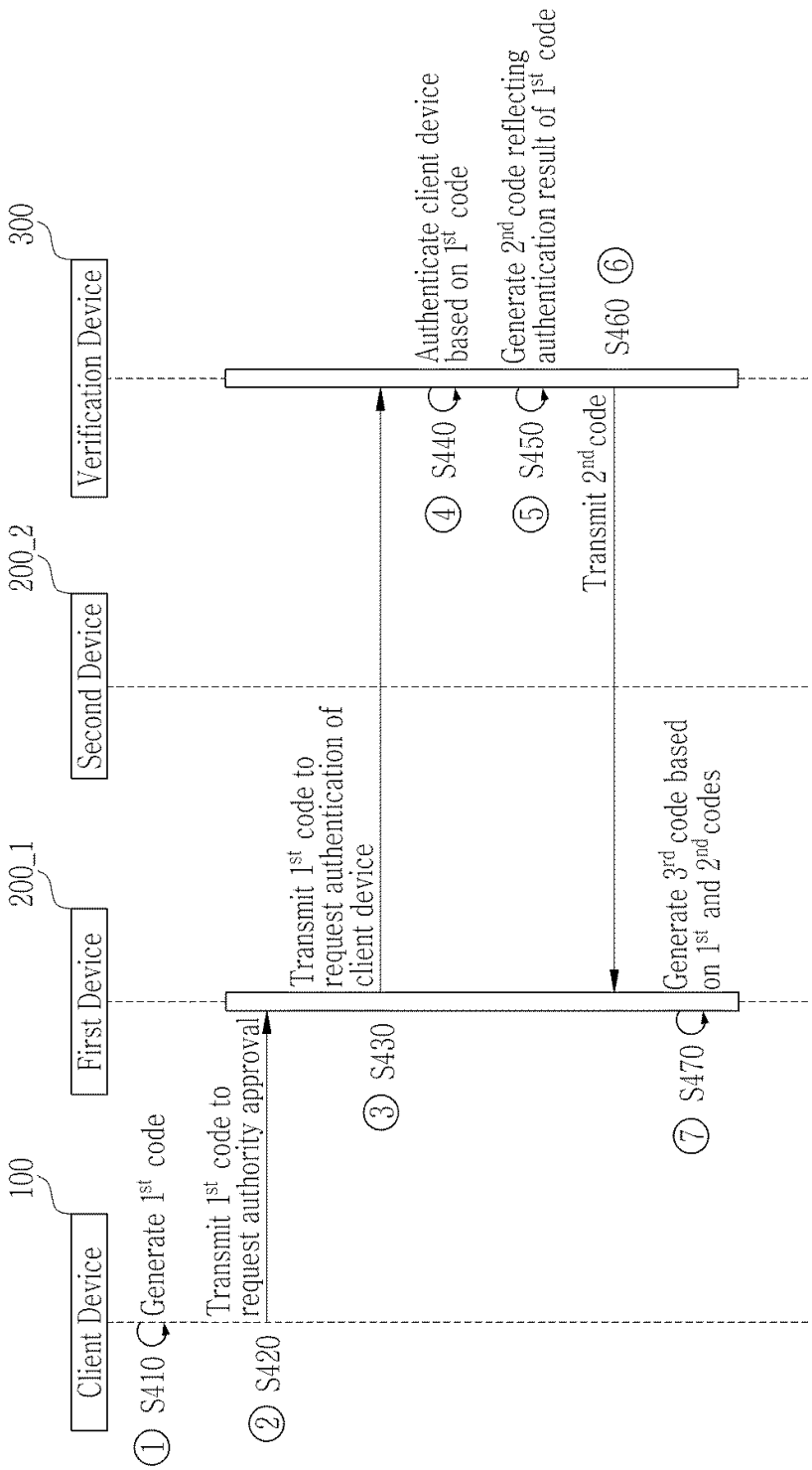
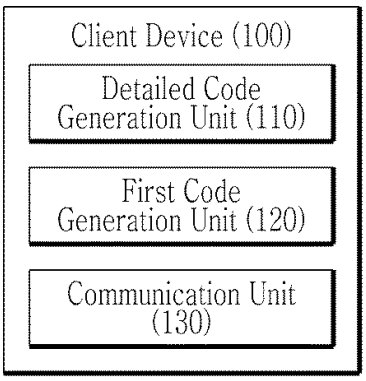
【DRAWINGS】

