## CLAIMS

What is claimed is:

1. A computer-implemented method comprising:

storing, by a payment institution, historical data associated with a past purchase transaction in which a payer and a payee used different currencies, and in which the payment institution performed currency conversion and decimal rounding, to complete the past purchase transaction, the historical data identifying a historical refunds amount that has already been refunded by the payee to the payer, valued in a currency used by the payee, and the historical refunds amount having been calculated by the payment institution using a first decimal rounding policy;

receiving, by the payment institution, a refund request associated with the past purchase transaction, the refund request identifying a payable refund amount that the payee currently proposes to refund to the payer, valued in the currency used by the payee;

in response to receiving the refund request associated with the past purchase transaction, accessing, by the payment institution, the stored, historical data associated with the past purchase transaction;

determining an initial refund amount for the refund request based on the historical refunds amount that is identified in the accessed, historical data, and the payable refund amount identified in the refund request;

selecting, by the payment institution, a second decimal rounding policy that is different than the first decimal rounding policy;

determining, by the payment institution and based on applying the second decimal rounding policy to the initial refund amount, an updated refund amount for the refund request; and

updating the historical refunds amount in the stored, historic data based on the updated refund amount.

2. The computer-implemented method of claim 1, further comprising:

obtaining a receivable payment amount P and a received payment amount R of the past purchase transaction and a total receivable refund amount $r_{\sum}$ and a total received refund amount $p_{\sum}$ of historical refunds from the historical data associated with the past purchase transaction;

obtaining a receivable refund amount $r_k$ specified in the refund request; and

calculating the updated refund amount $p_k$ of a current refund based on a principle that a payer amount proportion is equal to a payee amount proportion, wherein the payer amount proportion is $\frac{p_k+p_\Sigma}{P}$, and the payee amount proportion is $\frac{r_k+r_\Sigma}{R}$.

3. The computer-implemented method of claim 2, wherein determining the historical data associated with the past purchase transaction comprises:

obtaining an ID of the past purchase transaction comprised in the refund request; and

determining the historical data associated with the past purchase transaction based on the ID of the past purchase transaction.

4. The computer-implemented method of claim 3, wherein obtaining the receivable payment amount P and the received payment amount R of the past purchase transaction from the historical data associated with the past purchase transaction comprises:

obtaining the receivable payment amount P and the received payment amount R of the past purchase transaction from the historical data associated with the past purchase transaction.

5. The computer-implemented method of claim 3, wherein obtaining the total receivable refund amount $r_\Sigma$ and the total received refund amount $p_\Sigma$ of the historical refunds from the historical data associated with the past purchase transaction comprises:

determining each piece of refund information of the historical refunds of the past purchase transaction from the historical data associated with the past purchase transaction;

for each piece of the refund information, obtaining a receivable refund amount and a received refund amount of a current historical refund; and

calculating a sum of obtained receivable refund amounts of the historical refunds as the total receivable refund amount $r_\Sigma$, and calculating a sum of obtained received refund amounts of the historical refunds as the total received refund amount $p_\Sigma$.

6. The computer-implemented method of claim 3, wherein obtaining the total

receivable refund amount $r_{\sum}$ and the total received refund amount $p_{\sum}$ of the historical refunds from the historical data associated with the past purchase transaction comprises:

determining accumulated historical refund information of the past purchase transaction from the historical data associated with the past purchase transaction; and

obtaining the total receivable refund amount $r_{\sum}$ and the total received refund amount $p_{\sum}$ of the historical refunds of the past purchase transaction from the determined accumulated historical refund information.

7. The computer-implemented method of claim 2, wherein obtaining the total receivable refund amount $r_{\sum}$ and the total received refund amount $p_{\sum}$ of the historical refunds from the historical data associated with the past purchase transaction comprises:

determining, based on the refund request, whether the past purchase transaction satisfies a predetermined trigger condition; and

if the past purchase transaction does not satisfy the predetermined trigger condition, obtaining the total receivable refund amount $r_{\sum}$ and the total received refund amount $p_{\sum}$ both with a value of 0; or

if the past purchase transaction satisfies the predetermined trigger condition, obtaining the total receivable refund amount $r_{\sum}$ and the total received refund amount $p_{\sum}$ of the historical refunds from the historical data associated with the past purchase transaction.

