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(54) **SPLITTING A PURCHASE AMONG  
MULTIPLE PARTIES USING AN  
ELECTRONIC RECEIPT AFTER THE  
TRANSACTION**

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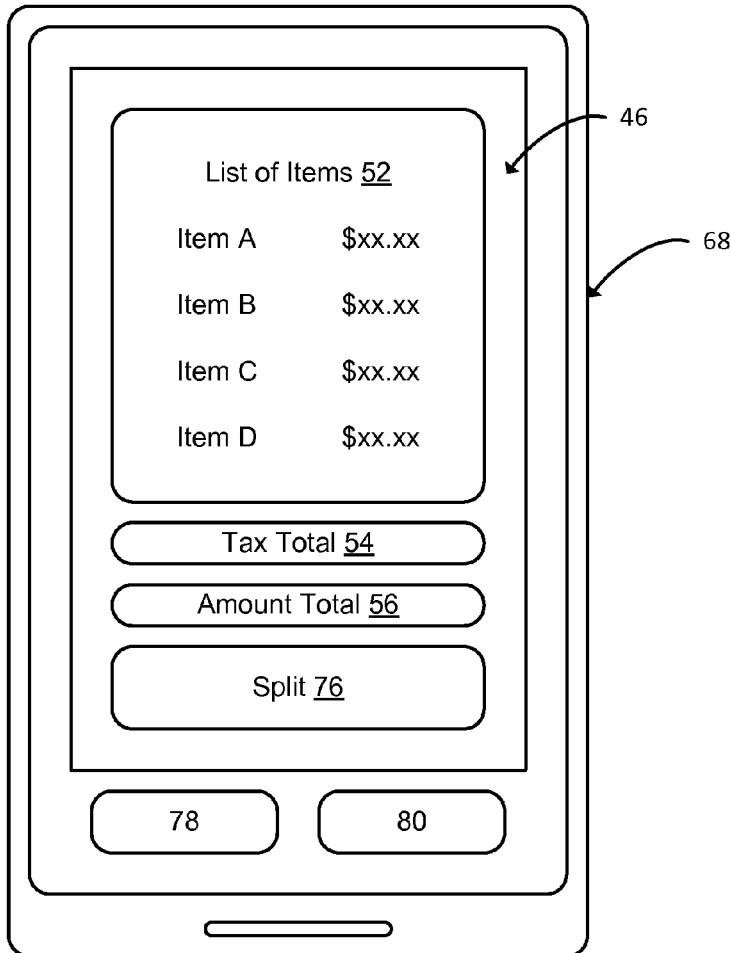
(57) **ABSTRACT**

A method is disclosed for a customer splitting the cost of a purchase with other persons. An electronic receipt may be viewed on a mobile electronic device with electronic receipts software thereon. Using a device configured according to one or more embodiments of the invention, a customer is able to select the receipt for splitting as well as selecting other persons to share the cost of items on the receipt. The customer may allocate item cost among those other persons. Information may be sent to a server or computer system to provide notifications to the other persons. The server may then process the request and transmit receipt information/notifications to the person requested by the customer.

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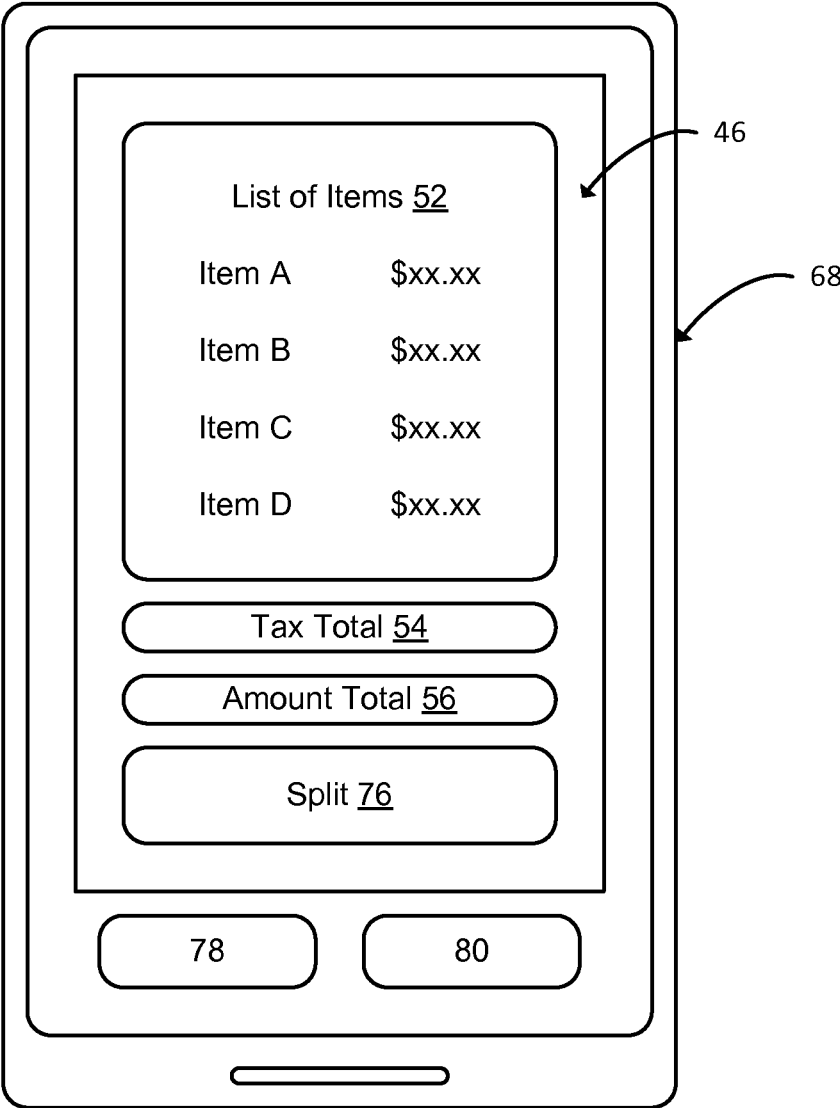


