

A TRANSACTION REWARD SYSTEM

Field of the Invention

- 5 The present invention broadly relates to a transaction reward system and method of performing a reward transaction that enables instant award and/or redemption of benefits and/or entitlements to be provided to customers at a point of sale.

Background of the Invention

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Loyalty incentive or reward programs have been used by loyalty program providers, including but not limited to, merchants, shopping mall operators, banks or independent service providers, to entice customers to patronise certain stores and spend more.

- 15 Rewards, including award and/or redemption of benefits and/or entitlements, that are provided to customers when purchase transactions occur at a merchant point of sale terminal or cashier counter are particularly attractive to customers as they provide instant gratification and enhance the customer's purchase experience.

- 20 However, conventional loyalty programs that provide instant rewards at point of sale require various degrees of system customisation and/or system investment by loyalty program providers that range from customising the existing point of sale systems, to customising credit or debit card payment acceptance terminals, which may require permission from owners of such terminals. Conventional loyalty programs may also
- 25 require reward devices, such as card payment terminals, personal computers, notebook computers, tablet computers or other portable computing devices, to be installed at the merchants' cashier counters in order to enable the merchant to provide instant rewards. In addition, traditional loyalty systems often require each member of the loyalty system to hold a membership card as a form of identification of the customer making the
- 30 purchase.

Since investment in devices and cards are required to ensure that rewards given to customers can be automated and substantiated with the corresponding purchase transactions, such conventional rewards systems tend to be costly and cumbersome to implement, particularly for small and medium size merchants.

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In order to avoid investment in systems, some merchants simply provide customers with physical items such as stamps, paper coupons and/or punch cards as a form of instant rewards to customers at the point of sale. However, with such a system it is difficult to link rewards given to the corresponding purchase transactions with

10 customers and, as a result, most programs of this type do not link the reward to the purchase transaction and customer, and are therefore prone to error and fraud. In addition, analytical data compiled from such reward programs will be flawed, not accurate and less valuable to loyalty program providers, participating merchants and any third parties who may be interested in using the data.

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For shopping mall operators who want to offer loyalty incentive or reward programs to encourage customers to patronise merchants within the malls, it is not practical or cost efficient because each merchant may use a point of sale system of a different brand or model, and individual customisation is required or new point of sale systems are

20 required. In order to avoid the need for such investment, mall operators may provide rewards based on proof of purchase and customer identification at a dedicated customer service counter at the mall. In this case, proof of purchase details are received at the service counter and sent to a server where the customer's reward entitlements are determined and displayed on a computer device at the counter.

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However, this type of system introduces an additional layer of complexity since a customer is required to visit the customer service counter in order to present the purchase receipt and claim a reward. The system is also subject to error and fraud as there is no proof of purchase for the transaction that can be verified independently.

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Summary of the Invention

Throughout this specification:

the term “administrator” is used for a user of a loyalty program provider and/or
5 a user of a participating merchant that has administrator rights to access data on the reward system;

the term “customer” is used to refer to a person that purchases goods or services, and a “registered customer” is a customer that has registered to use the reward system;

the term “loyalty card” or “reward card” is used to refer to any membership card
10 or any payment card, such as credit card, debit card or prepaid card, which is used to identify a customer who participates in a loyalty incentive or reward program;

the term “loyalty program provider” is used for any merchant, shopping mall operator, product supplier, bank, corporation, company, organisation, partnership, association, joint venture or service provider that provides or operates a loyalty
15 program;

the term “merchant” is used for any corporation, company, organisation, partnership, association, joint venture or individual that sells, provides, offers or distributes goods or services of any kind;

the term “mobile device” is used for any mobile computing device, such as
20 smartphone, tablet or other portable computer device, which allows users to download and install applications, has the capability of capturing information, for example using scan or camera functionality, and has input capability such as a touchscreen or keyboard;

the term “participating merchant” is used for a merchant that participates in a
25 loyalty program and offers benefits and incentives to customers who are members of the loyalty program;

the term “participating party” is used for a party that participates in a loyalty program, including but not limited to, a participating merchant, a loyalty program provider, a product supplier or a fulfilment service provider;

30 the term “point of sale” is used for a check-out counter or cashier counter of a merchant’s outlet;

the term “point of sale system” is used for any system or device, such as an electronic cash register, installed at a merchant’s point of sale for capturing transaction information including date, time, product code, quantity and price information;

5 the term “reward” is used for any award and/or redemption of benefits and/or entitlements;

the term “reward device” is used for any card payment terminal, personal computer, notebook computer, tablet computer or other computing device installed at a merchant’s point of sale to enable rewards to be given to customers for patronising the merchant; and

10 the term “SKU” refers to a stock keeping unit which is a number or code used to identify each unique product or item for sale in a store.

In accordance with a first aspect of the present invention, there is provided a transaction reward system for rewarding a purchasing customer at point of sale, the transaction
15 reward system comprising:

a mobile device arranged to receive at the point of sale purchase transaction information indicative of a purchase transaction; and

a server remotely located relative to the mobile device and arranged to communicate wirelessly with the mobile device;

20 the mobile device arranged to receive an authentication code confirming at the point of sale that the received purchase transaction information accurately represents the purchase transaction and that the purchase transaction defined by the received purchase transaction information occurred at the point of sale;

25 the mobile device arranged to communicate the authentication code and the information indicative of the purchase transaction to the server; and

the server arranged to:

make a determination as to whether the received authentication code is valid; and

30 allocate a reward to the purchasing customer based on the purchase transaction if the authentication code is determined to be valid.

In an embodiment, the authentication code includes information indicative of a cashier at the point of sale such that the authentication code is different for each cashier.

In an embodiment, the authentication code includes information indicative of a work shift at the point of sale such that the authentication code is different for each work shift.

5 In an embodiment, the authentication code includes information indicative of a product associated with a reward offer. The mobile device may be arranged to receive multiple authentication codes, each authentication code including information indicative of a product associated with a reward offer.

10 In an embodiment, the system is arranged to generate the authentication code automatically based on a defined time schedule.

In an embodiment, the system is arranged to generate the authentication code on demand.

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In an embodiment, the authentication code includes information indicative of a valid date and time period, and the server is arranged to make a determination as to whether the received authentication code is valid using the valid date and time period information. The valid date and time period may correspond to a work shift.

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In an embodiment, the authentication code is a two-dimensional code; a quick response (QR) code; a barcode or other optical, machine-readable code; a code with alphanumeric and special characters; or a code associated with a radio frequency identification (RFID) tag. The authentication code may include a cryptographic
25 checksum generated by the server using a secret key.

In an embodiment, the authentication code is held privately under the custody of the corresponding cashier and is shown to the customer if the cashier determines that the purchase transaction information entered into and shown on the mobile device is
30 correct.

In an embodiment, the mobile device comprises a smartphone or computer tablet.

In an embodiment, the mobile device is arranged so as to not display the authentication code when the authentication code is received by the mobile computing device.

5 In an embodiment, the mobile device is arranged to remove the authentication code from the mobile device after the authentication code is communicated to the server.

10 In an embodiment, the server is arranged to store information indicative of mobile devices registered with the transaction reward system, and to accept an authentication code communicated from a mobile device only if the mobile device is registered with the system.

15 In an embodiment, the transaction information includes receipt information indicative of a receipt associated with the purchase transaction. The mobile device may be arranged to receive the receipt information by scanning a receipt associated with the purchase transaction. The mobile device may facilitate multiple scans of the receipt in order to capture the whole receipt.

20 In an embodiment, the server includes an optical character recognition (OCR) software module arranged to convert the receipt information to searchable text. The system may be arranged to compare the text with information in the authentication code in order to make a determination as to whether the purchase transaction is valid.

25 In an embodiment, the text derived from the receipt includes date and/or time information and the system is arranged to make a determination as to whether the purchase transaction is valid based on the date and/or time information obtained from the receipt.

In an embodiment, the mobile device comprises a reward application operable by a user of the mobile device to carry out at least one of the following:

30 register as a member of a loyalty program;
 update personal particulars;

- enter transaction data;
- view reward balances;
- view a transaction history;
- view offers and promotions;
- 5 submit a redemption request;
- submit a forgotten password request; and/or
- change a password.

10 In an embodiment, the transaction reward system is arranged so as cause information indicative of a most recent transaction to be communicated to the mobile device.

15 In an embodiment, the mobile device and the server are arranged to facilitate communications between each other through the Internet and/or a mobile telephone communications network.

