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## A METHOD AND A DEVICE FOR PERFORMING A TRANSACTION USING DIGITAL PAYEMENT CARD LINKED WITH A SIM CARD

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**TITLE: “A METHOD AND A DEVICE FOR  
PERFORMING A TRANSACTION USING DIGITAL  
PAYEMENT CARD LINKED WITH A SIM CARD”**

**VISA**

**ALOK ROY**

## **TECHNICAL FIELD**

**[0001]** This disclosure relates generally to the field of digital payment transactions. More particularly, the present disclosure relates to a method and device for performing a transaction using a digital payment card linked with a Subscriber Identity Module (SIM) card.

## **BACKGROUND**

**[0002]** In existing arts, there are one or more methods of making payments to the merchants. In existing techniques, one or more methods of making payment may be one of using cash, using payment cards, contactless payment cards, digital transaction, and the like. The payments cards may be one of credit cards, debit cards, gift cards and the like. For example, the user may make payment using payment cards by swiping or taping the payment cards on a POS device at merchant store. The POS device is enabled to perform Point of Sale (POS) transactions between the merchant and the customer. The POS transaction is a payment made by the customers for the purchase of goods or services which are offered by the merchant. The payment cards are issued by the issuer banks associated with the customers for ease of transaction. However, 30% of all credit card details change each year due to card validity period expiration, card portfolio upgrade, lost or stolen cards and the like. Thus, the change in the details of credit cards every year involves a large amount of expenses including the cost of printing a new card, delivering the card to the customer and the like. Also, the old cards which are trashed generate hazardous plastic and electronic waste and need special handling to avoid polluting the environment. Moreover, many cards are lost or misplaced while carrying them physically. This also increases the risk of fraud for wireless/contactless transactions at POS where people can use someone else's lost/misplaced card through contactless payments for bill upto the allowed limits in that country/region. For example, in India the limit for contactless/wireless payments at POS is INR 2000, hence, if a lost card is found by any miscreants, they can purchase items for bills up to INR 2000 until the cardholder realizes the card is lost and blocks it. Thus, there is a need for an improved device and method for making payments with reduced security risks and not causing harm to the environment.

**[0003]** In some embodiments the POS transactions are performed using some of the pre-installed applications. However, the existing applications may not support all of the mobile devices, except

for few selective manufacturers. Thus, there is a need for an improved device and a method for making payment transactions such that the usage can be targeted at the global level and not just restricted to conditional constraints.

## **SUMMARY**

**[0004]** The present disclosure relates to a method and device for performing transaction using digital payment cards linked with a SIM card. In some embodiments of the present disclosure, a user may request for issuing a payment card in one of a financial institution. The financial institutions may be one of banks, credit unions, insurance companies and the like. The financial institutions or issuing bank may perform verification of the user and upon successful verification issue the payment card in digital form instead of currently existing physical payment cards. The digital payment card may be received by the user through issuer's internet banking site or net banking app where the digital payment card can be made available to the user to view the card number, expiry date and CVV, and the user can refer these card details for making online purchases. Now, to make the payment card available for transactions through POS terminals, this present disclosure uses the method of SIM card. Upon successfully receiving the digital payment card, the user may initiate a registration process of this digital payment card with the existing SIM card of the user's mobile device using a preferred mobile application. The preferred mobile application may be an already existing application of the issuing bank, or a new application provided by the issuing bank for the registration purpose. The user may perform registration using an application installed in the user device. During the registration process, the user may provide the payment card details within the application which may be further used for performing payment transactions. The payment card credentials which are provided by the user through the application are transmitted to the SIM card associated with user device. The SIM card to be provided by the telecom service providers as it happens today and would have advanced programmable chip to use the same SIM card for both mobile communication and storing the payment card details through registration process. The payment card information stored in the SIM card can be accessed only through the issuer mobile banking app and user can use the app to transmit the card details through wireless communication like NFC to make POS transaction. Thus, the registration process may link the payment card with SIM card using the application installed within the user device. Upon registration, the user may use the payment card at a merchant store for making transactions. For

