

2020 to December 31, 2020, that the parallel number is 4, and that the nonoperating days are Saturdays and Sundays.

[0031] In step S21, $\text{Ceiling}(365 \text{ days}/4) = 92 \text{ days}$ is calculated as the reference number of days because the simulation period is 365 days and because the parallel
5 number is 4. Herein, Ceiling function is a function of roundup of digits after the decimal point. In step S22, 1 is set as the variable i and January 1, 2020 is set as the variable si .

In step S23, the processing is advanced to step S24 because January 1, 2020 set as the variable si is Wednesday and an operating day. In step S24, December 29,
10 2019 that is the first nonoperating day preceding January 1, 2020 is set as the starting day of the first split period. In addition, December 29, 2019 is set as the variable si .

In step S25, the variable i is 1 and thus April 2, 2020 that is 92 days after January 1, 2020 being the starting day of the simulation period is set as the variable ei .
In step S26, April 3, 2020 that is the day before April 4, 2020 being the first
15 nonoperating day on or after April 2, 2020 is set as the ending day of the first split period.

In step S27, the processing is advanced to step S29 because April 3, 2020 is not a day on or after the ending day of the simulation period. In step S29, April 4,
2020 is set as the starting day of the second split period. In addition, April 4, 2020 is
20 set as the variable si . Then the variable i is changed into 2 and the processing is thereafter returned to step S25.

[0032] In step S25, July 5, 2020 that is 92 days after April 4, 2020 set as the variable si is set as the variable ei . In step S26, July 4, 2020 that is the day before July 5, 2020
being the first nonoperating day on or after July 5, 2020 is set as the ending day of the
25 second split period.

In step S27, the processing is advanced to step S29 because July 4, 2020 is not

Array) can be assumed.

The functional components may be implemented by one electronic circuit 15 or the functional components may be dispersively implemented by a plurality of electronic circuits 15.

5 [0053] <Modification 6>

In Modification 6, some of the functional components may be implemented by hardware and the other functional components may be implemented by software.

[0054] The processor 11, the memory 12, the storage 13, and the electronic circuit 15 are referred to as a processing circuit. That is, the functions of the functional
10 components are implemented by the processing circuit.

[0055] Embodiment 2.

Embodiment 2 differs from Embodiment 1 in that initial values of the quantities of state concerning the thermal environment are provided for each split period. As for Embodiment 2, these differences will be described and description of
15 identical points is omitted.

[0056] *** Description of configuration ***

With reference to Fig. 10, a configuration of the simulation device 10 according to Embodiment 2 will be described.

The simulation device 10 differs from the simulation device 10 illustrated in
20 Fig. 1 in that an initialization unit 27 is included as a functional component.

[0057] *** Description of operation ***

With reference to Fig. 11, general processing by the simulation device 10 according to Embodiment 2 will be described.

Processes of step S51 to step S53 are the same as the processes of step S11 to
25 step S13 in Fig. 2. In addition, processes of step S55 to step S57 are the same as the

Claims

[Claim 1] A simulation device comprising:

an acquisition unit to acquire a simulation period indicating an object period for which simulations of amounts of energy consumption in a building are to be done, a parallel number indicating the number of the simulations that are to be performed in parallel, and a holiday condition indicating nonoperating days of an air conditioning system installed in the building;

a planning unit to set the number of days, resulting from division of the number of days of the simulation period by the parallel number with roundup of digits after decimal point, as a reference number of days, and split the simulation period, acquired by the acquisition unit, into the parallel number so as to generate split periods so that numbers of days of the split periods approximate the reference number of days and so that starting days of the split periods other than an initial split period in the simulation period are the nonoperating days indicated by the holiday condition; and

a simulation unit to do the simulations of the amounts of energy consumption in the building in parallel, for the split periods generated by splitting by the planning unit.

[Claim 2] A simulation device comprising:

an acquisition unit to acquire a simulation period indicating an object period for which simulations of amounts of energy consumption in a building are to be done, a parallel number indicating the number of the simulations that are to be performed in parallel, and a holiday condition indicating nonoperating days of an air conditioning system installed in the building;

a planning unit to split the simulation period, acquired by the acquisition unit, into the parallel number so as to generate split periods so that starting days of the split

periods other than an initial split period in the simulation period are the nonoperating days indicated by the holiday condition; and

a simulation unit to do the simulations of the amounts of energy consumption in the building in parallel, for the split periods generated by splitting by the planning

5 unit, wherein

the planning unit

sets the number of days, resulting from the division of the number of days of the simulation period by the parallel number with the roundup of digits after decimal point, as a reference number of days, sets a day before a first nonoperating day
10 on or after a day that is the reference number of days after a starting day of the simulation period, as an ending day of a first split period, and sets the first nonoperating day as a starting day of a second split period, and

sets a day before an i-th nonoperating day that is a first nonoperating day on or after a day which is the reference number of days after a starting day of an i-th
15 split period, as an ending day of the i-th split period, and sets the i-th nonoperating day as a starting day of an i+1-th split period, sequentially from $i = 2$ to $n-1$, where n is the parallel number.