20 In an embodiment, the server is arranged so as to facilitate access to the server using a web browser. The web browser may be arranged to provide an administration screen usable to add, maintain, and/or modify operational data associated with operation of the transaction reward system.

25 In an embodiment, the operational data includes loyalty program provider data indicative of loyalty program providers associated with the system, merchant data indicative of merchants associated with the system, campaign rules and reward offers relevant to loyalty programs associated with the system, authentication code data, member data indicative of members associated with the system, and electronic catalogue data indicative of reward items available with the loyalty programs associated with the system.

30 In an embodiment, the server is arranged to store transaction records indicative of purchase transactions in respect of which a valid authentication code has been received at the server. The transaction records may comprise merchant identification information; customer identification information; date and time information; transaction

amount information, receipt number information and information indicative of an image of a receipt of each said purchase transaction. The transaction records may be accessible for verification purposes.

- 5 In an embodiment, the server is arranged to facilitate access to the server so that a customer or an administrator on behalf of a customer is able to perform redemption of reward entitlements allocated to the customer.

- 10 In an embodiment, the server is arranged to generate a one-time code (OTC), to send the OTC to a mobile device associated with a customer desiring to perform redemption of a reward entitlement, and to subsequently receive the OTC to thereby verify that the OTC has been received by the customer.

- 15 In accordance with a second aspect of the present invention, there is provided a method of performing a reward transaction for rewarding a purchasing customer at point of sale, the method comprising:

- providing a mobile device;
- carrying out a purchase transaction;
- receiving at the mobile device at the point of sale purchase transaction
- 20 information indicative of the purchase transaction;
- displaying the transaction information on a display of the mobile device;
- showing the displayed transaction information to a cashier at the point of sale;
- receiving an authentication code from the cashier if the cashier considers the displayed transaction information accurately represents the purchase transaction;
- 25 communicating the authentication code and the purchase transaction information from the mobile device to a remote server in communication with the mobile device;
- making a determination at the server as to whether the received authentication code is valid; and
- allocating a reward to the purchasing customer based on the purchase
- 30 transaction if the authentication code is determined to be valid.

In accordance with a third aspect of the present invention, there is provided a mobile device for a transaction reward system arranged to reward a purchasing customer at point of sale, the mobile device including a network interface arranged to facilitate wireless communications with a remote server, and the mobile device arranged to:

5 receive at the point of sale purchase transaction information indicative of a purchase transaction;

 receive an authentication code confirming at the point of sale that the received purchase transaction information accurately represents the purchase transaction and that the purchase transaction defined by the received purchase transaction information

10 occurred at the point of sale;

 communicate the authentication code and the information indicative of the purchase transaction to the server; and

 receive a communication from the server indicative that a reward is allocated to the customer if a determination is made by the server that the authentication code is

15 valid.

In accordance with a fourth aspect of the present invention, there is provided a transaction reward system for enabling a customer to redeem a reward at point of sale, the system comprising:

20 a mobile device arranged to receive at the point of sale a merchant identification code identifying the point of sale; and

 a server remotely located relative to the mobile device and arranged to communicate wirelessly with the mobile device;

 wherein the mobile device is arranged to communicate the merchant
25 identification code to the server;

 wherein the server is arranged to make a determination as to whether the received merchant identification code is valid, and to retrieve a customer reward balance associated with rewards earned by the customer;

 wherein the mobile device is further arranged to receive redemption information
30 indicative of a redemption transaction made by the customer, and to communicate the redemption information to the server;

 wherein the server is further arranged to:

update the customer reward balance in response to the redemption transaction;

retrieve a SKU redemption code associated with a catalogue item selected by the customer to form the basis of the redemption transaction; and

5 communicate the SKU redemption code to the mobile device; and

wherein the system comprises a point of sale system arranged to:

receive purchase transaction information indicative of a purchase transaction;

receive an SKU redemption code;

10 validate the SKU redemption code against SKU redemption codes associated with the point of sale system; and

compute the net amount of the purchase transaction by deducting an amount associated with the SKU redemption code from an amount associated with the purchase transaction if the SKU redemption code is determined to be valid.

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In an embodiment, the mobile device is arranged to display catalogue items available for redemption by the customer and associated with the merchant identification code.

20 In an embodiment, the merchant identification code includes information indicative of a point of sale of a participating merchant's outlet such that the merchant identification code is different for each point of sale.

25 In an embodiment, the merchant identification code is a two-dimensional code; a quick response (QR) code; a barcode or other optical, machine-readable code; a code with alphanumeric and special characters; or a code associated with a radio frequency identification (RFID) tag. The merchant identification code may include a cryptographic checksum generated by the server using a secret key.

30 In an embodiment, the merchant identification code for each point of sale is displayed publicly at the corresponding point of sale.

In an embodiment, the mobile device is arranged to receive the merchant identification code of a point of sale by scanning the merchant identification code displayed at the point of sale.

- 5 In an embodiment, the mobile device is arranged to receive the merchant identification code of a point of sale by selecting from a list of point of sale of participating merchants displayed on the mobile device through the reward application, wherein each point of sale in the list has a unique merchant identification code associated with it.
- 10 In an embodiment, the SKU redemption code includes information indicative of a catalogue item associated with an electronic catalogue of the system which is available for redemption at a specific point of sale of a participating merchant's outlet such that the SKU redemption code is different for each catalogue item.
- 15 In an embodiment, each SKU redemption code specific to a point of sale of a participating merchant is generated by the server in a format that conforms to the format of any normal SKUs acceptable to that participating merchant.

- In an embodiment, the point of sale system of each point of sale is arranged to store the
- 20 SKU redemption codes which are specific to that point of sale such that the SKU redemption codes can be recognised and accepted only by the point of sale system of the specific point of sale.

- In accordance with a fifth aspect of the present invention, there is provided a method of
- 25 performing a redemption transaction by a purchasing customer at a point of sale, the method comprising:

- receiving at the mobile device at the point of sale a merchant identification code identifying the point of sale;
- communicating the merchant identification code from the mobile device to the
- 30 server;
- making a determination at the server as to whether the received merchant identification code is valid;

retrieving at the server a customer reward balance associated with rewards earned by the customer;

receiving at the mobile device at the point of sale redemption information indicative of a redemption transaction made by the customer;

5 communicating the redemption transaction information from the mobile device to the server;

 updating the customer reward balance in response to the redemption transaction at the server;

 retrieving at the server a SKU redemption code associated with a catalogue item
10 selected by the customer to form the basis of the redemption transaction;

 communicating the SKU redemption code from the server to the mobile device;

 displaying the SKU redemption code on the mobile device;

 showing the displayed SKU redemption code to a cashier at the point of sale;

 wherein the system comprises a point of sale system arranged to:

15 receiving at a point of sale purchase transaction information indicative of a purchase transaction;

 receiving at the point of sale an SKU redemption code;

 validating the SKU redemption code against SKU redemption codes associated with the point of sale system at the point of sale system; and

20 computing the net amount of the purchase transaction by deducting an amount associated with the SKU redemption code from an amount associated with the purchase transaction if the SKU redemption code is determined to be valid.

In accordance with a sixth aspect of the present invention, there is provided a mobile
25 device for a transaction reward system arranged to redeem a reward previously earned by a purchasing customer at a point of sale against an instant purchase transaction, the mobile device including a network interface arranged to facilitate wireless communications with a remote server, and the mobile device arranged to:

 receive at the point sale a merchant identification code identifying the point of
30 sale;

 communicate the merchant identification code to the server;

receive at the point of sale redemption information indicative of a redemption transaction made by the customer;

communicate the redemption transaction information to the server;

5 receive a SKU redemption code associated with a catalogue item selected by the customer to form the basis of the redemption transaction from the server; and

present the SKU redemption code to a cashier at the point of sale for entering into a point of sale system to compute the net amount of the purchase transaction by deducting the amount of the SKU redemption code from the amount of the purchase transaction, if a determination is made by the point of sale system that the SKU

10 redemption code is valid.

