

Description

Cleaning Management System, Cleaning Management Apparatus,
Cleaning Management Method, and Program

TECHNICAL FIELD

[0001]

The present invention relates to a cleaning management system, a cleaning management apparatus, a cleaning management method, and a program.

Background Art

[0002]

In accommodation facilities, a plurality of employees perform room cleaning. In order to improve cleaning efficiency, there are various technologies for aggregating the status of employees.

[0003]

A cleaning management system disclosed in Patent Document 1 is such that a management server executes cleaning management processing. When a control unit of the management server receives an assignment instruction from a cleaning leader, the control unit extracts cleaning targets such as rooms, assigns cleaners in accordance with cleaning difficulty, and repeats the assignment processing such that the difference in total work time among the cleaners falls within a predetermined time.

Citation List

Patent Literature

[0004]

PTL 1: JP-2022-127091 A

Summary of Invention

Problems to be Solved by the Invention

[0005]

When performing cleaning work in an accommodation facility, from the viewpoint of work efficiency, a mechanism is used in which the

cleaning work is divided into a plurality of roles and a person in charge is assigned to each role. For example, in a case where one work area such as a room is cleaned by a plurality of persons, there is a need for a technology for centrally managing work in order to prevent duplicate work and work omissions.

[0006]

The cleaning management system disclosed in Patent Document 1 does not assume performing cleaning management according to a plurality of roles in a certain work area.

[0007]

The present invention has been made in view of the above points, and an object thereof is to provide a technology for efficiently managing cleaning work divided into a plurality of roles.

Means for Solving the Problems

[0008]

This application includes a plurality of means for solving the above problems; an example thereof is as follows.

[0009]

In order to solve the above problems, a cleaning management system according to one aspect of the present invention is a cleaning management system including: a cleaning management apparatus that manages a cleaning operation of an accommodation facility; an administrator terminal device possessed by an administrator of the cleaning operation; and a person-in-charge terminal device possessed by a person in charge, wherein the cleaning management apparatus includes: a role definition unit that associates a plurality of roles of cleaning work with each room of the accommodation facility; a person-in-charge determination unit that determines a person in charge for each of the plurality of roles; a progress management unit that manages a progress status of cleaning of a plurality of the rooms of the accommodation facility; and a display information generation unit that generates display information of a progress display screen that displays the progress status of the plurality of rooms in a certain display area, and the progress display screen is a screen that displays,

in a distinguishable manner, rooms for which at least one of the associated roles is not completed and other rooms.

[0010]

The display information generation unit of the cleaning management apparatus may generate, for each role, display information of a progress input screen that receives input operations of cleaning start and cleaning end, and the person-in-charge terminal device may include an output unit that displays the progress input screen.

[0011]

The progress display screen may be a screen that displays, in association with the room, a cleaning type including whether the cleaning type is general cleaning, cleaning during a customer stay, or simplified cleaning in which a cleaning target is less than that of general cleaning.

[0012]

The administrator terminal device may include an output unit that displays an additional work input screen that receives input operations of an additional work instruction for the room and a person in charge of the additional work, and the progress management unit of the cleaning management apparatus may manage a progress status of the additional work.

[0013]

The person-in-charge terminal device may include an input unit that receives an input operation of information indicating that there was a lost item for the room, the display information generation unit of the cleaning management apparatus may cause one or more objects indicating additional information regarding the room to be displayed on the progress display screen in an area relating to the room, and the progress display screen may include, as the additional information, the object indicating that there was a lost item in the room or the object indicating the presence of an additional work instruction.

[0014]

The cleaning management apparatus may include a storage unit that stores person-in-charge information in which an attribute is

associated with the person in charge, the attribute indicates whether the person in charge is a first person in charge who shares the person-in-charge terminal device with another person in charge or a second person in charge who does not share the person-in-charge terminal device, the progress input screen displayed on the person-in-charge terminal device relating to the first person in charge receives designation of a person in charge from among the first persons in charge and receives input operations of cleaning start and cleaning end for a role handled by the designated first person in charge, and the progress input screen displayed on the person-in-charge terminal device relating to the second person in charge is such that selection of the person in charge is suppressed.

[0015]

The person-in-charge determination unit of the cleaning management apparatus may register, as a trainee, a person in charge who needs training, and the person-in-charge terminal device may include an output unit that displays, to the trainee, a sample image regarding equipment after cleaning.

[0016]

The output unit of the person-in-charge terminal device may display, to the trainee, a checklist sheet screen that receives an input operation for checklist items of cleaning work to be handled, and the progress management unit of the cleaning management apparatus may manage progress of the trainee using information input to the checklist sheet screen.

[0017]

The person-in-charge terminal device may include an imaging mechanism, and include an image acquisition unit that acquires an after-cleaning image that is an image after cleaning using the imaging mechanism, the administrator terminal device may include an output unit that displays the after-cleaning image captured by the trainee, the person-in-charge determination unit of the cleaning management apparatus may register whether the person in charge having the person-in-charge terminal device is the trainee, the display information generation unit may generate, for each

role, display information of a progress input screen that receives an input operation of cleaning end, the progress management unit may determine cleaning end with respect to roles of persons in charge excluding the trainee using information received from the person-in-charge terminal device, and may determine cleaning end with respect to a role of the trainee using information received from the administrator terminal device.

[0018]

When reaching a cleaning end scheduled time associated with the room and not acquiring information indicating cleaning end for the room, the progress management unit of the cleaning management apparatus may transmit, to the administrator terminal device, an uncleaned notification identifying the room and a role that has not been cleaned, the person-in-charge determination unit of the cleaning management apparatus may assign, to the role relating to the uncleaned notification, an alternative person in charge designated in the administrator terminal device and transmit an assignment notification to the person-in-charge terminal device of the alternative person in charge, the administrator terminal device may include a person-in-charge designation unit that receives designation of the alternative person in charge to be assigned to the role identified in the uncleaned notification, and the person-in-charge terminal device may include an output unit that, upon receiving the assignment notification, outputs the assigned room and role.

[0019]

Further, in order to solve the above problems, a cleaning management apparatus according to another aspect of the present invention includes: a role definition unit that associates a plurality of roles of cleaning work with each room of an accommodation facility; a person-in-charge determination unit that determines a person in charge for each of the plurality of roles; a progress management unit that manages a progress status of cleaning of a plurality of the rooms of the accommodation facility; and a display information generation unit that generates display information of a progress display screen that displays the

progress status of the plurality of rooms in a certain display area, wherein the progress display screen is a screen that displays, in a distinguishable manner, rooms for which at least one of the associated roles is not completed and other rooms.

[0020]

Further, in order to solve the above problems, a cleaning management method according to another aspect of the present invention includes: a role definition procedure of associating a plurality of roles of cleaning work with each room of an accommodation facility; a person-in-charge determination procedure of determining a person in charge for each of the plurality of roles; a progress management procedure of managing a progress status of cleaning of a plurality of the rooms of the accommodation facility; and a display information generation procedure of generating display information of a progress display screen that displays the progress status of the plurality of rooms in a certain display area, wherein the progress display screen is a screen that displays, in a distinguishable manner, rooms for which at least one of the associated roles is not completed and other rooms.

[0021]

Further, in order to solve the above problems, a program according to another aspect of the present invention is a program that causes a processing unit of a computer to execute a cleaning management method, the program causing the processing unit to execute: a role definition procedure of associating a plurality of roles of cleaning work with each room of an accommodation facility; a person-in-charge determination procedure of determining a person in charge for each of the plurality of roles; a progress management procedure of managing a progress status of cleaning of a plurality of the rooms of the accommodation facility; and a display information generation procedure of generating display information of a progress display screen that displays the progress status of the plurality of rooms in a certain display area, wherein the progress display screen is a screen that displays, in a distinguishable manner, rooms for which

at least one of the associated roles is not completed and other rooms.

Effects of the Invention

[0022]

According to the present invention, it is possible to provide a technology for efficiently managing cleaning work divided into a plurality of roles.

[0023]

Problems, configurations, and effects other than those described above will be made clear by the following description of embodiments.

Brief Description of the Drawings

[0024]

[FIG. 1] FIG. 1(A) is a diagram illustrating one example of an overview of a cleaning management system. FIG. 1(B) is a diagram illustrating another example of the overview of the cleaning management system.

[FIG. 2] A diagram illustrating one example of functional blocks of the cleaning management system.

[FIG. 3] A diagram illustrating one example of a data structure of room-by-room role information.

[FIG. 4] A diagram illustrating one example of a data structure of cleaning management information.

[FIG. 5] A diagram illustrating one example of a hardware configuration of the cleaning management apparatus.

[FIG. 6] A diagram illustrating one example of a hardware configuration of a person-in-charge terminal device.

[FIG. 7] A sequence diagram illustrating one example of role definition processing.

[FIG. 8] A diagram illustrating one example of a role editing screen.

[FIG. 9] A diagram illustrating one example of an assigned room selection screen.

[FIG. 10] A diagram illustrating one example of an assigned room role editing screen 430.

[FIG. 11] A sequence diagram illustrating one example of work-sharing determination processing.

[FIG. 12] A diagram illustrating one example of an assignment information display screen.

[FIG. 13] A diagram illustrating one example of a person-in-charge determination screen.

[FIG. 14] A sequence diagram illustrating one example of progress display screen display processing.

[FIG. 15] FIG. 15(A) is a diagram illustrating one example of a progress display screen. FIG. 15(B) is a diagram illustrating one example of icons indicating statuses displayed on the progress display screen. FIG. 15(C) is a diagram illustrating one example of icons indicating additional information displayed on the progress display screen.

[FIG. 16] Information illustrating one example of a progress detail screen.

[FIG. 17] A flowchart illustrating one example of progress input screen generation processing.

[FIG. 18] A diagram illustrating one example of a progress input screen.

[FIG. 19] A diagram illustrating one example of a detail input screen.

[FIG. 20] A flowchart illustrating one example of person-in-charge redetermination processing.

[FIG. 21] A diagram illustrating one example of an overview of a cleaning management system in a first modification.

[FIG. 22] A diagram illustrating one example of functional blocks of the cleaning management system in the first modification.