example, the user may simply open the issuer's application and initiate the wireless payment by tapping ~~tap~~ on a Point of Sale (POS) device at a merchant store using his mobile device and make a successful transaction. At the time of transaction, the POS device and the user device may connect with each other using Near Field Communication, and the payment card details are transmitted from the SIM card to the POS device for making the successful transaction. Thus, the present disclosure provides an improved and efficient method and device for making payment transactions using NFC. Hence, the payment cards which are used for making payments provide reduced security risk of carrying physical cards and being environmentally friendly. Also, in the present disclosure, the SIM card is configured with the details of the payment cards. Since the usage of SIM cards is supported by all mobile devices, the usage of payment card transaction using SIM card can be performed globally without any constraints. Also, in the present disclosure, all the details of the payment card are loaded into the SIM card, which excludes the usage of the cloud for storing payment card details which in turn reduces the cost expenditure.

**[0005]** These and other features and characteristics of the present invention, as well as the methods of operation and functions of the related elements of structures and the combination of parts and economies of manufacture, will become more apparent upon consideration of the following description and the appended concepts with reference to the accompanying drawings, all of which form a part of this specification, wherein like reference numerals designate corresponding parts in the various figures. 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. As used in the specification, the singular form of "a," "an," and "the" include plural referents unless the context clearly dictates otherwise.

### **BRIEF DESCRIPTION OF THE DRAWINGS**

**[0006]** Additional advantages and details of non-limiting embodiments are explained in greater detail below with reference to the exemplary embodiments that are illustrated in the accompanying schematic figures, in which:

[0007] **FIGURE. 1A** discloses a schematic diagram of a system for facilitating payment transaction using a digital payment card linked with a SIM card, in accordance with some embodiments of the present disclosure;

[0008] **FIGURE.1B** discloses an exemplary user device associated with a SIM card for performing digital payment transaction, in accordance with some embodiments of the present disclosure; and

[0009] **FIGURE.2** shows a flowchart illustrating a method of performing card payment transaction at POS terminal using a digital payment card linked with a SIM card, in accordance with some embodiments of the present disclosure.

### **DESCRIPTION OF THE DISCLOSURE**

[0010] In the present document, the word "exemplary" is used herein to mean "serving as an example, instance, or illustration." Any embodiment or implementation of the present subject matter described herein as "exemplary" is not necessarily to be construed as preferred or advantageous over other embodiments.

[0011] While the disclosure is susceptible to various modifications and alternative forms, specific embodiment thereof has been shown by way of example in the drawings and will be described in detail below. It should be understood, however that it is not intended to limit the disclosure to the particular forms disclosed, but on the contrary, the disclosure is to cover all modifications, equivalents, and alternative falling within the spirit and the scope of the disclosure.

[0012] The terms "comprises", "comprising", or any other variations thereof, are intended to cover a non-exclusive inclusion, such that a setup, device or method that comprises a list of components or steps does not include only those components or steps but may include other components or steps not expressly listed or inherent to such setup or device or method. In other words, one or more elements in a device or system or apparatus preceded by "comprises... a" does not, without more constraints, preclude the existence of other elements or additional elements in the device or system or apparatus.

**[0013]** The terms "an embodiment", "embodiment", "embodiments", "the embodiment", "the embodiments", "one or more embodiments", "some embodiments", and "one embodiment" mean "one or more (but not all) embodiments of the invention(s)" unless expressly specified otherwise.

**[0014]** The terms "including", "comprising", "having" and variations thereof mean "including but not limited to", unless expressly specified otherwise.

**[0015]** For purposes of the description hereinafter, the terms "end," "upper," "lower," "right," "left," "vertical," "horizontal," "top," "bottom," "lateral," "longitudinal," and derivatives thereof shall relate to the invention as it is oriented in the drawing figures. However, it is to be understood that the invention may assume various alternative variations and step sequences, except where expressly specified to the contrary. It is also to be understood that the specific devices 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.