Brief Description of the Drawings

In order that the invention may be more clearly ascertained, embodiments will now be described, by way of example, with reference to the accompanying drawings, in which:

15 Figure 1 is a diagrammatic representation of a transaction reward system according to an embodiment of the present invention;

Figure 2 is a diagrammatic representation of functional components of a server of the system of Figure 1;

20 Figure 3 is a diagrammatic representation illustrating functional screens accessible through an administration screen of the system shown in Figure 1;

Figure 4 is a diagrammatic representation illustrating functionality of a mobile device loaded with a mobile device application for use by customers of the system of Figure 1;

25 Figure 5 is a flow diagram illustrating steps of a method of registering a new user with the transaction reward system shown in Figure 1;

Figure 6 is a diagrammatic representation illustrating data stored in a database of the system of Figure 1;

30 Figure 7 is a diagrammatic representation illustrating identification and particulars data of participating merchants stored in the database represented in Figure 6;

Figure 8 is a flow diagram illustrating a method of obtaining a reward using the transaction reward system shown in Figure 1.

Figure 9 is a diagrammatic representation of the transaction reward system
5 illustrating redemption of rewards by a purchasing customer according to an embodiment of the present invention.

Figure 10 is a flow diagram illustrating steps of a method of redeeming a reward previously earned by a customer against a purchase made by the customer at a point of
10 sale using the transaction reward system shown in Figure 9; and

Figure 11 is a diagrammatic representation illustrating electronic catalogue data of participating merchants stored in the database represented in Figure 6.

15 **Description of an Embodiment the Invention**

In a broad sense, the present system and method provides a transaction reward system wherein a customer is able to earn a reward for and/or redeem a reward previously earned by a customer against a purchase made by the customer at the point of sale of a
20 participating merchant without the need for dedicated hardware or a reward device at the point of sale or customising an existing point of sale system or card payment acceptance terminal at the point of sale.

In at least one embodiment, this is achieved using a reward application (or reward app)
25 on a mobile device, such as a smartphone, the reward application enabling a customer to enter transaction details indicative of a transaction, such as the purchase amount and receipt number of the transaction and an image of the receipt for the transaction, in the presence of the cashier at the point of sale. After verification by the cashier of the accuracy of the transaction details, the reward application is arranged to receive an
30 authentication code provided by the cashier, and to send the transaction details and the authentication code to a remote server. At the remote server, the received authentication code is analysed and, upon positive validation of the authentication code,

the server computes the rewards applicable to the customer and communicates the rewards to the mobile device.

5 In this way, instant rewards can be given to a customer without the need for a physical loyalty card, without customising an existing point of sale system or card payment acceptance terminal at the point of sale and without any dedicated reward device at the point of sale.

10 Referring to the drawings, Figure 1 shows a diagrammatic representation of a transaction reward system 10 according to an embodiment of the invention. The system 10 includes a server 20 and a database 100 that may be internal and/or external, local and/or remote relative to the server 20. The server 20 is accessible in this example from a remote location using suitable network enabled computing devices provided with dedicated software.

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In the present embodiment, the server 20 is configured so as to be accessible from a web browser implemented on a remote computing device. Using the web browser, a user may access an administration screen 30, a transaction verification screen 110 or a redemption screen 120 depending on the access rights granted to the user.

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The server 20 is also accessible by a plurality of mobile devices 40 carried by a respective plurality of customers 50, each of the mobile devices being used to enable instant reward transactions, as explained in greater detail below, at point of sale 70 of a plurality of participating merchants.

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During use, upon completion of a purchase at a participating merchant's point of sale 70, a customer 50 registered with the rewards system is able to perform an instant reward transaction using a dedicated reward application 400 on the mobile device 40.

30 In the present embodiment, after completing a purchase, the customer 50 enters the purchase amount and receipt number and captures an image of the receipt 60 of the purchase into the mobile device 40 using the reward application 400. The customer

then shows the purchase amount, receipt number and image of the receipt 60 entered into the mobile device 40 to the cashier 80 at the point of sale 70, and the cashier 80 checks to make sure the purchase amount, receipt number and image of the receipt 60 entered by the customer 50 are correct. The cashier 80 then makes an authentication code 90 available to the customer 50 who enters the authentication code 90 into the mobile device 40, for example by scanning, typing or otherwise. The reward application 400 sends information indicative of the purchase amount, the receipt number, the image of the receipt 60 and the authentication code 90 to the server 20, in this example through the Internet 130, and the server 20 validates the received information, for example against information stored in the database 100. If the information is positively validated, the server 20 determines the rewards to be awarded to the customer 50 based on the applicable campaigns, rules and reward offers maintained in the server 20 and database 100 and sends a response to the mobile device 40, via the reward application 400, so as to provide the customer 50 with confirmation in relation to the transaction that has just occurred.

In the present embodiment, each authentication code 90 is specific to a cashier 80 and includes information indicative of a valid date and time period for the cashier 80, a code identifying the cashier 80, a cryptographic signature generated from data in the code 90, and a secret cryptographic key known only to the server 20. This will help prevent fraudsters from generating authentication codes to carry out fraudulent transactions to claim rewards. The validity period can be the duration of a current shift period of the cashier 80 or shorter intervals of the shift period, as specified by the loyalty program provider or participating merchant. When the purchase amount, the receipt number, the receipt and the authentication code 90 are sent by the reward application 400 to the server 20, the server 20 checks that the authentication code 90 has not expired, that the submitted transaction is within the relevant validity date and time period for the authentication code 90 and that the receipt number has not been entered previously.

The authentication code 90 may be a two-dimensional code, a quick response (QR) code, a barcode or other machine-readable code, a code with alphanumeric and special characters, a radio frequency identification (RFID) tag or any other suitable code that

serves to identify the cashier 80 and a valid time period associated with the cashier 80. If the authentication code 90 is incorporated into a RFID tag, the code can be obtained by scanning using a near field communication (NFC) function of the customer's mobile device 40.

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In an embodiment, the authentication code 90 is held privately under the custody of the corresponding cashier 80 and is shown to the customer 50 if the cashier 80 determines that the purchase amount, receipt number and image of the receipt 60 entered by the customer 50 into the mobile device 40 are correct.

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In an embodiment, the authentication code 90 is not displayed on the reward application 400 after it has been captured or scanned into the mobile device 40, and the code 90 is removed from the mobile device 40 after it has been sent to the server 20. This will ensure that the authentication code cannot be reused by the customer 50, for example to
15 send a transaction amount and receipt that have not been authenticated by the cashier at the point of sale.

In an embodiment, only an authentication code 90 that has been sent by a pre-registered mobile device 40 using the reward application 400 will be accepted by the server 20.

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This will prevent a fraudster from using an application other than the reward application 400 to scan the authentication code 90 and submit fraudulent transactions to the server 20 using the authentication code 90.

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In an embodiment, an image of the receipt 60 may be entered into a mobile device by capturing multiple shots or capturing video of the receipt 60 if the receipt is too long to be captured with a single shot.

In an embodiment, the transaction reward system 10 provides the reward application 400 on a customer's mobile device 40 with electronic information of reward details
30 including rewards earned, reward balances and targeted marketing messages.

Referring to Figure 2, a schematic view of functional components of the server 20 is shown. The server 20 includes a server processing unit 200, a server reward application unit 280 and a network interface 290 arranged to facilitate network communications with the server 20. The server processing unit 200 includes a server CPU 210, server
5 memory 215, a calendar 270 and a clock 275.

The server memory 215 in this example stores a loyalty program provider maintenance module 220, a merchant maintenance module 225, an authentication code module 230, a member maintenance module 235, an electronic catalogue module 240, a reward
10 module 245, a redemption module 250, an optical character recognition (OCR) module 255, a merchant identification module 260 and a SKU redemption code module 265.

The loyalty program provider maintenance module 220 includes loyalty program provider maintenance software executable by the server CPU 210 to maintain loyalty
15 program provider related data, in this example using the administration screen 30 described in more detail below.

The merchant maintenance module 225 includes merchant maintenance software executable by the server CPU 210 to maintain merchant related data, in this example
20 using the administration screen 30 described in more detail below.

The authentication code module 230 includes authentication code software executable by the server CPU 210 to generate a unique authentication code 90 for each cashier 80 of each shift of a participating merchant's point of sale 70. The code may be generated
25 automatically based on a time schedule specified by the participating merchant or may be generated on demand, in this example using the administration screen 30 described in more detail below.

In one embodiment, the authentication code 90 may include a cryptographic checksum
30 generated by the authentication code module 230 and that can be used to validate the authentication code 90 when the code is received by the server 20.

The member maintenance module 235 includes member maintenance software executable by the server CPU 210 to maintain member related data, in this example using the administration screen 30 described in more detail below.

