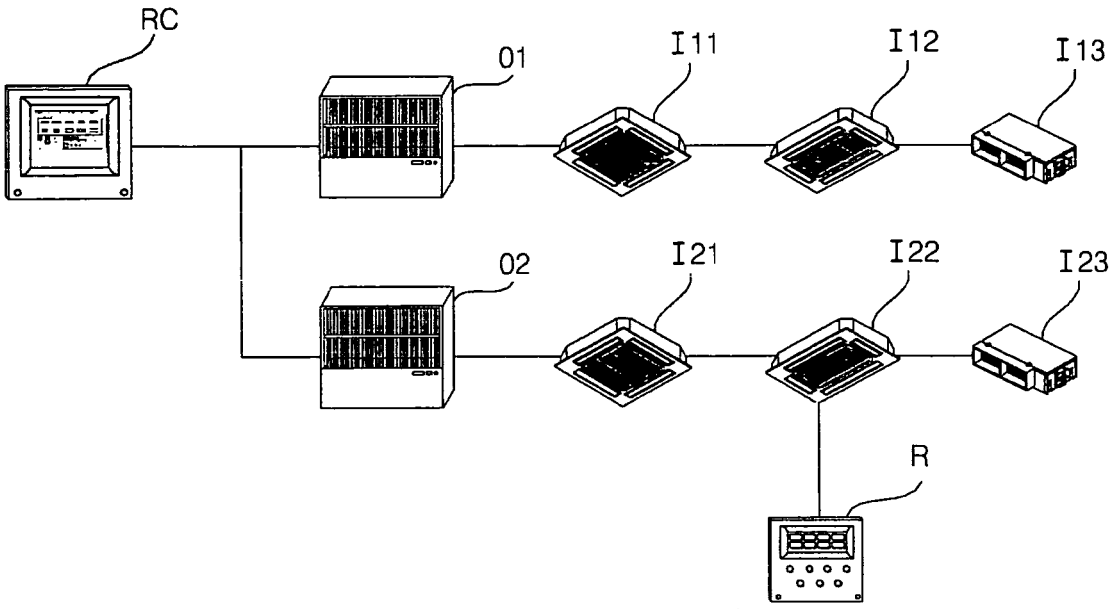

RC
01
I11
I12
I13
02
I21
I22
I23
R

Fig.2

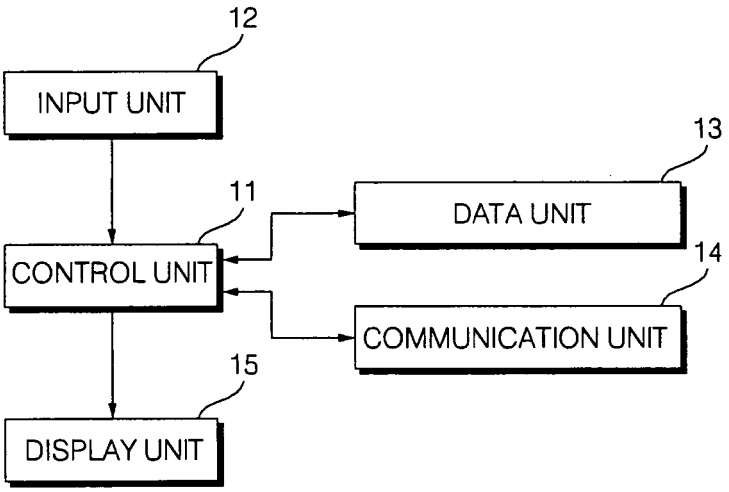

12
INPUT UNIT
13
DATA UNIT
11
CONTROL UNIT
14
COMMUNICATION UNIT
15
DISPLAY UNIT

Fig.3

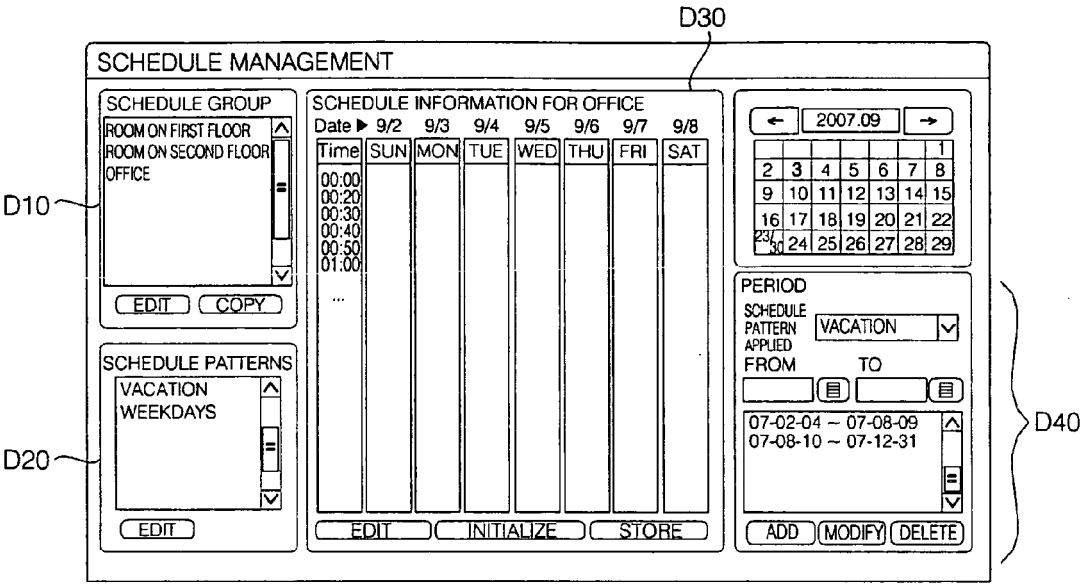

D30
SCHEDULE MANAGEMENT
SCHEDULE GROUP
ROOM ON FIRST FLOOR
ROOM ON SECOND FLOOR
OFFICE
EDIT
COPY
D10
SCHEDULE PATTERNS
VACATION
WEEKDAYS
EDIT
D20
SCHEDULE INFORMATION FOR OFFICE
Date ▶ 9/2 9/3 9/4 9/5 9/6 9/7 9/8
Time SUN MON TUE WED THU FRI SAT
00:00
00:20
00:30
00:40
00:50
01:00
