CLAIMS

[Claim 1]

A refrigerator comprising:

a heat insulating box body having therein a plurality of storage compartments including a first storage compartment whose temperature is configured to set at a soft-freezing temperature zone;

a door that opens and closes an opening provided at a front side of the first storage compartment;

a door opening/closing detection unit configured to detect opening and closing of the door;

a temperature detection unit configured to detect a temperature in the first storage compartment;

a temperature control unit configured to control the temperature in the first storage compartment; and

a controller configured to control the temperature control unit based on a temperature detected by the temperature detection unit,

wherein, when opening and closing of the door is detected during a normal temperature control that maintains a compartment temperature of the first storage compartment at a predetermined normal set temperature, the controller executes a special temperature control that shifts the compartment temperature of the first storage compartment to a first set temperature being higher than the normal set temperature and maintains the compartment temperature at the first set temperature for a first time period, and then shifts the compartment temperature to a second set temperature being lower than the normal set temperature and maintains the compartment temperature at the second set temperature for a second time period,

wherein, when opening and closing of the door is detected during the special temperature control, the controller restarts the special temperature control from a beginning, and

wherein, when opening and closing of the door is detected during the special temperature control while the compartment temperature of the first storage compartment is maintained at the first set temperature, the controller continues the special temperature control without restarting the special temperature control from a beginning.

[Claim 2]

A refrigerator comprising:

a heat insulating box body having therein a plurality of storage compartments including a first storage compartment whose temperature is configured to set at a soft-freezing temperature zone;

a door that opens and closes an opening provided at a front side of the first storage compartment;

a door opening/closing detection unit configured to detect opening and closing of the door;

a temperature detection unit configured to detect a temperature in the first storage compartment;

a temperature control unit configured to control the temperature in the first storage compartment; and

a controller configured to control the temperature control unit based on a temperature detected by the temperature detection unit,

wherein, when opening and closing of the door is detected during a normal temperature control that maintains a compartment temperature of the first storage compartment at a predetermined normal set temperature, the controller executes a special temperature control that shifts the compartment temperature of the first storage compartment to a first set temperature being higher than the normal set temperature and maintains the compartment temperature at the first set temperature for a first time period, and then shifts the compartment temperature to a second set temperature being lower than the normal set temperature and maintains the

compartment temperature at the second set temperature for a second time period; and

wherein, in a transition from the first set temperature to the second set temperature during the special temperature control, the controller takes a longer time to shift from the first set temperature to the normal set temperature than to shift from the normal set temperature to the second set temperature.

[Claim 3]

The refrigerator of claim 1 or 2, wherein the first time period and the second time period are determined so that an average temperature during one execution of the special temperature control becomes equal to the normal set temperature.

[Claim 4]

The refrigerator of any one of claims 1 to 3, further comprising

a storage device that stores a number of times the door is opened and closed for each hour for several days.

[Claim 5]

The refrigerator of claim 4, wherein the controller determines a time period of a day in which an average number of times the door is opened and closed is equal to or less than a first threshold, from information stored in the storage device and sets the time period as a non-use time period, and, when opening and closing of the door is detected during the non-use time period, the controller does not execute the special temperature control.

[Claim 6]

The refrigerator of claim 4 or 5, wherein the controller determines a time period of a day in which an average number of times the door is opened and closed is equal to or more than a second threshold, from information stored in the storage device and sets the time period as an active time period, and, when opening and closing of the door is detected several times during the active time period, the controller executes the special temperature control for a first detection and does not execute the special temperature control for second and subsequent detections.

[Claim 7]

The refrigerator of claim 6, wherein the controller sets more than one active time period, and, when opening and closing of the door is detected several times during the same active time period, the controller executes the special temperature control for a first detection and does not execute the special temperature control for second and subsequent detections.