- 5 The electronic catalogue module 240 includes electronic catalogue software which is adapted to be executed by the server CPU 210 to maintain catalogue items for redemption, in this example using the administration screen 30 described in more detail below.
- 10 The reward module 245 includes reward software executable by the server CPU 210 to determine rewards or other entitlements to be given to a customer 50 upon registration as a member of a loyalty program and based on the purchase transaction information and authentication code 90 received from the reward application 400.
- 15 The redemption module 250 includes redemption software executable by the server CPU 210 to enable redemption of rewards or other entitlements previously earned by a customer 50 based on campaign rules and reward offers 620, 920 respectively applicable to the participating merchant 600 and loyalty program provider 900.
- 20 The OCR module 255 includes OCR software executable by the server CPU 210 to convert a receipt 60 received from a reward application 400 to searchable text. In one embodiment, the transaction reward system 10 may include an OCR module 255 arranged to process the OCR text output derived from a receipt 60 and to compare the receipt number, and merchant name, date and time information obtained from the
25 receipt 60 with the receipt number from the corresponding purchase transaction information submitted with the receipt 60 and the name of the merchant and validity time period derived from the corresponding authentication code 90 submitted with the receipt 60 respectively. If the comparison indicates an error, the server 20 will reject the transaction and display an error message on the mobile device 40 of the customer
30 50.

The server 20 may also be arranged to compare the OCR output of the receipt 60 with the date derived from the calendar 270 and time derived from the clock 275. If the date of the receipt 60 does not match the current date of the calendar 270 or is outside a defined time period since the time on the receipt, the server 20 will reject the transaction and display an error message on the mobile device 40 of customer 50.

In a variation to this embodiment, if the comparison carried out by the server 20 indicates an error in a transaction, the transaction is placed in an exception report for an authorised officer to accept or reject manually. The server 20 then informs the customer 50 of any rejected transactions by sending an alert to the mobile device 40 of the customer 50.

The merchant identification code module 260 includes merchant identification code software executable by the server CPU 210 to generate a unique merchant identification code 2090 that identifies each participating merchant's point of sale 70.

In one embodiment, the merchant identification code 2090 may include a cryptographic checksum generated by the merchant identification code module 260 and that can be used to validate the merchant identification code 2090 when the code is received by the server 20.

The SKU redemption code module 265 includes SKU redemption code software executable by the server CPU 210 to generate a unique SKU redemption code 2550 that identifies each catalogue item 2530 of a participating merchant's electronic catalogue 960 which is available for redemption at the point of sale 70 of the participating merchant described in more detail below. The code may be generated automatically based on a time schedule specified by the participating merchant or may be generated on demand, in this example using the administration screen 30 described in more detail below.

In one embodiment, the SKU redemption code 2550 may include a cryptographic checksum generated by the SKU redemption code module 265 that can be used to validate the SKU redemption code 2550 when the code is received by the server 20.

- 5 Referring to Figure 3, a representation of an administration screen 30 is shown, the administration screen 30 enabling an administrator 360 to select a sub-screen, in this example a loyalty program provider data maintenance screen 300, a merchant data maintenance screen 310, a rules and offers maintenance screen 320, an authentication code maintenance screen 330, a member maintenance screen 340, an electronic
10 catalogue maintenance screen 345, a merchant identification code maintenance screen 350 and a SKU redemption code maintenance screen 355.

The loyalty program provider data maintenance screen 300 provides an interface to the loyalty program provider maintenance module 220 and is used by administrators 360 to
15 maintain data associated with the loyalty program providers, such as name, address and identification information.

The merchant data maintenance screen 310 provides an interface to the merchant maintenance module 225 and is used by administrators 360 to maintain data associated
20 with participating merchants, such as the name, address and identification of each outlet, each check-out counter and each cashier of each participating merchant.

The rules and offers maintenance screen 320 provides an interface to the loyalty program provider maintenance module 220, the merchant maintenance module 225 and
25 the reward module 245 and is used by administrators 360 to maintain the campaign rules and reward offers of loyalty program provider and/or participating merchants.

The authentication code maintenance screen 330 provides an interface with the authentication code module 230 and is used by administrators 360 to maintain time
30 schedule or on-demand requests to generate an authentication code 90. The authentication code maintenance screen 330 is also used by administrators 360 to print out authentication codes 90 through a printer 370 prior to commencement of each shift

at a participating merchant's operation, each authentication code 90 being given to the cashier 80 corresponding to the authentication code 90 who keeps the authentication code 90 privately.

- 5 In one embodiment, multiple authentication codes 90 can be generated and given to a cashier 80, with each authentication code 90 uniquely identifying the cashier 80 and also a special promotion, for example for a particular brand of product.

For example, a loyalty program provider may collaborate with product suppliers of
10 particular brands so that special offers are made available to members of the loyalty program when the members purchase the particular brands of products. The special offers may be, for example, 100 bonus points for purchase of brand A milk, a gift coupon for one bar of brand B soap for purchase of brand B shampoo, a gift coupon for one can of brand D soft drink for purchase of brand D beer, and so on. Such special
15 product offers can be maintained, for example, in the campaign rules and reward offers 620, 920 in the database 100.

To claim a reward after making a purchase, the customer 50 enters the purchase amount and receipt number and scans the receipt 60 associated with the purchase into a mobile
20 device 40 using the reward application 400, and shows the purchase amount, receipt number and receipt 60 entered into the mobile device 40 and shown on the screen of the mobile device 40 to the cashier 80 at the point of sale 70. The cashier 80 then checks to make sure that the purchase amount, receipt number and receipt 60 entered by the customer 50 are correct and, if the purchase includes products having special offers by
25 the product suppliers, the cashier 80 shows the respective authentication code 90 associated with each of the products having a special offer to the customer 50. The customer scans, types or otherwise enters each of the authentication codes 90 into the mobile device 40. The mobile device 40 then sends information indicative of the purchase amount, the receipt number, the receipt and the authentication codes 90
30 entered into the mobile device 40 to the server 20 through the Internet 130, and the server 20 validates the authentication codes 90 against corresponding authentication codes stored in the database 100. Upon positive validation, the server 20 determines the

rewards to be awarded to the customer 50 based on the applicable campaigns, rules and reward offers specified in the server 20 and database 100.

5 The member data maintenance screen 340 provides an interface to the member maintenance module 235 and is used by administrators 360 to maintain the personal particulars of registered members of a loyalty program, such as name, mobile phone number, email address, gender and date of birth information, and other personal data.

10 The electronic catalogue maintenance screen 345 provides an interface to the electronic catalogue module 240 and is used by administrators 360 to maintain the inventory of catalogue items available for redemption using rewards earned by a customer 50.

15 The merchant identification code maintenance screen 350 provides an interface to the merchant identification code module 260 and is used by administrators 360 to maintain time schedule or on-demand requests to generate a merchant identification code 2090. The merchant identification code maintenance screen 350 is also used by administrators 360 to print out merchant identification codes 2090 through a printer 370 for display at the corresponding point of sale 70 that each merchant identification code 2090 is associated with.

20 In one embodiment, the merchant identification code 2090 is displayed publicly at the corresponding point of sale 70 that the merchant identification code 2090 is associated with. This allows a customer 50 to scan the merchant identification code 2090 with the mobile device 40 of the customer 50 and send the merchant identification code 2090 to
25 the server 20 as part of a redemption transaction made by the customer 50 at a point of sale 70, as described in more detail in relation to Figures 9 and 10 below.

30 The merchant identification code 2090 may be a two-dimensional code, a quick response (QR) code, a barcode or other machine-readable code, a code with alphanumeric and special characters, a radio frequency identification (RFID) tag or any other suitable code that serves to identify the point of sale 70 and a valid time period associated with the point of sale 70. If the merchant identification code 2090 is

incorporated into a RFID tag, the code can be obtained by scanning using a near field communication (NFC) function of the customer's mobile device 40.

5 In one embodiment, the merchant identification code maintenance screen 350 is used by administrators 360 to maintain a list of points of sale 70 of all participating merchants with the corresponding merchant identification code uniquely identifying each point of sale. The list is made available to a customer 50 to browse via a reward application 400 loaded on the mobile device 40 of the customer. This allows a customer 50 to select the point of sale to be sent to the server 20 from the reward application 400 on his/her
10 mobile device 40 as part of a redemption transaction made by the customer 50 at the point of sale 70, as described in more detail in Figures 9 and 10 below.