**[0016]** As used herein, the terms "communication" and "communicate" may refer to the reception, receipt, transmission, transfer, provision, and/or the like of information (e.g., data, signals, messages, instructions, commands, and/or the like). For one unit (e.g., a device, a system, a component of a device or system, combinations thereof, and/or the like) to be in communication with another unit means that the one unit is able to directly or indirectly receive information from and/or transmit information to the other unit. This may refer to a direct or indirect connection (e.g., a direct communication connection, an indirect communication connection, and/or the like) that is wired and/or wireless in nature. Additionally, two units may be in communication with each other even though the information transmitted may be modified, processed, relayed, and/or routed between the first and second unit. For example, a first unit may be in communication with a second unit even though the first unit passively receives information and does not actively transmit information to the second unit. As another example, a first unit may be in communication with a second unit if at least one intermediary unit (e.g., a third unit located between the first unit and the second unit) processes information received from the first unit and communicates the processed information to the second unit. In some non-limiting embodiments, a message may refer to a

network packet (e.g., a data packet and/or the like) that includes data. It will be appreciated that numerous other arrangements are possible.

**[0017]** As used herein, the term “merchant” may refer to an individual or entity that provides goods and/or services, or access to goods and/or services, to customers based on a transaction, such as a payment transaction. The term “merchant” or “merchant system” may also refer to one or more computer systems operated by or on behalf of a merchant, such as a server computer executing one or more software applications. A “point-of-sale (POS) system,” as used herein, may refer to one or more computers and/or peripheral devices used by a merchant to engage in payment transactions with customers, including one or more card readers, near-field communication (NFC) receivers, RFID receivers, and/or other contactless transceivers or receivers, contact-based receivers, payment terminals, computers, servers, input devices, and/or other like devices that can be used to initiate a payment transaction.

**[0018]** As used herein, the term “user” may include an individual. In some embodiments, a user may be associated with one or more personal accounts and/or mobile devices. The user may also be referred to as a cardholder, account holder, or consumer in some embodiments.

**[0019]** As used herein, the term “user device” may be a device that is operated by a user. Examples of user devices may include a mobile phone, a smart phone, a card, a personal digital assistant (PDA), a laptop computer, a desktop computer, a server computer, a thin-client device, a tablet PC, etc. Additionally, user devices may be any type of wearable technology device, such as a watch, earpiece, glasses, etc. The user device may include one or more processors capable of processing user input. The user device may also include one or more input sensors for receiving user input. As is known in the art, there are a variety of input sensors capable of detecting user input, such as accelerometers, cameras, microphones, etc. The user input obtained by the input sensors may be from a variety of data input types, including, but not limited to, audio data, visual data, or biometric data. The user device may comprise any electronic device that may be operated by a user, which may also provide remote communication capabilities to a network. Examples of remote communication capabilities include using a mobile phone (wireless) network, wireless data network (e.g., 3G, 4G or similar networks), Wi-Fi, Wi-Max, or any other communication medium



that may provide access to a network such as the Internet or a private network. A user device may also be a credit, debit, or prepaid card.

**[0020]** As used herein, the term “access device” may be any suitable device for providing access to an external computer system. An access device may be in any suitable form. Some examples of access devices include point of sale (POS) devices, cellular phones, PDAs, personal computers (PCs), tablet PCs, hand-held specialized readers, set-top boxes, electronic cash registers (ECRs), automated teller machines (ATMs), virtual cash registers (VCRs), kiosks, security systems, access systems, Websites, and the like. An access device may use any suitable contact or contactless mode of operation to send or receive data from, or associated with, a mobile device. In some embodiments, where an access device may comprise a POS terminal, any suitable POS terminal may be used and may include a reader, a processor, and a computer-readable medium. A reader may include any suitable contact or contactless mode of operation. For example, exemplary card readers can include radio frequency (RF) antennas, optical scanners, bar code readers, or magnetic stripe readers to interact with a mobile device.