FIG. 1

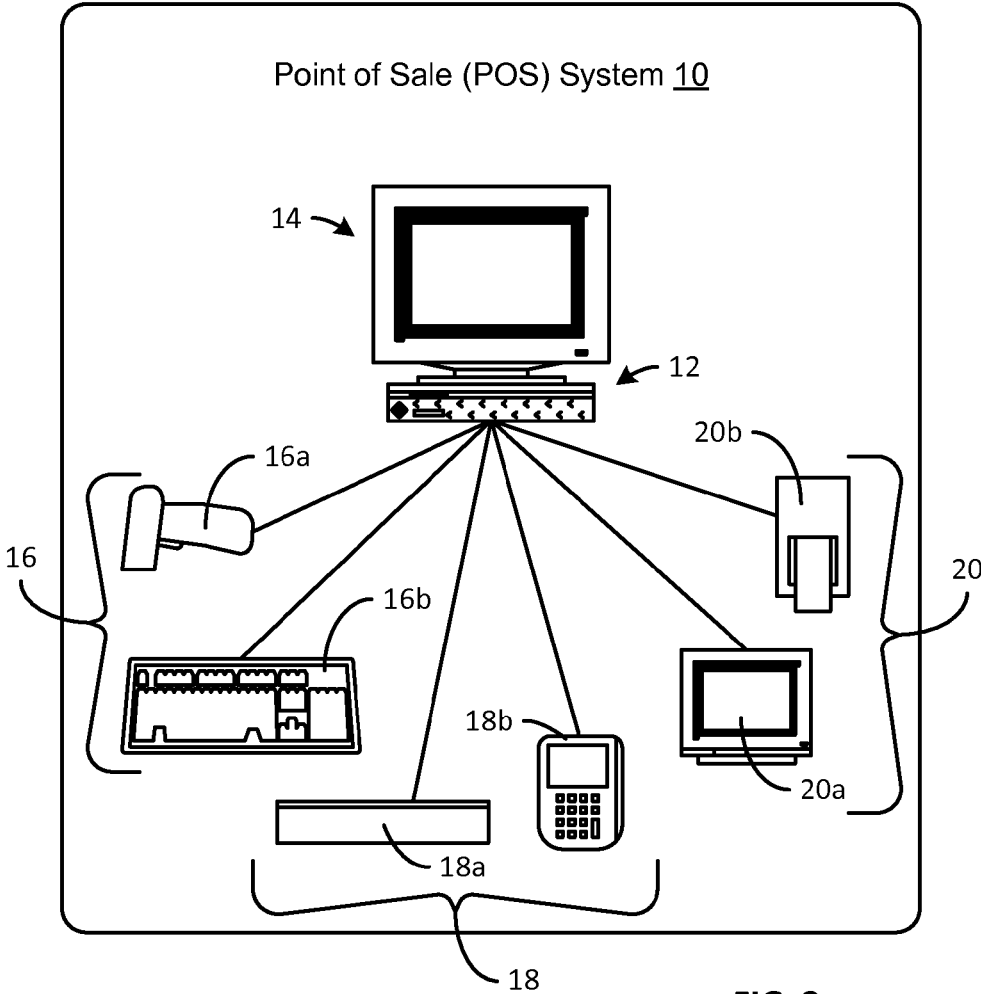


FIG. 2

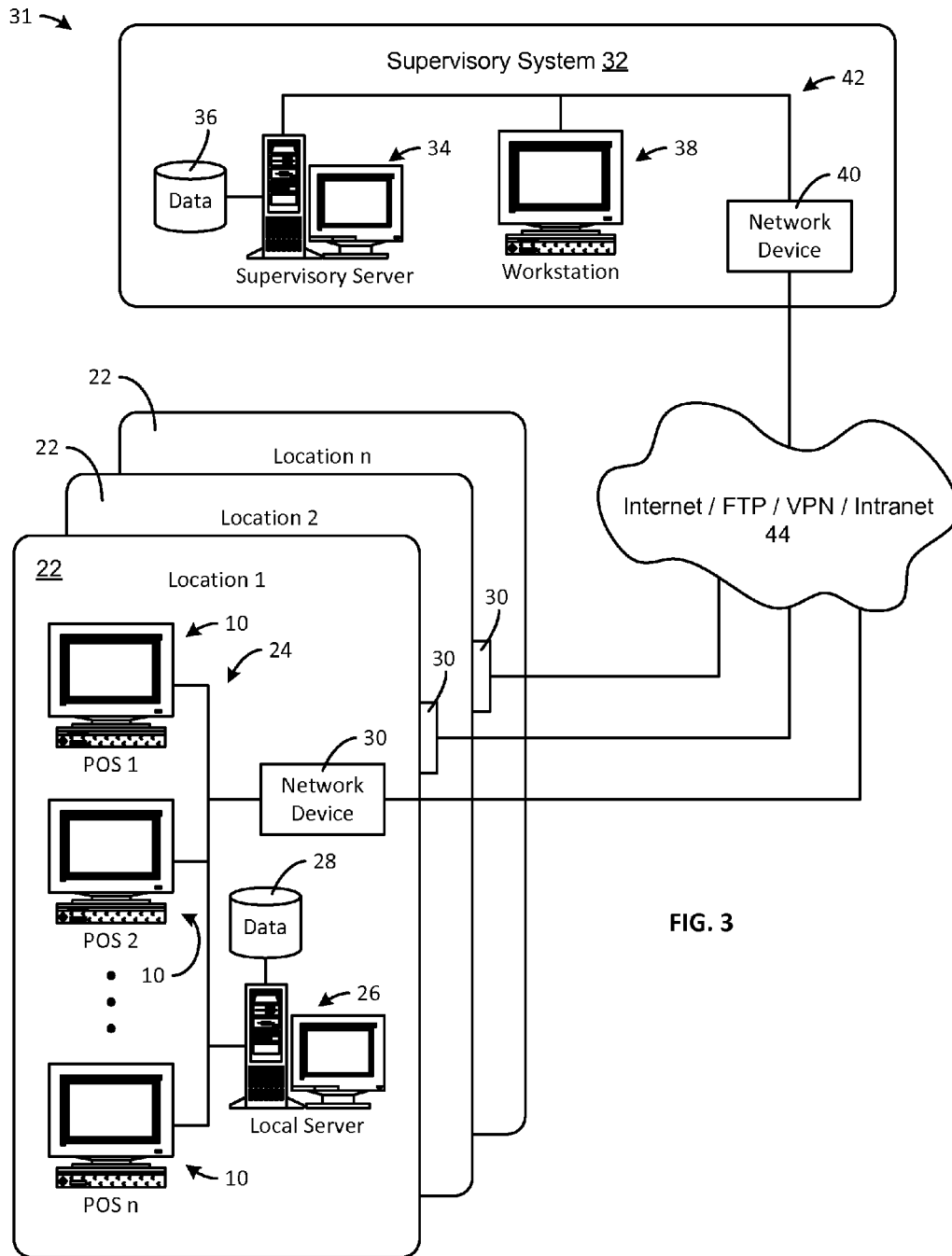


FIG. 3

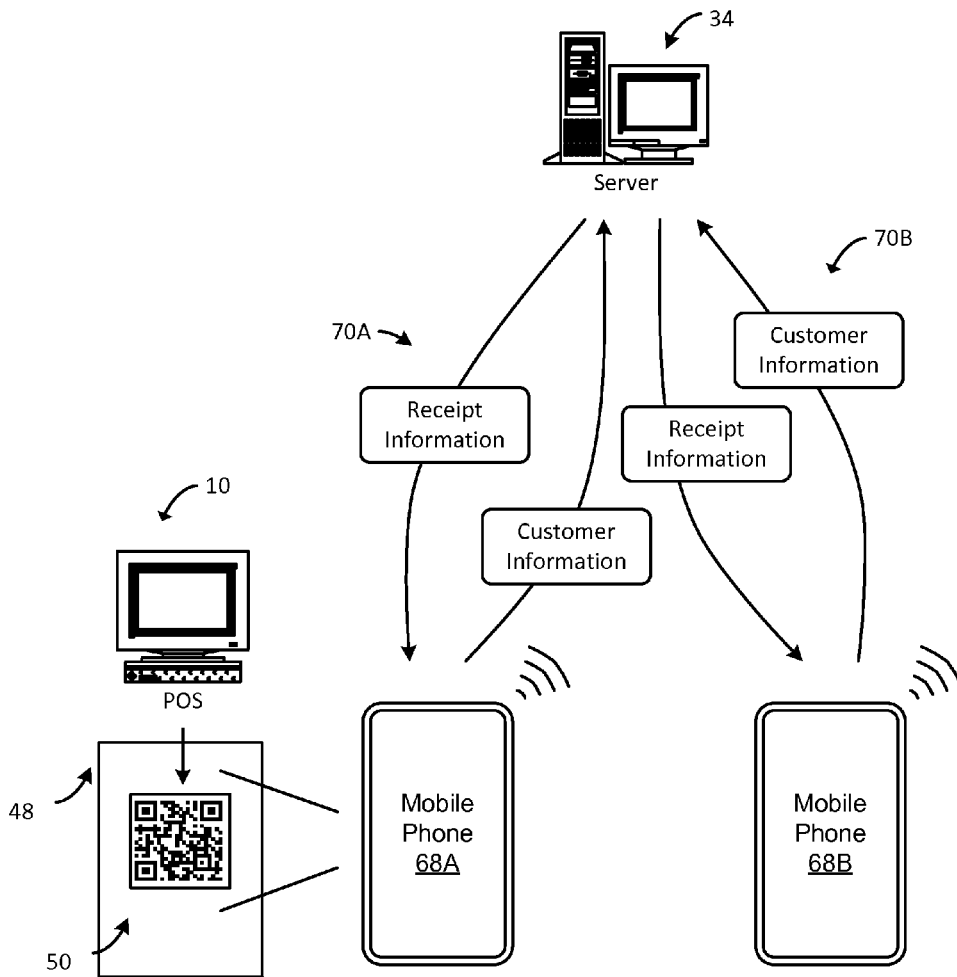


FIG. 4

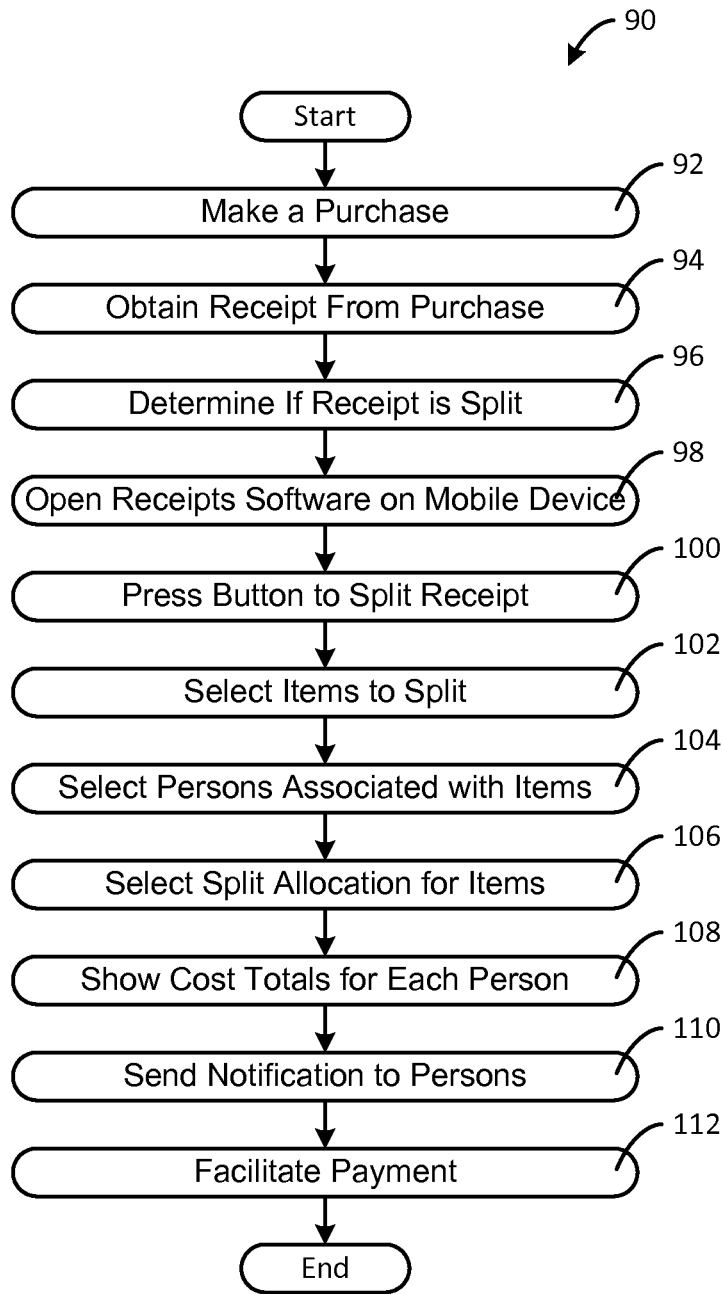


FIG. 5

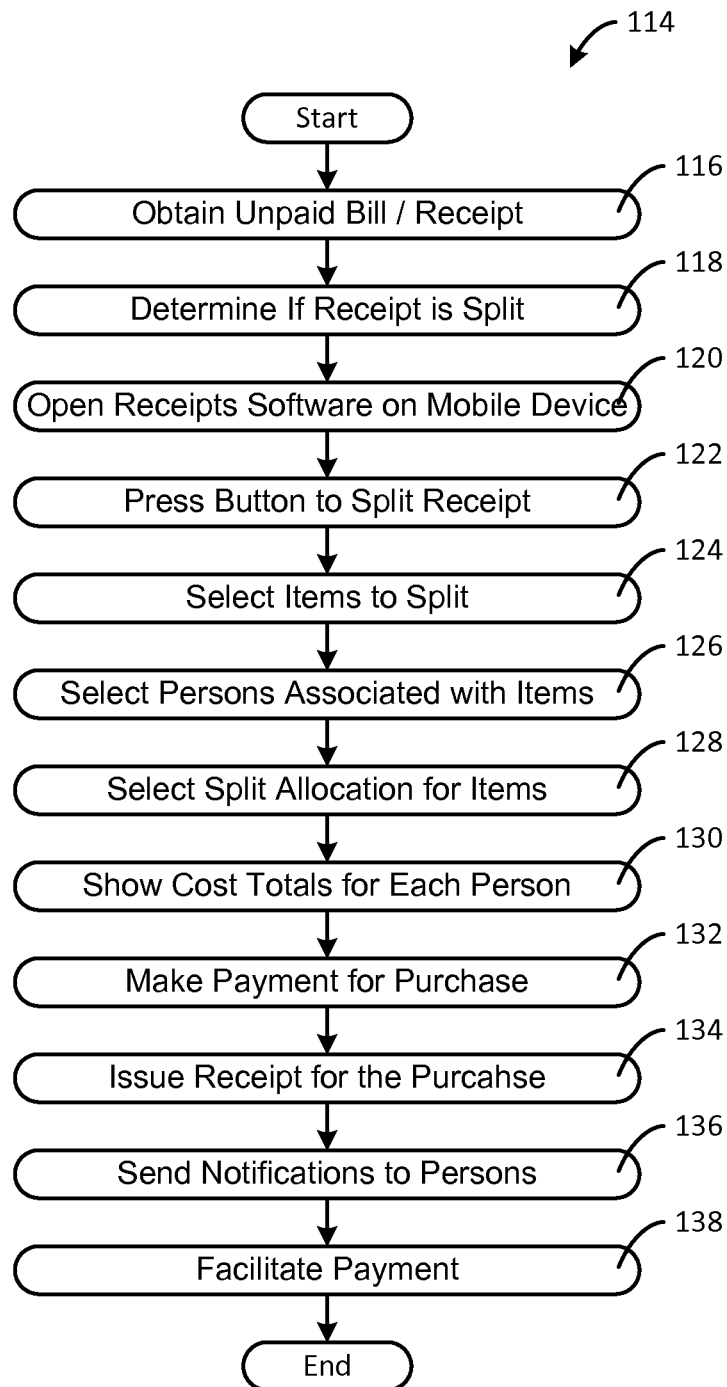


FIG. 6

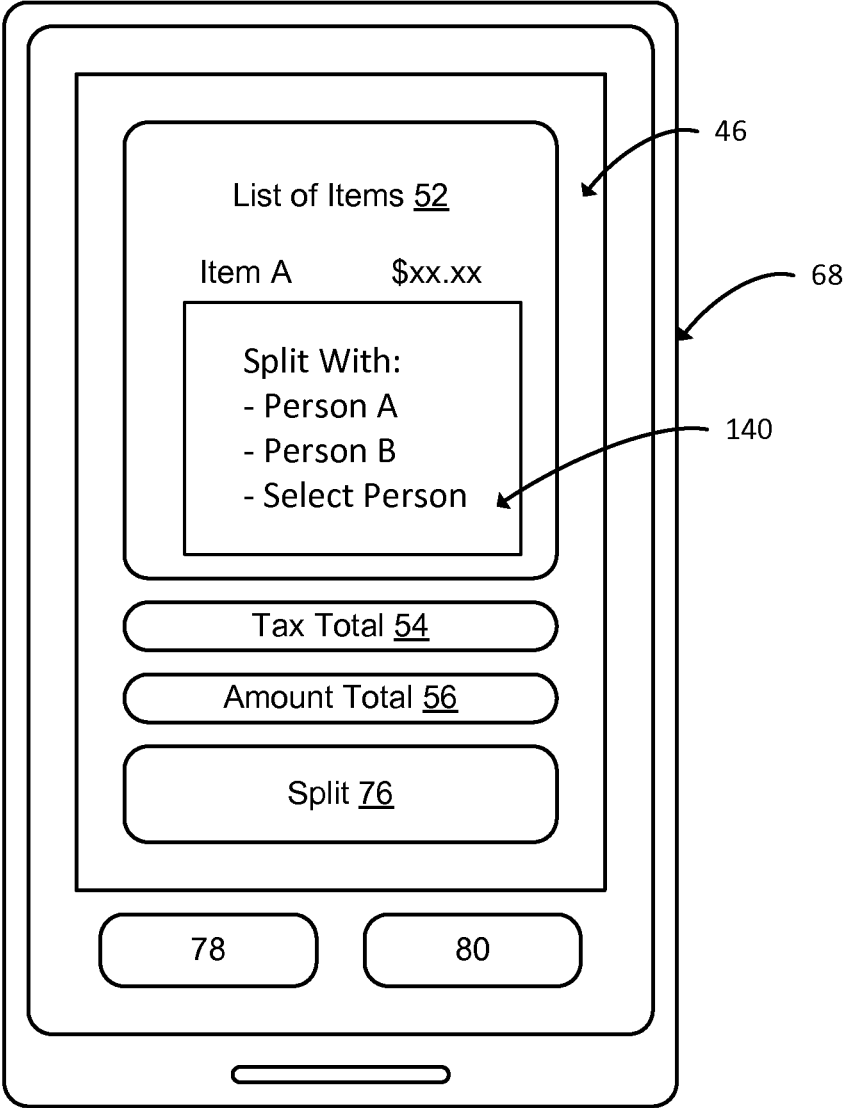


FIG. 7



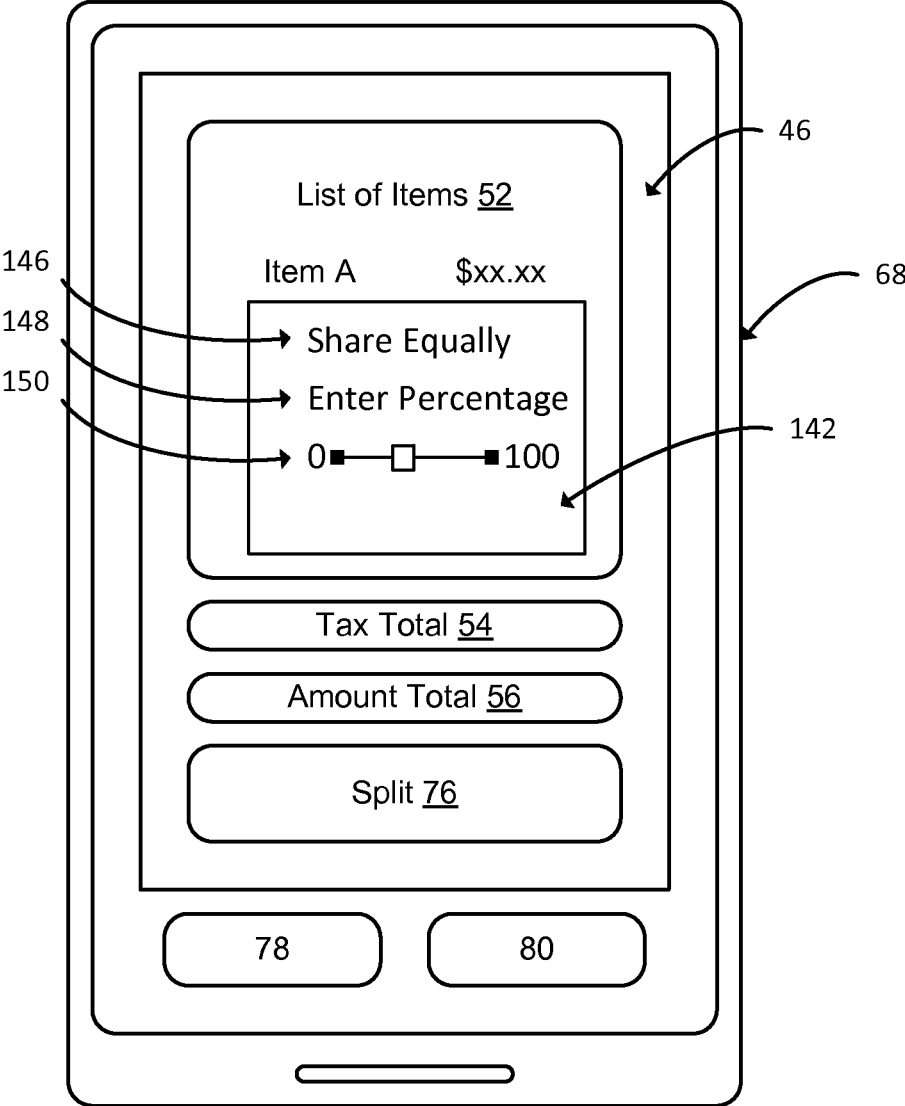


FIG. 8

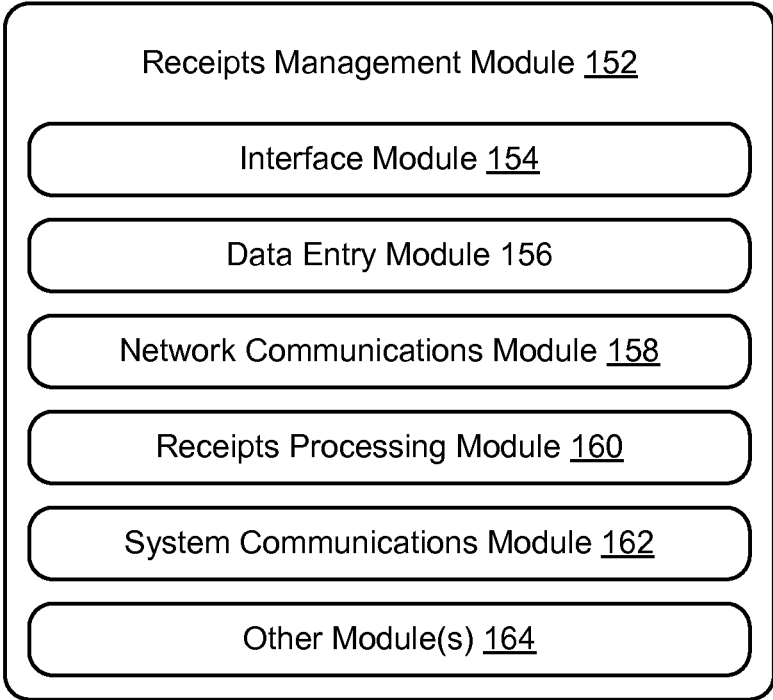


FIG. 9

## SPLITTING A PURCHASE AMONG MULTIPLE PARTIES USING AN ELECTRONIC RECEIPT AFTER THE TRANSACTION

### BACKGROUND

**[0001]** 1. Field of the Invention

**[0002]** This invention relates to receipts and receipt management systems and more particularly to an approach for allowing a customer to split a receipt, bill, or shopping cart with other people.

**[0003]** 2. Background of the Invention

**[0004]** Many point-of-sale (POS) systems currently in use today do not support important emerging technologies. For example, current POS systems are limited in their ability to handle electronic receipts and to facilitate management of receipts for transactions which generated electronic receipts. As a result, the adoption of electronic receipts is hindered or prevented by the inability to provide the functionality associated with a paper receipts or to adequately manage electronic receipts, and in particular for sharing a bill or the purchase of a cart of items among users of different devices. Accordingly, what is needed is a system and method for facilitating use of electronic receipts in new novel ways. As will be seen, the invention provides such an approach in an elegant manner.