The SKU redemption code maintenance screen 355 provides an interface to the SKU redemption code module 265 and is used by administrators 360 to maintain time
15 schedule or on-demand requests to generate a SKU redemption code 2550 that identifies each catalogue item 2530 of a participating merchant's electronic catalogue 960 which is available for redemption at the point of sale 70 of the participating merchant, as described in more detail in Figures 9 and 10 below.

20 Figure 4 illustrates diagrammatically a mobile device 40 loaded with a reward application 400 used by a customer 50 of the reward system 10.

In the present embodiment, a customer 50 who wishes to register as a member of a loyalty program associated with the reward system 10 downloads a reward application
25 400 to his/her mobile device 40 using an on-line applications store 450, a website associated with the operators of the reward system 10, from the server reward application 280 at the server 20, or in any other way, and installs the reward application 400 on the mobile device 40. The customer 50 can then use the reward application 400 to select a new registration function 410 and use the new registration function 410 to
30 provide registration details using a registration menu 420. The registration details entered by the customer are maintained in a member record 700 in the database 100, as described below and shown in Figure 6.

In the present embodiment, a registered customer 50, that is, a member of the rewards system 10, is able to log in to the server 20 using the log in function 430 of reward application 400 to select the transaction or activity that he/she wants to perform from a user interaction menu 440. In this example, the user interaction menu 440 enables a registered customer to:

enter a purchase transaction made at a participating merchant's point of sale 70 by entering the amount and receipt number and capturing the corresponding receipt 60 and an authentication code 90;

view reward balances 720 maintained in the database 100;

view records of previous transactions 800 maintained in the database 100;

view offers and promotions, including items available for redemption, from participating parties;

submit redemption requests, such as redeeming points for a gift item, redeeming points for an electronic cash coupon, and so on;

update personal particulars 710 maintained in the database 100;

submit a forgotten password request; and

change a password.

Figure 5 is a flow diagram 500 illustrating steps of an example method of registering a new user with the transaction reward system 10.

The method comprises a first step 510 of downloading a reward application 400 to a mobile device 40 associated with the customer 50 from an application store 450 or from the server reward application 280.

The method comprises a second step 520 of registering the customer 50 as a member of a loyalty program by providing registration details using the reward application 400. Registration details to be entered by the customer 50 via the reward application 400 may include but are not limited to the customer's name, gender, date of birth, mobile number, email address and identification information that may include a passport

number, national identity card number, driving license number and/or social security number.

5 The method comprises a third step 530 of sending the registration details from the mobile device 40 to the server 20, in this example through the Internet 130.

10 The method comprises a fourth step 540 of determining whether the customer 50 is already an existing member by comparing the registration details submitted by the customer 50 with particulars 710 maintained in member records 700 of the database 100.

15 The method comprises a fifth step 550 wherein the server 20 rejects the registration attempt and displays an error message on the mobile device 40 of customer 50 if the customer 50 is an existing registered member.

The method comprises a sixth step 560 of generating and assigning a unique identification to the customer 50 if required by the loyalty program provider.

20 The method comprises a seventh step 570 of determining the rewards and other entitlements that the customer 50 may be entitled to or has earned through the registration that has just occurred.

25 The method comprises an eighth step 580 of communicating a registration acknowledgement to the mobile device 40 that may include the unique identification assigned to the customer 50 in step 560 if applicable, and communicating rewards and other entitlements awarded and marketing messages to be displayed to the customer 50.

30 The method comprises a ninth step 590 whereby the customer 50 starts earning instant rewards for making purchases at participating merchants' outlets.

Figure 6 illustrates diagrammatically data stored in the database 100 of the reward system 10.

In the present embodiment, the database 100 includes records of registered participating merchants 600 including identification and particulars 610 of each participating merchant and campaign rules and reward offers 620 of each participating merchant.

- 5 The database 100 also includes records of customers registered as members 700 of a loyalty program, the records including identification and particulars 710 of each customer and the reward balances 720 (such as points balances, coupons balances and stamps balances available for redemption) of each customer.
- 10 The customer identification and particulars 710 may be in the form of a national identification card number, driving license number, passport number, social security number, mobile phone number or any other information capable of identifying a customer 50. The customer identification 710 may also include a unique identification assigned by the server 20 as part of the customer registration process described in step
- 15 560 of Figure 5.

- In the present embodiment, the database 100 also includes transaction records 800 of purchases made by members 700 at participating merchants 600, the transaction records 800 including transaction identification 810 of each transaction, date and time 820 of
- 20 each transaction, merchant identification 830 of each transaction, customer identification 840 of each transaction, amount 850 of each transaction, receipt number 855 of each transaction, receipt image 860 of each transaction, product codes for products purchased 870 that have special offers, and awards 880 associated with the transactions.

25

In an embodiment, the merchant identification 830 includes information indicative of each cashier 80 at each point of sale 70 of each outlet of the participating merchant for each shift.

- 30 In the present example, the transaction records 800 include transactions carried out with valid authentication codes 90 verified by the server 20.

In the present example, the transaction records 800 include redemption transactions 885 made by the respective members 700. Examples of redemptions include redeeming points for a gift item, for example that may be collected from a customer service counter of a mall or delivered to the address of the member, or redeeming points for a monetary electronic coupon which can be used by the member to pay for online shopping with a participating merchant.

In an embodiment, the transaction records 800 include contact transactions comprising contact data 890 indicative of, for example, details of offers made to a customer using the reward application 400, offers viewed by the customer using the reward application 400 and/or offers accepted by the customer using the reward application 400.

In the present embodiment, the database 100 also includes loyalty program provider records 900 including identification information and particulars 910 of each loyalty program provider, and the campaign rules and reward offers 920 of each loyalty program provider.

In the present embodiment, the database 100 also includes electronic catalogue records 950 including:

electronic catalogue 955, comprising information indicative of catalogue items such as an item description, quantity of items, item location, the reward currency (e.g. points) required to redeem each catalogue item, that allows a customer 50 to redeem his/her reward balances 720 for items listed on the electronic catalogue 955 and claim the redeemed items at service counters of participating parties, and

electronic catalogue 960 of each participating merchant, comprising information indicative of catalogue items such as an item description, quantity of items, item location, the reward currency (e.g. points) required to redeem each catalogue item and a SKU redemption code associated with each catalogue item, that allows a customer 50 to redeem his/her reward balances 720 at a point of sale 70 of a participating merchant for items listed on the electronic catalogue 960 and claim the redeemed items against an

instant purchase made at the point of sale 70, as described in more detail in Figures 9, 10 and 11 below.

Figure 7 illustrates the identification and particulars records 610 of participating
5 merchants 600 in more detail.

In the present embodiment, the identification and particulars records 610 of participating merchants 600 include for each outlet 1000:

10 shift records 1010 associated with the respective shifts at the outlet;
check-out counter records 1020 for each shift 1010; and
cashier records 1030 for each check-out counter 1020 and for each shift 1010.

It will be appreciated that the identification and particulars records 610 allows each cashier of each check-out counter of each shift of each outlet of each participating
15 merchant to be uniquely identified.

It will also be appreciated that the authentication code 90 produced by the authentication code module 230 uniquely identifies each cashier of each check-out counter of each shift of each outlet of each participating merchant.

20

Figure 8 is a flow diagram 1100 illustrating a method of obtaining a reward using the transaction rewards system 10.

The method comprises a first step 1110 whereby a customer 50 finalises a purchase at a
25 participating merchant and makes payment (by any form of payment instrument such as credit card, debit card, prepaid card, cash or any other payment method) at the participating merchant's point of sale 70. In a second step 1120, a customer 50 launches the reward application 400 on a mobile device 40 at the participating merchant's point of sale 70. This step may optionally require the customer 50 to log in
30 with his/her member identification and password.

The method 1100 comprises a third step 1130 wherein the customer 50 enters the transaction amount and receipt number of the purchase that the customer 50 has just made into the mobile device 40 using the reward application 400 at the participating merchant's point of sale 70, and a fourth step 1140 wherein the customer 50 captures,
5 for example by scanning, the receipt associated with the purchase that the customer 50 has just made into the mobile device 40 using the reward application 400 at the participating merchant's point of sale 70.

The method 1100 comprises a fifth step 1150 wherein the customer 50 shows the
10 mobile device with displayed transaction amount, receipt number and receipt information captured in the third step 1130 and fourth step 1140 to a cashier 80 at the participating merchant's point of sale 70. In a sixth step 1160, the cashier 80 views the transaction amount, receipt number and receipt shown on the mobile device 40, and in a seventh step 1170 the cashier 80 determines whether the transaction amount, receipt
15 number and receipt shown on the mobile device 40 are correct by comparing with the corresponding details shown on the cashier's point of sale system or a print copy of the transaction receipt.