**[0021]** As used herein, the term "Access data" may include any suitable data that can be used to access a resource or create data that can access a resource. In some embodiments, access data may be account information for a payment account. Account information may include a PAN (primary account number), payment token, expiration date, verification values (e.g., CVV, CVV2, dCVV, dCVV2), etc. In other embodiments, access data may be data that can be used to activate account data. For example, in some cases, account information may be stored on a mobile device, but may not be activated until specific information is received by the mobile device. In other embodiments, access data could include data that can be used to access a location. Such access data may be ticket information for an event, data to access a building, transit ticket information, etc. In yet other embodiments, access data may include data used to obtain access to sensitive data. Examples of access data may include codes or other data that are needed by a server computer to grant access to the sensitive data.

**[0022]** As used herein, the term “authorizing entity” may be an entity that authorizes a request, typically using an authorizing computer to do so. An authorizing entity may be an issuer, a governmental agency, a document repository, an access administrator, etc. An “issuer” may

typically include a business entity (e.g., a bank) that maintains an account for a user. An issuer may also issue payment credentials stored on a user device, such as a cellular telephone, smart card, tablet, or laptop to the user.

**[0023]** As used herein, the term “network computer” may be a computer in a network. An authorizing computer may be an example of a network computer.

**[0024]** As used herein, the term “authorization request message” may be an electronic message that is sent to a payment processing network and/or an issuer of a payment card to request authorization for a transaction. An authorization request message according to some embodiments may comply with ISO 8583, which is a standard for systems that exchange electronic transaction information associated with a payment made by a user using a payment device or payment account. The authorization request message may include an issuer account identifier that may be associated with a payment device or payment account. An authorization request message may also comprise additional data elements corresponding to “identification information” including, by way of example only: a service code, a CVV (card verification value), a dCVV (dynamic card verification value), an expiration date, etc. An authorization request message may also comprise “transaction information,” such as any information associated with a current transaction, such as the transaction amount, merchant identifier, merchant location, etc., as well as any other information that may be utilized in determining whether to identify and/or authorize a transaction.

**[0025]** As used herein, the term “authorization response message” may be an electronic message reply to an authorization request message generated by an issuing financial institution or a payment processing network. The authorization response message may include, by way of example only, one or more of the following status indicators: Approval -- transaction was approved; Decline -- transaction was not approved; or Call Center -- response pending more information, merchant must call the toll-free authorization phone number. The authorization response message may also include an authorization code, which may be a code that a credit card issuing bank returns in response to an authorization request message in an electronic message (either directly or through the payment processing network) to the merchant's access device (e.g., POS equipment) that indicates approval of the transaction. The code may serve as proof of

authorization. As noted above, in some embodiments, a payment processing network may generate or forward the authorization response message to the merchant.

**[0026]** It will be apparent that systems and/or methods, described herein, can be implemented in different forms of hardware, software, or a combination of hardware and software. The actual specialized control hardware or software code used to implement these systems and/or methods is not limiting of the implementations. Thus, the operation and behavior of the systems and/or methods are described herein without reference to specific software code, it being understood that software and hardware can be designed to implement the systems and/or methods based on the description herein.

**[0027]** Some non-limiting embodiments or aspects are described herein in connection with thresholds. As used herein, satisfying a threshold may refer to a value being greater than the threshold, more than the threshold, higher than the threshold, greater than or equal to the threshold, less than the threshold, fewer than the threshold, lower than the threshold, less than or equal to the threshold, equal to the threshold, etc.