...
EDIT
INITIALIZE
STORE
2007.09
PERIOD
SCHEDULE PATTERN APPLIED
VACATION
FROM
TO
07-02-04 ~ 07-08-09
07-08-10 ~ 07-12-31
ADD
MODIFY
DELETE
D40

Fig.4

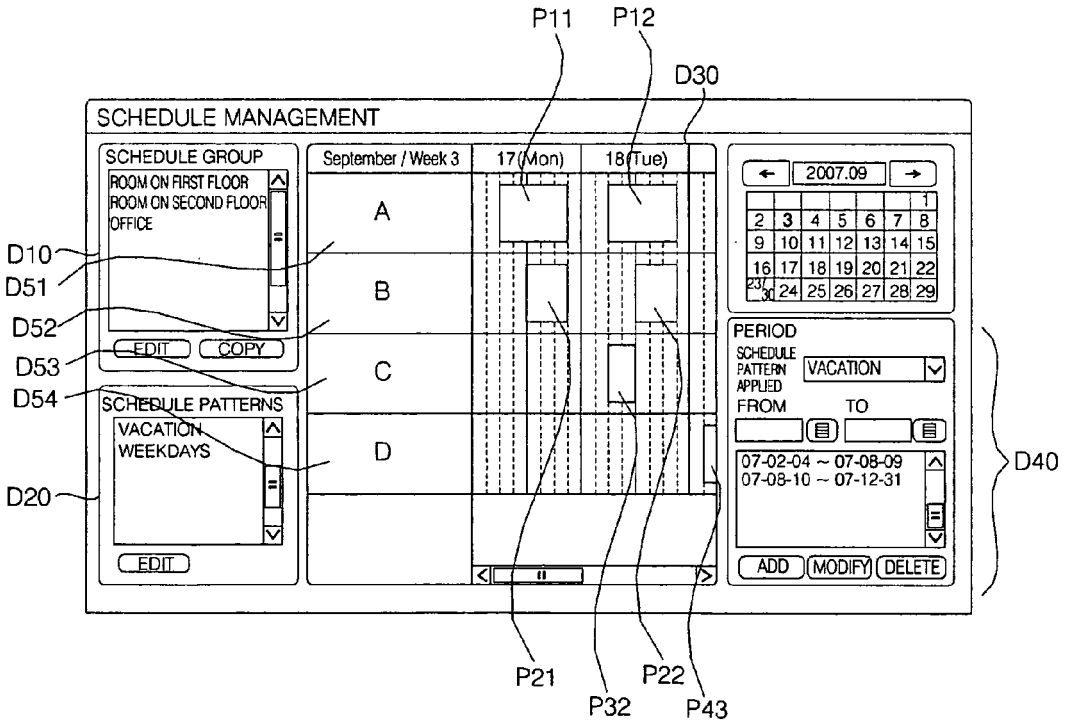

P11
P12
D30
SCHEDULE MANAGEMENT
SCHEDULE GROUP
ROOM ON FIRST FLOOR
ROOM ON SECOND FLOOR
OFFICE
EDIT
COPY
D10
D51
D52
D53
D54
SCHEDULE PATTERNS
VACATION
WEEKDAYS
EDIT
D20
September / Week 3
17(Mon)
18(Tue)
A
B
C
D
2007.09
PERIOD
SCHEDULE PATTERN APPLIED
VACATION
FROM
TO
07-02-04 ~ 07-08-09
07-08-10 ~ 07-12-31
ADD
MODIFY
DELETE
D40
P21
P32
P22
P43