[Claim 3] A simulation device comprising:

an acquisition unit to acquire a simulation period indicating an object period
20 for which simulations of amounts of energy consumption in a building are to be done, a parallel number indicating the number of the simulations that are to be performed in parallel, and a holiday condition indicating nonoperating days of an air conditioning system installed in the building;

a planning unit to split the simulation period, acquired by the acquisition unit,
25 into the parallel number so as to generate split periods so that starting days of the split

periods other than an initial split period in the simulation period are the nonoperating days indicated by the holiday condition; and

a simulation unit to do the simulations of the amounts of energy consumption in the building in parallel, for the split periods generated by splitting by the planning unit, wherein

the planning unit sets the number of days, resulting from the division of the number of days of the simulation period by the parallel number with the roundup of digits after decimal point, as a reference number of days, sets a day before an i-th nonoperating day that is a first nonoperating day on or after a day which is the reference number of days multiplied by i after a starting day of the simulation period, as an ending day of an i-th split period, and sets the i-th nonoperating day as a starting day of an i+1-th split period, sequentially from $i = 1$ to $n-1$, where n is the parallel number.

[Claim 4] A simulation device comprising:

an acquisition unit to acquire a simulation period indicating an object period for which simulations of amounts of energy consumption in a building are to be done, a parallel number indicating the number of the simulations that are to be performed in parallel, and a holiday condition indicating nonoperating days of an air conditioning system installed in the building;

a condition determination unit to determine whether an amount of heat exchange between room interior of the building and outdoors on a nonoperating day indicated by the holiday condition, acquired by the acquisition unit, exceeds a reference value or not;

a planning unit to, in case where the condition determination unit has determined that the amount of the heat exchange exceeds the reference value, split the simulation period, acquired by the acquisition unit, into the parallel number so as to

generate split periods so that starting days of the split periods other than an initial split period in the simulation period are the nonoperating days indicated by the holiday condition; and

5 a simulation unit to do the simulations of the amounts of energy consumption in the building in parallel, for the split periods generated by splitting by the planning unit.

[Claim 5] A simulation device comprising:

an acquisition unit to acquire a simulation period indicating an object period for which simulations of amounts of energy consumption in a building are to be done, a
10 parallel number indicating the number of the simulations that are to be performed in parallel, and a holiday condition indicating nonoperating days of an air conditioning system installed in the building;

a planning unit to split the simulation period, acquired by the acquisition unit, into the parallel number so as to generate split periods so that starting days of the split
15 periods other than an initial split period in the simulation period are the nonoperating days indicated by the holiday condition; and

a simulation unit to do the simulations of the amounts of energy consumption in the building in parallel, for the split periods generated by splitting by the planning unit, wherein

20 the simulation unit sets each of the split periods as an object split period, and does the simulation for the object split period by using a quantity of state, concerning the thermal environment in the building, for a day before the starting day of the object split period, obtained by performance of the simulation of the amount of energy consumption in the building for a runway period from a prescribed number of days
25 before the starting day of the object split period to the day before the starting day of the

object split period, as an initial value.

[Claim 6] The simulation device according to claim 2 or 3, wherein
 the planning unit sets the starting day of the simulation period or a first
 nonoperating day preceding the simulation period, as a starting day of a first split
 5 period.

[Claim 7] The simulation device according to claim 2 or 3, wherein
 in case where the split periods are each set as an object split period and where
 a starting day of the object split period is within consecutive holidays in which
 nonoperating days continue, the planning unit sets the starting day of the object split
 10 period on a first day of the consecutive holidays and sets an ending day of the split
 period before the object split period on a day before the first day of the consecutive
 holidays.

[Claim 8] A simulation method comprising:
 acquiring, by an acquisition unit, a simulation period indicating an object
 15 period for which simulations of amounts of energy consumption in a building are to be
 done, a parallel number indicating the number of the simulations that are to be
 performed in parallel, and a holiday condition indicating nonoperating days of an air
 conditioning system installed in the building;

 setting, by a planning unit, the number of days, resulting from division of the
 20 number of days of the simulation period by the parallel number with roundup of digits
 after decimal point, as a reference number of days, and splitting the simulation period
 into the parallel number so as to generate split periods so that numbers of days of the
 split periods approximate the reference number of days and so that starting days of the
 split periods other than an initial split period in the simulation period are the
 25 nonoperating days indicated by the holiday condition; and

doing, by a simulation unit, the simulations of the amounts of energy consumption in the building in parallel, for the split periods.