**[0028]** The present disclosure relates to a method and a device for performing a transaction using digital payment card linked with a SIM card. **FIGURE. 1A** discloses a schematic diagram of a system for facilitating payment transaction using a digital payment card linked with a SIM card, in accordance with some embodiments of the present disclosure. As shown in **FIGURE. 1A**, initially at step 1, a user **101** may request for issuing a payment card with an issuer bank **103**. In an embodiment, the user **101** may request one or more issuer banks **103** for issuing a payment card. The payment cards may be an electronic card which is linked to an account belonging to the user **101**. In some embodiments, the user **101** may already have an account in the issuer bank **103** or may create an account at an issuer bank **103**. Upon the creation of an account at the issuer bank **103**, the user **101** may request for issuing a payment card at the issuer bank. For example, the payment card may be a credit card, debit card, gift card and the like. Further, at step 2, the user **101** may receive a digital payment card from the issuer bank **103**. The issuer bank **103** may authenticate and verify the integrity of the user **101** before issuing the digital payment card to the user **101**. The digital payment card may be sent to the user via issuer's internet banking site or net banking app and the like. Furthermore, at step 3, the user **101** may register the payment card with

SIM card **105** in a user device **109** (as shown in FIGURE 1B) by entering the details of the digital payment card in an application installed within the user device **109**. The application installed within the user device **109** may be at least one of mobile bank applications or an exclusive application configured for the current digital transaction payment. Once the software application is installed within the user device **109**, thereafter the user **101** initiates a registration process by entering the digital payment card credentials issued by the issuer bank **103**. Furthermore, the credentials details entered in the application are linked to the SIM card **105** which is associated with the user device **109**. The SIM card **105** associated with the user device **109** may be a programmable chip, which can be used to store the digital payment card credentials and is used for mobile networks. Thus, the SIM card **105** associated with the user device **109** may perform a dual functionality by performing digital transaction with a Point of Sale (POS) device and initiating a mobile communication over the network. Also, the credentials of the digital payment card are being stored within the SIM card **105** as a result of which an explicit storage of card credentials details with the cloud infrastructure may be avoided and thus decreasing the expenditure required in storage of data on cloud infrastructure. Once the SIM card **105** registration process is complete, at step 4, the user **101** may perform card transactions at POS terminal using his user device **109**. For making payments, the user **101** may open the issuer's mobile application and initiate the wireless payment by placing the user device **109** near a POS device and further the SIM card **105** associated with the user device **109** detects the POS device using Near Field Communication. Finally, the digital payment card details are transmitted from the SIM card **105** associated with the user device **109** to the POS device for making the transaction.

[0029] **FIGURE.2** shows a flowchart illustrating a method of performing card payment transaction at POS terminal using a digital payment card linked with a SIM card, in accordance with some embodiments of the present disclosure.

[0030] As illustrated in **FIGURE.2**, the method **200** includes one or more blocks illustrating a method of performing card payment transaction at POS terminal using a SIM card **105** linked with a digital payment card. The method **200** may be described in the general context of computer executable instructions. Generally, computer executable instructions can include routines,

programs, objects, components, data structures, procedures, modules, and functions, which perform functions or implement abstract data types.

[0031] The order in which the method **200** is described is not intended to be construed as a limitation, and any number of the described method blocks can be combined in any order to implement the method **200**. Additionally, individual blocks may be deleted from the methods without departing from the spirit and scope of the subject matter described herein. Furthermore, the method **200** can be implemented in any suitable hardware, software, firmware, or combination thereof.

[0032] At **block 201**, the method **200** may include transmitting, by a user **101** a request for issuance of a payment card to an issuer bank **103**. In some embodiments, the user **101** may request for issuance of a payment card with more than one issuer bank. The user **101** may request in an issuer bank in which the user may have an account for holding his financial assets. In some embodiments, if the user **101** does not have an account in an issuer bank **103**, then the user **101** may create an account in issuer bank **103** and request for the issuance of a payment card. Upon receiving the request from user **101**, the issuer bank **103** may authorize and verify the integrity of the user **101** for providing the requested payment card.

