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**POINT OF SALE (POS) PAYMENT APPLICATION WITH QUICK TRANSACTION
SPLIT CAPABILITY.**

VISA

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TECHNICAL FIELD

[0001] This disclosure relates generally to speedy bill split payments and more particularly to a novel point of sale (POS) terminal with payment application for quick transaction split capability.

BACKGROUND

[0002] Splitting a dinner bill among attendees is a common practice in social and business gatherings. Conventional technique for splitting the bill includes a single attendee paying the bill, with others reimbursing them via cash or peer-to-peer (P2P) payment applications. However, in this technique each individual must manually initiate and authenticate the bill payment. For example, a \$100 bill may be split and manually entered and executed one by one by each attendee after one another. Additionally, only the payer may benefit from the card rewards, creating inequity among other attendees.

[0003] Also, the conventional technique of bill splitting by processing multiple payments at the POS is time-intensive, requiring repeated use of the payment terminal for each attendee, including entering amounts, processing tips, and generating receipts. For example, a table of ten attendees, splitting the bill may take around five to ten minutes for a waiter because of which other tables are left unattended. Hence, for larger groups, the conventional bill splitting technique causes delay of service to other customers and may also increase the likelihood of errors.

[0004] Therefore, there is at least a need to provide a solution to one or more aforesaid problems or improve an existing solution, product, or process.

SUMMARY

[0005] According to some non-limiting embodiments or aspects, the present disclosure provides a point of sale (POS) terminal with payment application for quick transaction split capability. The present disclosure discloses a novel application for efficiently splitting the bills at restaurants or elsewhere using intelligent POS terminals equipped with quick chip contactless functionality. In an embodiment of the present disclosure, the present disclosure allows the POS terminal to prompt the merchant with a series of simple questions, such as the number of attendees, whether amounts are to be split equally or differently, and whether a

uniform or individualized tip structure is preferred. Once these details are configured, the POS terminal may be placed in the middle of the table for the attendees to tap their cards or phones without needing to wait for transaction results.

[0006] In some non-limiting embodiments or aspects, the POS terminal in the present disclosure may then capture the payment credentials for each attendee and further may initiate terminal initiate several deferred authorization processes in parallel, enabling faster and more streamlined payment handling.

[0007] In some non-limiting embodiments or aspects, the POS terminal in the present disclosure may remain in "reading mode" until the specified number of credentials are captured. Further, the POS terminal may display the last 4 digits of the card and beep to inform the cardholder that the captured process worked correctly. In an embodiment, the deferred authorization may happen in the background, or the POS terminal may wait until all the credentials are presented. Once the process is complete, the POS terminal may display a summary status page for the merchant, indicating whether all the payments were successfully processed or may highlight any transactions that were declined or require additional authentication.

[0008] In some non-limiting embodiments or aspects, the POS terminal in the present disclosure to enhance identification and reduce errors, may display a miniature version of the card art alongside the last four digits of the card number for easier cardholder/merchant identification.

[0009] These and other features and characteristics of the present disclosure, as well as the methods of operation and functions of the related elements of structures and the combination of parts, will become more apparent upon consideration of the following description with reference to the accompanying drawings, all of which form a part of this specification. It is to be expressly understood, however, that the drawings are for the purpose of illustration and description only and are not intended as a definition of the limits of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] Additional advantages and details are explained in greater detail below with reference to the non-limiting, exemplary embodiments that are illustrated in the accompanying schematic figures, in which:

[0011] FIG. 1 is a block diagram illustrating a point of sale (POS) terminal with payment application for quick transaction split capability, as per a non-limiting embodiment of the present disclosure; and

[0012] FIG. 2 is a flow diagram of a method illustrating a point of sale (POS) payment application with quick transaction split capability, as per a non-limiting embodiment of the present disclosure.

[0013] It should be appreciated by those skilled in art that any block diagrams herein represent conceptual views of illustrative systems embodying the principles of the present subject matter. Similarly, it may be appreciated that any flow charts, flow diagrams, state transition diagrams, pseudo code, and the like represent various processes which may be substantially represented in computer readable medium and executed by a computer or processor, whether or not such computer or processor is explicitly shown.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0014] For purposes of the description hereinafter, it is to be understood that the embodiments may assume various alternative variations and step sequences, except where expressly specified to the contrary. It is also to be understood that the specific system and processes illustrated in the attached drawings, and described in the following specification, are simply exemplary embodiments or aspects of the invention. Hence, specific dimensions and other physical characteristics related to the embodiments or aspects disclosed herein are not to be considered as limiting.