8. A non-transitory, computer-readable medium storing one or more instructions executable by a computer system to perform operations comprising:

storing, by a payment institution, historical data associated with a past purchase transaction in which a payer and a payee used different currencies, and in which the payment institution performed currency conversion and decimal rounding, to complete the past purchase transaction, the historical data identifying a historical refunds amount that has already been refunded by the payee to the payer, valued in a currency used by the payee, and the historical refunds amount having been calculated by the payment institution using a first decimal rounding policy;

receiving, by the payment institution, a refund request associated with the past purchase transaction, the refund request identifying a payable refund amount that the payee currently proposes to refund to the payer, valued in the currency used by the payee;

in response to receiving the refund request associated with the past purchase transaction, accessing, by the payment institution, the stored, historical data associated with the past purchase transaction;

determining an initial refund amount for the refund request based on the historical refunds amount that is identified in the accessed, historical data, and the payable refund amount identified in the refund request;

selecting, by the payment institution, a second decimal rounding policy that is different than the first decimal rounding policy;

determining, by the payment institution and based on applying the second decimal rounding policy to the initial refund amount, an updated refund amount for the refund request; and

updating the historical refunds amount in the stored, historic data based on the updated refund amount.

9. The non-transitory, computer-readable medium of claim 8, wherein the operations further comprise:

obtaining a receivable payment amount P and a received payment amount R of the past purchase transaction and a total receivable refund amount $r_{\sum}$ and a total received refund amount $p_{\sum}$ of historical refunds from the historical data associated with the past purchase transaction;

obtaining a receivable refund amount $r_k$ specified in the refund request; and

calculating the updated refund amount $p_k$ of a current refund based on a principle that a payer amount proportion is equal to a payee amount proportion, wherein the payer amount proportion is $\frac{p_k+p_{\sum}}{P}$, and the payee amount proportion is $\frac{r_k+r_{\sum}}{R}$.

10. The non-transitory, computer-readable medium of claim 9, wherein determining the historical data associated with the past purchase transaction comprises:

obtaining an ID of the past purchase transaction comprised in the refund request; and

determining the historical data associated with the past purchase transaction based on the ID of the past purchase transaction.

11. The non-transitory, computer-readable medium of claim 10, wherein obtaining the

receivable payment amount P and the received payment amount R of the past purchase transaction from the historical data associated with the past purchase transaction comprises:

obtaining the receivable payment amount P and the received payment amount R of the past purchase transaction from the historical data associated with the past purchase transaction.

12. The non-transitory, computer-readable medium of claim 10, wherein obtaining the total receivable refund amount $r_{\sum}$ and the total received refund amount $p_{\sum}$ of the historical refunds from the historical data associated with the past purchase transaction comprises:

determining each piece of refund information of the historical refunds of the past purchase transaction from the historical data associated with the past purchase transaction;

for each piece of the refund information, obtaining a receivable refund amount and a received refund amount of a current historical refund; and

calculating a sum of obtained receivable refund amounts of the historical refunds as the total receivable refund amount $r_{\sum}$, and calculating a sum of obtained received refund amounts of the historical refunds as the total received refund amount $p_{\sum}$.

13. The non-transitory, computer-readable medium of claim 10, wherein obtaining the total receivable refund amount $r_{\sum}$ and the total received refund amount $p_{\sum}$ of the historical refunds from the historical data associated with the past purchase transaction comprises:

determining accumulated historical refund information of the past purchase transaction from the historical data associated with the past purchase transaction; and

obtaining the total receivable refund amount $r_{\sum}$ and the total received refund amount $p_{\sum}$ of the historical refunds of the past purchase transaction from the determined accumulated historical refund information.

14. The non-transitory, computer-readable medium of claim 9, wherein obtaining the total receivable refund amount $r_{\sum}$ and the total received refund amount $p_{\sum}$ of the historical refunds from the historical data associated with the past purchase transaction

comprises:

determining, based on the refund request, whether the past purchase transaction satisfies a predetermined trigger condition; and

if the past purchase transaction does not satisfy the predetermined trigger condition, obtaining the total receivable refund amount $r_{\sum}$ and the total received refund amount $p_{\sum}$ both with a value of 0; or

if the past purchase transaction satisfies the predetermined trigger condition, obtaining the total receivable refund amount $r_{\sum}$ and the total received refund amount $p_{\sum}$ of the historical refunds from the historical data associated with the past purchase transaction.