[FIG. 23] A diagram illustrating one example of a data structure of person-in-charge information.

[FIG. 24] A flowchart illustrating one example of progress input screen generation processing in the first modification.

[FIG. 25] A diagram illustrating one example of a progress input screen in the first modification.

[FIG. 26] A diagram illustrating one example of a person-in-charge attribute selection screen.

[FIG. 27] A flowchart illustrating one example of progress input screen generation processing in a second modification.

[FIG. 28] A flowchart illustrating one example of progress input screen generation processing in a third modification.

[FIG. 29] A diagram illustrating one example of a checklist sheet screen.

Description of Embodiments

[0025]

Hereinafter, embodiments of the present invention will be described with reference to the drawings.

[0026]

FIG. 1(A) is a diagram illustrating one example of an overview of a cleaning management system 1. FIG. 1(B) is a diagram illustrating another example of the overview of the cleaning management system 1. The cleaning management system 1 in the present embodiment includes a cleaning management apparatus 10 that manages a cleaning operation of an accommodation facility or the like, an administrator terminal device 20 possessed by an administrator X of the cleaning operation, and a person-in-charge terminal device 30 possessed by a person in charge Y of cleaning. The cleaning management apparatus 10, the administrator terminal device 20, and the person-in-charge terminal device 30 are connected so as to be communicable via a network N. The network N is a communication network such as a LAN (Local Area Network), a WAN (Wide Area Network), the Internet, and a mobile phone network. Note that the network N may be a VPN (Virtual Private Network) or the like on a wireless communication network such as a mobile phone communication network.

[0027]

The administrator terminal device 20 and the person-in-charge terminal device 30 receive a cleaning management service provided using software managed by the cleaning management apparatus 10 by installing the software. Alternatively, at least one of the

administrator terminal device 20 and the person-in-charge terminal device 30 may receive the cleaning management service by reading at least a part of a software program stored in the cloud and developing it on a memory 32 described later. Alternatively, the administrator terminal device 20 and the person-in-charge terminal device 30 may use the cleaning management service provided using a browser program.

[0028]

In the example shown in FIG. 1(A), each person in charge Y has the person-in-charge terminal device 30. Each person in charge Y operates the person-in-charge terminal device 30 to log in to the cleaning management service, thereby confirming information relating to cleaning work assigned to the person in charge Y and performing an input operation relating to progress.

[0029]

On the other hand, in the example shown in FIG. 1(B), a plurality of persons in charge Y share one person-in-charge terminal device 30. Each person in charge Y logs in to the cleaning management service with his/her person-in-charge ID, thereby, similarly to the example shown in FIG. 1(A), confirming information relating to cleaning work assigned to the person in charge Y and performing an input operation relating to progress. Note that the plurality of persons in charge Y sharing one person-in-charge terminal device 30 may share a login ID and perform an input operation relating to progress for a common screen for each person in charge Y. In other words, by any one person among the plurality of persons in charge Y logging in using his/her login ID, the plurality of persons in charge Y sharing one person-in-charge terminal device 30 may perform an input operation relating to progress for a common screen for each person in charge Y. Hereinafter, description will be made using the example of the cleaning management system 1 shown in FIG. 1(A).

[0030]

In other words, the management target in the cleaning management system 1 of the present embodiment is not limited to cleaning of an accommodation facility. The cleaning target need not be an

accommodation facility as long as the mode is such that one area is divided into a plurality of roles, each role is assigned to a person in charge Y, and cleaning is performed. Further, the work to be managed is not limited to cleaning.

[0031]

FIG. 2 is a diagram illustrating one example of functional blocks of the cleaning management system 1. The cleaning management apparatus 10 is a so-called server apparatus. However, the present invention is not limited thereto; the cleaning management apparatus 10 may be various information processing apparatuses such as a personal computer, a smartphone, a workstation, a PDA (Personal Data Assistant), and a tablet device. The cleaning management apparatus 10 is, for example, an apparatus possessed by an operator providing the cleaning management service. Note that the cleaning management apparatus 10 may be an apparatus using a software program deployed on the cloud. It can be said that the operator manages a cleaning operation of the accommodation facility.

[0032]

The cleaning management apparatus 10 includes a processing unit 110, a storage unit 120, an input unit 130, an output unit 140, and a communication unit 150. The processing unit 110 controls the entirety of the cleaning management apparatus 10 in an integrated manner. The storage unit 120 stores information necessary for processing by the processing unit 110. The input unit 130 receives input of information to the cleaning management apparatus 10 from an input device connected via an input IF 14 described later included in the cleaning management apparatus 10. The output unit 140 outputs information stored in the cleaning management apparatus 10 to an output device connected via an output IF 15 described later included in the cleaning management apparatus 10. The communication unit 150 mediates transmission and reception of information with another information processing apparatus connected via the network N.

[0033]

The processing unit 110 includes a role definition unit 111, a person-in-charge determination unit 112, a progress management unit 113, and a display information generation unit 114. The role definition unit 111 associates a plurality of roles of cleaning work with each room of the accommodation facility. In the present embodiment, one work area is divided into a plurality of roles for cleaning by a plurality of persons. A role is a work content allocated to a person in charge Y, and includes an area to be cleaned such as a living room, a toilet, and a bathroom, and specific work such as vacuuming, taking out trash, and replenishing supplies. Hereinafter, description will be made using an example in which one person is assigned to one role. In this example, when one work is shared by a plurality of persons, roles are defined for each person.

[0034]

The person-in-charge determination unit 112 determines the person in charge Y for each role. For example, the person-in-charge determination unit 112 registers, in cleaning management information 122 described later, the person in charge Y specified for a combination of a room and a role on the administrator terminal device 20.

[0035]

The progress management unit 113 manages the progress status of cleaning of a plurality of rooms of the accommodation facility. For example, when receiving an input operation for work start or work end from the person in charge Y, the progress management unit 113 changes the room status by updating cleaning management information 122 described later. Further, for example, when receiving an additional work instruction for a room from the administrator terminal device 20, the progress management unit 113 manages the progress status of the additional work by updating the cleaning management information 122.

[0036]

The display information generation unit 114 generates display information of screens displayed on the administrator terminal device 20 and the person-in-charge terminal device 30. For

example, the display information generation unit 114 generates display information of a progress display screen 450 described later that displays progress statuses of a plurality of rooms in a certain display area. Further, for example, the display information generation unit 114 generates, for each role, display information of a progress input screen 470 described later that receives input operations of cleaning start and cleaning end. The display information generated by the display information generation unit 114 is transmitted to the administrator terminal device 20 or the person-in-charge terminal device 30 that requested the screen.

[0037]

The storage unit 120 stores room-by-room role information 121 and cleaning management information 122. The room-by-room role information 121 is information in which cleaning roles are set for rooms. The cleaning management information 122 is information in which, for each room, the person in charge Y responsible for cleaning and cleaning progress are associated.

[0038]

The administrator terminal device 20 is a terminal device possessed by the administrator X of the cleaning operation, such as a personal computer or a tablet device. Note that the administrator terminal device 20 may be various information processing apparatuses such as a smartphone, a workstation, and a PDA.

[0039]

The administrator terminal device 20 includes a processing unit 210, a storage unit 220, an input unit 230, an output unit 240, and a communication unit 250. The processing unit 210 controls the entirety of the administrator terminal device 20 in an integrated manner. The storage unit 220 stores information necessary for processing by the processing unit 210. The input unit 230 receives input of information to the administrator terminal device 20 from an input device connected via an input IF (not illustrated) included in the administrator terminal device 20. The output unit 240 outputs information stored in the administrator terminal

device 20 to an output device connected via an output IF (not illustrated) included in the administrator terminal device 20. The communication unit 250 mediates transmission and reception of information with another information processing apparatus connected via the network N.

[0040]

The processing unit 210 includes a display information request unit 211 and a person-in-charge designation unit 212. The display information request unit 211 requests display information of a screen from the cleaning management apparatus 10 in accordance with an input operation. For example, the display information request unit 211 requests display information of the progress display screen 450 described later from the cleaning management apparatus 10, and displays the progress display screen 450 on the output unit 240 using the display information transmitted in response to the request. The display information request unit 211 transmits information input to the displayed screen to the cleaning management apparatus 10. For example, the display information request unit 211 transmits, to the cleaning management apparatus 10, a request to define an accommodation facility or rooms to be a target of the cleaning management service, a request to register the person in charge Y, a request to change the room status, a request to register a scheduled time relating to cleaning, and the like. The person-in-charge designation unit 212 receives designation of the person in charge Y to be assigned to a role on a person-in-charge determination screen 444 described later, and transmits the designation to the cleaning management apparatus 10.

[0041]

The person-in-charge terminal device 30 is a terminal device possessed by the person in charge Y of cleaning, such as a personal computer or a tablet device. Note that the person-in-charge terminal device 30 may be various information processing apparatuses such as a smartphone, a workstation, and a PDA.

[0042]

The person-in-charge terminal device 30 includes a processing unit 310, a storage unit 320, an input unit 330, an output unit 340, and a communication unit 350. The processing unit 310 controls the entirety of the person-in-charge terminal device 30 in an integrated manner. The storage unit 320 stores information necessary for processing by the processing unit 310. The input unit 330 receives input of information to the person-in-charge terminal device 30 from an input device connected via an input IF 34 described later included in the person-in-charge terminal device 30. For example, the input unit 330 receives an input operation by the person in charge Y to a progress input screen 470 described later indicating cleaning progress. Further, the input unit 330 receives an input operation of information indicating that there was a lost item for a room.

[0043]

The output unit 340 outputs information stored in the person-in-charge terminal device 30 to an output device connected via an output IF 35 described later included in the person-in-charge terminal device 30. For example, the output unit 340 displays the progress input screen 470 described later. The communication unit 350 mediates transmission and reception of information with another information processing apparatus connected via the network N.

