CLAIMS

1. A vehicle control system characterized by comprising:

a travel management device which includes a reservation request unit, the reservation request unit being configured to transmit a reservation request for a block section to be reserved based on track information indicating a plurality of block sections constituting a track on which a vehicle travels and a connection relationship between the block sections, the block section to be reserved being among the block sections included in the track on which the vehicle travels; and

a resource management device which includes a reservation management unit, the reservation management unit being configured to record the block section to be reserved indicated by the reservation request as a reserved block section of the vehicle which has transmitted the reservation request in case where the block section to be reserved indicated by the reservation request is not reserved by a vehicle other than the vehicle which has transmitted the reservation request at a time at which the reservation request is received.

2. The vehicle control system according to claim 1, characterized in that

the reservation management unit of the resource management device is configured to transmit reservation completion information indicating the reserved block section of the vehicle which has transmitted the reservation request to the vehicle which is a transmission source of the reservation request, and

the travel management device includes a speed calculation unit configured

to calculate a speed limit pattern in each block section up to the block section indicated by the reservation completion information.

3. The vehicle control system according to claim 1 or 2, characterized in that

the vehicle is mounted with the travel management device,

the resource management device is installed in each predetermined range in the track, and

a reservation request unit of the travel management device is configured to transmit, to the resource management device corresponding to a range including the block section to be reserved, the reservation request for the block section to be reserved.

4. The vehicle control system according to any one of claims 1 to 3, characterized in that

the travel management device includes a passage information notification unit configured to transmit a passaged block section of the vehicle to the resource management device, and

the reservation management unit of the resource management device is configured to update information of the passed block section from a reserved block section to an unreserved block section in response to receiving the passed block section.

5. The vehicle control system according to any one of claims 1 to 4,

characterized in that

the travel management device includes a reservation abandonment unit configured to perform stop control of the vehicle in a case of acquiring a cancellation request for the reserved block section from a host device, the reservation abandonment unit being configured to transmit a reservation abandonment of an advance block section in a travel direction in the reserved block section to the resource management device after the vehicle stops.

6. The vehicle control system according to any one of claims 1 to 5, characterized in that

the travel management device is mounted on a vehicle.

7. The vehicle control system according to claim 6, characterized in that

the resource management device is configured to store each block section included in a non-branch consecutive section in which a plurality of block sections without branches are continued, is configured not to store information on whether each block section included in the non-branch consecutive section is reserved or unreserved, and is configured to store a travel order of a vehicle traveling along the non-branch consecutive section, and

the travel management device is configured to acquire, after the vehicle mounted with the travel management device enters the non-branch consecutive section, identification information of an immediately preceding vehicle traveling immediately ahead of the vehicle from the resource management device, is

configured to detect a position of the immediately preceding vehicle by communicating with the immediately preceding vehicle, and is configured to request braking control based on the position of the immediately preceding vehicle and a position of the vehicle mounted with the travel management device.

8. The vehicle control system according to any one of claims 1 to 7, characterized in that

the travel management device is configured to acquire reservation status information from the resource management device in advance in order to determine a block section to be reserved.

9. The vehicle control system according to any one of claims 1 to 8, characterized in that

the resource management device includes a branch control unit, the branch control unit being configured to perform, in a case where a block section having a branch exists in the reserved block section of the vehicle, switching control for the branch based on a travel direction on the vehicle.

10. The vehicle control system according to any one of claims 1 to 7, characterized in that

the travel management device includes a branch control unit, the branch control unit being configured to perform, in a case where a block section having a branch exists in the reserved block section of the vehicle, switching control for the

branch based on a travel direction on the vehicle.

11. The vehicle control system according to any one of claims 1 to 10, characterized in that

the travel management device is configured to determine a travel start timing of a vehicle mounted with the travel management device based on a reservation time of a block section reserved by a vehicle other than the vehicle mounted with the travel management device.

12. A travel management device comprising:

a reservation request unit configured to transmit a reservation request for a block section to be reserved based on track information indicating a plurality of block sections constituting a track on which a vehicle travels and a connection relationship between the block sections, the block section to be reserved being among the block sections included in the track on which the vehicle travels;

a reception unit configured to receive, from the resource management device which includes a reservation management unit configured to record the block section to be reserved indicated by the reservation request as a reserved block section of the vehicle which has transmitted the reservation request in case where the block section to be reserved indicated by the reservation request is not reserved by a vehicle other than the vehicle which has transmitted the reservation request at a time at which the reservation request is received, reservation completion information indicating the reserved block section; and

a speed calculation unit configured to calculate a speed limit pattern in each block section up to the block section indicated by the reservation completion information.

13. A resource management device which is communicatively connected to a travel management device which includes a reservation request unit, the reservation request unit being configured to transmit a reservation request for a block section to be reserved based on track information indicating a plurality of block sections constituting a track on which a vehicle travels and a connection relationship between the block sections, the block section to be reserved being among the block sections included in the track on which the vehicle travels, a resource management device comprising:

a reservation management unit configured to record the block section to be reserved indicated by the reservation request as a reserved block section of the vehicle which has transmitted the reservation request in case where the block section to be reserved indicated by the reservation request is not reserved by a vehicle other than the vehicle which has transmitted the reservation request at a time at which the reservation request is received.

14. A vehicle control method for a vehicle control system including a travel management device and a resource management device, characterized in that

the travel management device transmits a reservation request for a block section to be reserved based on track information indicating a plurality of block

sections constituting a track on which a vehicle travels and a connection relationship between the block sections, the block section to be reserved being among the block sections included in the track on which the vehicle travels, and

the resource management device records the block section to be reserved indicated by the reservation request as a reserved block section of the vehicle which has transmitted the reservation request in case where the block section to be reserved indicated by the reservation request is not reserved by a vehicle other than the vehicle which has transmitted the reservation request at a time at which the reservation request is received.

15. A program for a computer of a travel management device in a vehicle control system including the travel management device and a resource management device, the program causing the computer to execute:

a reservation request procedure of determining a block section to be reserved based on track information indicating a plurality of block sections constituting a track on which a vehicle travels and a connection relationship between the block sections, the block section to be reserved being among the block sections included in the track on which the vehicle travels, and transmitting a reservation request for the block section to be reserved;

a reception procedure of receiving, from the resource management device which includes a reservation management unit configured to record the block section to be reserved indicated by the reservation request as a reserved block section of the vehicle which has transmitted the reservation request in case where

the block section to be reserved indicated by the reservation request is not reserved by a vehicle other than the vehicle which has transmitted the reservation request at a time at which the reservation request is received, reservation completion information indicating the reserved block section; and

a speed calculation procedure of calculating a speed limit pattern in each block section up to the block section indicated by the reservation completion information.

16. A program for a computer of a resource management device in a vehicle control system that includes a travel management device and the resource management device, the travel management device including a reservation request unit, the reservation request unit transmitting a reservation request for a block section to be reserved based on track information indicating a plurality of block sections constituting a track on which a vehicle travels and a connection relationship between the block sections, the block section to be reserved being among the block sections included in the track on which the vehicle travels, the program causing the computer to execute:

a resource management procedure of recording the block section to be reserved indicated by the reservation request as a reserved block section of the vehicle which has transmitted the reservation request in case where the block section to be reserved indicated by the reservation request is not reserved by a vehicle other than the vehicle which has transmitted the reservation request at a time at which the reservation request is received.