Fig.5

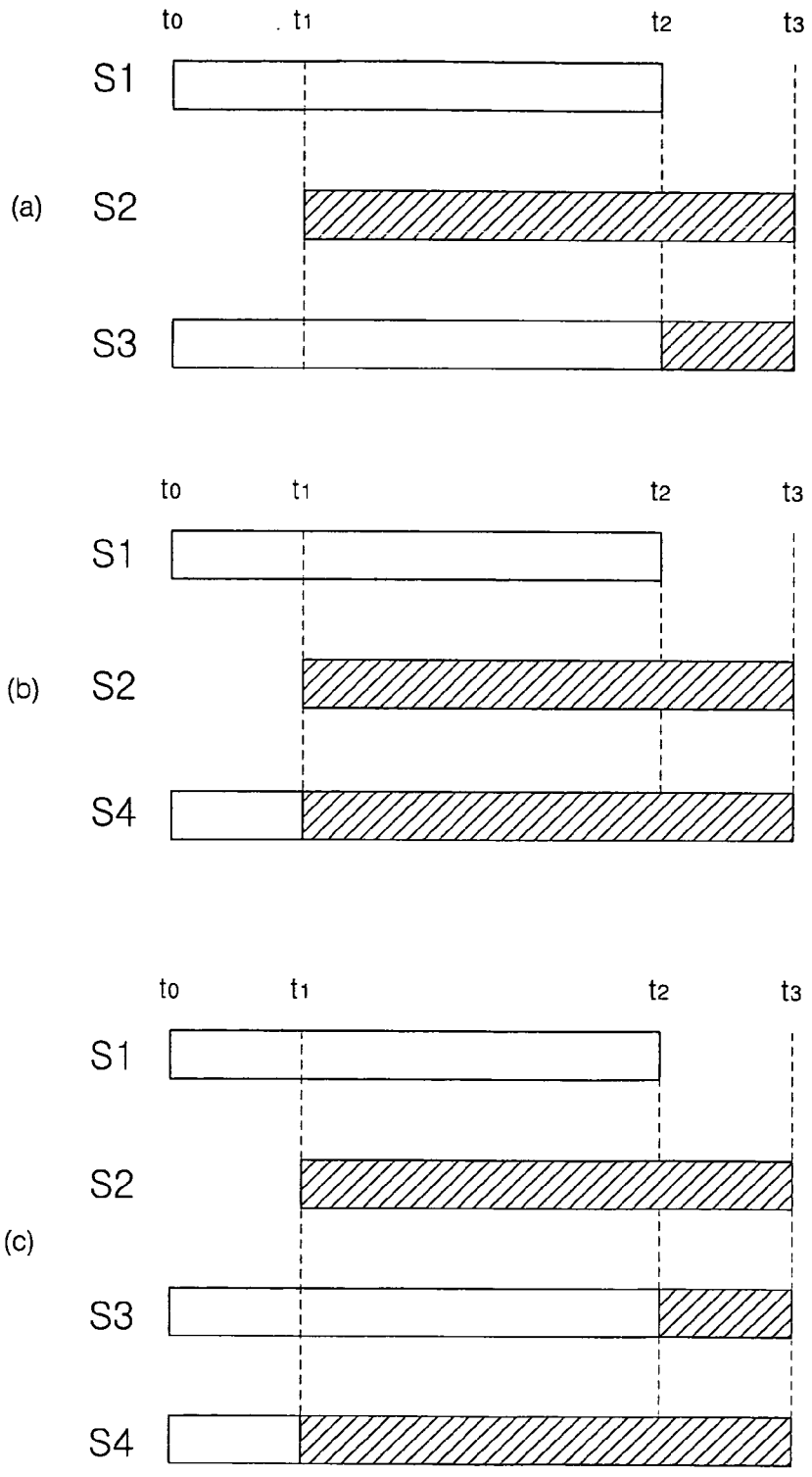


Fig.6

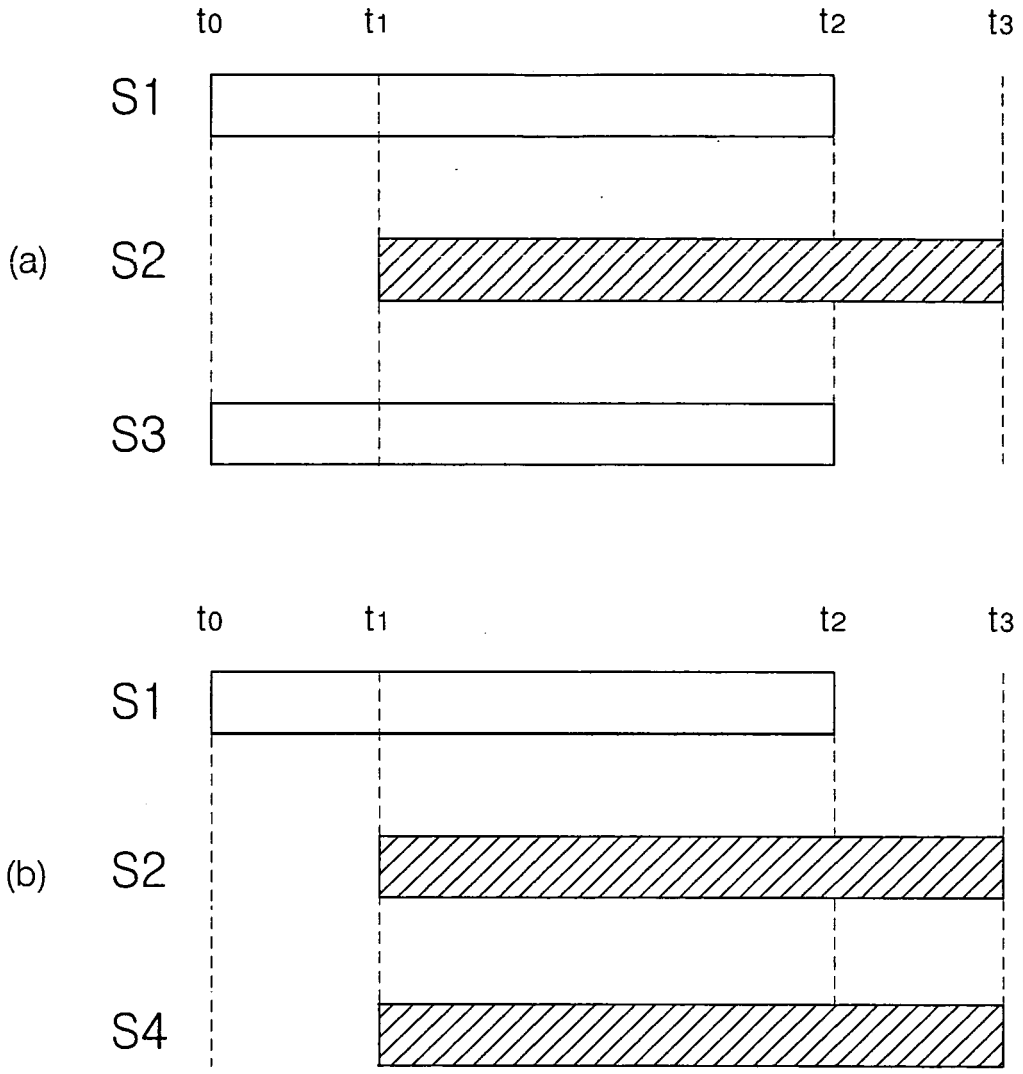


Fig.7

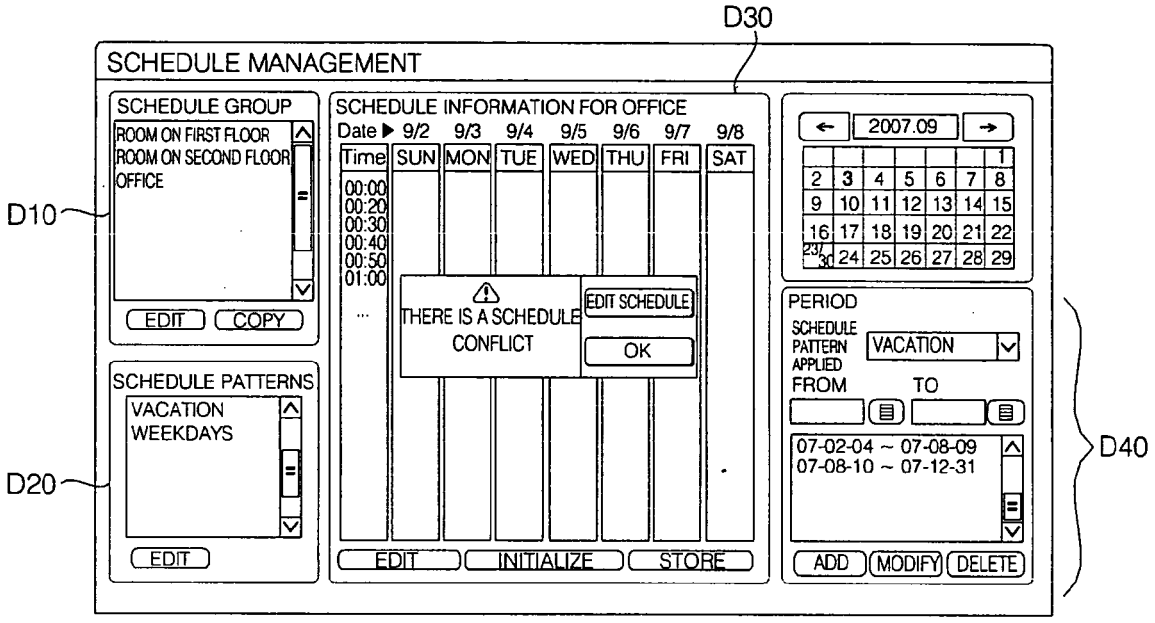
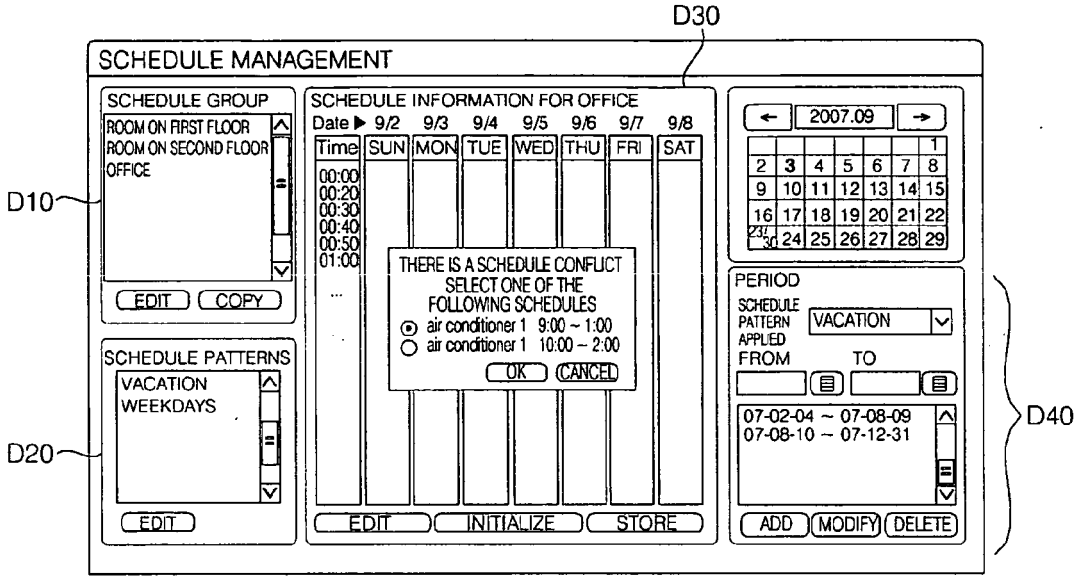
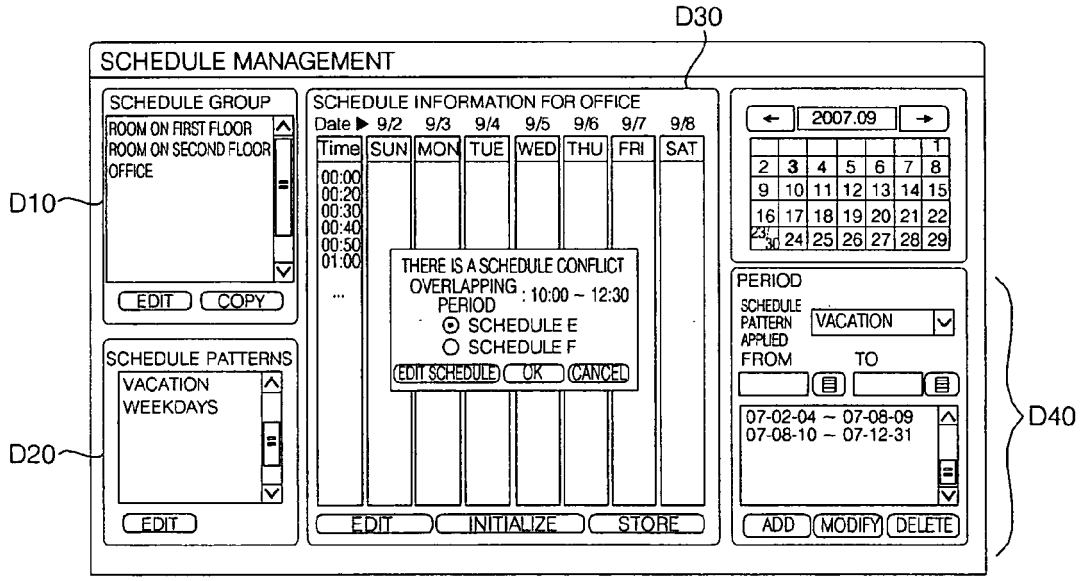

D30
SCHEDULE MANAGEMENT
SCHEDULE GROUP
ROOM ON FIRST FLOOR
ROOM ON SECOND FLOOR
OFFICE
EDIT
COPY
D10
SCHEDULE PATTERNS
VACATION
WEEKDAYS
EDIT
D20
SCHEDULE INFORMATION FOR OFFICE
Date ▶ 9/2 9/3 9/4 9/5 9/6 9/7 9/8
Time SUN MON TUE WED THU FRI SAT
00:00
00:20
00:30
00:40
00:50
01:00
THERE IS A SCHEDULE CONFLICT
EDIT SCHEDULE
OK
EDIT
INITIALIZE
STORE
2007.09
PERIOD
SCHEDULE PATTERN APPLIED
VACATION
FROM
TO
07-02-04 ~ 07-08-09
07-08-10 ~ 07-12-31
ADD
MODIFY
DELETE
D40