[0044]

The processing unit 310 includes a display information request unit 311 and an image acquisition unit 312. The display information request unit 311 requests display information of a screen from the cleaning management apparatus 10 in accordance with an input operation. For example, the display information request unit 311 requests display information of the progress display screen 450 described later from the cleaning management apparatus 10, and displays the progress display screen 450 on the output unit 340 using the display information transmitted in response to the request. The display information request unit 311 transmits information input to the displayed screen to the cleaning management apparatus 10. For example, the display

information request unit 311 transmits, to the cleaning management apparatus 10, progress-related information and report matters and the like input to the progress input screen 470 and a detail input screen 480 described later. The image acquisition unit 312 acquires a captured image using an imaging device 37 described later that functions as an imaging mechanism. For example, the image acquisition unit 312 acquires an image obtained by photographing a lost item and transmits the image to the cleaning management apparatus 10 in association with a room.

[0045]

FIG. 3 is a diagram illustrating one example of a data structure of the room-by-room role information 121. The room-by-room role information 121 includes, for example, a room number, a room type, and role information. The room number is identification information for identifying a room (e.g., a guest room) of the accommodation facility. A building and a floor to which the room belongs may be identifiable by the room number. The room type is information indicating the type of a guest room. The role information is information indicating cleaning roles set for the room.

[0046]

FIG. 4 is a diagram illustrating one example of a data structure of the cleaning management information 122. The cleaning management information 122 includes, for example, a room number, a status, a cleaning type, a role, a person in charge, a scheduled start time, a scheduled end time, a start time, an end time, and additional information. The room number is identification information for identifying a room of the accommodation facility. The status is information for identifying a stage of room cleaning. The cleaning type is information for identifying a type of room cleaning. For example, the cleaning type is information indicating any of types such as "regular cleaning" that is general cleaning, "simplified cleaning" in which cleaning targets are fewer than those of regular cleaning, and "stay cleaning" that is cleaning performed during a customer stay, i.e., after check-in and before check-out, and is associated with the room number.

[0047]

The role is information for identifying a cleaning role set for the room identified by the room number. The person in charge is information for identifying the person in charge Y assigned to the role. The scheduled start time and the scheduled end time are information indicating a cleaning scheduled start time and a cleaning scheduled end time preset for the role. The start time and the end time are information indicating a time at which cleaning in the role was started and a time at which the cleaning was ended. The additional information is information input by the administrator terminal device 20 or the person-in-charge terminal device 30 for the room. The additional information includes, for example, information indicating that there was a lost item and information relating to additional work.

[0048]

In the cleaning management information 122 in the present embodiment, one or more roles are set for one room number, and one person in charge Y is associated with each role. Further, one status and one cleaning type are associated with one room number. Note that for each role, progress for each role ("not performed", "in cleaning", or "completed") may be associated. As will be described later in detail, the room status changes in accordance with changes in role progress. Hereinafter, description will be made using an example in which the scheduled start time, the scheduled end time, the start time, and the end time are associated one each with one role. However, the scheduled start time, the scheduled end time, the start time, and the end time may be associated one each with one room number. Further, the status, the cleaning type, and the role are not limited to the example shown in this figure.

[0049]

FIG. 5 is a diagram illustrating one example of a hardware configuration of the cleaning management apparatus 10. The cleaning management apparatus 10 includes an arithmetic device 11, a memory 12, an external storage device 13, an input IF

(Interface) 14, an output IF 15, and a communication IF 16, and the components are connected by a bus.

[0050]

The arithmetic device 11 is an arithmetic device such as a CPU (Central Processing Unit), and executes processing in accordance with a program recorded in the memory 12 or the external storage device 13. In the cleaning management apparatus 10, processing is performed by the arithmetic device 11 that operates in accordance with a program read onto the memory 12 or the external storage device 13. The processing unit 110 implements each function when the arithmetic device 11 executes the program.

[0051]

The memory 12 is a storage device such as a RAM (Random Access Memory) or a flash memory, and functions as a storage area into which programs and data are temporarily read. The external storage device 13 is, for example, an HDD (Hard Disk Drive), a CD-R (Compact Disc-Recordable), a DVD-RAM (Digital Versatile Disk-Random Access Memory), or the like, and a writable and readable storage medium and a storage medium drive device, or the like. The storage unit 120 is implemented by the memory 12 or the external storage device 13. Note that the storage unit 120 may be implemented by a storage device connected via the communication IF 16.

[0052]

The input IF 14 is an interface for receiving an input operation from an operator, and is connected with input devices such as a touch panel, a keyboard, a mouse, and a microphone. The output IF 15 is an interface for outputting information to an output device such as an OLED (Organic Light Emitting Diode) display incorporated in the cleaning management apparatus 10.

[0053]

The communication IF 16 is an interface for connecting the cleaning management apparatus 10 to the network N, and is connected with a communication device such as a LAN (Local Area Network) card. Note that the cleaning management apparatus 10 may include a storage medium drive device (not illustrated) for

inputting/outputting information from/to a portable medium such as a CD (Compact Disk) or a DVD (Digital Versatile Disk).

[0054]

Since a hardware configuration of the administrator terminal device 20 is the same as the hardware configuration of the cleaning management apparatus 10, description thereof is omitted.

[0055]

FIG. 6 is a diagram illustrating one example of a hardware configuration of the person-in-charge terminal device 30. The person-in-charge terminal device 30 includes an arithmetic device 31, a memory 32, an external storage device 33, an input IF 34, an output IF 35, a communication IF 36, and an imaging device 37. For example, the arithmetic device 31, the memory 32, the external storage device 33, the input IF 34, the output IF 35, and the communication IF 36 are connected by a bus. The imaging device 37 is connected to the input IF 34.

[0056]

The arithmetic device 31 is an arithmetic device such as a CPU (Central Processing Unit), and executes processing in accordance with a program recorded in the memory 32 or the external storage device 33. In the person-in-charge terminal device 30, processing is performed by the arithmetic device 31 that operates in accordance with a program read onto the memory 32 or the external storage device 33. The processing unit 310 implements each function when the arithmetic device 31 executes the program.

[0057]

The memory 32 is a storage device such as a RAM (Random Access Memory) or a flash memory, and functions as a storage area into which programs and data are temporarily read. The external storage device 33 is, for example, an HDD, a CD-R, a DVD-RAM (Digital Versatile Disk-Random Access Memory), or the like, and a writable and readable storage medium and a storage medium drive device, or the like. The storage unit 320 is implemented by the memory 32 or the external storage device 33. Note that the storage unit 320 may be implemented by a storage device connected via the communication IF 36.

[0058]

The input IF 34 is an interface for receiving an input operation from an operator, and is connected with input devices such as a touch panel, a keyboard, a mouse, and a microphone. The output IF 35 is an interface for outputting information to an output device such as an OLED (Organic Light Emitting Diode) display incorporated in the person-in-charge terminal device 30.

[0059]

The communication IF 36 is an interface for connecting the cleaning management apparatus 10 to the network, and is connected with a communication device such as a LAN (Local Area Network) card. Note that the person-in-charge terminal device 30 may include a storage medium drive device (not illustrated) for inputting/outputting information from/to a portable medium such as a CD or a DVD.

[0060]

The imaging device 37 is a device, i.e., a camera, that includes an optical system and an image sensor, takes in light from outside, and acquires images such as still images and moving images. The image sensor is configured by a sensor that converts light into an electrical signal.

[0061]

Note that the processing of each component of the cleaning management apparatus 10, the administrator terminal device 20, and the person-in-charge terminal device 30 may be executed by one piece of hardware or may be executed by a plurality of pieces of hardware. Further, the processing of each component of the cleaning management apparatus 10, the administrator terminal device 20, and the person-in-charge terminal device 30 may be implemented by one program or may be implemented by a plurality of programs.

[0062]

FIG. 7 is a sequence diagram illustrating one example of role definition processing. The processing in this figure is started, for example, when an input operation indicating performing role definition is performed on the administrator terminal device 20.

[0063]

First, the display information request unit 211 of the administrator terminal device 20 requests display information of a role editing screen 410 from the cleaning management apparatus 10 (step S11).

[0064]

Next, the display information generation unit 114 of the cleaning management apparatus 10 transmits display information of the role editing screen 410 to the requesting administrator terminal device 20 (step S12).

[0065]

FIG. 8 is a diagram illustrating one example of the role editing screen 410. The role editing screen 410 includes a role editing area 411 and an assignment button 412. The role editing area 411 is an area in which the number of roles to be set and the contents of each role are displayed so as to allow input thereof. The assignment button 412 is a button for finalizing the number and contents of roles input in the role editing area 411. When the assignment button is selected, the display screen transitions to an assigned room selection screen 420 described later.

[0066]

Returning to FIG. 7, next, the display information request unit 211 of the administrator terminal device 20 displays the role editing screen 410 (step S13). Specifically, the display information request unit 211 displays the role editing screen 410 on a display of the administrator terminal device 20 via the output unit 240 using the display information transmitted from the cleaning management apparatus 10 in step S12.

[0067]

Next, the display information request unit 211 of the administrator terminal device 20 receives selection of the assignment button 412 and requests display information of the assigned room selection screen 420 from the cleaning management apparatus 10 (step S14). Specifically, the display information request unit 211 receives input of the number and contents of roles in the role editing area 411 of the role editing screen 410,

and when the assignment button 412 is selected, requests display information of the assigned room selection screen 420 from the cleaning management apparatus 10.

[0068]

Next, the display information generation unit 114 of the cleaning management apparatus 10 transmits display information of the assigned room selection screen 420 to the administrator terminal device 20 that transmitted the request (step S15).

[0069]

FIG. 9 is a diagram illustrating one example of the assigned room selection screen 420. The assigned room selection screen 420 includes a room selection area 421 and an assignment change button 422. The room selection area 421 is an area in which rooms managed by the accommodation facility having the administrator terminal device 20 that requested the assigned room selection screen 420 are displayed so as to be selectable. The assignment change button 422 is a button for receiving an instruction to change roles of rooms selected in the room selection area 421.

[0070]

As shown in the room selection area 421 of FIG. 9, when preset roles exist for a room, the roles may be displayed in association with the room. In the example shown in FIG. 9, rooms with room numbers "101", "102", "103", and "104" are selected. Further, the room with room number "102" has preset roles of "wet areas", "take out trash", "vacuum", "floor cleaning", and "replenish supplies". On the other hand, the room with room number "103" has no preset role.

