【CLAIMS】

【Claim 1】

A method for managing an unmanned store remotely, comprising:

receiving a request for entering from a user;

determining whether the user's ticket is valid;

determining whether the ticket is in enter state or go out state when the ticket is valid; and

opening a door by controlling a short signal provided from a solid state relay when the ticket is in enter state,

wherein the opening a door comprises:

searching, by a service server, for a serial number of a smart plug that controls the door;

transmitting, by the service server, a door opening command to an Mqtt server based on the serial number;

transmitting, by the Mqtt server, a smart plug power ON command corresponding to the serial number to the smart plug; and

after the smart plug is switched to ON state according to the smart plug power ON command, supplying power to the solid state relay by the smart plug supplying power to an adapter,

wherein the smart plug is connected to the Mqtt server through a Wi-Fi network,

wherein, by customizing a control code controlling the smart plug, the smart plug automatically provides power to the adapter to open the door when

the smart plug detects that a connection with the Wi-Fi network is lost, and the smart plug cut off the power provided to the adapter to close the door when the smart plug detects that the smart plug is reconnected to the Wi-Fi network.

【Claim 2】

The method of claim 1, wherein:

the opening a door comprising:

causing the solid state relay to output a short signal for a predetermined time by controlling an Mqtt server and a smart plug electrically connected to the solid state relay.

【Claim 3】

The method of claim 1, further comprising:

encouraging the user to purchasing a ticket when the ticket is invalid.

【Claim 4】

The method of claim 1, further comprising:

determining whether the ticket holds an assigned seat; and

opening a door by controlling the short signal when the ticket holds the assigned seat.

【Claim 5】

The method of claim 4, further comprising:

inducing the user to select a seat when the ticket does not hold the assigned seat.

【Claim 6】

The method of claim 1, further comprising:

determining whether a door floor corresponding to the door and the seat floor designated by the ticket are the same;

when it is determined that the door floor and the seat floor are not the same, determining whether the door floor and the common floor are the same;

when it is determined that the door floor and the seat floor are the same, opening the door; and

when it is determined that the door floor and the seat floor are not the same, and the door floor and the common floor are not the same, not opening the door.

【Claim 7】

The method of claim 1, further comprising:

receiving a store identifier identifying a store to which the door is to be opened among a plurality of stores;

receiving a door identifier identifying a door to be opened a plurality of doors of the store identified by the store identifier;

obtaining a serial number of a smart plug controlling a door to be opened among the plurality of doors from the database using at least one of the store identifier and the door identifier; and

using the obtained serial number of the smart plug, opening a door by controlling a short signal provided from the solid state relay to be opened by turning the smart plug to ON state and then having the smart plug supply power to the adapter and the solid state relay.

【Claim 8】

A method for managing an unmanned store remotely, comprising:

receiving a request for going out/leaving from a user;

determining whether the user's ticket is valid;

determining whether the user's usage time has been exceeded when the ticket is valid; and

opening a door by controlling a short signal provided from a solid state relay when the user's usage time has not been exceeded,

wherein the opening a door comprises:

searching, by a service server, for a serial number of a smart plug that controls the door;

transmitting, by the service server, a door opening command to a Mqtt server based on the serial number;

transmitting, by the Mqtt server, a smart plug power ON command corresponding to the serial number to the smart plug; and

after the smart plug is switched to ON state according to the smart plug power ON command, supplying power to the solid state relay by the smart plug supplying power to an adapter,

wherein the smart plug is connected to the Mqtt server through a Wi-Fi network,

wherein, by customizing a control code controlling the smart plug, the smart plug automatically provides power to the adapter to open the door when the smart plug detects that a connection with the Wi-Fi network is lost, and the smart plug cut off the power provided to the adapter to close the door when the

smart plug detects that the smart plug is reconnected to the Wi-Fi network.

【Claim 9】

The method of claim 8, wherein:

the opening a door comprising:

causing the solid state relay to output a short signal for a predetermined time by controlling an Mqtt server and a smart plug electrically connected to the solid state relay.

【Claim 10】

The method of claim 8, further comprising:

encouraging the user to purchasing a ticket when the ticket is invalid.