### BRIEF DESCRIPTION OF THE DRAWINGS

**[0005]** In order that the advantages of the invention will be readily understood, a more particular description of the invention briefly described above will be rendered by reference to specific embodiments illustrated in the appended drawings. Understanding that these drawings depict only typical embodiments of the invention and are not therefore to be considered limiting of its scope, the invention will be described and explained with additional specificity and detail through use of the accompanying drawings, in which:

**[0006]** FIG. 1 is a schematic block diagram of one embodiment of a receipt viewed on a mobile electronic device;

**[0007]** FIG. 2 is a schematic block diagram of one embodiment of a point-of-sale (POS) system having the capability to allow splitting of receipts, bills, and purchases among customers;

**[0008]** FIG. 3 is a schematic block diagram of one embodiment of multiple POS systems operating in the context of an enterprise-wide system;

**[0009]** FIG. 4 is a block diagram illustrating the flow of data within one embodiment;

**[0010]** FIG. 5 is a block diagram of one embodiment of a method for splitting a receipt;

**[0011]** FIG. 6 is a block diagram of one embodiment of a method for splitting a receipt;

**[0012]** FIG. 7 is a schematic block diagram of one embodiment of a receipt viewed on a mobile electronic device;

**[0013]** FIG. 8 is a schematic block diagram of one embodiment of a receipt viewed on a mobile electronic device; and

**[0014]** FIG. 9 is a schematic block diagram of one embodiment of a receipts sharing module.

### DETAILED DESCRIPTION

**[0015]** It will be readily understood that the components of the embodiments, as generally described and illustrated in the Figures herein, could be arranged and designed in a wide

variety of different configurations. Thus, the following more detailed description of the embodiments of the invention, as represented in the Figures, is not intended to limit the scope of the invention, as claimed, but is merely representative of certain examples of presently contemplated embodiments in accordance with the invention. The presently described embodiments will be best understood by reference to the drawings, wherein like parts are designated by like numerals throughout.

**[0016]** The invention has been developed in response to the present state of the art and, in particular, in response to the problems and needs in the art that have not yet been fully solved by currently available apparatus and methods. Accordingly, a novel approach is provided for managing receipts and in particular for sharing or splitting a bill, shopping cart, or purchase with friends and other persons. For simplicity, this will typically be referred to herein simply as splitting a receipt.