[0033] At **block 203**, method **200** may include receiving, by the user **101**, a digital payment card from the issuer bank. The user **101** may receive the digital payment card instead of a physical payment card through issuer's internet banking site or net banking app and the like. The digital payment card received by the user **101** may include one or more payment card credentials such as payment card number, the Card Verification Value (CVV), the expiry date of the payment card and the like.

[0034] At **block 205**, the method **200** may include registering the digital payment card, by the user **101** with the existing SIM card of the user **101** mobile device. User **101** may install an application in the user device **109** for the registration process. For example, application installed within the user device **109** may be at least one of mobile bank applications or an exclusive application configured for the current digital transaction payment. Further, the user **101** may use the installed application for registration of the digital payment card with the SIM card **105**. The user **101** may initiate the registration process by entering the one or more credentials of the digital

payment card such as payment card number, expiry date, date of birth, CVV and the like. Furthermore, the issuer bank **103** may authenticate the details entered via the mobile application for the registration process. Upon successful authentication, the digital payment card is successfully registered. For example, the issuer bank may authenticate user **101** by at least one of sending a One Time Password (OTP) to the registered mobile number of the user **101**, asking a security question for which the user **101** may provide a correct answer and the like. In some embodiments, the user **101** may perform the registration with respect to one or more digital payment cards associated with user **101**. The one or more digital payment cards may be provided by one or more issuers banks for which the user **101** may have an account.

**[0035]** At **block 207**, the method **200** may include upon successful registration, transmitting the payment card details to the SIM card **105** such that the SIM card **105** and the digital payment card are linked with each other. SIM card **105** may store one or more credentials of the digital payment card.

**[0036]** At **block 209**, the method **200** may include making a transaction by user **101** using the user device **109** associated with the user **101**. The user device **109** may be inserted with a registered SIM card **105** having one or more credentials associated with the one or more payment cards of the user **101**. For example, the user **101** may tap or place the user device **109** at a POS device for making transaction with the merchant **107**. The SIM card **105** within the user device **109** may detect a POS device near to its location using a Near Field Communication (NFC) technology and transfer the stored payment card details to the POS device of the merchant **107**. Finally, the upon the successful authentication of the payment card details read by the POS device, funds transfer takes place from a user account to merchant **107**. Finally, the transaction is completed upon the successful fund transfer between user and merchant.

**[0037]** Finally, the language used in the specification has been principally selected for readability and instructional purposes, and it may not have been selected to delineate or circumscribe the inventive subject matter. Accordingly, the disclosure of the embodiments of the disclosure is intended to be illustrative, but not limiting, of the scope of the disclosure.

**[0038]** With respect to the use of substantially any plural and/or singular terms herein, those having skill in the art can translate from the plural to the singular and/or from the singular to the plural as is appropriate to the context and/or application. The various singular/plural permutations may be expressly set forth herein for sake of clarity.

**[0039]** 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 appended concepts. 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.

**A METHOD AND A DEVICE FOR PERFORMING A TRANSACTION USING  
DIGITAL PAYEMENT CARD LINKED WITH A SIM CARD**

**ABSTRACT**

The present disclosure relates to a method and device for linking digital payment card with a SIM card. Initially, a user 101 may request an issuer bank for issuing a payment card. Further, the user may receive a digital payment card from the issuer bank 103. The issuer bank 103 may transmit the digital payment card to the user only upon successful authorization of the user. Thereafter, the user may register the digital payment card with the existing SIM card 105 of the user's mobile device 109 using an application installed within the user device associated with the user 101. During registration, the user may provide one or more credentials of the payment card and link the digital payment card with the SIM card. Moreover, the SIM card 105 stores one or more credentials of the digital payment card. Finally, the user may perform a transaction using the user device in which the SIM card may transmit the credentials to the POS device using a NFC technology for performing fund transfer between the user and a merchant.