[0015] The figures depict embodiments of the present subject matter for the purposes of illustration only. A person skilled in art will easily recognize from the following description that alternative embodiments of the structures and methods illustrated herein may be employed without departing from the principles of the disclosure described herein.

[0016] FIG. 1 is a block diagram illustrating a point of sale (POS) terminal with payment application for quick transaction split capability, as per a non-limiting embodiment of the present disclosure. The present disclosure proposes a POS terminal with payment application which splits the transaction automatically and drive the payment kernel to capture the payment

credentials as shown in FIG. 1. The merchant POS of the present disclosure comprises of a split payment application, a gateway connector, a PIN Entry Device (PED) and one or more payment kernels to facilitate payment application with quick transaction split capability. In an embodiment of the present disclosure, the gateway connector interfaces with one or more payment networks, the PED secures customer authentication, and one or more payment kernels supports a wide range of payment cards, including but not limited to contactless cards and mobile wallets as described below in subsequent paragraphs.

[0017] Initially, the merchant may select the split payment application on the proposed POS terminal, for example by clicking /pressing a button to select a menu item. The merchant may further enter the transaction amount to be split, for example a tab amount of \$120. In an embodiment of the present disclosure, the merchant may optionally enter the number of parts to be split, and the proposed payment application will automatically divide the transaction amount by parts to split, for example \$120 to be split into four equal parts amounting to \$30 each. Or the merchant may optionally enter each split transaction amount according to order, for example \$120 to be split in any required amount.

[0018] Further, the POS split payment application may start to capture the payment credentials for each split transaction and the cardholder may be prompted to tap/dip/swipe/QR scan to provide the payment credentials. In an embodiment of the present disclosure, the split transaction amount may be displayed for each split transaction as per the merchant's input. The cardholder may optionally enter the split transaction amount if not prepopulated or may modify the prepopulated split transaction amount. Further, the proposed POS application may then display the total transaction amount, previous split transaction amount(s), remaining transaction amount to the cardholders for their reference.

[0019] After the cardholder has presented the payment credential in the POS terminal (for example tap/dip/swipe/QR scan), the corresponding kernel of the merchant POS may determine whether if the PIN entry is required, if yes, the required PIN to be entered may be prompted to the cardholder. After one split transaction payment credential capture, the POS terminal may encrypt the transaction data and PIN Block if application. Instead of sending the transaction authorization request to the payment gateway immediately, the POS split payment application may store the authorization request temporarily. Further, the POS split payment application may repeat the above steps until all the payment credentials have been captured for each split transaction.

[0020] For each split transaction, the POS split payment application may send authorization requests for split transactions to the payment gateway and further the POS split payment application may receive and store the authorization responses of each split transaction. In case of split transactions authorized decline, the POS split payment application may repeat the above steps for declined split transactions. In an embodiment of the present disclosure, references may be displayed to identify the cardholder who made the declined transaction, for example the last four digits of Permanent Account Number (PAN), card brand, issuer, payment instrument form-factor, split transaction amount, split transaction reference (X/4) where X may be the amount to be split.

[0021] In the case of any transaction reversal or refund, all the split transactions will be reversed or refunded by the proposed split payment application. Additionally, the final split transaction amount may be adjusted by the merchant after authorization, for example, tip amount, optimization of the transaction flow the first split transaction may be executed while above are being executed for the later failed split transactions.

[0022] Technical Advantages of the present disclosure

[0023] The conventional technique for split transactions involves a repetitive and time-intensive process. The chart below depicts the conventional technique for split transactions.

102	104	106	102	104	106	102	104	106...
-----	-----	-----	-----	-----	-----	-----	-----	--------

At step 102, the merchant initializes the transaction by entering the total amount on the POS terminal. At step 104, for each attendee, the payment credential capture step is performed, where the customer provides their payment details, typically by tapping or inserting their card. This step may be followed by cardholder verification, such as entering a PIN or signing a receipt. Once verified, at step 106, the conventional POS terminal processes the split transaction authorization, sending the payment request to the respective network. This process is repeated for each attendee, requiring the merchant to reinitialize the transaction for every split, re-enter the amount, and process payments sequentially. The cycle continues until all attendees have completed their individual transactions, making it time-consuming, particularly for larger groups.

[0024] The chart below depicts the splitting of the payment with the proposed POS terminal with split payment application.