The method 1100 comprises an eighth step 1180 wherein the customer 50 cancels the
20 transaction if the cashier 80 determines that the transaction amount, receipt number and receipt shown on the mobile device 40 of customer 50 are wrong. The customer 50 is then able to re-enter the transaction amount, receipt number and receipt to the mobile device 40.

25 The method 1100 comprises a ninth step 1190 wherein the cashier 80 shows the authentication code 90 under his/her custody to the customer 50 if the cashier 80 determines that the transaction amount, receipt number and receipt shown on the mobile device 40 are correct.

30 The authentication code 90 shown by the cashier 80 to the customer 50 may be indicative of a particular brand of product which has a special promotional offer, if the brand of product has been purchased by the customer 50. Accordingly, the cashier 80

may need to show multiple authentication codes 90 to the customer 50 if the purchase made by customer 50 includes multiple products which have special promotional offers.

5 The method 1100 comprises a tenth step 1200 wherein the customer 50 captures, for example by scanning, the authentication code 90 shown by the cashier 80 into the mobile device 40.

10 In one embodiment, the customer 50 may capture multiple authentication codes 90 shown by the cashier 80 into the mobile device 40 if the purchase made by customer 50 includes multiple products which have special promotional offers.

15 The method 1100 comprises an eleventh step 1210 wherein the reward application 400 of the mobile device 40 sends the transaction amount, receipt number, receipt and the associated authentication code 90 to the server 20, for example through the Internet 130. In a twelfth step 1220, the authentication code module 230 in the server 20 verifies the authentication code 90 received from the mobile device 40 and the server 20 verifies the receipt number received from the mobile device 40 against the transaction records 800 in database 100, and in a thirteenth step 1230, the authentication code module 230 in the server 20 makes a determination as to whether the authentication
20 code 90 received from mobile device 40 of customer 50 is valid or not and the server 20 makes a determination as to whether the receipt number received from the mobile device 40 of customer 50 has previously been recorded in transaction records 800 or not.

25 The method 1100 comprises a fourteenth step 1240 wherein the server 20 rejects the transaction and displays an error message on the mobile device 40 if the authentication code 90 received from the mobile device 40 is not valid or the receipt number received from the mobile device has been received by the server 20 previously.

30 The method 1100 comprises a fifteenth step 1250 wherein the reward module 245 in the server 20 determines rewards and other entitlements for the customer 50 and updates reward balances 720 of the customer 50 that are maintained in the database 100.

In an embodiment, the rewards are given based on the transaction amount of a purchase, the point of sale and, where applicable, based on particular products included in the purchase.

- 5 The method 1100 comprises a sixteenth step 1260 wherein the server 20 provides the mobile device 40 with information indicative of rewards and other entitlements awarded to the customer. In one example, such information is indicative of the purchase amount, rewards earned for the purchase that has just occurred, and reward
10 balances. The mobile device 40 may also be provided with targeted marketing messages.

It will be appreciated by a person skilled in the art that the rewards provided to the customer 50 may be of any suitable type, for example reward points, cash vouchers or coupons, gift vouchers or coupons, discount vouchers or coupons and/or lucky draw
15 chances.

The transaction verification screen 110 shown in Figure 1 is used by checkers/auditors to access and review transaction records 800 maintained in the database 100.

- 20 In one example, independent checkers and/or auditors who have access rights to the transaction records 800 can retrieve transaction records 800 by searching. The checkers/auditors can then verify the data with respect to the corresponding data shown on the receipt images of such transaction records 800 and/or electronic records or printed receipts from point of sale systems of corresponding participating merchants,
25 and reveal discrepancies, if any. The checkers/auditors can also sample the receipt images and check them against the original receipts of participating merchants to make sure there are no counterfeits. As each purchase transaction record 800 is supposed to have been authenticated by a cashier 80 responsible for that transaction at the point of sale, any discrepancy found will mean either that the transaction is a fraudulent
30 transaction or there is an error in authentication of the transaction by the cashier 80. Such independent verification will detect and deter any potential frauds and reckless

mistakes, and in turn will help assure the accuracy and quality of the transaction data, thereby enhancing the value of the resultant analytical data compiled from system 10 of the present invention to loyalty program providers, participating merchants, marketing companies and product suppliers, among others.

5

The redemption screen 120 shown in Figure 1 is used by customer service operatives (CSO) at participating merchants' service counters and/or CSO at customer service counters of mall operators.

10 In the present embodiment, a customer 50 can redeem his/her reward balances 720 at participating merchants' service counters equipped with computer devices (such as personal computers or notebook computers) which have access to the server 20, for example through the Internet 130. Customer requests for redemption of rewards may require presentation of identification information, such as a national identification card
15 number, driving license number, passport number, social security number, mobile phone number or the like maintained in member record 700 of the database 100, to the CSO at participating merchants' service counters. The CSO enters the identification information using the redemption screen 120 and the redemption module 250 retrieves reward balances 720 from the database 100 and performs redemption for customer 50.

20

It will be appreciated that the redemption can be, for example, to redeem points for a gift item, and the rewards (e.g. points) redeemed will be deducted from the reward balance 720 associated with the customer 50 in the database 100. The redeemed items may be given to the customer by the CSO.

25

For a loyalty program operated by a mall operator, the same redemption process described above as performed by CSO at participating merchants' service counters can similarly be done by a CSO at a customer service counter of a mall.

30 The items available for redemption and the requirements for obtaining the items from participating parties may be listed on an electronic catalogue 955 which the customer 50 can browse.

In an embodiment, the customer 50 can use the reward application 400 loaded on a mobile device 40 to submit a redemption request to the server 20 to redeem an item, and in response the server 20 is arranged to deduct the appropriate number of points from the reward balance 720 of the customer 50, and to add a coupon for the item to the
5 reward balance 720 of the customer 50. The customer 50 may then visit the applicable customer service counters of participating merchants or malls to redeem the coupon in exchange for the item.

In an embodiment, an additional step for authentication of a customer 50 desiring to
10 redeem rewards may be implemented. For example, based on the identification information entered into the redemption screen 120 by a CSO, the redemption module 250 generates a one-time code ("OTC") and sends a message including the OTC to the telephone number of the mobile device 40 of the customer 50, thereby informing the customer 50 of a redemption request using his/her reward entitlements. If the customer
15 50 who presented his/her identification to the CSO is the holder of the mobile device 40, the message and OTC will be displayed on the mobile device 40. The customer 50 then presents the OTC to the CSO for verification by the server 20. Upon positive verification, the CSO can proceed with the redemption request for the customer 50.

20 After redemption has successfully been carried out, a message confirming the redemption including the updated reward balances 720 of the customer 50 can be sent to the customer's mobile device 40.

Figure 9 is a diagrammatic representation of the transaction reward system 2000
25 illustrating redemption of rewards that a purchasing customer 50 has previously earned against a purchase made by the customer 50 at the point of sale 70 according to an embodiment of the present invention . The rewards are redeemed without the need for dedicated hardware or reward device at the point of sale or customising existing point of sale system or card payment acceptance terminal at the point of sale.

In the present embodiment, to redeem rewards earned previously by a customer 50 against an instant purchase transaction (e.g. \$100) made by the customer 50 at a participating merchant's point of sale 70, the customer 50 either scans the merchant identification code 2090 displayed at the point of sale 70 or browses and selects the point of sale from a list of points of sale displayed on the customer's mobile device 40 via the reward application 400 that matches the location of the point of sale 70 where the redemption is to be made. Each point of sale in the list has a merchant identification code associated with it in the background.

10 The customer 50 then uses the reward application 400 loaded on his/her mobile device 40 to submit the scanned merchant identification code 2090 or the selected point of sale to the server 20 as part of a redemption request, in this example through the Internet 130. If the merchant identification code 2090 or selected point of sale received from the mobile device 40 is determined to be valid by the server 20, the server 20 retrieves
15 the electronic catalogue 960 associated with the point of sale 70 and the reward balance 720 (e.g. 650 points) of the customer 50 from the database 100. The retrieved electronic catalogue 960 and reward balance 720 are communicated to the mobile device 40 of the customer 50, in this example through the Internet 130.