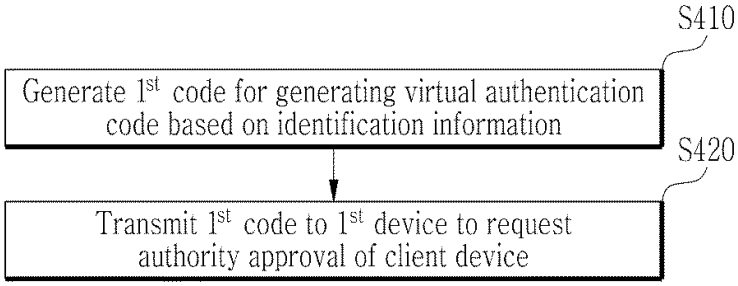
【Figure 1】



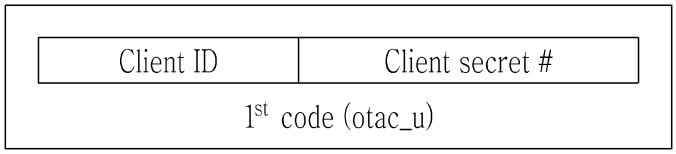
【Figure 2】


Client Device (100)
Detailed Code Generation Unit (110)
First Code Generation Unit (120)
Communication Unit (130)

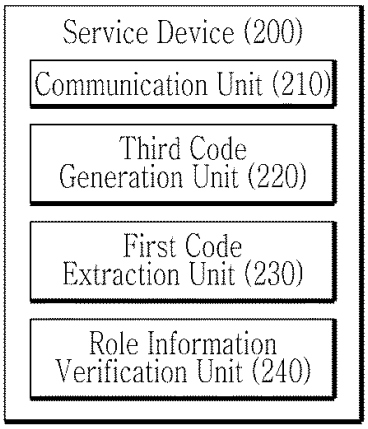
【Figure 3】


S410
Generate 1st code for generating virtual authentication code based on identification information
S420
Transmit 1st code to 1st device to request authority approval of client device