102	104	106	104	106	104	106...
-----	-----	-----	-----	-----	-----	--------

[0025] At step 102, the merchant initializes the transaction by entering the total amount on the POS terminal of the present disclosure. At step 104, the present disclosure allows the POS terminal to prompt the merchant with a series of simple questions, such as the number of attendees, whether amounts are to be split equally or differently, and whether a uniform or individualized tip structure is preferred. Once these details are configured, the POS terminal may be placed in the middle of the table for attendees to tap their cards or phones without needing to wait for transaction results after successful cardholder verification. Once verified, at step 106, the proposed POS terminal processes the split transaction authorization, sending the payment request to the respective network and the cycle continues. Hence the present disclosure restricts sequential entering of details in the proposed POS terminal as compared to the conventional technique.

[0026] Further in an embodiment of the present disclosure, the chart below depicts optimization of the transaction flow of the first split transaction while processing the later split transactions.

102	104	106		
		104	106	
			104	106...

The present disclosure allows for the more payment credentials of all attendees to be collected in parallel. After step 102, the transaction may be initialized, and the merchant enters the transaction amount in the POS terminal. At step 104 the POS terminal of the present disclosure enters a "reading mode," enabling multiple attendees to tap their cards or phones one after another in rapid succession. Once all credentials are gathered, at step 106 the present disclosure processes the authorization requests in parallel mode by starting the next split transaction without waiting for the completion of the previous split transaction. This parallel processing significantly reduces the time and effort required compared to traditional series processing.

[0027] FIG. 2 is a flow diagram of a method illustrating a point of sale (POS) payment application with quick transaction split capability, as per a non-limiting embodiment of the present disclosure.

[0028] At step 202, the method comprises initializing a split transaction by a merchant by entering a transaction amount in a POS terminal. Initially, the merchant may select the split payment application on the proposed POS terminal, for example by clicking /pressing a button to select a menu item. The merchant may further enter the transaction amount to be split, for example a tab amount of \$120. In an embodiment of the present disclosure, the merchant may optionally enter the number of parts to be split, and the proposed payment application may automatically divide the transaction amount by parts to be split, for example \$120 to be split into four equal parts amounting to \$30 each. Or the merchant may optionally enter each split transaction amount according to order, for example \$120 to be split in any required amount.

[0029] At step 204, the method comprises capturing, by the POS terminal with split payment application, payment credentials for each split transaction and the cardholder may be prompted to tap/dip/swipe/QR scan to provide the payment credentials. In an embodiment of the present disclosure, the split transaction amount may be displayed for each split transaction as per the merchant's input. The cardholder may optionally enter the split transaction amount if not prepopulated or may modify the prepopulated split transaction amount. Further, the POS application may then display the total transaction amount, previous split transaction amount(s), remaining transaction amount to cardholders for their reference.

[0030] At step 206, the method comprises temporarily storing the authorization requests for each split transaction. After the cardholder has presented the payment credential in the POS terminal (for example tap/dip/swipe/QR scan), the corresponding kernel of the merchant POS may determine whether if the PIN entry is required, if yes, the required PIN to be entered may be prompted to the cardholder. After one split transaction payment credential capture, the POS terminal may encrypt the transaction data and PIN Block if application. Instead of sending transaction authorization request to a payment gateway immediately, the POS split payment application may store the authorization request temporarily. Further, the POS split payment application may repeat the above steps until all the payment credentials have been captured for each split transaction.

[0031] At step 208, the method comprises sending the authorization requests for each split transaction to the payment gateway. Further at step 210, the method further comprises receiving and storing the authorization responses of each split transaction. In case of split

transaction(s) authorized decline, the POS split payment application may repeat the above steps for declined split transaction. In an embodiment of the present disclosure, references may be displayed to identify the cardholder who made the declined transaction, for example the last four digits of Permanent Account Number (PAN), card brand, issuer, payment instrument form-factor, split transaction amount, split transaction ref (X/4) where X may be the amount to be split.

[0032] In the case of any transaction reversible or refund, all split transactions may be reversed or refunded by the proposed split payment application. Additionally, the final split transaction amount may be adjusted by the merchant after authorization, for example, tip amount, optimization of the transaction flow the first split transaction may be executed while above are being executed for the later failed split transactions.

