CLAIMS

[Claim 1] An information relay device included in a toll collection system, the toll collection system including:

an on-board unit mounted on a vehicle in which a user is on-board;

a roadside device calculating a usage fee of the toll road of the vehicle in which the on-board unit is mounted by wirelessly communicating with the on-board unit at a toll booth on the toll road; and

a processing device that is possessed by a service provider providing a cashless payment service of the usage fee of the toll road to perform the payment process of the usage fee,

wherein the information relay device relays information related to the payment process between the on-board unit or the roadside device and the processing device,

the information relay device comprising:

a reception unit configured to receive information from the on-board unit or the roadside device, the information including identification information for identifying the user of the toll road and the usage fee of the toll road for the user;

a storage medium storing a registration table in which the identification information and account information for identifying a payment means of the user are pre-registered in association;

a security communication unit that is an application programming interface provided from the service provider and configured to establish a communication connection with a processing device of the service provider using connection information incorporated in the application programming interface in advance, and generate encrypted information in which the account information associated with the identification information and the usage fee are encrypted using an encryption key incorporated in the application programming interface in advance; and

a transmission unit configured to transmit the encrypted information to the processing device having the application programming interface in which the encryption key is incorporated in advance.

[Claim 2] The information relay device according to claim 1, further comprising a notification unit configured to notify that a balance is insufficient when the balance in the payment means is less than the usage fee.

[Claim 3] An information relay method performed in a toll collection system, the toll collection system including:

an on-board unit that mounted on a vehicle in which a user is on-board;

a roadside device possessed calculating a usage fee of the toll road of the vehicle in which the on-board unit is mounted by wirelessly communicating with the on-board unit at a toll booth on the toll road; and

a processing device that is possessed by a service provider providing a cashless payment service of the usage fee of the toll road to perform the payment process of the usage fee,

wherein the information relay method that relays information using an information relay device that relays information related to the payment process between the on-board unit or the roadside device and the processing device , the information relay method comprising the following steps performed by the information relay device:

receiving information from the on-board unit or the roadside device, the information including identification information for identifying a user of the toll road and the usage fee of the toll road for the user;

establishing a communication connection with a processing device of the service provider using connection information incorporated in an application programming interface in advance, the application programming interface being provided from the service provider and being installed in the information relay device;

generating encrypted information in which account information associated with the identification information and the usage fee are encrypted using an encryption key incorporated in the application programming interface in advance; and

transmitting the encrypted information to the processing device having the application programming interface in which the encryption key is incorporated in advance .

[Claim 4] A program for causing a computer of an information relay device included in a toll collection system, the toll collection system including:

an on-board unit mounted on a vehicle in which a user is on-board;

a roadside device possessed calculating a usage fee of the toll road of the vehicle in which the on-board unit is mounted by wirelessly communicating with the on-board unit at a toll booth on the toll road; and

a processing device that is possessed by a service provider providing a cashless payment service of the usage fee of the toll road to perform the payment process of the usage fee,

wherein the information relay device relays information related to the payment process between the on-board unit or the roadside device and the processing device,

the computer program causing the computer of the information relay device execute the steps of:

receiving from the on-board unit or the roadside device, the information

including identification information for identifying a user of the toll road and the usage fee of the toll road for the user;

establishing a communication connection with a processing device of the service provider using connection information incorporated in an application programming interface in advance, the application programming interface being provided from the service provider and being installed in the information relay device;

generating encrypted information in which account information associated with the identification information and the usage fee are encrypted using an encryption key incorporated in the application programming interface in advance; and

transmitting the encrypted information to the processing device the processing device having the application programming interface in which the encryption key is incorporated in advance encryption key .