**FIGURE. 1A**



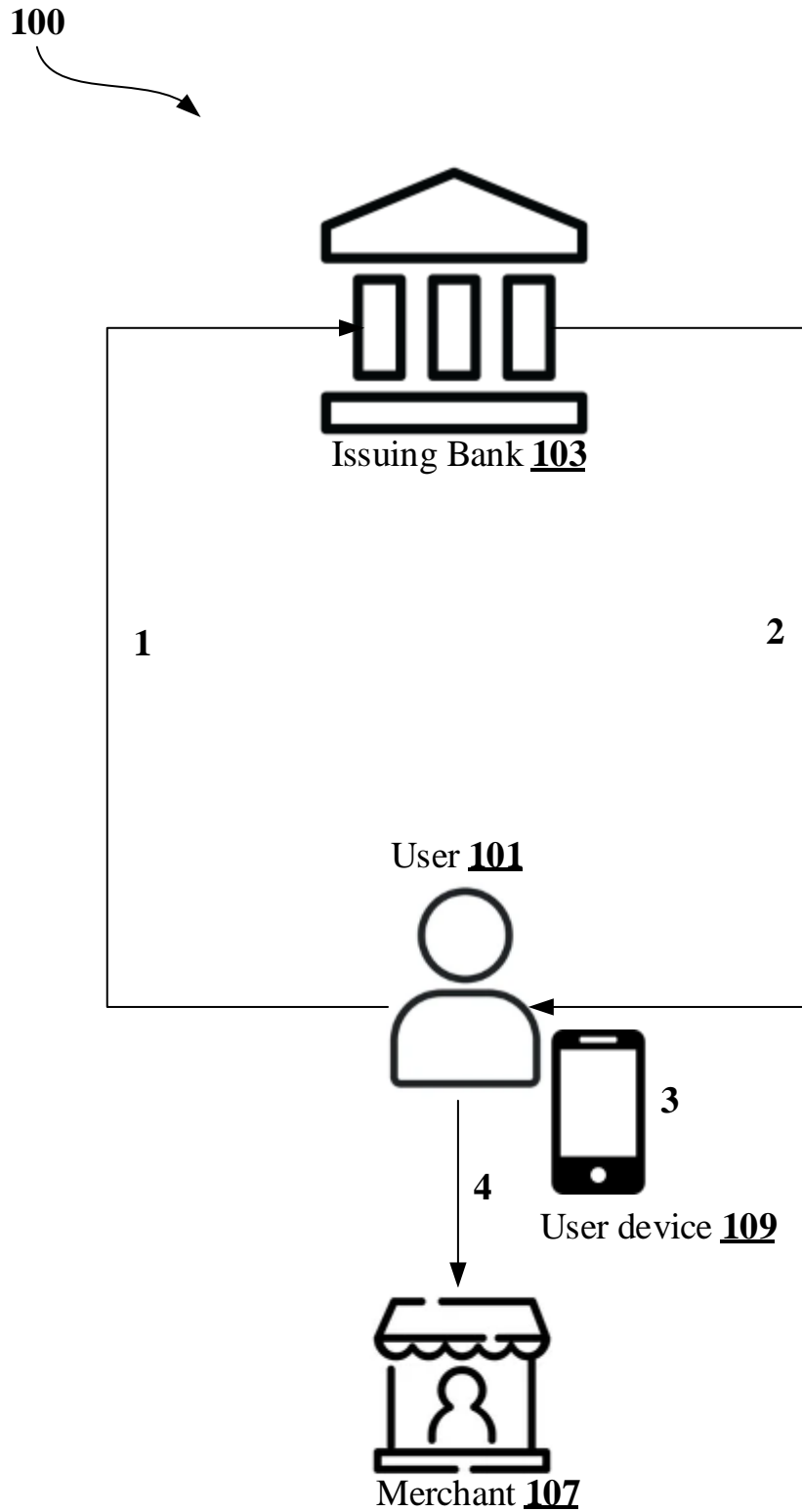