[0033] In an embodiment, one or more computer-readable storage media may be utilized in implementing embodiments consistent with the present disclosure. A computer-readable storage medium refers to any type of physical memory on which information or data readable by a processor may be stored. Thus, a computer-readable storage medium may store instructions for execution by one or more processors, including instructions for causing the processor(s) to perform steps or stages consistent with the embodiments described herein. A non-transitory computer readable medium may include media such as magnetic storage medium, optical storage, volatile and non-volatile memory devices etc. Further, non-transitory computer-readable media may include all computer-readable media except for transitory. The code implementing the described operations may further be implemented in hardware logic (e.g., an integrated circuit chip, Programmable Gate Array (PGA), Application Specific Integrated Circuit (ASIC), etc.).

[0034] The described operations may be implemented as a method, system or article of manufacture using standard programming and/or engineering techniques to produce software, firmware, hardware, or any combination thereof. The described operations may be implemented as code maintained in a “non-transitory computer readable medium”, where a processor may read and execute the code from the computer readable medium. The processor is at least one of a microprocessor and a processor capable of processing and executing the queries.

[0035] The illustrated steps are set out to explain the exemplary embodiments shown, and it should be anticipated that ongoing technological development will change the manner in which particular functions are performed. These examples are presented herein for purposes of illustration, and not limitation. Further, the boundaries of the functional building steps have been arbitrarily defined herein for the convenience of the description. Alternative boundaries can be defined so long as the specified functions and relationships thereof are appropriately performed. Alternatives (including equivalents, extensions, variations, deviations, etc., of those described herein) will be apparent to persons skilled in the relevant art(s) based on the teachings contained herein. Such alternatives fall within the scope and spirit of the disclosed embodiments. Also, the words "comprising," "having," "containing," and "including," and other similar forms are intended to be equivalent in meaning and be open ended in that an item or items following any one of these words is not meant to be an exhaustive listing of such item or items or meant to be limited to only the listed item or items. It must also be noted that as used herein, the singular forms "a," "an," and "the" include plural references unless the context clearly dictates otherwise.

[0036] All patents, patent applications, publications, and descriptions mentioned above are herein incorporated by reference in their entirety for all purposes. None is admitted to being prior art.

[0037] Although the invention has been described in detail for the purpose of illustration based on what is currently considered to be the most practical and preferred embodiments, it is to be understood that such detail is solely for that purpose and that the invention is not limited to the disclosed embodiments, but, on the contrary, is intended to cover modifications and equivalent arrangements that are within the spirit and scope of the invention. For example, it is to be understood that the present invention contemplates that, to the extent possible, one or more features of any embodiment can be combined with one or more features of any other embodiment.

**POINT OF SALE (POS) PAYMENT APPLICATION WITH QUICK TRANSACTION
SPLIT CAPABILITY.**

ABSTRACT

The present disclosure discloses a point of sale (POS) terminal with payment application with quick transaction split capability. The present disclosure allows for the more payment credentials of all attendees to be collected in parallel. The method comprises initializing a split transaction by a merchant by entering a transaction amount in the POS and capturing, by the split payment application, payment credentials for each split transaction. The method further comprises temporarily storing the authorization requests for each split transaction and sending the authorization requests for each split transaction to a payment gateway. The present disclosure proposes performing the authorization requests in parallel mode by starting the next split transaction without waiting for the completion of the previous split transaction. Finally, the method comprises receiving and storing the authorization responses of each split transaction.