[0071]

Further, as shown in FIG. 9, when rooms of an accommodation facility are grouped by tabs or the like, the number of rooms selected in each tab may be displayed in a predetermined area of the assigned room selection screen 420.

[0072]

Returning to FIG. 7, next, the display information request unit 211 of the administrator terminal device 20 displays the assigned room selection screen 420 using the display information

transmitted from the cleaning management apparatus 10 in step S15 (step S16).

[0073]

Next, the display information request unit 211 of the administrator terminal device 20 transmits the input information (step S17). Specifically, the display information request unit 211 transmits, to the cleaning management apparatus 10, information for identifying rooms selected in the room selection area 421 of the assigned room selection screen 420 displayed in step S16. Further, the display information request unit 211 transmits, to the cleaning management apparatus 10, the number and contents of roles input to the role editing screen 410 displayed in step S13.

[0074]

Next, the role definition unit 111 of the cleaning management apparatus 10 updates the room-by-room role information 121 (step S18). Specifically, the role definition unit 111 updates the room-by-room role information 121 by associating the room numbers of the rooms selected on the assigned room selection screen 420 with the number and contents of roles input to the role editing screen 410. In other words, the role definition unit 111 associates roles of cleaning work with rooms of the accommodation facility. Thereafter, the cleaning management apparatus 10 and the administrator terminal device 20 end the processing of this sequence diagram.

[0075]

Note that role definition processing may be performed via an assigned room role editing screen 430 described later. The display information generation unit 114 of the cleaning management apparatus 10 transmits display information of the assigned room role editing screen 430 in response to a request from the administrator terminal device 20. The role definition unit 111 updates the room-by-room role information 121 using information input to the assigned room role editing screen 430.

[0076]

FIG. 10 is a diagram illustrating one example of the assigned room role editing screen 430. The assigned room role editing screen 430

includes a role input area 431 and a room number display area 432. The role input area 431 is an area for receiving input of roles to be defined for each room. For example, in the role input area 431, roles for which the cleaning management apparatus 10 accepts definition are displayed so as to be selectable as shown in FIG. 10. The room number display area 432 is an area for displaying a room number.

[0077]

According to this configuration, even when the accommodation facility has a large number of rooms, roles can be collectively set for rooms to be cleaned having the same roles, which is efficient.

[0078]

FIG. 11 is a sequence diagram illustrating one example of work-sharing determination processing. The processing in this figure is started, for example, when an input operation indicating requesting an assignment information display screen 440 is performed on the administrator terminal device 20.

[0079]

First, the display information request unit 211 of the administrator terminal device 20 requests display information of the assignment information display screen 440 from the cleaning management apparatus 10 (step S21).

[0080]

Next, the display information generation unit 114 of the cleaning management apparatus 10 generates display information of the assignment information display screen 440 and transmits the display information to the administrator terminal device 20 that transmitted the request (step S22).

[0081]

FIG. 12 is a diagram illustrating one example of the assignment information display screen 440. The assignment information display screen 440 includes an assignment information display area 441, an assignment information selection area 442, and a batch edit acceptance button 443. The assignment information display area 441 is an area for displaying, for each room, cleaning-related

information in association. For example, as shown in FIG. 12, the assignment information display area 441 displays, in association with a room number, a room type, a status, a cleaning type, roles relating to cleaning, persons in charge Y allocated to the respective roles, a scheduled start time and a scheduled end time, whether there is a lost item, a cleaning start time and a cleaning end time, and a person in charge Y who actually performed cleaning. Note that additional work input by the administrator terminal device 20 may be displayed for each room in the assignment information display area 441.

[0082]

The assignment information selection area 442 is an area for receiving selection of a room for which a person in charge Y is to be allocated. Note that when room selection is received in the assignment information selection area 442 and the batch edit acceptance button 443 is selected, the display screen transitions to a person-in-charge determination screen 444 described later for determining the person in charge Y of the selected room. Note that the assignment information display screen 440 may accept an input operation for selecting and changing information displayed in the assignment information display area 441. Further, when an area indicating each room in the assignment information display area 441 is selected, the display screen may transition to the person-in-charge determination screen 444.

[0083]

In the example shown in FIG. 12, rooms with room numbers "105" and "106" are selected, but persons in charge Y have already been determined for both rooms. When a room for which a person in charge Y has already been determined is selected on the assignment information display screen 440, the person-in-charge determination screen 444 described later receives an instruction to change the person in charge Y.

[0084]

Returning to FIG. 11, next, the display information request unit 211 of the administrator terminal device 20 displays the assignment information display screen 440 based on the display

information transmitted from the cleaning management apparatus 10 (step S23).

[0085]

Next, the display information request unit 211 receives designation of a room for which the person in charge Y is to be determined, and requests the person-in-charge determination screen 444 (step S24). Specifically, the display information request unit 211 transmits, to the cleaning management apparatus 10, information indicating a request for the person-in-charge determination screen 444 including information for identifying the room selected in the assignment information selection area 442 of the assignment information display screen 440.

[0086]

Next, the display information generation unit 114 of the cleaning management apparatus 10 generates display information of the person-in-charge determination screen 444 and transmits the display information to the requesting administrator terminal device 20 (step S25).

[0087]

FIG. 13 is a diagram illustrating one example of the person-in-charge determination screen 444. The person-in-charge determination screen 444 is a screen for receiving input of a person in charge Y for each role that has already been defined by the role definition unit 111. As shown in FIG. 13, the person-in-charge determination screen 444 may accept batch setting of a scheduled start time, a scheduled end time, additional work, and the like for rooms selected in the assignment information selection area 442 of the assignment information display screen 440. Note that display of input areas for the scheduled start time, the scheduled end time, and additional work on the person-in-charge determination screen 444 is optional. Further, as shown in FIG. 13, the person-in-charge determination screen 444 may be displayed overlapping the assignment information display screen 440. According to the person-in-charge determination screen 444 shown in this figure, it is possible to collectively determine the

persons in charge Y for a plurality of rooms in which the same roles are defined.

[0088]

Note that when a plurality of rooms with different defined roles are selected on the assignment information display screen 440, it is possible to accept determination of the person in charge Y for roles common among roles defined for the rooms. On the other hand, for roles that are not common, the person-in-charge determination screen 444 may be displayed such that an input operation for determining the person in charge Y is suppressed.

[0089]

Returning to FIG. 11, next, the display information request unit 211 of the administrator terminal device 20 displays the person-in-charge determination screen 444 (step S26).

[0090]

Next, the display information request unit 211 transmits the input information to the cleaning management apparatus 10 (step S27). That is, the display information request unit 211 transmits, to the cleaning management apparatus 10, information for identifying the person in charge Y input on the person-in-charge determination screen 444 in association with a role.

[0091]

Next, the person-in-charge determination unit 112 of the cleaning management apparatus 10 updates the room-by-room role information 121 (step S28). Specifically, the person-in-charge determination unit 112 updates the room-by-room role information 121 using the room for which the person in charge Y is to be determined input in step S24 and the information for identifying the person in charge Y associated with a role for which input was received in step S27. As a result, it can be said that the person-in-charge determination unit 112 determines the person in charge Y of the cleaning work for each role.

[0092]

Thereafter, the cleaning management apparatus 10 and the administrator terminal device 20 end the processing of this flowchart.

[0093]

FIG. 14 is a sequence diagram illustrating one example of progress display screen display processing. The processing in this figure is started, for example, when an input operation indicating requesting a progress display screen 450 described later is performed on the administrator terminal device 20.

[0094]

First, the display information request unit 211 of the administrator terminal device 20 requests display information of the progress display screen 450 from the cleaning management apparatus 10 (step S31).

[0095]

Next, the display information generation unit 114 of the cleaning management apparatus 10 refers to the cleaning management information 122 and generates display information of the progress display screen 450 (step S32).

[0096]

FIG. 15(A) is a diagram illustrating one example of the progress display screen 450. FIG. 15(B) is a diagram illustrating one example of status icons displayed on the progress display screen 450. FIG. 15(C) is a diagram illustrating one example of additional-information icons displayed on the progress display screen 450.

[0097]

The progress display screen 450 includes a room information display area 451 that displays information of a plurality of rooms of the accommodation facility. In the room information display area 451, rooms for which at least one of one or more roles relating to room cleaning is not completed and other rooms are displayed in a distinguishable manner. As an example, a room for which cleaning of all roles has been completed and a room for which at least one role is not completed are displayed in different colors.

[0098]

More specifically, an area indicating each room displayed in the room information display area 451 includes a room number display

area 4511 that displays a room number, a cleaning scheduled time display area 4512 that displays cleaning scheduled time, a status icon display area 4513, and an additional icon display area 4514. The status icon display area 4513 displays a status icon which is an object representing a status indicating a stage of room cleaning. The status icon is, for example, an object representing each status of "cleaning not required", "cleaning not possible", "cleaning possible", "in cleaning", "waiting for confirmation", "in confirmation", "cannot continue", and "completed", as shown in FIG. 15(B). One status icon is displayed for each room in the room information display area 451. Note that as shown in FIG. 15(A), a character string indicating each status may be displayed in the room information display area 451.

[0099]

In the present embodiment, any of the statuses "cleaning not required", "cleaning not possible", "cleaning possible", and "cannot continue" is set for a room by an input operation on the administrator terminal device 20. Further, the statuses "in cleaning", "waiting for confirmation", "in confirmation", and "completed" are set by an input operation on the person-in-charge terminal device 30. As will be described later in detail, for example, when any of the assigned persons in charge Y performs an input operation to start cleaning for a room in the "cleaning possible" status, the progress management unit 113 of the cleaning management apparatus 10 changes the status to "in cleaning". When all persons in charge Y for all roles of the room input information indicating completion of cleaning, the progress management unit 113 changes the status to "waiting for confirmation". When a person in charge Y who is a confirmer preset for the room inputs information indicating starting confirmation into the person-in-charge terminal device 30, the progress management unit 113 changes the status to "in confirmation". When the person in charge Y inputs information indicating ending confirmation into the person-in-charge terminal device 30, the progress management unit 113 changes the status to "completed". Note that the confirmer may be the administrator X; in that case,

the status relating to confirmation is changed when an input operation on the administrator terminal device 20 is received.

