

Claims

- [Claim 1] A method for unlocking a vehicle door using a mobile terminal, the method comprising:
authenticating, by a mobile key management server, a user and a smartphone of the user;
authenticating, by the mobile key management server, a vehicle having a door to be unlocked using the authenticated smartphone;
generating, by the mobile key management server, a mobile key issuance algorithm corresponding to the authenticated vehicle and smartphone;
issuing, by the mobile key management server, a mobile key, using the generated mobile key issuance algorithm, in response to a request from the smartphone;
receiving, at the mobile key management server, the issued mobile key via the smartphone and the vehicle;
confirming, by the mobile key management server, whether the issued mobile key matches the received mobile key; and
requesting, by the mobile key management server, the vehicle to unlock the door thereof, when the issued mobile key matches the received mobile key.
- [Claim 2] The method of claim 1, wherein the mobile key comprises a virtual code configured to authorize the vehicle to unlock the door thereof.
- [Claim 3] The method of claim 1, wherein the mobile key issuance algorithm is generated to be unique to the vehicle, based on information related to authentication of the vehicle.
- [Claim 4] The method of claim 1, wherein the receiving of the issued mobile key includes:
transmitting, by the mobile key management server, the issued mobile key to the smartphone of the user;
transmitting, via a mobile key transmission server, the mobile key received at the smartphone to the vehicle; and
redirecting, by the vehicle, the mobile key received at the vehicle to the mobile key management server.
- [Claim 5] The method of claim 4, wherein the transmitting of the mobile key received at the smartphone includes:
obtaining, by the smartphone, vehicle identification information which is unique to distinguish the vehicle from other vehicles from the

- vehicle;
transmitting, by the smartphone, the vehicle identification information and the received mobile key to the mobile key transmission server; and
identifying, by the mobile key transmission server, the vehicle, using the vehicle identification information and transmitting the mobile key to the identified vehicle.
- [Claim 6] The method of claim 5, wherein the obtaining of the vehicle identification information comprises obtaining the vehicle identification information from a vehicle ID provider installed at the vehicle.
- [Claim 7] The method of claim 6, wherein the vehicle ID provider is configured to transmit the vehicle identification information, in response to a predetermined manipulation on the smartphone.
- [Claim 8] The method of claim 7, wherein the vehicle ID provider comprises a NFC tag configured to transmit the vehicle identification information to the smartphone when the smartphone approaches thereto.
- [Claim 9] The method of claim 1, further comprising:
transmitting, by the mobile key management server, the issued mobile key to the vehicle via the smartphone; and
unlocking by the vehicle, the door thereof, upon receiving the transmitted mobile key.
- [Claim 10] The method of claim 1, further comprising transmitting, by the mobile key management server, the generated mobile key issuance algorithm to the vehicle.
- [Claim 11] The method of claim 10, further comprising:
transmitting, by the mobile key management server, the issued mobile key to the vehicle via the smartphone;
verifying, by the vehicle, the transmitted mobile key using the transmitted mobile key issuance algorithm; and
When the transmitted mobile key is verified, unlocking, by the vehicle, the door thereof.
- [Claim 12] The method of claim 11, wherein the verifying of the transmitted mobile key includes:
generating, by the vehicle, a mobile key using the transmitted mobile key issuance algorithm; and
confirming, by the vehicle, whether the generated mobile key matches the transmitted mobile key.