[Claim 9] A simulation method comprising:

5 acquiring, by an acquisition unit, a simulation period indicating an object period for which simulations of amounts of energy consumption in a building are to be done, a parallel number indicating the number of the simulations that are to be performed in parallel, and a holiday condition indicating nonoperating days of an air conditioning system installed in the building;

10 splitting, by a planning unit, the simulation period into the parallel number so as to generate split periods so that starting days of the split periods other than an initial split period in the simulation period are the nonoperating days indicated by the holiday condition; and

15 doing, by a simulation unit, the simulations of the amounts of energy consumption in the building in parallel, for the split periods, wherein the planning unit

20 sets the number of days, resulting from the division of the number of days of the simulation period by the parallel number with the roundup of digits after decimal point, as a reference number of days, sets a day before a first nonoperating day on or after a day that is the reference number of days after a starting day of the simulation period, as an ending day of a first split period, and sets the first nonoperating day as a starting day of a second split period, and

25 sets a day before an i-th nonoperating day that is a first nonoperating day on or after a day which is the reference number of days after a starting day of an i-th split period, as an ending day of the i-th split period, and sets the i-th nonoperating day as a starting day of an i+1-th split period, sequentially from $i = 2$ to $n-1$, where n is the

parallel number.

[Claim 10] A simulation method comprising:

acquiring, by an acquisition unit, a simulation period indicating an object period for which simulations of amounts of energy consumption in a building are to be done, a parallel number indicating the number of the simulations that are to be performed in parallel, and a holiday condition indicating nonoperating days of an air conditioning system installed in the building;

splitting, by a planning unit, the simulation period into the parallel number so as to generate split periods so that starting days of the split periods other than an initial split period in the simulation period are the nonoperating days indicated by the holiday condition; and

doing, by a simulation unit, the simulations of the amounts of energy consumption in the building in parallel, for the split periods, wherein

the planning unit sets the number of days, resulting from the division of the number of days of the simulation period by the parallel number with the roundup of digits after decimal point, as a reference number of days, sets a day before an i-th nonoperating day that is a first nonoperating day on or after a day which is the reference number of days multiplied by i after a starting day of the simulation period, as an ending day of an i-th split period, and sets the i-th nonoperating day as a starting day of an i+1-th split period, sequentially from $i = 1$ to $n-1$, where n is the parallel number.

[Claim 11] A simulation method comprising:

acquiring, by an acquisition unit, a simulation period indicating an object period for which simulations of amounts of energy consumption in a building are to be done, a parallel number indicating the number of the simulations that are to be performed in parallel, and a holiday condition indicating nonoperating days of an air

conditioning system installed in the building;

determining, by a condition determination unit, whether an amount of heat exchange between room interior of the building and outdoors on a nonoperating day indicated by the holiday condition exceeds a reference value or not;

5 splitting the simulation period, by a planning unit, in case where it has been has determined that the amount of the heat exchange exceeds the reference value, the planning unit splitting the simulation period into the parallel number so as to generate split periods so that starting days of the split periods other than an initial split period in the simulation period are the nonoperating days indicated by the holiday condition; and
10 doing, by a simulation unit, the simulations of the amounts of energy consumption in the building in parallel, for the split periods.

[Claim 12] A simulation method comprising:

 acquiring, by an acquisition unit, a simulation period indicating an object period for which simulations of amounts of energy consumption in a building are to be
15 done, a parallel number indicating the number of the simulations that are to be performed in parallel, and a holiday condition indicating nonoperating days of an air conditioning system installed in the building;

 splitting, by a planning unit, the simulation period into the parallel number so as to generate split periods so that starting days of the split periods other than an initial
20 split period in the simulation period are the nonoperating days indicated by the holiday condition; and

 doing, by a simulation unit, the simulations of the amounts of energy consumption in the building in parallel, for the split periods, wherein

 the simulation unit sets each of the split periods as an object split period, and
25 does the simulation for the object split period by using a quantity of state, concerning

the thermal environment in the building, for a day before the starting day of the object split period, obtained by performance of the simulation of the amount of energy consumption in the building for a runway period from a prescribed number of days before the starting day of the object split period to the day before the starting day of the object split period, as an initial value.

[Claim 13] A simulation program that causes a computer to function as a simulation device to execute:

an acquisition process of acquiring a simulation period indicating an object period for which simulations of amounts of energy consumption in a building are to be done, a parallel number indicating the number of the simulations that are to be performed in parallel, and a holiday condition indicating nonoperating days of an air conditioning system installed in the building;

a planning process of setting the number of days, resulting from division of the number of days of the simulation period by the parallel number with roundup of digits after decimal point, as a reference number of days, and splitting the simulation period, acquired by the acquisition process, into the parallel number so as to generate split periods so that numbers of days of the split periods approximate the reference number of days and so that starting days of the split periods other than an initial split period in the simulation period are the nonoperating days indicated by the holiday condition; and

a simulation process of doing the simulations of the amounts of energy consumption in the building in parallel, for the split periods generated by splitting in the planning process.

