What is claimed is:

1. An Internet of Things (IoT) device for recording transportation data of an object, the IoT device having been one time programmed with a private key in a manufacturing process of the IoT device, the IoT device comprising:

at least one sensor configured to detect external environment data of the object during transportation of the object; and

a processor configured to receive the data from the at least one sensor and generate a data packet based on the data using the private key, the data packet including a unique identification number of the IoT device, the data and a signature generated based on the unique identification number and the data~~.~~;

wherein the processor is further configured to:

perform a Hash operation on a combination of the unique identification number and the data;

use the private key to perform an asymmetric encryption on the hashed combination of the unique identification number and the data to generate the signature; and

packetize the unique identification number of the IoT device, the data and the signature into the data packet.

2. The IoT device according to claim 1, wherein the processor is further configured to:

generate the unique identification number using a public key corresponding to the private key.

3. The IoT device according to claim 2, wherein the processor is further configured to:

perform a Hash operation on the public key and use result of the Hash operation as the unique identification number.

4. The IoT device according to claim 1, wherein the processor is further configured to:

use a public key corresponding to the private key as the unique identification

number.

~~5. The IoT device according to claim 2 or 4, wherein the processor is further configured to:~~

~~perform a Hash operation on a combination of the unique identification number and the data;~~

~~use the private key to perform an asymmetric encryption on the hashed combination of the unique identification number and the data to generate the signature; and~~

~~packetize the unique identification number of the IoT device, the data and the signature into the data packet.~~

~~6.~~ 5. The IoT device according to claim 1, wherein the processor is further configured to:

register the unique identification number of the IoT device to ~~the~~ a block chain platform.

~~7.~~6. The IoT device according to claim 1, wherein the processor is further configured to:

transmit the data packet to ~~the~~ a block chain platform.

~~8.~~7. The IoT device according to claim ~~8~~ 6, further comprising:

a communication module configured to receive the data packet from the processor and transmit the data packet to the block chain platform for storage.

~~9.~~8. The IoT device according to claim ~~8~~ 7, wherein the communication module includes an online communication interface, the online communication interface being connected with a radio access network directly and configured to transmit the data packet to the block chain platform over the radio access network.

~~10.~~9. The IoT device according to claim ~~8~~ 7, wherein the communication module includes an offline communication interface, the offline communication interface communicating with a scanner in a near distance communication to transmit the data packet to the scanner, the scanner forwarding the data packet to the block chain platform.

~~11.~~10. The IoT device according to claim ~~10~~ 9, wherein the near distance communication includes at least one of Near Field Communication (NFC), Radio Frequency Identification (RFID) communication, WiFi communication, Bluetooth communication, and ZIGBEE communication.

~~12.~~11. The IoT device according to claim ~~8~~ 7, wherein the communication module includes a wired communication interface, the wired communication interface transmitting the data packet directly or indirectly to the block chain platform through a data cable.

~~13.~~12. The IoT device according to claim 1, wherein the sensor includes at least one of an environmental sensor, a motion sensor, a gas sensor and a location sensor.

~~14.~~13. The IoT device according to claim 1, further comprising a power supply component for powering the IoT device.

~~15.~~14. A method for recording transportation data of an object, comprising:

receiving external environment data of the object detected during transportation of the object from at least one sensor of an Internet of Things (IoT) device, the IoT device having been one time programmed with a private key in a manufacturing process of the IoT device; and

generating a data packet based on the data using the private key, the data packet including a unique identification number of the IoT device, the data and a signature generated based on the unique identification number and the data~~.~~;

wherein the generating a data packet includes:

performing a Hash operation on a combination of the unique identification number and the data;

using the private key to perform an asymmetric encryption on the hashed combination of the unique identification number and the data to generate the signature; and

packetizing the unique identification number of the IoT device, the data and the signature into the data packet.

~~16.~~15. A nonvolatile computer readable medium for recording transportation data

of an object, comprising:

computer program codes for receiving external environment data of the object detected during transportation of the object from at least one sensor of an Internet of Things (IoT) device, the IoT device having been one time programmed with a private key in a manufacturing process of the IoT device; and

computer program codes for generating a data packet based on the data using the private key, the data packet including a unique identification number of the IoT device, the data and a signature generated based on the unique identification number and the data~~.~~;

wherein the computer program codes further include codes for:

performing a Hash operation on a combination of the unique identification number and the data;

using the private key to perform an asymmetric encryption on the hashed combination of the unique identification number and the data to generate the signature; and

packetizing the unique identification number of the IoT device, the data and the signature into the data packet.

~~17. A block chain platform for recording transportation data of an object, comprising:~~

~~an underlying block chain; and~~

~~an application server or a smart contract entity configured to receive a data packet from an IoT device, authenticate the data packet based on a public key of the IoT device and store the data of the data packet to the underlying block chain upon a successful authentication.~~

~~18. The block chain platform according to claim 17, wherein the application server or the smart contract entity is further configured to~~

~~retrieve the signature and the combination of the unique identification number and the data from the data packet, respectively;~~

~~perform a Hash operation on the combination of the unique identification number~~

~~and the data, the Hash operation being same as that performed on the combination of the unique identification number and the data at the processor of the IoT device;~~

~~decrypt the signature using the public key of the IoT device;~~

~~compare a result of the Hash operation and a result of decrypting; and~~

~~store the data to the underlying block chain if the result of the Hash operation and the result of decrypting are the same.~~

~~19. The block chain platform according to claim 17, wherein the application server or the smart contract entity is further configured to receive the data packet from a scanner communicated with the IoT device.~~

~~20. A method for recording transportation data of an object, comprising:~~

~~receiving a data packet from an IoT device;~~

~~authenticating the data packet based on a public key of the IoT device; and~~

~~storing the data of the data packet to the underlying block chain upon a successful authentication.~~

~~21. A nonvolatile computer readable medium for recording transportation data of an object, comprising:~~

~~computer program codes for receiving a data packet from an IoT device;~~

~~computer program codes for authenticating the data packet based on a public key of the IoT device; and~~

~~computer program codes for storing the data of the data packet to the underlying block chain upon a successful authentication.~~

~~22.~~16. An Internet of Things (IoT) system for recording transportation data of an object comprising:

the IoT device according to claim 1, and

the block chain platform according to ~~claim 17~~ any one of claims 5-13.