**[0017]** In selected embodiments, a customer may utilize a mobile electronic device, such as a smart phone or tablet. Referring to FIG. 1, an electronic receipt 46 may be displayed or managed on a mobile electronic device 68. The device 68 may include receipt management software which allows the customer to receive electronic receipts on and manage receipts with the mobile electronic device 68. The software may allow the customer to interface with the electronic receipt, with a store point of sale (POS) system, and with a back office/supervisory receipts management system. The electronic receipt software and/or the receipts management system may allow the customer to share or split a receipt, bill, or shopping cart among other people such as among different users of mobile electronic devices. The customer may select a person to split a receipt with, and may split the costs associated with that receipt with this person.

**[0018]** An electronic receipt 46 may include a list of items 52 which may show the items purchased on that receipt and which may show the cost of those items. The receipt may also display the taxes or other surcharges 54 and the after tax total 56. The electronic receipt 46 may be displayed in a manner similar to a paper receipt in this regard. The receipt management software may display the electronic receipt 46 with a button 76 to allow the customer to split the receipt among other persons.

**[0019]** Typically, such a receipt 46 is for an event or purpose which is shared among a group of people. The receipt may include items for a party, a meal purchase, items for a trip, etc. In these cases, it is often desirable to split the costs for purchasing the items which are recorded on a receipt among the various people involved with the event. The customer may allocate different items among one or more other persons to split the receipt and determine how much each person should pay. Different allocation methods may be used to divide the receipt/item cost in a manner agreed upon by the various people. The receipt management software may send notifications to individuals indicating how much they should pay, and in some cases who they should pay. The receipt management software may assist persons with payment of their portion of the receipt.

**[0020]** Various parts of a receipts management system may facilitate communication with the customer and others and may allow the customer to split receipts among other persons. Various parts of a receipts management system are described to illustrate how these may allow a customer to manage electronic receipts, and more particularly to split receipts among

other people. In certain embodiments, a machine-readable code may be used to interact between the customer's mobile electronic device, receipts, a receipts management server, and/or the POS system. The machine readable code may comprise a conventional barcode or a two-dimensional barcode (e.g., a Quick Response (QR) Code). The data encoded within a machine-readable code may vary between different embodiments and different purposes or goals of the embodiment. In selected embodiments, a machine-readable code may encode a transaction identification (ID) uniquely identifying a particular transaction (e.g., purchase, return, or the like). Alternatively, or in addition thereto, a machine-readable code may encode data regarding the POS terminal and/or the store where the terminal is located. A machine readable code may facilitate the installation of electronic receipts software by the customer or other persons known to the customer. In some embodiments, a machine readable code may be accompanied by an alpha-numeric code. A customer may obtain electronic receipts and manage electronic receipts through an account established with a receipt management server. The customer's mobile device telephone number, member number, etc. may be used to identify the customer and to deliver electronic receipts to the customer or otherwise interact with the customer.

**[0021]** In general, the purpose of a receipts system is to facilitate the handling of receipts in a manner which is convenient to the customer and which allows a customer to easily perform desired management tasks related to receipts such as accounting, cost allocation, and splitting receipts. Many challenges arise in using electronic receipts. In particular, the use of electronic receipts may create challenges when a customer needs to perform subsequent receipt management functions such as splitting receipts with friends or other persons.

**[0022]** Embodiments in accordance with the invention may be embodied as an apparatus, system, device, method, computer program product, or other entity. Accordingly, the invention may take the form of an entirely hardware embodiment, an entirely software embodiment (including firmware, resident software, micro-code, etc.), or an embodiment combining software and hardware aspects that may all generally be referred to herein as a "module" or "system." Furthermore, the invention may take the form of a computer program product embodied in any tangible medium of expression having computer-usable program code embodied in the medium.

**[0023]** Any combination of one or more computer-usable or computer-readable media may be utilized. For example, a computer-readable medium may include one or more of a portable computer diskette, a hard disk, a random access memory (RAM) device, a read-only memory (ROM) device, an erasable programmable read-only memory (EPROM or Flash memory) device, a portable compact disc read-only memory (CDROM), an optical storage device, and a magnetic storage device. In selected embodiments, a computer-readable medium may comprise any non-transitory medium that can contain, store, communicate, propagate, or transport the program for use by or in connection with the instruction execution system, apparatus, or device.

**[0024]** Computer program code for carrying out operations of embodiments described herein may be written in any combination of one or more programming languages, including an object-oriented programming language such as Java, Smalltalk, C++, or the like and conventional procedural programming languages, such as the "C" programming language or similar programming languages. The program code may

execute entirely on a computer of a point-of-sale (POS) system, partly on a POS computer, as a stand-alone software package, on a stand-alone hardware unit, partly on a remote computer spaced some distance from the POS computer, or entirely on a remote computer or server. In the latter scenario, the remote computer may be connected to the POS computer through any type of network, including a local area network (LAN) or a wide area network (WAN), or the connection may be made to an external computer (e.g., through the Internet using an Internet Service Provider).

**[0025]** Embodiments can also be implemented in cloud computing environments. In this description and the following claims, "cloud computing" is defined as a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned via virtualization and released with minimal management effort or service provider interaction, and then scaled accordingly. A cloud model can be composed of various characteristics (e.g., on-demand self-service, broad network access, resource pooling, rapid elasticity, measured service, etc.), service models (e.g., Software as a Service ("SaaS"), Platform as a Service ("PaaS"), Infrastructure as a Service ("IaaS"), and deployment models (e.g., private cloud, community cloud, public cloud, hybrid cloud, etc.).

**[0026]** The embodiments are described herein with reference to flowchart illustrations and/or block diagrams of methods, apparatus (systems) and computer program products according to embodiments of the invention. It will be understood that each block of the flowchart illustrations and/or block diagrams, and combinations of blocks in the flowchart illustrations and/or block diagrams, can be implemented by computer program instructions or code. These computer program instructions may be provided to a processor of a general purpose computer, special purpose computer, or other programmable data processing apparatus to produce a machine, such that the instructions, which execute via the processor of the computer or other programmable data processing apparatus, create means for implementing the functions/acts specified in the flowchart and/or block diagram block or blocks.

**[0027]** These computer program instructions may also be stored in a computer-readable medium that can direct a computer or other programmable data processing apparatus to function in a particular manner, such that the instructions stored in the computer-readable medium produce an article of manufacture including instruction means which implement the function/act specified in the flowchart and/or block diagram block or blocks.

**[0028]** The computer program instructions may also be loaded onto a computer or other programmable data processing apparatus to cause a series of operational steps to be performed on the computer or other programmable apparatus to produce a computer implemented process such that the instructions which execute on the computer or other programmable apparatus provide processes for implementing the functions/acts specified in the flowchart and/or block diagram block or blocks.

**[0029]** Referring to FIG. 2, in selected embodiments, the hardware, software, or hardware and software of a POS system 10 may be configured to implement one or more methods in accordance with embodiments described herein. For example, a POS system 10 may be manufactured, pro-

grammed, modified, or upgraded to support providing electronic receipts to customers and to facilitate subsequent management of the receipt. In particular, a POS system may allow a customer to split a receipt with other persons. In discussing the present system, it is appreciated that the system may involve one or more parts of a local POS terminal and associated computers or servers, remote computers or servers, customer devices such as a mobile electronic device, and associated equipment.

**[0030]** A POS system **10** may include various components. In certain embodiments, a POS system **10** may include a central or primary computer **12**, a monitor **14** (e.g., a cashier-facing monitor **14**), one or more input devices **16** (e.g., scanners **16a**, keyboards **16b**, scales, or the like), one or more payment devices **18** (e.g., cash drawers **18a**, card readers **18b**) for receiving or returning payments, one or more output devices **20** (e.g., customer-facing display **20a** or monitor **20a**, receipt printer **20b**), or the like or combinations or sub-combinations thereof.

**[0031]** A computer **12** may form the primary processing unit of a POS system **10**. Other components **16**, **18**, **20** forming part of a POS system **10** may communicate with the computer **12**. Input devices **16** and certain payment devices **18** may feed data and commands to a computer **12** for processing or implementation. For example, a scanner **16a** may pass data communicating the identity of one or more items to be purchased, returned, or the like to a computer **12**. Similarly, a card reader **18b** may pass payment information to a computer **12**.