[0100]

The additional icon display area 4514 displays an additional icon which is an object indicating additional information input for a room. The additional icon is, for example, an object representing each additional information of "lost item present", "report matter present", and "additional cleaning present", as shown in FIG. 15(C). When no additional information is input for a room, no additional icon is displayed in the additional icon display area 4514. When one or more pieces of additional information are input for a room, one or more additional icons are displayed in the additional icon display area 4514.

[0101]

In other words, when there is additional information indicating that there was a lost item for a room, the display information generation unit 114 of the cleaning management apparatus 10 refers to the cleaning management information 122 and causes an object indicating existence of the lost item to be displayed in the additional icon display area 4514. When there is additional information indicating that an additional work instruction was accepted for a room, the display information generation unit 114 causes an object indicating existence of the additional work to be displayed in the additional icon display area 4514. When there is additional information indicating that a report matter exists for a room, the display information generation unit 114 causes an object indicating existence of the report matter exists to be displayed in the additional icon display area 4514.

[0102]

Note that in the room information display area 451, information indicating a cleaning type may be displayed in association with a room. For example, in the room information display area 451, a character string or an icon indicating distinction among "regular cleaning", "simplified cleaning", and "stay cleaning" is displayed. In the example shown in FIG. 15(A), for rooms relating to "simplified cleaning" or "stay cleaning", character strings

indicating cleaning types are displayed, and for rooms relating to “regular cleaning”, the cleaning type is not displayed.

[0103]

Further, in the room information display area 451, at least one (e.g., a leader) among persons in charge Y who clean the room may be displayed. In the room information display area 451, a room designated by the administrator terminal device 20 as a room to be urgently cleaned and other rooms may be displayed in a distinguishable manner.

[0104]

Returning to FIG. 14, next, the display information generation unit 114 of the cleaning management apparatus 10 transmits the display information of the progress display screen 450 generated in step S32 to the administrator terminal device 20 that transmitted the request (step S33).

[0105]

Next, the display information request unit 211 of the administrator terminal device 20 displays the progress display screen using the display information transmitted in step S33 (step S34). Thereafter, the cleaning management apparatus 10 and the administrator terminal device 20 end the processing of this sequence diagram.

[0106]

In this example, processing in which the progress display screen 450 is displayed on the administrator terminal device 20 has been described; however, the person-in-charge terminal device 30 can also display the progress display screen 450 similarly. In that case, similarly to the display information request unit 211 of the administrator terminal device 20, the display information request unit 311 of the person-in-charge terminal device 30 requests display information of the progress display screen 450 from the cleaning management apparatus 10 and displays the progress display screen 450 using the received display information.

[0107]

When one of the rooms included in the room information display area 451 of the progress display screen 450 is selected, the

display screen transitions to a progress detail screen 460. Note that the display screen may transition to the progress detail screen 460 also when a predetermined area indicating a room number is selected on the assignment information display screen 440 of FIG. 12.

[0108]

FIG. 16 is information illustrating one example of the progress detail screen 460. The progress detail screen 460 includes a status display area 461, a role display area 462, a progress display area 463, an additional work display area 464, a lost item display area 465, and a report matter display area 466. The status display area 461 is an area for displaying a status indicating a stage of cleaning. The role display area 462 is an area for displaying roles associated with a room in the cleaning management information 122. The progress display area 463 is an area for displaying progress of cleaning. For example, in the progress display area 463, for each role, a person in charge Y, a cleaning start time, and a cleaning end time are displayed. The additional work display area 464 is an area for displaying additional work input by the administrator terminal device 20 for the room and a progress status of the additional work.

[0109]

The lost item display area 465 is an area for displaying information indicating that there was a lost item for the room. For example, as shown in FIG. 16, image information indicating the lost item photographed using the imaging device 37 of the person-in-charge terminal device 30 is displayed in the lost item display area 465. The report matter display area 466 is an area for displaying a report matter input for the room on the person-in-charge terminal device 30.

[0110]

As described above, according to the progress display screen 450 of the present embodiment, a room for which at least one associated role has not been completed is displayed in a manner distinguishable from other rooms. Accordingly, the progress status of cleaning work can be easily confirmed, thereby improving

management efficiency. Further, since the status and additional information of each room are displayed by icons, users such as the administrator X and the person in charge Y can intuitively confirm the situation, and even when a plurality of users use different languages, the situation can be efficiently communicated.

[0111]

FIG. 17 is a flowchart illustrating one example of progress input screen generation processing. The processing of this flowchart is processing executed in the cleaning management apparatus 10, and is started, for example, when the person-in-charge terminal device 30 receives an input operation requesting the progress input screen 470 and transmits a request to the cleaning management apparatus 10.

[0112]

First, the display information generation unit 114 receives a request for the progress input screen 470 (step S41).

[0113]

Next, the display information generation unit 114 generates display information of the progress input screen 470 (step S42).

[0114]

FIG. 18 is a diagram illustrating one example of the progress input screen 470. The progress input screen 470 includes a progress display area 471 and a notice display area 472. The progress display area 471 is an area for receiving input of cleaning progress for each room. The notice display area 472 is an area for displaying cleaning notices for the entire accommodation facility. Note that, as shown in FIG. 18, the progress input screen 470 may display a search box for narrowing down rooms to be displayed by building or floor.

[0115]

The progress display area 471 includes a role display area 4711. The role display area 4711 is an area for displaying roles defined for each room. The role display area 4711 includes a person-in-charge display area 4712, a progress presentation area 4713, and a progress input area 4714. The person-in-charge display area 4712 is an area for displaying the person in charge Y assigned to the

role displayed in the role display area 4711 in the cleaning management information 122.

[0116]

The progress presentation area 4713 is an area for displaying progress of cleaning in a role. For example, the progress presentation area 4713 displays any of "not performed", "in cleaning", and "completed" as progress. "Not performed" is displayed when input indicating cleaning start has not been received for the role displayed in the role display area 4711. "In cleaning" is displayed when input indicating cleaning start has been received and input indicating cleaning end has not been received for the role. "Completed" is displayed when input indicating cleaning end has been received for the role.

[0117]

The progress input area 4714 is an area for receiving progress input from the person in charge Y displayed in the person-in-charge display area 4712 for the role displayed in the role display area 4711. For example, when input indicating work start has not been received for the role, the display information generation unit 114 generates display information for displaying, in the progress input area 4714, a selection button for receiving input of "work start". After receiving input of work start, the display information generation unit 114 displays, in the progress input area 4714, a selection button for receiving input of "completed". Note that the progress input area 4714 may be set such that input to a corresponding progress input area 4714 is enabled only when the person in charge Y logged in to the cleaning management service is displayed in the person-in-charge display area 4712.

[0118]

In other words, the progress input area 4714 may receive an input operation indicating that confirmation has been ended using the administrator terminal device 20 or the person-in-charge terminal device 30 of a confirmer preset for the room. Note that when room selection displayed in the progress display area 471 is received on the administrator terminal device 20 or the person-in-charge

terminal device 30, the display screen transitions to the detail input screen 480.

[0119]

FIG. 19 is a diagram illustrating one example of the detail input screen 480. The detail input screen 480 includes an additional work progress input area 481, a lost item information input area 482, and a report matter input area 483. The additional work progress input area 481 displays additional work input by the administrator terminal device 20 before display of this screen and the person in charge Y assigned to the additional work, and receives input of progress relating to the additional work. Note that when no additional work is set by the administrator terminal device 20, no additional work is displayed in the additional work progress input area 481.

[0120]

Note that setting of additional work is performed by an input operation to an additional work input screen (not illustrated) output by the output unit 240 of the administrator terminal device 20. The additional work input screen is a screen for receiving designation of a room and additional work. Upon receiving an input operation to the additional work input screen, the progress management unit 113 of the cleaning management apparatus 10 updates the cleaning management information 122 by associating the room with additional information specifying the additional work instruction. When receiving a request for the detail input screen 480 specifying a room from the display information request unit 311 of the person-in-charge terminal device 30, the display information generation unit 114 of the cleaning management apparatus 10 generates display information of the additional work input screen by referring to the cleaning management information 122, and transmits the display information to the person-in-charge terminal device 30.

[0121]

The lost item information input area 482 is an area for receiving input of information relating to a lost item. For example, as shown in FIG. 19, the lost item information input area 482 may be

such that image information of the lost item and the person in charge Y who input information relating to the lost item are displayed so as to allow input thereof. The report matter input area 483 is an area for receiving input of a report matter. The report matter input area 483 may be such that image information relating to the report matter is displayed so as to allow input thereof.

[0122]

Note that the additional work progress input area 481 may receive input of additional work by the person-in-charge terminal device 30. In that case, for example, when the person in charge Y voluntarily performed additional work that was not preset by the administrator terminal device 20 as additional work, it is possible to receive input of the additional work by the person in charge Y. Further, the person in charge Y who performed additional work displayed in the additional work progress input area 481 may be changeable on the person-in-charge terminal device 30.

[0123]

Returning to FIG. 17, next, the display information generation unit 114 transmits the display information to the requesting person-in-charge terminal device 30 (step S43). Specifically, the display information generation unit 114 transmits the display information of the progress input screen 470 generated in step S42 to the person-in-charge terminal device 30 that transmitted the request in step S41.

[0124]

Next, upon receiving input to the progress input screen 470, the progress management unit 113 updates progress management information (step S44). For example, when receiving an input operation of a selection button indicating "work start" displayed in the progress input area 4714, the progress management unit 113 records a start time in a corresponding record of the cleaning management information 122. When receiving an input operation of a selection button indicating "completed" displayed in the progress input area 4714, the progress management unit 113 records an end

time in the corresponding record of the cleaning management information 122.

[0125]

When at least one of roles for a room has received an input operation of "work start", the progress management unit 113 changes the status of the room from "cleaning possible" to "in cleaning". Further, when "completed" input operations have been received for all roles corresponding to the room, the progress management unit 113 changes the status of the room from "in cleaning" to "completed". Thereafter, the cleaning management apparatus 10 ends the processing of this flowchart.