[Claim 8]

The refrigerator of any one of claims 4 to 7, wherein

the storage device stores the compartment temperature of the first storage compartment for a certain time period, and

the controller calculates an average temperature of the compartment temperature of the first storage compartment for the certain time period, from information stored in the storage device, and, when the average temperature is higher than the normal set temperature, the controller executes a temperature averaging control that maintains the compartment temperature of the first storage compartment at the second set temperature for a third time period to bring the average temperature to the normal set temperature.

[Claim 9]

The refrigerator of claim 8 as dependent on claim 5, wherein the controller calculates an average temperature of the compartment temperature of the first storage compartment for the active time periods of a day, from information stored in the storage device, and, when the average temperature of the active time periods is higher than the normal set temperature, the controller executes the temperature averaging control during the non-use time period to bring the average temperature of the active time periods to the normal set temperature.

[Claim 10]

The refrigerator of any one of claims 1 to 9, wherein a compartment temperature of at least one of the storage compartments, the at least one being adjacent to the first storage compartment, is set at a refrigerator temperature zone.

[Claim 11]

The refrigerator of any one of claims 1 to 10, wherein the plurality of storage compartments include a refrigerator compartment and a vegetable compartment whose compartment temperatures are set at a refrigerator temperature zone, and the refrigerator compartment is arranged above the first storage compartment and the vegetable compartment is arranged below the first storage compartment.

[Claim 12]

A refrigerator comprising:

a heat insulating box body having therein a plurality of storage compartments including a first storage compartment whose temperature is set at a soft-freezing temperature zone;

a door that opens and closes an opening provided at a front side of the first storage compartment;

a door opening/closing detection unit configured to detect opening and closing of the door;

a temperature detection unit configured to detect a temperature in the first storage compartment;

a temperature control unit configured to control the temperature in the first storage compartment; and

a controller configured to control the temperature control unit based on a temperature detected by the temperature detection unit,

wherein, based on opening and closing of the door, the controller executes a normal temperature control that maintains a compartment temperature of the first storage compartment at a predetermined normal set temperature or a special temperature control that shifts the compartment temperature of the first storage compartment to a first set temperature being higher than the normal set temperature and maintains the compartment temperature at the first set temperature for a first time period, and then shifts the compartment temperature to a second set

temperature being lower than the normal set temperature and maintains the compartment temperature at the second set temperature for a second time period,

wherein, in a transition from the first set temperature to the second set temperature during the special temperature control, the controller takes a longer time to shift from the first set temperature to the normal set temperature than to shift from the normal set temperature to the second set temperature, and

the plurality of storage compartments include a refrigerator compartment and a vegetable compartment whose compartment temperatures are set at a refrigerator temperature zone, and the refrigerator compartment is arranged above the first storage compartment and the vegetable compartment is arranged below the first storage compartment.

[Claim 13]

A refrigerator comprising:

a heat insulating box body having therein a plurality of storage compartments including a first storage compartment whose temperature is set at a soft-freezing temperature zone;

a door that opens and closes an opening provided at a front side of the first storage compartment;

a door opening/closing detection unit configured to detect opening and closing of the door;

a temperature detection unit configured to detect a temperature in the first storage compartment;

a temperature control unit configured to control the temperature in the first storage compartment; and

a controller configured to control the temperature control unit based on a temperature detected by the temperature detection unit,

wherein, based on opening and closing of the door, the controller executes a normal temperature control that maintains a compartment temperature of the first storage compartment at a predetermined normal set temperature or a special

temperature control that shifts the compartment temperature of the first storage compartment to a first set temperature being higher than the normal set temperature and maintains the compartment temperature at the first set temperature for a first time period, and then shifts the compartment temperature to a second set temperature being lower than the normal set temperature and maintains the compartment temperature at the second set temperature for a second time period, and

the plurality of storage compartments include a refrigerator compartment and a vegetable compartment whose compartment temperatures are set at a refrigerator temperature zone, and the refrigerator compartment is arranged above the first storage compartment and the vegetable compartment is arranged below the first storage compartment.