Fig.8


D30
SCHEDULE MANAGEMENT
SCHEDULE GROUP
ROOM ON FIRST FLOOR
ROOM ON SECOND FLOOR
OFFICE
EDIT
COPY
SCHEDULE PATTERNS
VACATION
WEEKDAYS
EDIT
SCHEDULE INFORMATION FOR OFFICE
Date ▶ 9/2 9/3 9/4 9/5 9/6 9/7 9/8
Time SUN MON TUE WED THU FRI SAT
00:00
00:20
00:30
00:40
00:50
01:00
THERE IS A SCHEDULE CONFLICT
SELECT ONE OF THE
FOLLOWING SCHEDULES
air conditioner 1 9:00 ~ 1:00
air conditioner 1 10:00 ~ 2:00
OK
CANCEL
EDIT
INITIALIZE
STORE
2007.09
PERIOD
SCHEDULE PATTERN APPLIED
VACATION
FROM
TO
07-02-04 ~ 07-08-09
07-08-10 ~ 07-12-31
ADD
MODIFY
DELETE
D10
D20
D40

(a)


D30
SCHEDULE MANAGEMENT
SCHEDULE GROUP
ROOM ON FIRST FLOOR
ROOM ON SECOND FLOOR
OFFICE
EDIT
COPY
SCHEDULE PATTERNS
VACATION
WEEKDAYS
EDIT
SCHEDULE INFORMATION FOR OFFICE
Date ▶ 9/2 9/3 9/4 9/5 9/6 9/7 9/8
Time SUN MON TUE WED THU FRI SAT
00:00
00:20
00:30
00:40
00:50
01:00
THERE IS A SCHEDULE CONFLICT
OVERLAPPING PERIOD : 10:00 ~ 12:30
SCHEDULE E
SCHEDULE F
EDIT SCHEDULE
OK
CANCEL
EDIT
INITIALIZE
STORE
2007.09
PERIOD
SCHEDULE PATTERN APPLIED
VACATION
FROM
TO
07-02-04 ~ 07-08-09
07-08-10 ~ 07-12-31
ADD
MODIFY
DELETE
D10
D20
D40

(b)