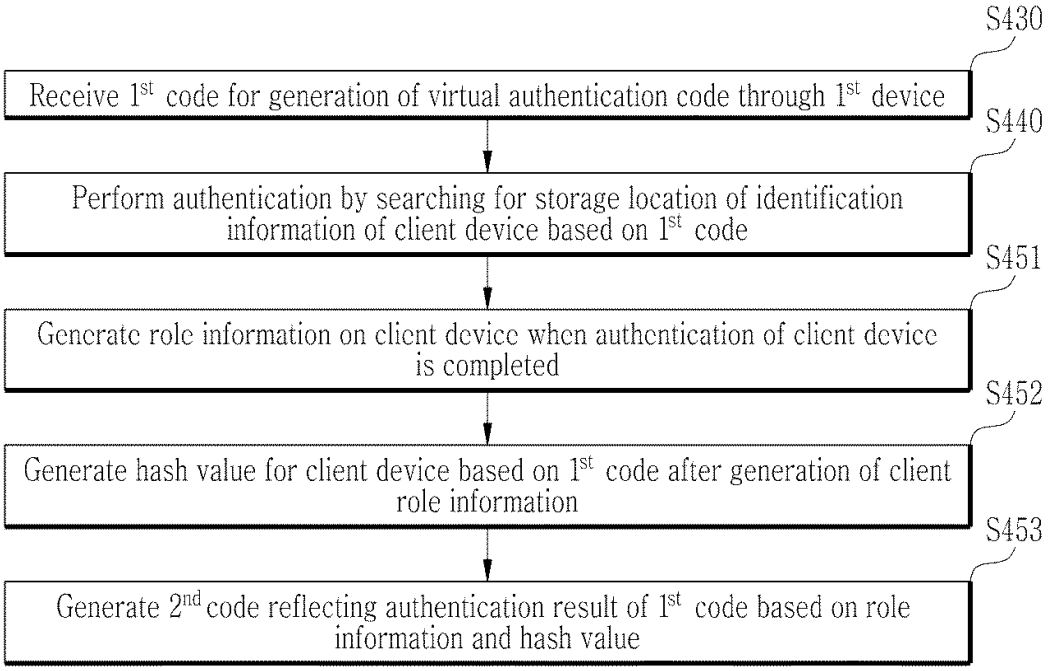
【Figure 4】



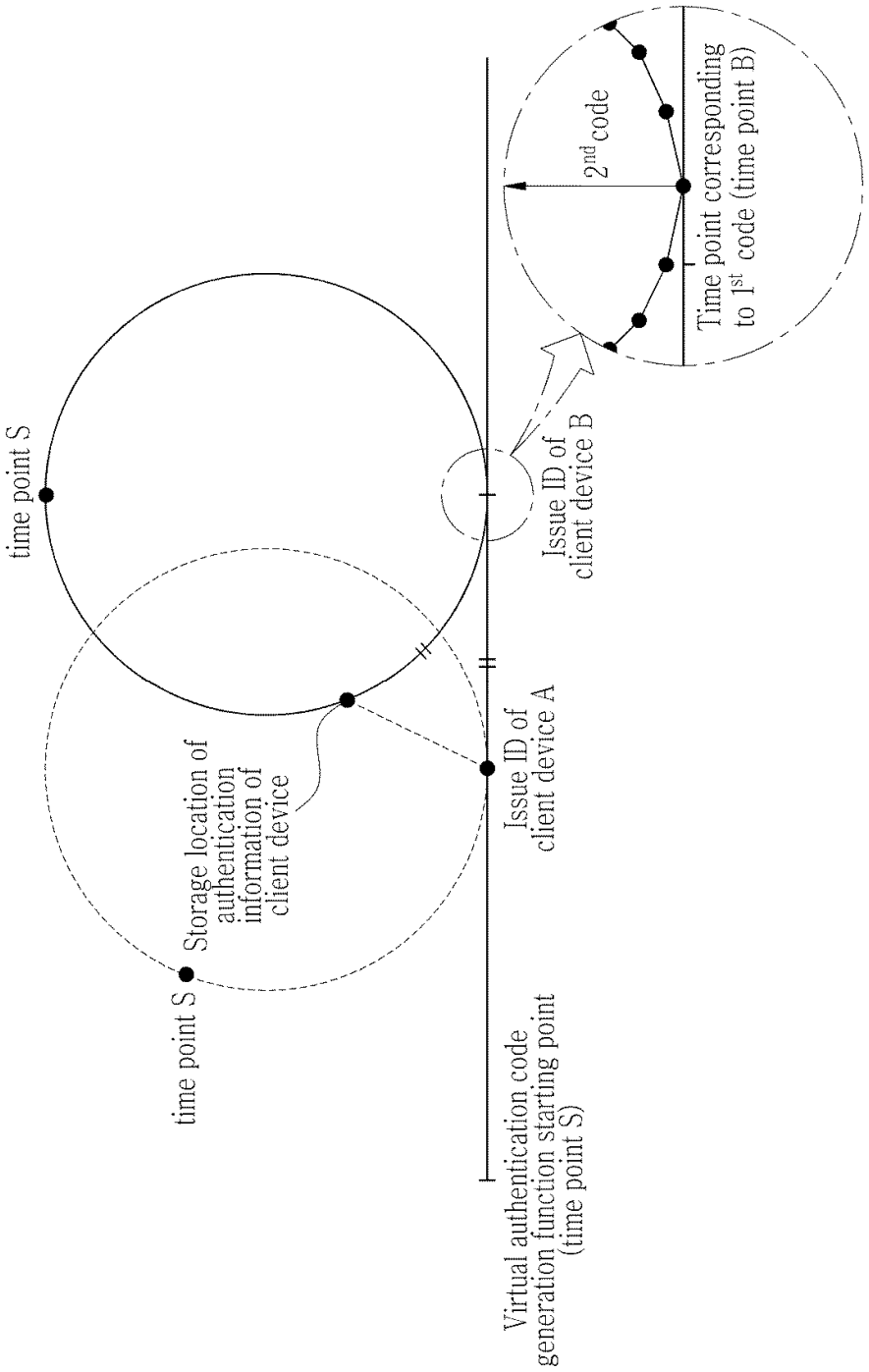
【Figure 5】


Service Device (200)
Communication Unit (210)
Third Code Generation Unit (220)
First Code Extraction Unit (230)
Role Information Verification Unit (240)

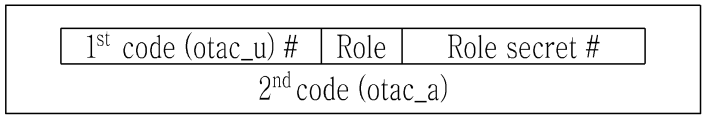
【Figure 6】


S430
Receive 1st code for generation of virtual authentication code through 1st device
S440
Perform authentication by searching for storage location of identification information of client device based on 1st code
S451
Generate role information on client device when authentication of client device is completed
S452
Generate hash value for client device based on 1st code after generation of client role information
S453
Generate 2nd code reflecting authentication result of 1st code based on role information and hash value

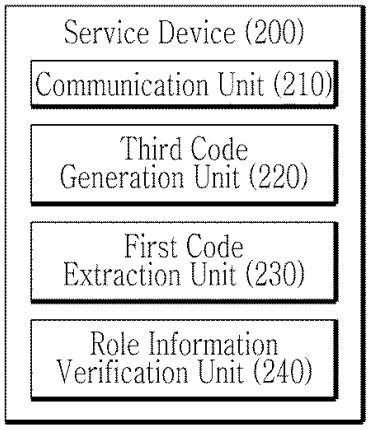
【Figure 7】


time point S
Storage location of authentication information of client device
time point S
Issue ID of client device A
Issue ID of client device B
2nd code
Time point corresponding to 1st code (time point B)
Virtual authentication code generation function starting point (time point S)