**[0032]** Conversely, output devices **20** and certain payment devices **18** may follow or implement commands issued by a computer **12**. For example, a cash drawer **18a** may open in accordance with the commands of a computer **12**. Similarly, a customer-facing display **20a** and receipt printer **20b** may display or output data or information as instructed by a computer **12**.

**[0033]** In selected embodiments, in addition to handling consumer transactions (e.g., purchases, returns), a POS system **10** may also provide or support certain “back office” functionality. For example, a POS system **10** may provide or support inventory control, purchasing, receiving and transferring products, or the like. A POS system **10** may also store sales and customer information for reporting purposes, marketing purposes, receivables management, trend analysis, cost analysis, price analysis, profit analysis, or the like. If desired or necessary, a POS system **10** may include an accounting interface to pass certain information to one or more in-house or independent accounting applications. A POS system **10** may also communicate with third parties and may transmit receipt information and facilitate customer management of receipts.

**[0034]** Referring to FIG. 3, in selected embodiments, a POS system **10** may operate substantially independently, as a stand-alone unit. Alternately, a POS system **10** may be one of several POS systems **10** forming the front line of a larger system. For example, multiple POS systems **10** may operate at a particular location **22** (e.g., within a retail, brick-and-mortar store). In such embodiments, the various POS systems **10** may be interconnected via a LAN **24**. A LAN **24** may also connect the POS systems **10** to a local server **26**.

**[0035]** A local server **26** may support the operation of the associated POS systems **10**. For example, a server **26** may provide a central repository from which certain data needed by the associated POS systems **10** may be stored, indexed,

accessed, or the like. A server **26** may serve certain software to one or more POS systems **10**. In certain embodiments, a POS system **10** may offload certain tasks, computations, verifications, or the like to a server **26**.

**[0036]** Alternatively, or in addition thereto, a server **26** may support certain back office functionality. For example, a server **26** may receive and compile (e.g., within one or more associated databases **28**) data from the various associated POS systems **10** to provide or support inventory control, purchasing, receiving and transferring products, or the like. A server **26** may also receive and compile sales and customer information for reporting purposes, marketing purposes, receivables management, trend analysis, cost analysis, price analysis, profit analysis, or the like.

**[0037]** In certain embodiments, one or more POS systems **10** or servers **26** corresponding to a particular location **22** may communicate with or access one or more remote computers or resources via one or more network devices **30**. For example, a network device **30** may enable a POS system **10** to contact outside resources and verify the payment credentials (e.g., credit card information) provided by a customer. A network device **30** may comprise a modem, router, or the like.

**[0038]** In selected embodiments, a POS system **10** may operate within an enterprise-wide system **31** comprising multiple locations **22** (e.g., branches **22** or stores **22**). In such embodiments, each location **22** may have one or more POS systems **10**, local servers **26**, local databases **28**, network devices **30**, or the like or combinations or sub-combinations thereof connected by a computer network (e.g., a LAN **24**). Additionally, each such location **22** may be configured to interact with one or more supervisory systems **32**. For example, multiple branch locations **22** may report to an associated “headquarters” location or system **32**.

**[0039]** A supervisory system **32** may comprise one or more supervisory servers **34**, databases **36**, workstations **38**, network devices **40**, or the like or combinations or sub-combinations thereof. The various components of a supervisory system **32** may be interconnected via a computer network (e.g., a LAN **42**). In selected embodiments, a supervisory system **32** may comprise one or more supervisory servers **34** providing a central repository from which certain data needed by the one or more POS systems **10** or local servers **26** may be stored, indexed, accessed, or the like.

**[0040]** Alternatively, or in addition thereto, a supervisory server **34** may receive and compile (e.g., within one or more associated databases **36**) data from the various associated POS systems **10** or local servers **26** to provide or support inventory control, purchasing, receiving and transferring products, or the like. A supervisory server **34** may also receive and compile sales and customer information for reporting purposes, marketing purposes, receivables management, trend analysis, cost analysis, price analysis, profit analysis, or the like.

**[0041]** A supervisory system **32** may be connected to one or more associated locations **22** or branches **22** in via any suitable computer network **44** (e.g., WAN **44**). For example, in selected embodiments, one or more locations **22** may connect to a supervisor system **32** via the Internet. Communication over such a network **44** may follow any suitable protocol or security scheme. For example, communication may utilize the File Transfer Protocol (FTP), a virtual private network (VPN), intranet, or the like.

**[0042]** It is thus appreciated that in discussing the functionality of the various POS terminals and servers, the embodi-

ments described herein may be implemented in a system contained within a single location or across multiple locations. By way of example, the functionality accomplished by a server or computer, such as storing, processing, and transmitting/sending receipt information, may be accomplished by a local computer or a remote computer such as servers 26 and 34.

[0043] Referring to FIG. 4, a customer may download or may already have downloaded electronic receipts software to a mobile electronic device 68A. The mobile electronic device 68A may be a smart phone, tablet PC, etc. A customer may have previously received a paper receipt 48 which includes an invitation such as a 2d barcode 50 to use electronic receipts instead of paper receipts and may have installed electronic receipts software on the mobile electronic device 68A.

[0044] As indicated at 70A, the customer may have an account with the computer server 34 and may transmit information to the server 34. It will be appreciated that the functionality of server 34 may be implemented by server 26, etc. The computer server 34 may likewise transmit information to the mobile device 68A. The customer may receive electronic receipts on the mobile device 68A and the electronic receipts software on the mobile device 68A may enable them to manage electronic receipts. Additionally, the electronic receipts software may allow the customer to interact with a POS system 10 and with other persons via the mobile electronic device 68A.

[0045] In addition to the customer, one or more additional persons associated with the customer may have an electronic device 68B which has electronic receipts software. The receipts management software may allow the customer to manage electronic receipts through interactions with other persons known to them. These other persons may have previously received a paper receipt 48 which includes an invitation to use electronic receipts instead of paper receipts and may have installed electronic receipts software on the mobile electronic device 68B.

[0046] Both the customer and the additional person(s) may have created an account with the receipts management server. The account may include a login such that the account is secure. The account and/or account creation process may facilitate verification of the person's identity and/or contact information, such as their email address or phone number. The account information may include a verified telephone number for a mobile electronic device.

[0047] Additionally, the customer may send an invitation to these other persons inviting them to download electronic receipts software, or may send a notification to these other persons that they desire to share a receipt with them and inviting them to download receipts management software and similarly create an account, etc. with the server 34 to allow them to manage electronic receipts in the manner discussed herein.

[0048] The receipts system may allow a customer to easily communicate with other person via mobile electronic devices 68A, 68B. The customer may create account settings with an account with a receipts management server 34 or personalized settings within receipt management software on their device 68B. These settings may include contact information for other persons including information such as their name and also information such as a preferred method of delivering messages and the like to that person.

[0049] Where another person has receipts management software on a mobile electronic device 68B, the preferred

method of delivering messages may be a text message and the software may thus store the device telephone number. Where another person does not have receipts management software on a mobile electronic device, the preferred method of communication may be through email, and the software may store an email address for this person. The receipt management software may also include bank account information for the person. The software may include account or routing information for a person sufficient to allow that person to send or approve a message to their bank to transfer money to another person as desired. Payments may also be similarly implemented through various other payment businesses and peer to peer payment systems.

[0050] Referring to FIG. 5, a first process 90 for splitting a receipt/purchase according to the present invention is shown. A customer may first make a purchase 92. The customer may then obtain 94 an electronic receipt 46 for that purchase. The customer typically has receipt management software on a mobile electronic device 68A. If the customer determines 96 that the receipt should be split, they may open 98 receipt management software on the device and view the receipt 74 on the electronic device 68A. The customer may then press 100 a button on the device to split the receipt. The button may be a digital button or menu command created by the receipt management software.

[0051] As discussed, the electronic receipt 46 is typically displayed on the mobile electronic device in a manner which shows the items 52 which were purchased. The customer may select 102 which items on the receipt 46 need to be split. This may be accomplished in different ways. The customer may select all items on the receipt to split together. The customer may select a group of items on the receipt to split together. The customer may also select individual items on the receipt to split. The customer may select items on the receipt 46 in different combinations of the above. By way of example, the customer may select a group of items to be split in one way and select another item of group of items to be split in a different way.