Fig.9

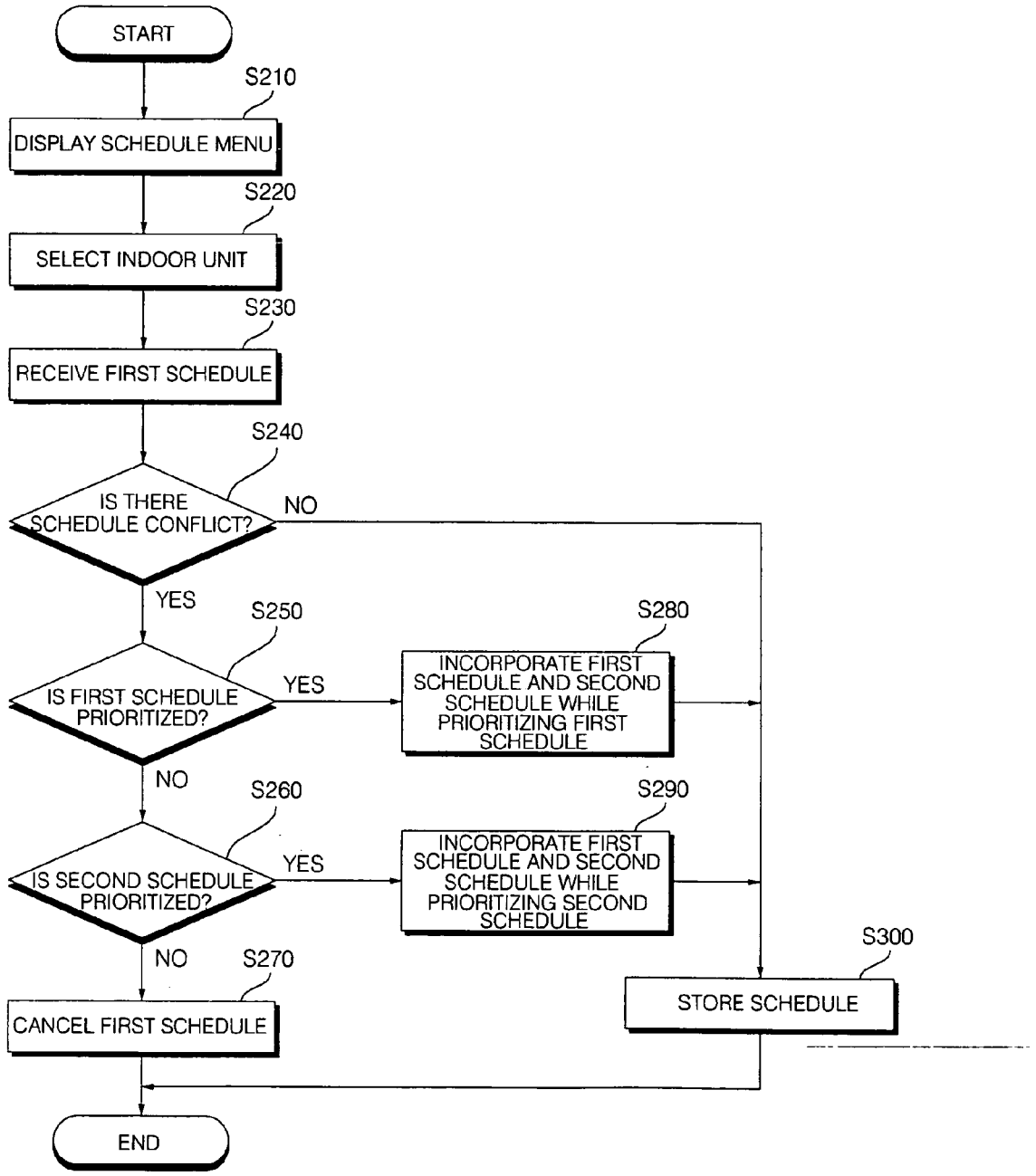

START
S210
DISPLAY SCHEDULE MENU
S220
SELECT INDOOR UNIT
S230
RECEIVE FIRST SCHEDULE
S240
IS THERE SCHEDULE CONFLICT?
NO
YES
S250
IS FIRST SCHEDULE PRIORITIZED?
YES
S280
INCORPORATE FIRST SCHEDULE AND SECOND SCHEDULE WHILE PRIORITIZING FIRST SCHEDULE
NO
S260
IS SECOND SCHEDULE PRIORITIZED?
YES
S290
INCORPORATE FIRST SCHEDULE AND SECOND SCHEDULE WHILE PRIORITIZING SECOND SCHEDULE
NO
S270
CANCEL FIRST SCHEDULE
S300
STORE SCHEDULE
END