FIG. 1

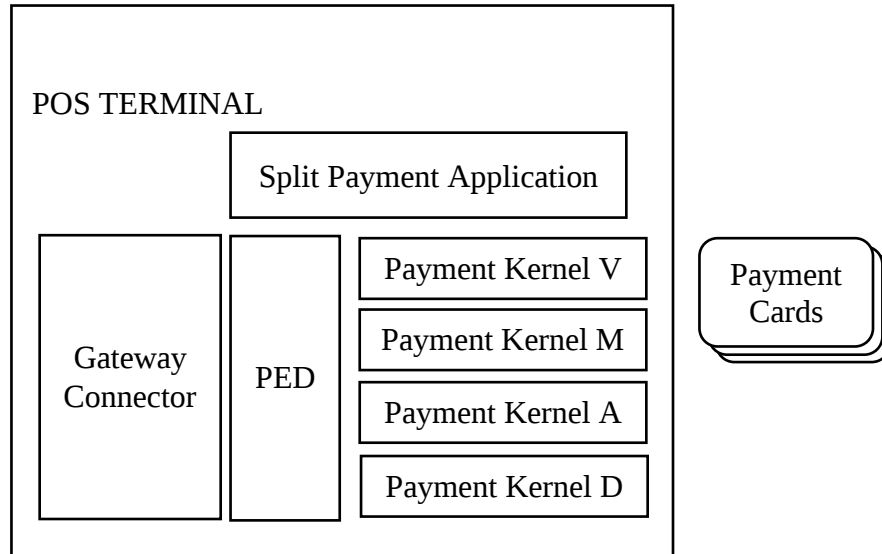


FIG.1

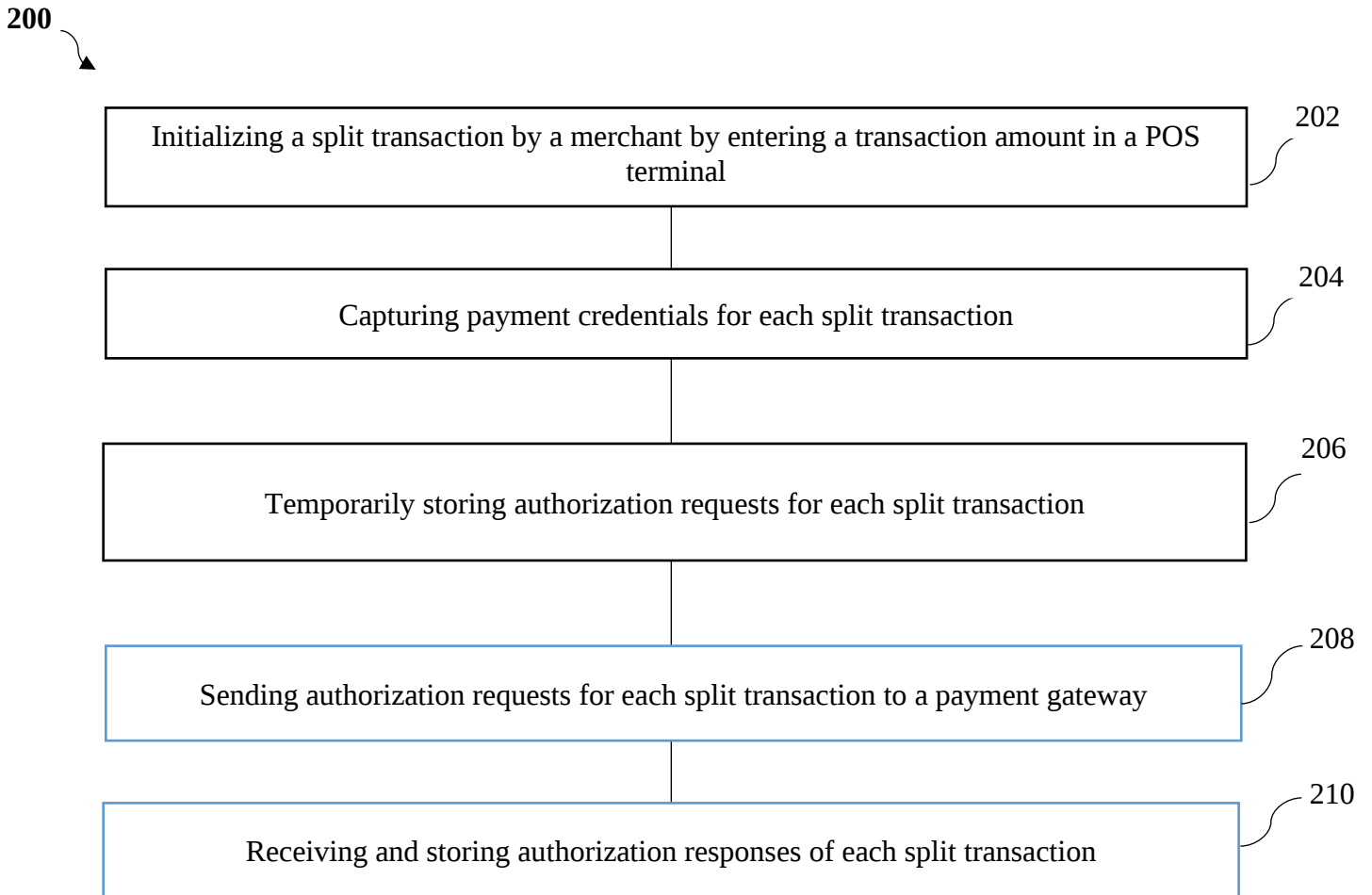


FIG.2