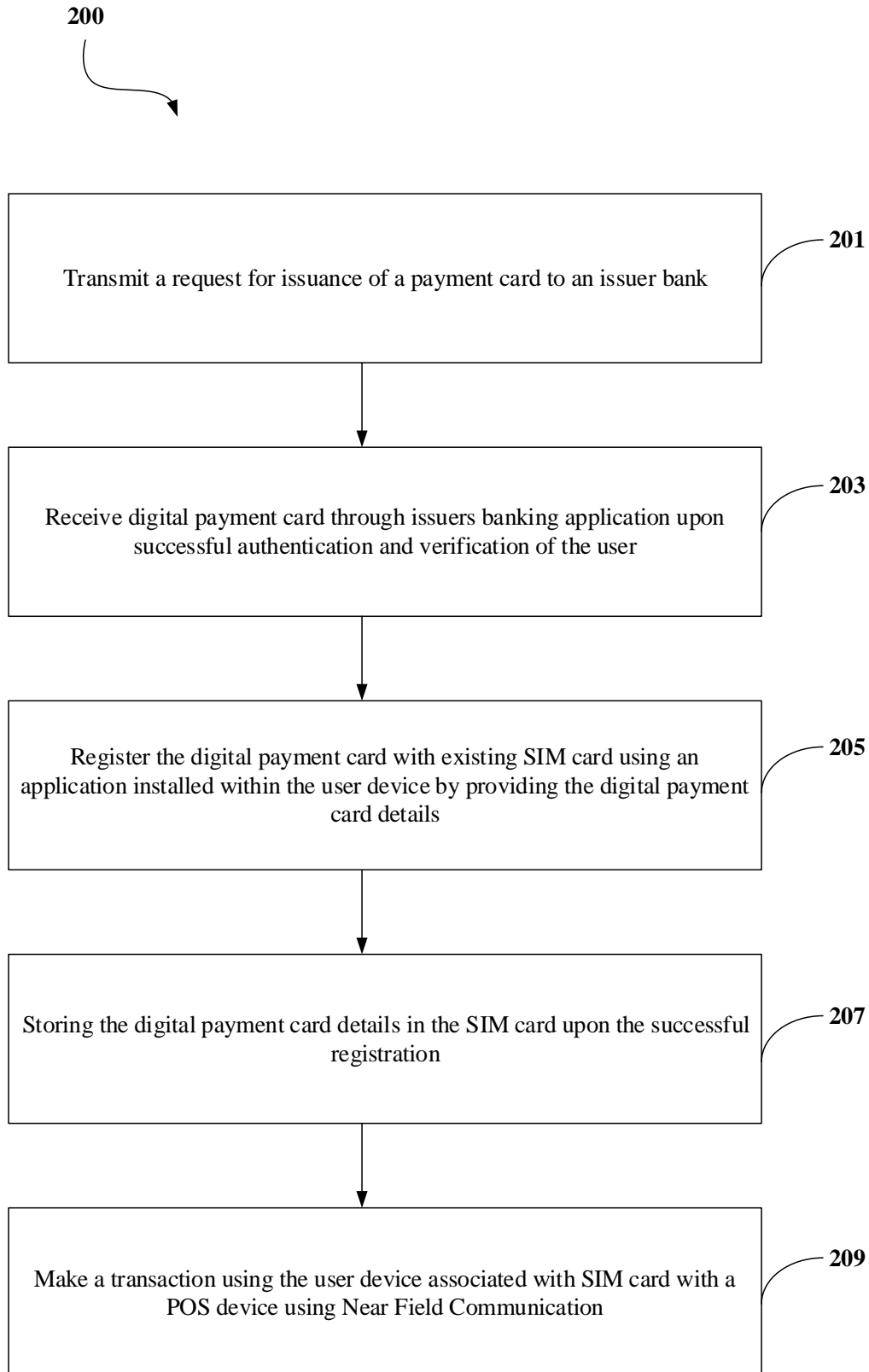


FIGURE. 1A



**FIGURE. 1B**



**FIGURE. 2**