20 The customer 50 browses the electronic catalogue 960 using the reward application 400 on his/her mobile device 40 to select the item to redeem (e.g. a \$5 coupon which requires 500 points to redeem) against the available reward balance 720 of the customer 50 (in this example, 650 points), and the selected item (e.g. one \$5 coupon) is sent by the reward application 400 to the server 20. The server 20 then updates the electronic
25 catalogue 960 associated with the point of sale 70 and the reward balance 720 of the customer 50 in the database 100 with the item redeemed (in this example, one \$5 coupon) and the rewards redeemed (in this example, 500 points) respectively, and the server 20 retrieves from the electronic catalogue 960 of the point of sale 70 the SKU redemption code 2550 that uniquely identifies the catalogue item 2530 redeemed by the
30 customer 50. In this example, the SKU redemption code 2550 represents the \$5 coupon that has just been redeemed by the customer 50. The SKU redemption code 2550, the updated reward balance 720 of the customer 50 and confirmation and marketing

messages in relation to the redemption transaction that has just occurred are sent to the mobile device 40 of the customer 50. The reward application 400 displays the SKU redemption code 2550 of the catalogue item 2530 redeemed by the customer 50, the updated reward balance 720 of the customer 50 and the redemption confirmation and marketing messages on the mobile device 40 of the customer 50. To complete the redemption, the customer 50 presents the SKU redemption code 2550 displayed on his/her mobile device 40 to the cashier 80 at the point of sale 70 and the cashier 80 captures the SKU redemption code 2550 into a point of sale system 2100. The point of sale system 2100 then validates the SKU redemption code 2550 against a SKU database 2150 of the point of sale system 2100 that may be internal and/or external, local and/or remote relative to the point of sale system 2100 to ensure that the SKU redemption code 2550 is valid and has not been used before. If the SKU redemption code 2550 is positively validated, the point of sale system 2100 updates the SKU database with the redemption to prevent the re-use of the same SKU redemption code 2550 and computes the net amount of the purchase transaction payable by the customer 50 (in this example \$95) by deducting the amount of the SKU redemption code 2250 (in this example \$5) from the amount of the purchase transaction (in this example \$100).

Upon completion of the redemption and purchase described above, the customer 50 can proceed with earning rewards at the point of sale 70 for the purchase transaction that has just occurred in accordance with the steps described in Figure 8.

In the present embodiment, the merchant identification code 2090 includes information indicative of a point of sale 70 of a participating merchant such that the merchant identification code 2090 is different for each point of sale and uniquely identifies each point of sale 70 of each participating merchant.

The merchant identification code 2090 may be a two-dimensional code, a quick response (QR) code, a barcode or other machine-readable code, a code with alphanumeric and special characters, a radio frequency identification (RFID) tag or any other suitable code that serves to identify the point of sale 70. If the merchant identification code 2090 is incorporated into a RFID tag, the code can be obtained by

scanning using a near field communication (NFC) function of the customer's mobile device 40. The merchant identification code 2090 may include a cryptographic checksum generated by the server 20 using a secret key.

- 5 In an embodiment, the merchant identification code 2090 for each point of sale 70 is displayed publicly at the corresponding point of sale 70 so that a customer 50 can scan the merchant identification code 2090 with his/her mobile device 40.

10 In an embodiment, the reward application 400 contains a list of all the points of sale of all participating merchants, with each point of sale in the list having a merchant identification code associated with it in the background, so that a customer 50 can select the point sale from the list displayed on his/her mobile device 40 that matches the location of the point of sale 70 where a redemption transaction is to be made by the customer 50.

15

20 In an embodiment, each SKU redemption code 2550 is specific to a point of sale 70 and includes information indicative of a catalogue item (such as a \$5 coupon) associated with an electronic catalogue 960 of the system 10, the catalogue item available for redemption at the specific point of sale 70 of a participating merchant and the SKU redemption code 2550 being different for each catalogue item, as described in more detail in Figure 11.

25 In an embodiment, each SKU redemption code 2550 applicable to a point of sale 70 of a participating merchant is generated by the SKU redemption code module 265 of the server 20 in a format that conforms to the format of any SKU acceptable to the point of sale system 2100 of the participating merchant.

30 In an embodiment, the point of sale system 2100 of each point of sale 70 is arranged to store the SKU redemption codes 2550 which are specific to that point of sale 70 in a SKU database 2150 of the point of sale system 2100 such that the SKU redemption codes 2550 can be recognised and accepted only by the point of sale system 2100 of the specific point of sale 70.

The SKU redemption code 2550 may be a two-dimensional code, a quick response (QR) code, a barcode or other machine-readable code, a code with alphanumeric and special characters or any other suitable code that serves to identify a specific catalogue item 2530. The SKU redemption code 2550 may include a cryptographic checksum
5 generated by the server 20 using a secret key. This will help prevent fraudsters from generating SKU redemption codes to carry out fraudulent redemption transactions.

In an embodiment, the cashier 80 at the point of sale 70 can capture the SKU redemption code 2550 into the point of sale system 2100, for example by using a
10 barcode scanner of the point of sale system 2100 or by entering the SKU redemption code 2550 into the point of sale system 2100 through a keyboard of the point of sale system 2100.

It will be appreciated by a person skilled in the art that the SKU redemption code 2550
15 can be accepted by existing point of sale systems 2100 without the need to customise the existing point of sale systems 2100.

Figure 10 is a flow diagram 2200 illustrating a method of redeeming rewards previously earned by a customer 50 against a purchase transaction made by the customer 50 at a
20 point of sale 70 of a participating merchant using the transaction rewards system 10.

The method 2200 comprises a first step 2210 wherein a customer 50 launches the reward application 400 on a mobile device 40 at the participating merchant's point of sale 70 and selects a redemption request. This step may optionally require the customer
25 50 to log in with his/her member identification and password.

The method 2200 comprises a second step 2220 wherein the customer 50 scans a merchant identification code 2090 displayed at the point of sale 70 into the mobile device 40 using the reward application 400, or selects the point of sale from a list of
30 points of sale displayed on the mobile device 40 that matches the location of the point of sale 70 where the redemption is to be made via the reward application 400.

The method 2200 comprises a third step 2230 wherein the reward application 400 of the mobile device 40 in communication with the server 20, for example through the Internet 130, sends the scanned merchant identification code 2090 or the selected point of sale from the second step 2220 to the server 20. In a fourth step 2240, the server 20
5 retrieves the electronic catalogue 960 of the point of sale 70 of the participating merchant and the reward balance 720 of the customer 50 from the database 100. In a fifth step 2250, the reward application 400 of the mobile device 40 displays catalogue items 2530 from the retrieved electronic catalogue 960 of the point of sale 70 which are available for redemption and the reward balance 720 of the customer 50 (e.g. 650
10 points).

The method 2200 comprises a sixth step 2260 wherein the customer 50 browses the electronic catalogue 960 and selects the catalogue item 2530 to redeem against the available reward balance 720. In a seventh step 2270, the reward application 400 of the
15 mobile device 40 sends the selected item to the server 20, and in an eighth step 2280, the server 20 updates the catalogue 960 of the point of sale 70 and the reward balances 720 of the customer 50 in the database 100 with the item redeemed (e.g. one \$5 coupon) and the rewards redeemed (e.g. 500 points is required to redeem one \$5 coupon) respectively.

20

The method 2200 comprises a ninth step 2290 wherein the server 20 retrieves the SKU redemption code 2250 of the redeemed item 2530 from the electronic catalogue 960 and sends the SKU redemption code 2250, the updated reward balances 720 and a redemption confirmation and marketing message to the mobile device 40. In a tenth
25 step 2300, the reward application 400 displays the SKU redemption code 2550, updated reward balances 720 (in this example, the reward balance becomes 150 points after the redemption of the \$5 coupon using 500 points) and redemption confirmation and marketing messages received from the server 20 at the mobile device 40.

30 The method 2200 comprises an eleventh step 2310 wherein a cashier 80 at the point of sale 70 captures items purchased by the customer 50 into a point of sale system 2100

and the point of sale system computes a purchase amount (e.g. \$100) of the items purchased by the customer 50. This step 2310 may occur while the steps 2200 to 2300 are taking place. In a twelfth step 2320, the customer 50 presents the SKU redemption code 2550 to the cashier 80 at the point of sale 70, and in a thirteenth step 2330, the
5 cashier 80 captures the SKU redemption code 2550 into the point of sale system 2100, for example by using a barcode scanner of the point of sale system 2100 if it already has an existing barcode scanner that can scan the SKU redemption code 2550 displayed on the mobile device 40 of the customer 50 or by entering the SKU redemption code 2550 into the point of sale system 2100 through a keyboard of the point of sale system
10 2100.