15. A computer-implemented system, comprising:

one or more computers; and

one or more computer memory devices interoperably coupled with the one or more computers and having tangible, non-transitory, machine-readable media storing one or more instructions that, when executed by the one or more computers, perform one or more operations comprising:

storing, by a payment institution, historical data associated with a past purchase transaction in which a payer and a payee used different currencies, and in which the payment institution performed currency conversion and decimal rounding, to complete the past purchase transaction, the historical data identifying a historical refunds amount that has already been refunded by the payee to the payer, valued in a currency used by the payee, and the historical refunds amount having been calculated by the payment institution using a first decimal rounding policy;

receiving, by the payment institution, a refund request associated with the past purchase transaction, the refund request identifying a payable refund amount that the payee currently proposes to refund to the payer, valued in the currency used by the payee;

in response to receiving the refund request associated with the past purchase transaction, accessing, by the payment institution, the stored, historical data associated with the past purchase transaction;

determining an initial refund amount for the refund request based on the historical refunds amount that is identified in the accessed, historical data, and the payable refund amount identified in the refund request;

selecting, by the payment institution, a second decimal rounding policy that is different than the first decimal rounding policy;

determining, by the payment institution and based on applying the second decimal rounding policy to the initial refund amount, an updated refund amount for the refund request; and

updating the historical refunds amount in the stored, historic data based on the updated refund amount.

16. The computer-implemented system of claim 15, wherein the operations further comprise:

obtaining a receivable payment amount P and a received payment amount R of the past purchase transaction and a total receivable refund amount $r_{\sum}$ and a total received refund amount $p_{\sum}$ of historical refunds from the historical data associated with the past purchase transaction;

obtaining a receivable refund amount $r_k$ specified in the refund request; and

calculating the updated refund amount $p_k$ of a current refund based on a principle that a payer amount proportion is equal to a payee amount proportion, wherein the payer amount proportion is $\frac{p_k+p_{\sum}}{P}$, and the payee amount proportion is $\frac{r_k+r_{\sum}}{R}$.

17. The computer-implemented system of claim 16, wherein determining the historical data associated with the past purchase transaction comprises:

obtaining an ID of the past purchase transaction comprised in the refund request; and

determining the historical data associated with the past purchase transaction based on the ID of the past purchase transaction.

18. The computer-implemented system of claim 17, wherein obtaining the receivable payment amount P and the received payment amount R of the past purchase transaction from the historical data associated with the past purchase transaction comprises:

obtaining the receivable payment amount P and the received payment amount R of the past purchase transaction from the historical data associated with the past purchase transaction.

19. The computer-implemented system of claim 17, wherein obtaining the total receivable refund amount $r_{\sum}$ and the total received refund amount $p_{\sum}$ of the historical refunds from the historical data associated with the past purchase transaction comprises:

determining each piece of refund information of the historical refunds of the past purchase transaction from the historical data associated with the past purchase transaction;

for each piece of the refund information, obtaining a receivable refund amount and a received refund amount of a current historical refund; and

calculating a sum of obtained receivable refund amounts of the historical refunds as the total receivable refund amount $r_{\sum}$, and calculating a sum of obtained received refund amounts of the historical refunds as the total received refund amount $p_{\sum}$.

20. The computer-implemented system of claim 17, wherein obtaining the total receivable refund amount $r_{\sum}$ and the total received refund amount $p_{\sum}$ of the historical refunds from the historical data associated with the past purchase transaction comprises:

determining accumulated historical refund information of the past purchase transaction from the historical data associated with the past purchase transaction; and

obtaining the total receivable refund amount $r_{\sum}$ and the total received refund amount $p_{\sum}$ of the historical refunds of the past purchase transaction from the determined accumulated historical refund information.

21. The computer-implemented system of claim 16, wherein obtaining the total receivable refund amount $r_{\sum}$ and the total received refund amount $p_{\sum}$ of the historical refunds from the historical data associated with the past purchase transaction comprises:

determining, based on the refund request, whether the past purchase transaction satisfies a predetermined trigger condition; and

if the past purchase transaction does not satisfy the predetermined trigger condition, obtaining the total receivable refund amount $r_{\sum}$ and the total received refund amount $p_{\sum}$ both with a value of 0; or

if the past purchase transaction satisfies the predetermined trigger condition, obtaining the total receivable refund amount $r_{\sum}$ and the total received refund amount $p_{\sum}$ of the historical refunds from the historical data associated with the past purchase transaction.