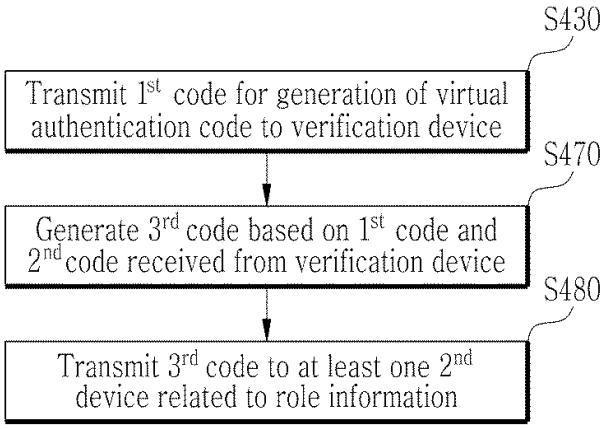
【Figure 8】



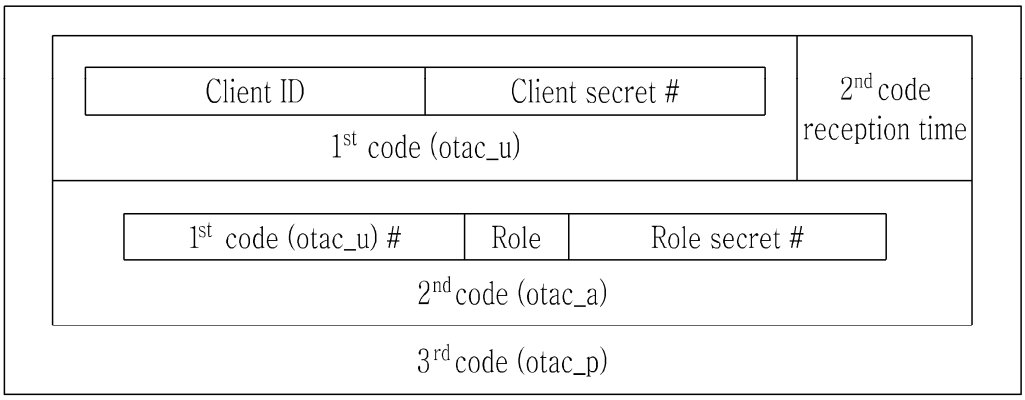
【Figure 9】


Service Device (200)
Communication Unit (210)
Third Code Generation Unit (220)
First Code Extraction Unit (230)
Role Information Verification Unit (240)

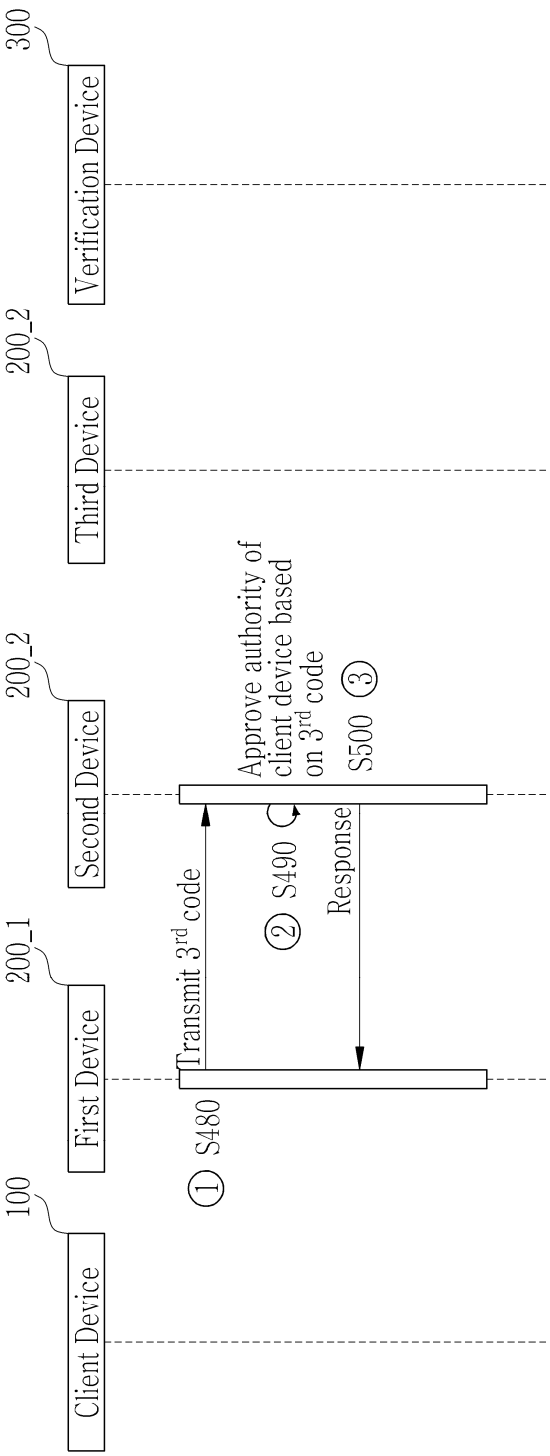
【Figure 10】


S430
Transmit 1st code for generation of virtual authentication code to verification device
S470
Generate 3rd code based on 1st code and 2nd code received from verification device
S480
Transmit 3rd code to at least one 2nd device related to role information