Fig.10

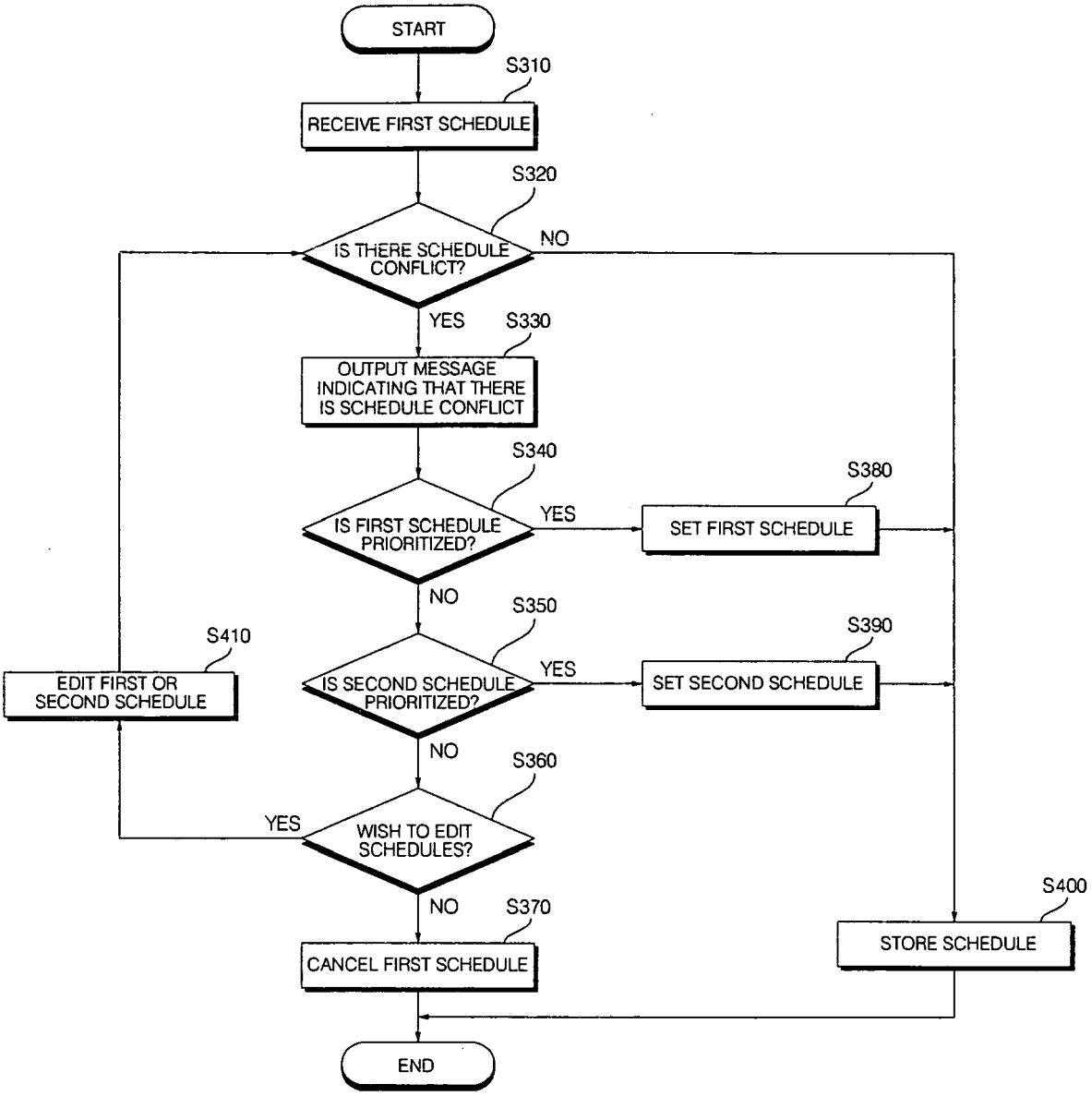
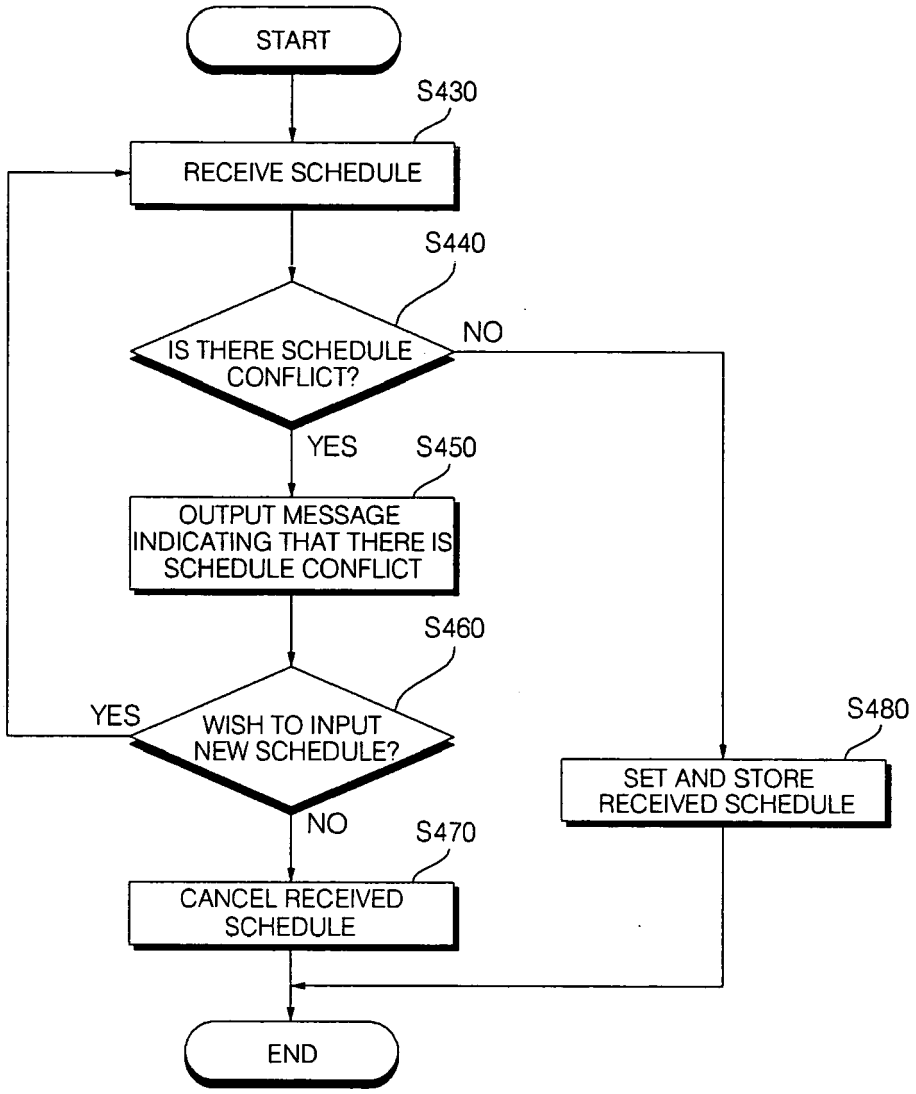

START
S310
RECEIVE FIRST SCHEDULE
S320
IS THERE SCHEDULE CONFLICT?
NO
YES
S330
OUTPUT MESSAGE INDICATING THAT THERE IS SCHEDULE CONFLICT
S340
IS FIRST SCHEDULE PRIORITIZED?
YES
S380
SET FIRST SCHEDULE
NO
S350
IS SECOND SCHEDULE PRIORITIZED?
YES
S390
SET SECOND SCHEDULE
NO
S360
WISH TO EDIT SCHEDULES?
YES
S410
EDIT FIRST OR SECOND SCHEDULE
NO
S370
CANCEL FIRST SCHEDULE
S400
STORE SCHEDULE
END

Fig.11


START
S430
RECEIVE SCHEDULE
S440
IS THERE SCHEDULE CONFLICT?
NO
YES
S450
OUTPUT MESSAGE INDICATING THAT THERE IS SCHEDULE CONFLICT
S460
WISH TO INPUT NEW SCHEDULE?
YES
NO
S470
CANCEL RECEIVED SCHEDULE
S480
SET AND STORE RECEIVED SCHEDULE
END