【Claim 11】

The method of claim 8, further comprising:

determining whether the user has completed settlement of an excess amount when the user's usage time exceeds; and

opening a door by controlling the short signal when the user has completed settlement of the excess amount.

【Claim 12】

The method of claim 11, further comprising:

inducing the user to settle the excess amount when the user has not completed settlement of the excess amount.

【Claim 13】

The method of claim 8, further comprising:

determining whether a door floor corresponding to the door and the seat

floor designated by the ticket are the same;

when it is determined that the door floor and the seat floor are not the same, determining whether the door floor and the common floor are the same;

when it is determined that the door floor and the seat floor are the same, opening the door; and

when it is determined that the door floor and the seat floor are not the same, and the door floor and the common floor are not the same, not opening the door.

【Claim 14】

A method for managing an unmanned store remotely, comprising:

receiving, by a service server, a light bulb control request including an unmanned store identifier (shop_id) from a store operator device;

identifying, by the service server, an unmanned store corresponding to the unmanned store identifier (shop_id);

determining, by the service server, whether the identified unmanned store is an integrated kiosk setting using only an entry/exit kiosk that handles all entering, going out, and leaving, or a separated kiosk setting using a separately configured an entry kiosk and an exit kiosk;

transmitting, by the service server, a light bulb control command corresponding to the light bulb control request to the entry/exit kiosk when it is determined that the identified unmanned store is the integrated kiosk setting;

transmitting, by the service server, the light bulb control command only to the exit kiosk and does not transmitting the light bulb control command to the

entry kiosk when it is determined that the identified unmanned store is the separated kiosk setting; and

controlling, by the entry/exit kiosk or the exit kiosk which has received the light bulb control command, a light bulb by transmitting the light bulb control command received from the service server to a bridge,

wherein the entry/exit kiosk or the exit kiosk and the bridge are configured on the same bandwidth network through a Wi-Fi router,

wherein the controlling the light bulb by transmitting the light bulb control command received from the service server to a bridge, comprises:

when the service server receives a desired color value or a desired brightness value of the light bulb together with the unmanned store identifier (shop_id) from the store operator device, controlling color or brightness of the light bulb using the received color value or brightness value, and

when the service server does not receive the desired color value or the desired brightness value of the light bulb from the store operator device, controlling color or brightness of the light bulb using a basic color value or a basic brightness value of the light bulb preset for each store.

【Claim 15】

The method of claim 14, wherein:

the light bulb control request comprises at least one of a request to turn on/off all light bulbs in an unmanned store, a request to turn on/off only light bulbs of a specific seat, and a request to change color and brightness of light bulbs of a specific seat.

【Claim 16】

The method of claim 15, wherein:

the light bulb control request that the service server receives from the store operator device further comprises a bulb identifier (bulb_id) of a specific seat when the bulb control request is a request to turn on/off only light bulbs of the specific seat, and

the service server generates the light bulb control command based on the bulb identifier (bulb_id) of the specific seat.

【Claim 17】

The method of claim 15, wherein:

the light bulb control request that the service server receives from the store operator device further comprises a bulb identifier (bulb_id) of a specific seat, a desired color value, and a desired brightness value when the light bulb control request is a request to change color and brightness of light bulbs of the specific seat, and

the service server generates the light bulb control command based on the bulb identifier (bulb_id) of the specific seat, the desired color value, and the desired brightness value.

【Claim 18】

The method of claim 14, further comprising:

transmitting, by the store operator device, IP information for each bridge added or modified to add or modify information about the bridge to the service server, transmitting, by the store operator device, a username value for identifying

a bridge to the service server, or transmitting, by the store operator device, a group_id value for identifying multiple light bulbs that can be controlled by one bridge to the service server.

【Claim 19】

The method of claim 14, further comprising:

transmitting, by the store operator device, a bulb identifier (bulb_id) value for identifying light bulb added or modified for each seat to add or modify the bulb ID for each seat to the service server.

【Claim 20】

The method of claim 14, further comprising:

transmitting, by the store operator device, a desired basic color value or a basic brightness value to set a basic color value or a basic brightness value of light bulbs for each store to the service server.