[0052] The customer may then select 104 one or more individuals associated with an item(s). By way of example, one person could be associated to certain items on a receipt. Multiple persons could be associated with other items on a receipt. The customer may select 106 how the item(s) are split. It is understood that in the present application, split refers to how the cost of one or more items is allocated among themselves and also among one or more other people. Where a single person is associated with an item or group of items, the software may automatically assign 100% of the cost of that item to that person. Where no person has been assigned to an item, the receipt management software may allocate 100% of the cost of that item to the customer who paid for the purchase associated with the receipt 46.

[0053] Where multiple persons are associated with an item or group of items, the customer may decide how the item or group of items is allocated among the persons associated with that item. The customer may decide that the cost of that item should be allocated equally between the persons associated with that item. The customer may also decide that the cost of that item should be allocated in a different manner, and may enter a percentage allocation for the item or group. The customer may enter a percentage as a number into the receipt management software for each person; all of the percentages adding up to 100%. The software may also provide one or

more bars or scales with a slider between 0 and 100 to allocate a portion of that item cost to a person.

**[0054]** After allocating the item costs between different persons, the receipt management software may show **108** the totals of the split receipt, showing the total cost for each person associated with the receipt. The receipt management software may also send **110** notifications to the persons associated with the receipt. As discussed, the software or server **34** may have contact information for the different persons saved therein. These contacts may be selected when a customer associates items on the receipts with persons. The customer may press a button or otherwise enter a command to send a message to the other persons. The message may be sent via text or email and may show how much they owe for that purchase. The message could have a link to a website to show the breakdown of cost allocation for the receipt **46**. The receipts management server **34** may provide this webpage and provide this information to the persons.

**[0055]** If another person does not have the receipts management software, the message may provide an invitation to get the receipt management software. Additionally, the receipt management system may facilitate **112** providing payment to the customer for the purchase associated with the receipt. Particularly where other persons have receipt management software and have created an account, they may have provided routing information for their bank and may have set up transfer processes to pay money to the customer. The message may include a link or command to pay the designated amount to the customer for the receipt. If they approve of the allocation, the person may initiate a transfer of money to the customer via the message.

**[0056]** Referring to FIG. 6, a second process **114** for splitting a purchase according to the present invention is shown. As discussed above, it may be common for a person to make a purchase, receive an electronic receipt, and then allocate costs among different person for that purchase. It may also be common for a customer to allocate costs among different persons before completing a purchase. This may be the case when the customer creates an electronic shopping cart of items on their mobile electronic device **68A**, or where a bill is presented to a customer in receipt format.

**[0057]** In these situations, a customer may (typically with the other persons in a group) first receive **116** an unpaid receipt bill. The receipt bill refers to a bill which is presented to the customer, often in the format of a receipt. The receipt bill may be viewed on the mobile electronic device in a manner similar to the receipt **46**. The receipt bill may be from a restaurant, for example, after a customer and group of one or more other persons has eaten at the restaurant.

**[0058]** Where the bill is presented to the customer in paper form, the bill may include a 2D barcode such as a QR code. The barcode may allow the customer to scan the barcode and thereby obtain an electronic copy of the bill. By way of example, the scanning the barcode may cause the mobile electronic device to obtain the bill from a receipts management server **34**. In some situations, the barcode may include the bill information embedded therein in a format known to the receipt management software such as delineated text or values. The customer may capture the barcode with a camera on the mobile electronic device and, from the barcode, the software may have the data necessary to construct a version of the bill electronically and allow the customer to split the bill or otherwise manage the bill.

**[0059]** The receipt bill may also be in the format of a shopping cart of selected items for purchase. The customer may utilize a mobile electronic device **68A**, such as a smart phone or tablet computer, while shopping at a brick and mortar store to create a shopping cart of items for purchase. Mobile self-checkout software loaded on the electronic device **68A** may facilitate this. The customer may create a shopping cart of items which are selected for purchase by using the mobile electronic device camera to capture a UPC code on each item. The mobile self-checkout software may, from the UPC code, obtain and store information regarding the product and may then allow the customer to enter a quantity of the item for purchase and the price for the item if necessary.

**[0060]** The customer may proceed in this manner while shopping; selecting items for purchase, scanning the UPC code associated with that item, and creating a digital shopping cart on the mobile electronic device **68** which includes a list of items selected for purchase. When the customer is ready to checkout and pay for the selected items, the customer may allocate the item costs among the persons associated with the receipt. Alternatively, the customer may allocate the items among different persons before checkout as these items are added to the shopping cart. Where the receipt bill is from a restaurant or the like, the customer may allocate the items after receiving the receipt bill.

**[0061]** With any of the above receipt bills/shopping carts, if the customer determines **118** that the receipt should be split, they may open **120** receipt management software on the device and view the receipt bill on the electronic device **68A**. The customer may then press **122** a button on the device to split the receipt. The button may be a digital button or menu command created by the receipt management software.

**[0062]** The receipt bill may be displayed similar to how an electronic receipt **46** is displayed on the mobile electronic device; i.e. in a manner which shows the items **52** which are selected for purchase. The customer may select **124** which items on the receipt **46** need to be split. This may be accomplished in different ways. The customer may select all items on the receipt to split together. The customer may select a group of items on the receipt to split together. The customer may also select individual items on the receipt to split. The customer may select items on the receipt **46** in different combinations of the above. By way of example, the customer may select a group of items to be split in one way and select another item of group of items to be split in a different way.

**[0063]** The customer may then select **126** one or more individuals associated with an item or group of items. By way of example, one person could be associated to certain items on a receipt. Multiple persons could be associated with other items on a receipt. The customer may select **128** how the item or group of items are split. It is understood that in the present application, split refers to how the cost of one or more items is allocated among themselves and also among one or more other people. Where a single person is associated with an item or group of items, the software may automatically assign 100% of the cost of that item to that person. Where no person has been assigned to an item, the receipt management software may allocate 100% of the cost of that item to the customer who paid for the purchase associated with the receipt **46**.

**[0064]** Where multiple persons are associated with an item or group of items, the customer may decide how the item or group of items is allocated among the persons associated with that item. The customer may decide that the cost of that item

should be allocated equally between the persons associated with that item. The customer may also decide that the cost of that item should be allocated in a different manner, and may enter a percentage allocation for the item or group. The customer may enter a percentage as a number into the receipt management software for each person; all of the percentages adding up to 100%. The software may also provide one or more bars or scales with a slider between 0 and 100 to allocate a portion of that item cost to a person.

**[0065]** After allocating the item costs between different persons, the receipt management software may show **130** the totals of the split receipt, showing the total cost for each person associated with the receipt. Where the bill is from a restaurant or another business where a tip is applicable, the receipt management software may suggest a tip amount for each individual and may allow the persons to enter a tip percentage and suggest a tip amount from that percentage. Each person may enter a tip amount for their portion of the purchase, and the software may show their total allocated cost including their tip and taxes. If desired, the software may round each person's amount to the nearest one dollar, 5 dollars, etc. as selected by each person.

**[0066]** The customer and/or additional persons may then make payment **132** for the purchase. As the bill/shopping cart has been allocated among the different associated persons, each person may see their allocated amount. Each person may thus make payment **132** for their portion of the bill. If necessary or desired, the customer may make payment **132** for the entire bill. A receipt, which may be an electronic receipt **46**, may then be issued **134** for the purchase. For an electronic receipt **46**, the receipt management server **34** may issue an electronic receipt to the mobile electronic devices **68A**, **68B**. Particularly where multiple persons pay for their allocated portions of the receipt directly, the receipt may be sent to these persons. Their receipt may show the overall purchase and indicate what they paid for from that purchase.

**[0067]** If necessary, the receipt management system may also send **136** notifications to the persons associated with the receipt. As discussed, the software or server **34** may have contact information for the different persons saved therein. These contacts may be selected when a customer associates items on the receipts with persons. The customer may press a button or otherwise enter a command to send a message to the other persons. The message may be sent via text or email and may show how much they owe for that purchase. The message could have a link to a website to show the breakdown of cost allocation for the receipt **46**. The receipts management server **34** may provide this webpage and provide this information to the persons.

**[0068]** If another person does not have the receipts management software, the message may provide an invitation to get the receipt management software. Additionally, the receipt management system may facilitate **138** providing payment to the customer for the purchase associated with the receipt. Particularly where other persons have receipt management software and have created an account, they may have provided routing information for their bank and may have set up transfer processes to pay money to the customer. The message may include a link or command to pay the designated amount to the customer for the receipt. If they approve of the allocation, the person may initiate a transfer of money to the customer via the message.