[Claim 14] A simulation program that causes a computer to function as a simulation device to execute:

an acquisition process of acquiring a simulation period indicating an object

period for which simulations of amounts of energy consumption in a building are to be done, a parallel number indicating the number of the simulations that are to be performed in parallel, and a holiday condition indicating nonoperating days of an air conditioning system installed in the building;

5 a planning process of splitting the simulation period, acquired by the acquisition process, into the parallel number so as to generate split periods so that starting days of the split periods other than an initial split period in the simulation period are the nonoperating days indicated by the holiday condition; and

 a simulation process of doing the simulations of the amounts of energy
10 consumption in the building in parallel, for the split periods generated by splitting by the planning process, wherein

 in the planning process
 the number of days, resulting from the division of the number of days of the simulation period by the parallel number with the roundup of digits after decimal
15 point, is set as a reference number of days, a day before a first nonoperating day on or after a day that is the reference number of days after a starting day of the simulation period is set as an ending day of a first split period, and the first nonoperating day is set as a starting day of a second split period, and

 a day before an i-th nonoperating day that is a first nonoperating day
20 on or after a day which is the reference number of days after a starting day of an i-th split period is set as an ending day of the i-th split period, and the i-th nonoperating day is set as a starting day of an i+1-th split period, sequentially from $i = 2$ to $n-1$, where n is the parallel number.

[Claim 15] A simulation program that causes a computer to function as a
25 simulation device to execute:

an acquisition process of acquiring a simulation period indicating an object period for which simulations of amounts of energy consumption in a building are to be done, a parallel number indicating the number of the simulations that are to be performed in parallel, and a holiday condition indicating nonoperating days of an air conditioning system installed in the building;

a planning process of splitting the simulation period, acquired by the acquisition process, into the parallel number so as to generate split periods so that starting days of the split periods other than an initial split period in the simulation period are the nonoperating days indicated by the holiday condition; and

a simulation process of doing the simulations of the amounts of energy consumption in the building in parallel, for the split periods generated by splitting by the planning process, wherein

in the planning process, the number of days, resulting from the division of the number of days of the simulation period by the parallel number with the roundup of digits after decimal point, is set as a reference number of days, a day before an i -th nonoperating day that is a first nonoperating day on or after a day which is the reference number of days multiplied by i after a starting day of the simulation period is set as an ending day of an i -th split period, and the i -th nonoperating day is set as a starting day of an $i+1$ -th split period, sequentially from $i = 1$ to $n-1$, where n is the parallel number.

[Claim 16] A simulation program that causes a computer to function as a simulation device to execute:

an acquisition process of acquiring a simulation period indicating an object period for which simulations of amounts of energy consumption in a building are to be done, a parallel number indicating the number of the simulations that are to be performed in parallel, and a holiday condition indicating nonoperating days of an air

conditioning system installed in the building;

a condition determination process of determining whether an amount of heat exchange between room interior of the building and outdoors on a nonoperating day indicated by the holiday condition, acquired by the acquisition process, exceeds a
5 reference value or not;

a planning process of, in case where the condition determination process has determined that the amount of the heat exchange exceeds the reference value, splitting the simulation period, acquired by the acquisition process, into the parallel number so as to generate split periods so that starting days of the split periods other than an initial
10 split period in the simulation period are the nonoperating days indicated by the holiday condition; and

a simulation process of doing the simulations of the amounts of energy consumption in the building in parallel, for the split periods generated by splitting by the planning process.

15 [Claim 17] A simulation program that causes a computer to function as a simulation device to execute:

an acquisition process of acquiring a simulation period indicating an object period for which simulations of amounts of energy consumption in a building are to be done, a parallel number indicating the number of the simulations that are to be
20 performed in parallel, and a holiday condition indicating nonoperating days of an air conditioning system installed in the building;

a planning process of splitting the simulation period, acquired by the acquisition process, into the parallel number so as to generate split periods so that starting days of the split periods other than an initial split period in the simulation period
25 are the nonoperating days indicated by the holiday condition; and

a simulation process of doing the simulations of the amounts of energy consumption in the building in parallel, for the split periods generated by splitting by the planning process, wherein

- in the simulation process, each of the split periods is set as an object split
- 5 period, and the simulation for the object split period is done by using a quantity of state, concerning the thermal environment in the building, for a day before the starting day of the object split period, obtained by performance of the simulation of the amount of energy consumption in the building for a runway period from a prescribed number of days before the starting day of the object split period to the day before the starting day
- 10 of the object split period, as an initial value.