CLAIMS

What is claimed is:

1. A computer-implemented method comprising:

transmitting, by a redeeming entity computer to a central entity computer, a request for digital currency, the request comprising a serial number and a denomination of a physical currency;

receiving, by the redeeming entity computer, a notification that the digital currency has been generated, wherein the digital currency is generated by the central entity computer based upon the request, wherein generating the digital currency comprises recording the digital currency on a blockchain for the denomination and linked to the serial number; and

responsive to receiving the notification, causing, by the redeeming entity computer, removal of the physical currency from circulation.

2. The method of claim 1, wherein the recording of the digital currency on the blockchain is validated by a plurality of validating entities.

3. The method of claim 1, wherein causing removal of the physical currency from circulation comprises physically destroying the physical currency, the physical currency being fiat currency.

4. The method of claim 1, wherein the physical currency is a first physical currency, the method further comprising:

transmitting, by the redeeming entity computer to the central entity computer, a second request for digital currency, the second request comprising a serial number and a denomination of a second physical currency, wherein the serial number and the denomination of the second physical currency are the same as the serial number and the denomination of the first physical currency; and

receiving, by the redeeming entity computer from the central entity computer, an indication of the central entity computer refraining from generating a second digital currency based on the second request, responsive to the central entity computer determining that the

digital currency corresponding to the serial number and denomination is already recorded on the blockchain.

5. The method of claim 1, further comprising:

receiving, by the redeeming entity computer, the physical currency for redemption for the digital currency.

6. The method of claim 1, wherein the physical currency is received from a user at a bank associated with the redeeming entity computer.

7. The method of claim 1, further comprising:

determining that the physical currency is unusable, wherein the request for the digital currency is transmitted responsive to the determination.

8. The method of claim 1, wherein the request for the digital currency is granted based upon a certificate issued to the redeeming entity computer by a transaction processing network, wherein the certificate grants permissions to the redeeming entity computer that are different from permissions granted to the central entity computer.

9. The method of claim 1, wherein the digital currency is recorded on the blockchain using a public key of the central entity computer.

10. The method of claim 1, wherein the blockchain includes a plurality of blocks, at least one block, of the plurality of blocks, storing data for a plurality of transactions, the plurality of transactions including a second record recording the removal of the physical currency from circulation.

11. The method of claim 1, wherein the blockchain includes a plurality of blocks, at least one block, of the plurality of blocks, storing data for a plurality of transactions, the plurality of transactions including a record including a public key associated with a digital wallet.

12. A method comprising:

providing, by a user device to a redeeming entity computer, data corresponding to a request to redeem physical currency for digital currency, wherein a user associated with the user device provides the physical currency for redemption, the physical currency having a denomination and a serial number;

receiving, by the user device from the redeeming entity computer, an indication that the digital currency has been generated, wherein the digital currency is generated by a central entity computer based upon the request, wherein generating the digital currency comprises recording the digital currency to a record on a blockchain for the denomination and linked to the serial number; and

recording, to a digital wallet executing on the user device, an amount of digital currency corresponding to the denomination.

13. The method of claim 12, wherein recording the amount of digital currency to the digital wallet comprises associating the digital currency with the digital wallet using a private key stored to the digital wallet.

14. The method of claim 13, wherein the private key of the digital wallet is stored on a chip of a smart card or a secure element of the user device.

15. The method of claim 12, wherein the data corresponding to the request and the physical currency are provided to the redeeming entity computer via an Automated Teller Machine (ATM).

16. The method of claim 12, wherein the digital currency is recorded on the blockchain using a public key of the central entity computer.

17. The method of claim 12, wherein the digital currency is removed from circulation responsive to the request.

18. The method of claim 17, wherein removing the digital currency from circulation comprises physically destroying the digital currency, and wherein the digital currency is fiat currency.

19. The method of claim 12, wherein the recording of the digital currency on the blockchain is validated by a plurality of validating entities.

20. The method of claim 12, wherein the record on the blockchain to further comprises an address of the digital wallet of the user.

21. The method of claim 12, wherein the blockchain includes a plurality of blocks, at least one block, of the plurality of blocks, storing data for a plurality of transactions, the plurality of transactions including a second record recording removal of the physical currency from circulation.

22. The method of claim 12, wherein the blockchain includes a plurality of blocks, at least one block, of the plurality of blocks, storing data for a plurality of transactions, the plurality of transactions including a first record indicating that the digital currency for an amount associated with the denomination has been created, the first record including a public key associated with the digital wallet.

23. A method comprising:

transmitting, by a user device to a central entity computer, a request to record a transfer of digital currency between a first user associated with the user device and a second user, the request including a public key of the first user, a public key of the second user, and an amount;

receiving, by the user device from the central entity computer responsive to the request, an indication of recordation of the transfer, the recordation of the transfer being on record on a block in a blockchain comprising the public key of the first user, the public key of the second user, the transaction amount, and a serial number of a physical currency corresponding to the digital currency; and

recording, to a digital wallet executing on the user device, an updated amount of digital currency corresponding to the amount.

24. The method of claim 23, further comprising:

receiving, by the user device from a second user device associated with the second user, a certificate of the second user,

wherein the request further comprises the certificate of the second user or a derivative thereof and a certificate of the first user or a derivative thereof.

25. The method of claim 24, wherein the certificate of the first user and the certificate of the second user were granted to the first user and the second user by a transaction processing network.

26. The method of claim 24, the record further comprising an action relating to removal of the physical currency from a fiat currency system.

27. The method of claim 26, the record further comprising one or more of a currency type of the physical currency or a denomination of the physical currency.

28. The method of claim 23, wherein the request is signed using a private key of the first user.

29. The method of claim 28, wherein the private key is retrieved from a secure element or chip of the user device.

30. The method of claim 23, wherein a second digital wallet associated with the second user is further updated in connection with the amount.

31. The method of claim 23, wherein the record is recorded on the blockchain using a public key of the central entity computer.

32. The method of claim 23, wherein the blockchain includes a plurality of blocks, at least one block, of the plurality of blocks, storing data for a plurality of transactions, the plurality of transactions including a second record recording removal of the physical currency from circulation.

33. A computer product comprising a computer readable medium storing a plurality of instructions for controlling a computer system to perform operations of the method of any one of claims 1 – 32.

34. A system comprising:

the computer product of claim 33; and

one or more processors for executing instructions stored on the computer readable medium.