**[0069]** Referring now to FIG. 7, in splitting a receipt or bill, the customer will typically view the receipt **46** on a mobile

electronic device **68**. The customer may select an item, group of items, or all items on the receipt and may then press a bottom **76** or other command to split these items. This may cause the software to show a menu or window **140** allowing the customer to select persons to split the cost of the selected item(s). The menu **140** may show likely persons and may include an option to select a person from known contacts or profile settings. The software may provide suggested persons in the menu. These suggested persons may be persons who have already split items on the receipt **46** or persons who commonly split items with the customer. The customer may select one or more persons, including themselves, to split the cost of an item and these persons may be associated with that item on the receipt **46**.

**[0070]** Referring to FIG. 8, a customer may allocate the cost of the item for the associated persons. After selection of the persons associated with an item, the software may display a menu or window **142** allowing the customer to allocate the item cost among the persons. The menu **142** may include an option **146** to share the cost equally among the persons. The menu **142** may include an option **148** to enter a percentage for each of the persons, and may autocomplete the percentage of the last person so that the allocation sums to 100%. The menu **142** may also provide a slider option **150** where the customer can simply move a slider button between 0 and 100 percent to allocate item cost to a person. If some cost has been allocated to a person, a slider associated with a second person could be reduced to move between 0 and the remaining unallocated percentage of the item cost.

**[0071]** A customer may wish to allocate cost among different people for many reasons. The customer and other persons may be purchasing items together for a trip or party and may wish to split the cost. The customer and others may be eating out or at an event together and may wish to split the cost. In many situations, it may be desirable to allocate the cost or an item or group of items differently among the persons. For example, one person may entirely consume a food at a restaurant while other items are shared. Thus, one or more items may be entirely allocated to a single person or fewer persons while other items may be allocated to more or different persons. A receipt may contain personal items for one person and shared items for a group event. The customer may allocate the cost of items as needed to accommodate the situation.

**[0072]** Referring to FIG. 9, a computer system may include a receipts management module **152**. The various functions or modules of a receipts management module **152** may be enacted or implemented by any suitable system or component thereof. For example, in selected embodiments, one or more functions or modules of a receipts management module **152** may be distributed across one or more hardware devices, including a mobile electronic device **68A**, **68B**, a primary computer **12** of a POS system **10**, a local server **26**, a supervisory server **34**, some other onsite resource, some other offsite resource, or the like or combinations or sub-combinations thereof. Thus, different embodiments may be adapted to a wide variety of situations, including more rigid legacy systems.

**[0073]** In selected embodiments, a receipts management module **152** facilitates the receipts printing process described herein. The receipts management module may include any suitable arrangement of sub-components or modules. The receipts management module **152** may include an interface module **154** which interfaces with a customer. The interface module may include a display on a mobile electronic device



68A, 68B. The receipts management module 152 may also include a data entry module 156 which may include a keypad or touchscreen on a mobile electronic device 68A, 68B and which allows the customer to enter data associated with splitting a receipt. The receipts management module 152 may include a network communications module 158 which may facilitate communications between the mobile electronic device 68A, 68B, the POS terminal 10, and the server 26, 34, as well as between the customer and other persons.

[0074] The receipts management module 152 may include a receipts processing module 160 which may include a receipts management server 34 and which may facilitate processing receipts and preparing receipts for splitting. The receipts management module 152 may include a system communications module 162 which may communicate between a server 26, 34, POS terminal 10 and one or more persons associated with splitting a receipt, such as by way of a mobile electronic device 68B or a computer associated with that person. The system communications module may include a communications device and may transmit notification and receipt information from the server to the person. The receipts management module 152 may also include other modules 164 as are desirable to implement various embodiments. The various modules and parts of the mobile self-checkout module 152 may include hardware, firmware and software components as are desirable for various embodiments and to achieve the various steps, features, and functionality discussed herein.

[0075] The flowchart and block diagrams of the Figures illustrate the architecture, functionality, and operation of possible implementations of systems, methods, and computer program products according to one or more embodiments. In this regard, each block in the flowchart or block diagrams may represent a module, segment, or portion of code, which comprises one or more executable instructions for implementing the specified logical function(s). It will also be noted that each block of the block diagrams and/or flowchart illustrations, and combinations of blocks in the block diagrams and/or flowchart illustrations, may be implemented by special purpose hardware-based systems that perform the specified functions or acts, or combinations of special purpose hardware and computer instructions.

[0076] It should also be noted that, in some alternative implementations, the functions noted in the blocks may occur out of the order noted in the Figure. In certain embodiments, two blocks shown in succession may, in fact, be executed substantially concurrently, or the blocks may sometimes be executed in the reverse order, depending upon the functionality involved. Alternatively, certain steps or functions may be omitted if not needed.

[0077] The invention may be embodied in other specific forms without departing from its spirit or essential characteristics. The described embodiments are to be considered in all respects only as illustrative, and not restrictive. The scope of the invention is, therefore, indicated by the appended claims, rather than by the foregoing description. All changes which come within the meaning and range of equivalency of the claims are to be embraced within their scope.

1. A method for splitting a receipt among multiple persons comprising:

- receiving an electronic receipt on a mobile electronic device;
- receiving a selection of an item from the electronic receipt on the mobile electronic device;

- receiving a selection of a person on the mobile electronic device;

- associating the person with the item on the mobile electronic device;

- receiving an allocation of the item cost for the person on the mobile electronic device; and

- splitting the receipt total among multiple persons according to item cost allocations.

2. The method of claim 1, wherein the method further comprises sending a notification to each of the multiple persons indicating their portion of the receipt cost.

3. The method of claim 2, wherein the notification includes a link to view the electronic receipt and the item cost allocations.

4. The method of claim 2, wherein the notification includes a link to effect payment for a person's portion of the receipt cost.

5. The method of claim 1, wherein the method more specifically comprises:

- receiving a selection of a group of items from the electronic receipt on the mobile electronic device;

- associating the person with the group of items on the mobile electronic device; and

- receiving an allocation of the cost of the group of items for the person on the mobile electronic device.

6. The method of claim 1, wherein the method further comprises providing a suggestion of persons for splitting items on the receipt.

7. The method of claim 6, wherein the suggested persons are persons who have split item costs on the electronic receipt.

8. The method of claim 6, wherein the suggested persons are persons who have split item costs previously.

9. The method of claim 1, wherein the step of receiving an allocation of the item cost for the person on the mobile electronic device more specifically comprises receiving a designation to split the item cost equally among persons associated with the item.

10. The method of claim 1, wherein the step of receiving an allocation of the item cost for the person on the mobile electronic device more specifically comprises receiving a designation to allocate a percentage of the item cost to the person.

11. The method of claim 10, wherein the step of receiving a designation to allocate a percentage of the item cost more specifically comprises receiving a movement of a slider bar between a minimum and a maximum percentage to allocate a percentage of the item cost to the person.

12. A method for splitting a receipt among multiple persons comprising:

- completing a purchase transaction;

- transmitting an electronic receipt for the transaction to a mobile electronic device;

- displaying the electronic receipt on the mobile electronic device;

- receiving a selection to split the receipt purchase cost among multiple persons on the mobile electronic device;

- receiving a selection of an item from the electronic receipt on the mobile electronic device;

- receiving a selection of a person on the mobile electronic device;

- associating the person with the item on the mobile electronic device;

- receiving an allocation of the item cost for the person on the mobile electronic device; and

splitting the receipt total among multiple persons according to item cost allocations.

**13.** The method of claim **12**, wherein the method further comprises sending a notification to each of the multiple persons indicating their portion of the receipt cost.

**14.** The method of claim **13**, wherein the notification is sent via text message to a mobile electronic device associated with the person.

**15.** The method of claim **12**, wherein the method more specifically comprises:

receiving a selection of a group of items from the electronic receipt on the mobile electronic device;

associating the person with the group of items on the mobile electronic device; and

receiving an allocation of the cost of the group of items for the person on the mobile electronic device.

**16.** The method of claim **12**, wherein the method more specifically comprises:

receiving a selection of multiple persons on the mobile electronic device;

associating the multiple persons with the item on the mobile electronic device; and

receiving an allocation of the item cost for each of the multiple persons on the mobile electronic device to allocate the cost of the item between the multiple persons.

**17.** The method of claim **16**, wherein the method comprises receiving an allocation to split the cost of the item equally among the multiple persons.

**18.** The method of claim **16**, wherein the method comprises receiving individual allocations for each of the multiple persons to split the cost of the item non-equally.

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