[0126]

Note that when receiving input to the detail input screen 480, the progress management unit 113 manages additional information such as a progress status of additional work and information relating to a lost item by updating the cleaning management information 122 using the input information.

[0127]

As described above, by performing progress management using information input on the progress input screen 470 in the present embodiment, it is possible to efficiently update progress status. Further, since information indicating that cleaning has been performed can be easily input, it is possible to efficiently manage evidence of cleaning work by the person in charge Y.

[0128]

FIG. 20 is a flowchart illustrating one example of person-in-charge redetermination processing. The processing in this figure is executed periodically, for example, in the cleaning management apparatus 10.

[0129]

First, the progress management unit 113 of the cleaning management apparatus 10 refers to the cleaning management information 122 and identifies a record for which the scheduled end time has been reached and the status is not "completed" (step S51).

Specifically, the progress management unit 113 extracts a record for which the scheduled end time has been reached in the cleaning

management information 122. The progress management unit 113 identifies, among roles of the extracted record, a record for which the status corresponding to the room number associated with the role is not "completed". Note that when a plurality of records are identified, the progress management unit 113 executes the following processing for each record.

[0130]

Next, the progress management unit 113 transmits an uncleaned notification to the administrator terminal device 20 (step S52). Specifically, the progress management unit 113 generates an uncleaned notification identifying the room number and role of the record identified in step S51, and transmits the uncleaned notification to the administrator terminal device 20.

[0131]

Next, the administrator terminal device 20 requests the person-in-charge determination screen 444 (step S53). Specifically, the administrator terminal device 20 transmits, to the cleaning management apparatus 10, information indicating requesting the person-in-charge determination screen 444 regarding the room number and role included in the uncleaned notification.

[0132]

Next, the display information generation unit 114 of the cleaning management apparatus 10 transmits display information of the person-in-charge determination screen 444 (step S54). For example, the person-in-charge determination screen 444 is similar to the example shown in FIG. 13. Note that in the person-in-charge determination screen 444 in this processing, candidates for alternative persons in charge may be persons who are not performing cleaning work at the current time. In that case, by referring to the cleaning management information 122, the display information generation unit 114 determines persons in charge Y who are not performing cleaning work at the current time, and generates display information of the person-in-charge determination screen 444 with those persons in charge Y as candidates for alternative persons in charge.

[0133]

Next, the person-in-charge designation unit 212 of the administrator terminal device 20 receives selection of an alternative person in charge Y and transmits the selection to the cleaning management apparatus 10 (step S55). Specifically, the person-in-charge determination unit 212 receives an input operation of designating an alternative person in charge Y who is a person in charge Y newly assigned to the role identified in the uncleaned notification, and transmits the input information to the cleaning management apparatus 10.

[0134]

Next, the person-in-charge determination unit 112 of the cleaning management apparatus 10 updates the cleaning management information 122 (step S56). Specifically, the person-in-charge determination unit 112 updates the cleaning management information 122 by associating the room number and role combination included in the uncleaned notification transmitted to the administrator terminal device 20 in step S52 with the alternative person in charge Y selected in step S55. That is, the person-in-charge determination unit 112 assigns, to the role relating to the uncleaned notification, the alternative person in charge Y designated in the administrator terminal device 20.

[0135]

Next, the person-in-charge determination unit 112 of the cleaning management apparatus 10 transmits an assignment notification to the alternative person in charge Y (step S57). Specifically, the person-in-charge determination unit 112 generates an assignment notification indicating that the alternative person in charge Y designated in the administrator terminal device 20 has been assigned to the role relating to the uncleaned notification. By referring to information stored in an unillustrated area of the storage unit 120 in which a person in charge Y and the person-in-charge terminal device 30 possessed by the person in charge Y are associated, the person-in-charge determination unit 112 identifies a contact address of the alternative person in charge Y. The person-in-charge determination unit 112 transmits the generated

assignment notification to the contact address of the alternative person in charge Y.

[0136]

Next, the display information request unit 311 of the person-in-charge terminal device 30 displays the room and role (step S58). Specifically, the display information request unit 311 displays, via the output unit 340, information indicating the room and role assigned for cleaning included in the assignment notification. Thereafter, the cleaning management apparatus 10, the administrator terminal device 20, and the person-in-charge terminal device 30 end the processing of this sequence diagram.

[0137]

As described above, according to this processing, it is possible to assign an alternative person in charge Y to a role of a room for which the scheduled end time has elapsed and cleaning has not yet been completed, thereby improving efficiency.

[0138]

[First Modification]

[0139]

Next, a cleaning management system 1 in a first modification will be described. In the cleaning management system 1 in the first modification, there exist a plurality of persons in charge Y who share one person-in-charge terminal device 30 and persons in charge Y who have dedicated person-in-charge terminal devices 30. Hereinafter, differences from the above-described embodiment will be described.

[0140]

FIG. 21 is a diagram illustrating one example of an overview of the cleaning management system 1 in the first modification. The cleaning management system 1 in the present modification includes a cleaning management apparatus 10, an administrator terminal device 20, a person-in-charge terminal device 30A, and a person-in-charge terminal device 30B. The person-in-charge terminal device 30A is a person-in-charge terminal device 30 shared by a plurality of persons in charge Y, and functions as a first person-in-charge terminal device. Hereinafter, description will be made

using an example in which the person-in-charge terminal device 30A receives an input operation by a first person in charge Y. Note that the person-in-charge terminal device 30A may receive an input operation by a leader who is one of the first persons in charge Y. [0141]

The person-in-charge terminal device 30B is a device exclusively used by one person in charge Y and functions as a second person-in-charge terminal device. Hereinafter, description will be made using an example in which the person-in-charge terminal device 30B receives an input operation by a second person in charge Y. Note that whether the person-in-charge terminal device 30 is a person-in-charge terminal device 30A shared by a plurality of first persons in charge Y or a person-in-charge terminal device 30B exclusively used by one second person in charge Y may be predetermined or may not be predetermined. Hereinafter, description will be made using an example in which it has not been predetermined in advance whether the person-in-charge terminal device 30 is the person-in-charge terminal device 30A or the person-in-charge terminal device 30B.

[0142]

FIG. 22 is a diagram illustrating one example of functional blocks of the cleaning management system 1 in the first modification. The storage unit 120 of the cleaning management apparatus 10 stores person-in-charge information 123 in addition to the room-by-room role information 121 and the cleaning management information 122. The person-in-charge information 123 is information relating to the person in charge Y. Functions of the person-in-charge terminal device 30A and the person-in-charge terminal device 30B are common.

[0143]

FIG. 23 is a diagram illustrating one example of a data structure of the person-in-charge information 123. The person-in-charge information 123 includes a person-in-charge ID, a name, and an attribute. The person-in-charge ID is identification information for identifying the person in charge Y of cleaning. The name is a character string indicating the name of the person in charge Y.

The attribute is information indicating an attribute of the person in charge Y. For example, the attribute is information indicating whether the person in charge Y is a first person in charge Y who shares the person-in-charge terminal device 30 with another person in charge Y or a second person in charge Y who does not share the person-in-charge terminal device 30 with another person in charge Y. In the example shown in FIG. 22, when the attribute is "shared", this indicates that the person in charge Y is the first person in charge Y, and when the attribute is "general", this indicates that the person in charge Y is the second person in charge Y. Note that the attribute may include information indicating whether the person in charge Y is a leader. In other words, the person-in-charge information 123 may include information for identifying the person-in-charge terminal device 30 operated by the person in charge Y.

[0144]

FIG. 24 is a flowchart illustrating one example of progress input screen generation processing in the first modification. The processing of this flowchart is executed in the cleaning management apparatus 10 similarly to the progress input screen generation processing in FIG. 17, and is started, for example, when the person-in-charge terminal device 30 receives an input operation requesting the progress input screen 470 and transmits a request to the cleaning management apparatus 10.

[0145]

The processing of step S41 is the same as the processing of step S41 shown in FIG. 17.

[0146]

Next, the display information generation unit 114 determines whether the request is from the first person in charge Y (step S411). Specifically, by referring to the request received in step S41 and the person-in-charge information 123, the display information generation unit 114 determines whether the attribute of the person in charge who transmitted the request is "shared". When the attribute is "shared", the display information generation

unit 114 determines that the request is from the first person in charge Y.

[0147]

When determining that the request is from the first person in charge (YES in step S411), the display information generation unit 114 generates display information of the progress input screen 470 that displays the first person in charge Y for selection for a role (step S412).

[0148]

FIG. 25 is a diagram illustrating one example of the progress input screen 470 in the first modification. The progress input screen 470 in the present modification includes a person-in-charge input area 4715 instead of the person-in-charge display area 4712 of the progress input screen 470 shown in FIG. 18. By referring to attributes of the person-in-charge information 123, the display information generation unit 114 extracts first persons in charge and displays the first persons in charge in the person-in-charge input area 4715 so as to be selectable.

[0149]

Returning to FIG. 24, next, the display information generation unit 114 transmits the display information to the person-in-charge terminal device 30 that transmitted the request (step S413).

Specifically, the display information generation unit 114 transmits, to the person-in-charge terminal device 30 that is the transmission source of the request for the progress input screen 470 received in step S41, the display information generated in step S412.

[0150]

Next, the progress management unit 113 executes processing of step S414. Since the processing of step S414 is the same as the processing of step S44 shown in FIG. 17, description thereof is omitted. Thereafter, the cleaning management apparatus 10 ends the processing of this flowchart.

[0151]

When determining that the request is not from the first person in charge Y (NO in step S411), the display information generation

unit 114 executes the processing of step S42 and subsequent steps. The processing executed in steps S42 to S44 is the same as the processing executed in steps S42 to S44 shown in FIG. 17. Thereafter, the cleaning management apparatus 10 ends the processing of this flowchart.