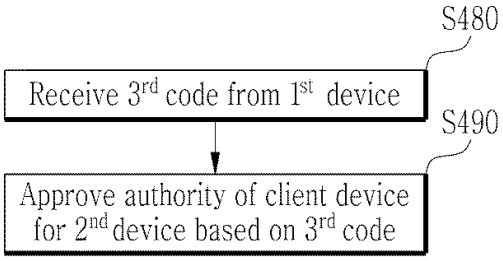
【Figure 11】


Client ID
Client secret #
2nd code reception time
1st code (otac_u)
1st code (otac_u) #
Role
Role secret #
2nd code (otac_a)
3rd code (otac_p)

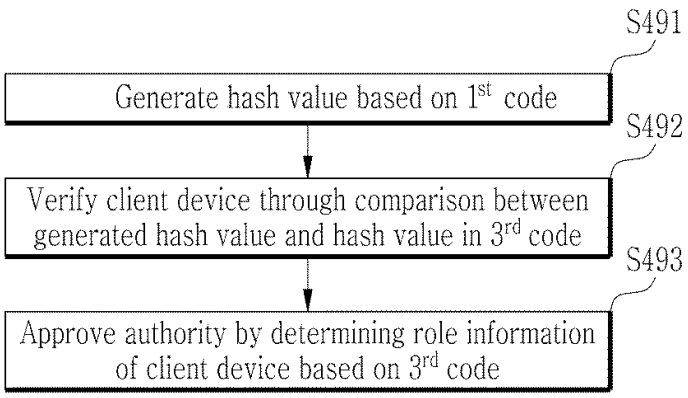
【Figure 12】


100
Client Device
200_1
First Device
200_2
Second Device
200_2
Third Device
300
Verification Device
① S480
Transmit 3rd code
② S490
Approve authority of client device based on 3rd code
Response
S500 ③

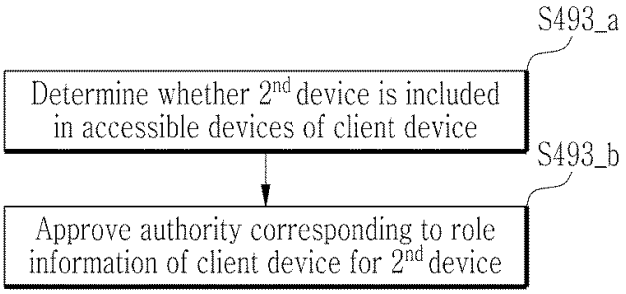
【Figure 13】


S480
Receive 3rd code from 1st device
S490
Approve authority of client device for 2nd device based on 3rd code

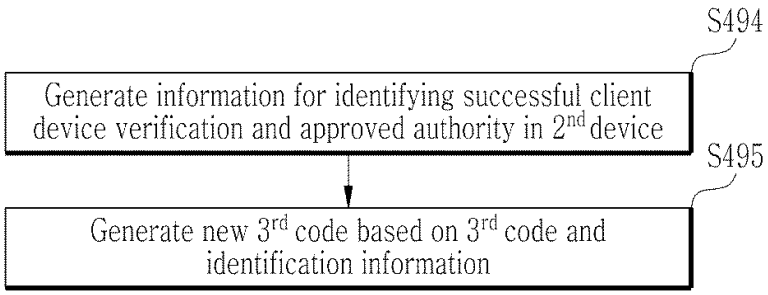
【Figure 14】


S491
Generate hash value based on 1st code
S492
Verify client device through comparison between generated hash value and hash value in 3rd code
S493
Approve authority by determining role information of client device based on 3rd code

【Figure 15】


S493_a
Determine whether 2nd device is included in accessible devices of client device
S493_b
Approve authority corresponding to role information of client device for 2nd device

【Figure 16】


S494
Generate information for identifying successful client device verification and approved authority in 2nd device
S495
Generate new 3rd code based on 3rd code and identification information