[0152]

As described above, according to the present modification, the progress input screen 470 displayed on the person-in-charge terminal device 30A of the first person in charge Y receives designation of a person in charge Y from among a plurality of first persons in charge Y. Further, this progress input screen 470 can receive an input operation of cleaning start or cleaning end for a role handled by the designated person in charge Y. On the other hand, the progress input screen 470 displayed on the person-in-charge terminal device 30B of the second person in charge Y who does not share the person-in-charge terminal device 30 with another person in charge is such that selection of the person in charge Y is not accepted. Therefore, even when not all persons in charge Y have person-in-charge terminal devices 30 for progress input, it is possible to appropriately receive input relating to progress status. Further, since the person-in-charge terminal device 30B of the second person in charge Y displays the progress input screen 470 that does not accept a change of the person in charge Y, a change of the person in charge Y due to an operation mistake or the like is suppressed, thereby improving convenience.

[0153]

FIG. 26 is a diagram illustrating one example of a person-in-charge attribute selection screen 490. In the person-in-charge attribute selection screen 490, attributes of the person in charge Y are displayed so as to be selectable. For example, when determining in step S411 shown in FIG. 24 that the request is from the first person in charge Y, the display information generation unit 114 of the cleaning management apparatus 10 may display the person-in-charge attribute selection screen 490 before displaying the progress input screen 470. When receiving an input operation indicating that the attribute of the person in charge Y is the

first person in charge Y on the person-in-charge attribute selection screen 490, the display information generation unit 114 can display the progress input screen 470 shown in FIG. 25. When receiving an input operation indicating that the attribute of the person in charge Y is the second person in charge Y on the person-in-charge attribute selection screen 490, the display information generation unit 114 can display the progress input screen 470 shown in FIG. 18.

[0154]

[Second Modification]

[0155]

Next, a cleaning management system 1 in a second modification will be described. In the cleaning management system 1 in the present modification, when the progress input screen 470 is requested from the person-in-charge terminal device 30, an input operation to the person-in-charge attribute selection screen 490 is received.

Hereinafter, differences from the above-described embodiment will be described. Note that the person-in-charge terminal device 30 in the present modification may be assigned one device to one person in charge Y similarly to the example shown in FIG. 1(A), may be assigned one device to a plurality of persons in charge Y similarly to the example shown in FIG. 1(B), or may include the person-in-charge terminal device 30A exclusively used by one first person in charge Y and the person-in-charge terminal device 30B shared by a plurality of second persons in charge Y similarly to the example shown in FIG. 21.

[0156]

FIG. 27 is a flowchart illustrating one example of progress input screen generation processing in the second modification. Since the processing of step S41 is the same as step S41 shown in FIG. 17, description thereof is omitted.

[0157]

Next, the display information generation unit 114 generates display information of the person-in-charge attribute selection screen 490 (step S421). The person-in-charge attribute selection screen 490 is similar to the example shown in FIG. 26.

[0158]

Next, the display information generation unit 114 transmits the display information of the person-in-charge attribute selection screen 490 to the person-in-charge terminal device 30 that transmitted the request (step S422).

[0159]

Next, the display information generation unit 114 determines whether input for a shared terminal has been received (step S423). Specifically, the display information generation unit 114 determines whether, for the person-in-charge attribute selection screen 490 displayed on the person-in-charge terminal device 30, input for a shared terminal has been received.

[0160]

When determining that input for a shared terminal has been received (YES in step S423), the display information generation unit 114 executes the processing of steps S412 to S414. This processing is the same as the processing of steps S412 to S414 shown in FIG. 24. Thereafter, the cleaning management apparatus 10 ends the processing of this flowchart.

[0161]

When determining that input for a shared terminal has not been received (NO in step S423), that is, when determining that an input operation for an individual terminal has been received for the person-in-charge attribute selection screen 490, the display information generation unit 114 executes the processing of steps S42 to S44. This processing is the same as the processing of steps S42 to S44 shown in FIG. 17. Thereafter, the cleaning management apparatus 10 ends the processing of this flowchart.

[0162]

As described above, according to the present modification, information displayed on the progress input screen 470 can be made different in accordance with an input operation on the person-in-charge terminal device 30, thereby enabling progress input more in accordance with requests of the person in charge Y.

[0163]

[Third Modification]

[0164]

Next, a cleaning management system 1 in a third modification will be described. In the cleaning management system 1 in the present modification, a screen different from that for other persons in charge Y is displayed for a trainee who is a person in charge Y who needs training. Hereinafter, differences from the above-described embodiment and the first modification will be described.

[0165]

FIG. 28 is a flowchart illustrating one example of progress input screen generation processing in the third modification. The processing of this flowchart is executed in the cleaning management apparatus 10 similarly to the progress input screen generation processing in FIG. 17, and is started, for example, when the person-in-charge terminal device 30 receives an input operation requesting the progress input screen 470 and transmits a request to the cleaning management apparatus 10. Note that the storage unit 120 of the cleaning management apparatus 10 in the present modification stores the person-in-charge information 123. Prior to start of the processing of this flowchart, the person-in-charge determination unit 112 registers an attribute of the trainee so as to be distinguishable from attributes of other persons in charge Y.

[0166]

The processing of steps S41 to S43 is the same as the processing of steps S41 to S43 shown in FIG. 17.

[0167]

Next, the progress management unit 113 receives an input operation to the progress input screen (step S431). Specifically, the progress management unit 113 receives an input operation to the progress input area 4714 of the progress input screen 470.

[0168]

Next, the person-in-charge determination unit 112 determines whether the input operation to the progress input area 4714 in step S431 is an input operation of cleaning end by the trainee (step S432).

[0169]

When the person-in-charge determination unit 112 determines that an input operation of cleaning end by the trainee has been received (YES in step S432), the display information generation unit 114 generates display information of a checklist sheet screen 500 and transmits the display information to the person-in-charge terminal device 30 that transmitted the cleaning end (step S433). The checklist sheet screen 500 is displayed by the display information request unit 311 of the person-in-charge terminal device 30 that received the display information via the output unit 340.

[0170]

FIG. 29 is a diagram illustrating one example of the checklist sheet screen 500. The checklist sheet screen 500 includes a check input area 501, a sample image display area 502, and an after-cleaning image acquisition instruction button 503. The check input area 501 is an area for receiving, from the trainee, an input operation of end of each cleaning work for checklist items of cleaning work to be handled.

[0171]

The sample image display area 502 is an area for displaying, to the trainee, a sample image regarding equipment after cleaning. The after-cleaning image acquisition instruction button 503 is a button for receiving an input operation of an instruction to acquire an after-cleaning image, which is an image after cleaning, using the imaging device 37 included in the person-in-charge terminal device 30. Upon receiving an input operation of the after-cleaning image acquisition instruction button 503, the image acquisition unit 312 of the person-in-charge terminal device 30 captures an after-cleaning image using the imaging device 37 and transmits the after-cleaning image to the cleaning management apparatus 10.

[0172]

Returning to FIG. 28, next, the progress management unit 113 transmits, to the administrator terminal device 20, information input to the checklist sheet screen 500 and display information of the progress input screen 470 (step S434). Specifically, the

progress management unit 113 transmits, to the administrator terminal device 20, information input to the check input area 501 of the checklist sheet screen 500 and the after-cleaning image, and the display information of the progress input screen 470.

[0173]

Thereafter, the output unit 240 of the administrator terminal device 20 displays information input to the checklist sheet screen 500 including the after-cleaning image captured by the trainee. Further, the output unit 240 displays, on the administrator terminal device 20, the progress input screen 470 that receives an input operation of cleaning completion for each role. The display information request unit 211 of the administrator terminal device 20 transmits information input to the progress input screen 470 to the cleaning management apparatus 10.

[0174]

Next, the progress management unit 113 of the cleaning management apparatus 10 determines whether an input operation of cleaning end has been received (step S435). Specifically, the progress management unit 113 determines whether an input operation indicating that cleaning has ended has been received for the progress input area 4714 of the progress input screen 470 displayed on the administrator terminal device 20.

[0175]

When determining that an input operation of cleaning end by the trainee has not been received (NO in step S435), the progress management unit 113 repeats the processing of step S435 until an input operation of cleaning end is received.

[0176]

When the progress management unit 113 determines that an input operation indicating the end of cleaning has been received (YES in step S435), or when the person-in-charge determination unit 112 determines in step S432 that an input operation indicating the end of cleaning by the trainee has not been received (NO in step S432), the progress management unit 113 updates the cleaning management information 122 (step S436). Specifically, when receiving an input operation relating to progress from a person in

charge Y who is not a trainee, the progress management unit 113 registers, in the cleaning management information 122, in accordance with the input operation, a start time, an end time, progress of additional work, or the like, for a role assigned to the person in charge Y. Further, when receiving an input operation relating to progress regarding work other than cleaning end from the trainee, the progress management unit 113 also registers the input information in the cleaning management information 122.

[0177]

When receiving, from the administrator terminal device 20, information indicating that an input operation of cleaning end has been received (YES in step S435), the progress management unit 113 registers, in the cleaning management information 122, in accordance with the input operation, information indicating that cleaning of the role assigned to the trainee has ended. In other words, the progress management unit 113 determines cleaning end for roles of persons in charge Y excluding the trainee using information received from the person-in-charge terminal device 30. The progress management unit 113 determines cleaning end for the role of the trainee using information received from the administrator terminal device 20. Thereafter, the cleaning management apparatus 10 ends the processing of this flowchart.

[0178]

In the present modification, when an input operation of cleaning end by the trainee is received, the administrator X confirms input contents by the trainee to the checklist sheet screen 500, and when an input operation of cleaning end is performed on the administrator terminal device 20, the cleaning management information 122 is updated. However, the administrator X only needs to be able to confirm the input information to the checklist sheet screen 500 input by the trainee. Therefore, the progress management unit 113 may update the cleaning management information 122 at the time when receiving the input operation of cleaning end to the progress input screen 470 by the trainee.

[0179]

Further, when an input operation of cleaning end by the trainee is received, a person in charge Y who is a leader associated with the trainee in advance may confirm input contents to the checklist sheet screen 500 instead of the administrator X. In that case, an input operation of cleaning end from the person-in-charge terminal device 30 of the leader may be received.

[0180]

As described above, according to the present modification, the progress management unit 113 of the cleaning management apparatus 10 can manage progress of the trainee using information input to the checklist sheet screen 500. Therefore, it is possible to appropriately present checklist items to the trainee who needs training, thereby enabling efficient management of cleaning operations. Further, since a sample image regarding equipment after cleaning is displayed for the trainee, the trainee can intuitively confirm a state of the equipment after cleaning, which contributes to improvement of work efficiency.

[0181]

Although description has been made on embodiments of the present invention as described above, the present invention is not limited to the above-described examples of embodiments, and includes various modifications. For example, the above-described examples of embodiments have been described in detail to facilitate understanding of the present invention, and the present invention is not limited to one including all configurations described herein. Further, it is possible to replace part of a configuration of one example of embodiment with a configuration of another example. Further, it is also possible to add a configuration of another example to a configuration of one example of embodiment. Further, for part of the configuration of each example of embodiment, it is possible to add, delete, or replace another configuration. Further, the above configurations, functions, processing units, processing means, and the like may be implemented by hardware, for example, by designing some or all of them as an integrated circuit. Further, control lines and information lines in the drawings indicate what are considered

necessary for description, and do not indicate all of them. It may be considered that substantially all components are interconnected.

[0182]

Further, functional configurations of the cleaning management apparatus 10, the administrator terminal device 20, and the person-in-charge terminal device 30 are classified according to main processing contents for facilitating understanding. The present invention is not limited by a method of classifying components or names thereof. As described above, configurations of the cleaning management apparatus 10, the administrator terminal device 20, and the person-in-charge terminal device 30 can be classified into more components according to processing contents. Further, it is also possible to classify such that one component executes more processing.

Reference Signs List

[0183]

1: cleaning management system, 10: cleaning management apparatus, 11, 31: arithmetic device, 12, 32: memory, 13, 33: external storage device, 14, 34: input IF, 15, 35: output IF, 16, 36: communication IF, 20: administrator terminal device, 30, 30A, 30B: person-in-charge terminal device, 37: imaging device, 110, 210, 310: processing unit, 111: role definition unit, 112: person-in-charge determination unit, 113: progress management unit, 114: display information generation unit, 120, 220, 320: storage unit, 121: room-by-room role information, 122: cleaning management information, 123: person-in-charge information, 130, 230, 330: input unit, 140, 240, 340: output unit, 150, 250, 350: communication unit, 211, 311: display information request unit, 212: person-in-charge designation unit, 312: image acquisition unit, 410: role editing screen, 411: role editing area, 412: assignment button, 420: assigned room selection screen, 421: room selection area, 422: assignment change button, 430: assigned room role editing screen, 431: role input area, 432: room number

display area, 440: assignment information display screen, 441: assignment information display area, 442: assignment information selection area, 444: person-in-charge determination screen, 450: progress display screen, 451: room information display area, 460: progress detail screen, 461: status display area, 462, 4711: role display area, 463, 471: progress display area, 464: additional work display area, 465: lost item display area, 466: report matter display area, 470: progress input screen, 472: notice display area, 480: detail input screen, 481: additional work progress input area, 482: lost item information input area, 483: report matter input area, 490: person-in-charge attribute selection screen, 500: checklist sheet screen, 501: check input area, 502: sample image display area, 503: after-cleaning image acquisition instruction button, 4511: room number display area, 4512: cleaning scheduled time display area, 4513: status icon display area, 4514: additional icon display area, 4712: person-in-charge display area, 4713: progress presentation area, 4714: progress input area, 4715: person-in-charge input area, N: network, X: administrator, Y: person in charge

CLAIMS

[Claim 1]

A cleaning management system comprising:

- a cleaning management apparatus that manages a cleaning operation of an accommodation facility;
- an administrator terminal device possessed by an administrator of the cleaning operation; and
- a person-in-charge terminal device possessed by a person in charge, wherein

the cleaning management apparatus comprises:

- a role definition unit that associates, for each room of the accommodation facility, a plurality of roles of cleaning work;
- a person-in-charge determination unit that determines a person in charge for each of the plurality of roles;
- a progress management unit that manages a progress status of cleaning of a plurality of the rooms of the accommodation facility; and
- a display information generation unit that generates display information of a progress display screen that displays, in a certain display area, the progress status of the plurality of rooms, and

the progress display screen is a screen that displays, in a distinguishable manner, a room for which at least one of the associated roles is not completed and another room.

[Claim 2]

The cleaning management system according to claim 1, wherein

- the display information generation unit of the cleaning management apparatus generates, for each role, display information of a progress input screen that receives an input operation of cleaning start and cleaning end, and
- the person-in-charge terminal device comprises an output unit that displays the progress input screen.

[Claim 3]

The cleaning management system according to claim 1, wherein the progress display screen is a screen that displays, in association with the room, a cleaning type including whether the cleaning type is general cleaning, cleaning during a customer stay, or simplified cleaning in which a cleaning target is less than that of general cleaning.

[Claim 4]

The cleaning management system according to claim 1, wherein the administrator terminal device comprises an output unit that displays an additional work input screen that receives an input operation of an additional work instruction for the room and a person in charge of the additional work, and the progress management unit of the cleaning management apparatus manages a progress status of the additional work.

[Claim 5]

The cleaning management system according to claim 4, wherein the person-in-charge terminal device comprises an input unit that receives an input operation of information indicating that there was a lost item for the room, the display information generation unit of the cleaning management apparatus causes, in an area relating to the room, one or more objects indicating additional information regarding the room to be displayed on the progress display screen, and the progress display screen includes, as the additional information, the object indicating that there was a lost item in the room or the object indicating that there was the additional work instruction.

[Claim 6]

The cleaning management system according to claim 2, wherein the cleaning management apparatus comprises a storage unit that stores person-in-charge information in which an attribute is associated with the person in charge,

the attribute indicates whether the person in charge is a first person in charge who shares the person-in-charge terminal device with another person in charge or a second person in charge who does not share the person-in-charge terminal device,

the progress input screen displayed on the person-in-charge terminal device relating to the first person in charge receives designation of a person in charge from among the first persons in charge and receives an input operation of cleaning start and cleaning end for a role handled by the designated first person in charge, and

the progress input screen displayed on the person-in-charge terminal device relating to the second person in charge is such that selection of the person in charge is suppressed.

[Claim 7]

The cleaning management system according to claim 1, wherein the person-in-charge determination unit of the cleaning management apparatus registers, as a trainee, a person in charge who needs training, and

the person-in-charge terminal device comprises an output unit that displays, to the trainee, a sample image regarding equipment after cleaning.

[Claim 8]

The cleaning management system according to claim 7, wherein the output unit of the person-in-charge terminal device displays, to the trainee, a checklist sheet screen that receives an input operation for checklist items of cleaning work to be handled, and

the progress management unit of the cleaning management apparatus manages progress of the trainee using information input to the checklist sheet screen.

[Claim 9]

The cleaning management system according to claim 8, wherein

the person-in-charge terminal device comprises an imaging mechanism, and comprises an image acquisition unit that acquires, using the imaging mechanism, an after-cleaning image that is an image after cleaning,

the administrator terminal device comprises an output unit that displays the after-cleaning image captured by the trainee,

the person-in-charge determination unit of the cleaning management apparatus registers whether the person in charge having the person-in-charge terminal device is the trainee,

the display information generation unit generates, for each role, display information of a progress input screen that receives an input operation of cleaning end, and

the progress management unit determines cleaning end with respect to roles of persons in charge excluding the trainee using information received from the person-in-charge terminal device, and determines cleaning end with respect to a role of the trainee using information received from the administrator terminal device.

[Claim 10]

The cleaning management system according to claim 1, wherein when reaching a cleaning end scheduled time associated with the room and not acquiring information indicating cleaning end for the room, the progress management unit of the cleaning management apparatus transmits, to the administrator terminal device, an uncleaned notification identifying the room and a role that has not been cleaned,

the person-in-charge determination unit of the cleaning management apparatus assigns, to the role relating to the uncleaned notification, an alternative person in charge designated in the administrator terminal device, and transmits an assignment notification to the person-in-charge terminal device of the alternative person in charge,

the administrator terminal device comprises a person-in-charge designation unit that receives designation of the alternative person in charge to be assigned to the role identified in the uncleaned notification, and

the person-in-charge terminal device comprises an output unit that, upon receiving the assignment notification, outputs the assigned room and role.

[Claim 11]

A cleaning management apparatus comprising:

a role definition unit that associates, for each room of an accommodation facility, a plurality of roles of cleaning work;

a person-in-charge determination unit that determines a person in charge for each of the plurality of roles;

a progress management unit that manages a progress status of cleaning of a plurality of the rooms of the accommodation facility; and

a display information generation unit that generates display information of a progress display screen that displays, in a certain display area, the progress status of the plurality of rooms, wherein

the progress display screen is a screen that displays, in a distinguishable manner, a room for which at least one of the associated roles is not completed and another room.

[Claim 12]

A cleaning management method comprising:

a role definition procedure of associating, for each room of an accommodation facility, a plurality of roles of cleaning work;

a person-in-charge determination procedure of determining a person in charge for each of the plurality of roles;

a progress management procedure of managing a progress status of cleaning of a plurality of the rooms of the accommodation facility; and

a display information generation procedure of generating display information of a progress display screen that displays, in a certain display area, the progress status of the plurality of rooms, wherein

the progress display screen is a screen that displays, in a distinguishable manner, a room for which at least one of the associated roles is not completed and another room.

[Claim 13]

A program for causing a processing unit of a computer to execute a cleaning management method, the program causing the processing unit to execute:

a role definition procedure of associating, for each room of an accommodation facility, a plurality of roles of cleaning work;

a person-in-charge determination procedure of determining a person in charge for each of the plurality of roles;

a progress management procedure of managing a progress status of cleaning of a plurality of the rooms of the accommodation facility; and

a display information generation procedure of generating display information of a progress display screen that displays, in a certain display area, the progress status of the plurality of rooms, wherein

the progress display screen is a screen that displays, in a distinguishable manner, a room for which at least one of the associated roles is not completed and another room.