The method 2200 comprises a fourteenth step 2340 wherein the point of sale system 2100 validates the SKU redemption code 2550 entered by the cashier 80 against a SKU database 2150 of the point of sale system 2100, and in a fifteenth step 2350, the point of
15 sale system 2100 makes a determination as to whether the SKU redemption code 2550 is valid and has not been used before,

The method 2200 comprises a sixteenth step 2360 wherein the point of sale system 2100 rejects the SKU redemption code 2550 and displays an error message if the SKU
20 redemption code 2550 entered by the cashier 80 is not valid or has been used before.

The method 2200 comprises a seventeenth step 2370 wherein the point of sale system 2100 updates the SKU database 2150 with the SKU redemption code 2550 that has just been redeemed to prevent a re-use of the same SKU redemption code 2550 and
25 computes the net amount of purchase payable by the customer 50 (in this example, \$95) by deducting the amount of the SKU redemption code 2250 (in this example \$5) from the amount of the purchase transaction (in this example, \$100). In an eighteenth step 2380, the customer 50 pays the net amount of purchase by cash or card, and in a nineteenth step 2390, the point of sale system 2100 prints the transaction receipt for the
30 purchase transaction that has just occurred.

The method 2200 comprises a twentieth step 2400 wherein the customer 50 continues with the steps described in Figure 8 to earn rewards for the purchase transaction that has just occurred.

- 5 Figure 11 illustrates diagrammatically data stored in an electronic catalogue 960 of a participating merchant 2500 that allows a customer 50 to redeem catalogue items 2530 of the electronic catalogue 960 and claim the redeemed items against purchase made at the point of sale 70 of the participating merchant 2500.
- 10 In the present embodiment, the electronic catalogue 960 of a participating merchant 2500 includes for each outlet 2510 and for each point of sale 2520 of the participating merchant 2500:
- catalogue items 2530 associated with the respective point of sale of the outlet;
 - reward currency 2540 (e.g. points) required to redeem each catalogue item
 - 15 2530;
 - SKU redemption code 2550 that uniquely identifies each catalogue item 2530;
 - and
 - quantity 2560 of each catalogue item 2530 available for redemption.
- 20 It will be appreciated that the electronic catalogue 960 allows each catalogue item of each point of sale of each outlet of each participating merchant to be uniquely identified.
- It will also be appreciated that the SKU redemption code 2550 produced by the SKU
- 25 redemption code module 265 of the server 20 uniquely identifies each catalogue item 2530 of each electronic catalogue of each point of sale of each outlet of each participating merchant.
- In one example, the electronic catalogue 960 of a point of sale 2520 may contain
- 30 multiple items of the same type of catalogue item 2530 (e.g. \$5 coupon) with each of such item (in this example, \$5 coupon) uniquely identified by its corresponding SKU redemption code 2550.

This will ensure that each catalogue item 2530 as identified by its SKU redemption code 2550 can only be redeemed by a customer 50 at the specific point of sale 70 that the SKU redemption code 2550 is associated with and for once only.

- 5 It will be appreciated by a person skilled in the art that the present system provides a highly accurate and reliable system and method to run loyalty reward programs without the need for (a) customisation of merchants' point of sale systems, (b) customisation of payment acceptance terminals at merchants' point of sale, (c) installation of any reward devices at merchants' point of sale, and/or (d) issuance of any physical loyalty or
- 10 reward cards to customers. Without such investment and constraint, the present system enables loyalty program providers to run global loyalty reward programs that reward any customer 50 who has registered with the transaction reward system 10 for transactions done by the customer at the point of sale 70 of any participating merchant in any country, which would otherwise be prohibitively expensive.
- 15
- An additional benefit of the present system is that the transaction reward system 10 works regardless of the form of payment, whether by credit card, debit card, prepaid card, cash or any other method of payment.
- 20 The information collected by the transaction reward system 10 of the present invention includes, among other things, purchase transactions and, where applicable, the brands of the products purchased, accurately associated with the respective purchasers and date, time and location of purchases. Therefore, analytical data compiled from the transaction reward system 10 will be highly accurate, relevant and valuable to loyalty
- 25 program providers, participating merchants, marketing companies, product suppliers and brand principals, among others.

Having described preferred embodiments of the invention with reference to the accompanying drawings, it is to be understood that the invention is not limited to those

30 precise embodiments and that various changes and modifications could be effected

therein by one skilled in the art without departing from the spirit or scope of the invention as defined in the appended claims.

5 In the claims which follow and in the preceding description of the invention, except where the context requires otherwise due to express language or necessary implication, the word “comprise” or “include” or variations such as “comprises”, “comprising”, “include” or “including” is used in an inclusive sense, i.e. to specify the presence of the stated features but not to preclude the presence or addition of further features in various embodiments of the invention.

CLAIMS:

1. A transaction reward system for rewarding a purchasing customer at point of sale, the transaction reward system comprising:
 - 5 a mobile device arranged to receive at the point of sale purchase transaction information indicative of a purchase transaction; and
 - a server remotely located relative to the mobile device and arranged to communicate wirelessly with the mobile device;
 - the mobile device arranged to receive an authentication code confirming at the
 - 10 point of sale that the received purchase transaction information accurately represents the purchase transaction and that the purchase transaction defined by the received purchase transaction information occurred at the point of sale;
 - the mobile device arranged to communicate the authentication code and the information indicative of the purchase transaction to the server; and
 - 15 the server arranged to:
 - make a determination as to whether the received authentication code is valid; and
 - allocate a reward to the purchasing customer based on the purchase transaction if the authentication code is determined to be valid.
 - 20
2. The transaction reward system as claimed in claim 1, wherein the authentication code includes information indicative of a cashier at the point of sale such that the authentication code is different for each cashier.
- 25 3. The transaction reward system as claimed in claim 1 or claim 2, wherein the authentication code includes information indicative of a work shift at the point of sale such that the authentication code is different for each work shift.
4. The transaction reward system of any one of claims 1 to 3, wherein the
- 30 authentication code includes information indicative of a product associated with a reward offer.

5. The transaction reward system of claim 4, wherein the mobile device is arranged to receive multiple authentication codes, each authentication code including information indicative of a product associated with a reward offer.

5 6. The transaction reward system of claim 1, wherein the system is arranged to generate the authentication code automatically based on a defined time schedule.

7. The transaction reward system of claim 1, wherein the system is arranged to generate the authentication code on demand.

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8. The transaction reward system of any one of the preceding claims, wherein the authentication code includes information indicative of a valid date and time period, and the server is arranged to make a determination as to whether the received authentication code is valid using the valid date and time period information.

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9. The transaction reward system of claim 8, wherein the valid date and time period corresponds to a work shift.

10. The transaction reward system of any one of the preceding claims, wherein the authentication code is a two-dimensional code; a quick response (QR) code; a barcode or other optical, machine-readable code; a code with alphanumeric and special characters; or a code associated with a radio frequency identification (RFID) tag.

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11. The transaction reward system of any one of the preceding claims, wherein the authentication code includes a cryptographic checksum generated by the server using a secret key.

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12. The transaction reward system of any one of the preceding claims, wherein the mobile device comprises a smartphone or computer tablet.

30

13. The transaction reward system of any one of the preceding claims, wherein the mobile device is arranged so as to not display the authentication code when the authentication code is received by the mobile device.
- 5 14. The transaction reward system of any one of the preceding claims, wherein the mobile device is arranged to remove the authentication code from the mobile device after the authentication code is communicated to the server.
- 10 15. The transaction reward system of any one of the preceding claims, wherein the server is arranged to store information indicative of mobile devices registered with the transaction reward system, and to accept an authentication code communicated from a mobile device only if the mobile device is registered with the system.
- 15 16. The transaction reward system of any one of the preceding claims, wherein the transaction information includes receipt information indicative of a receipt associated with the purchase transaction.
- 20 17. The transaction reward system of claim 16, wherein the mobile device is arranged to receive the receipt information by scanning a receipt associated with the purchase transaction.
- 25 18. The transaction reward system of claim 16, wherein the mobile device facilitates multiple scans of the receipt in order to capture the whole receipt.
- 30 19. The transaction reward system of claim 17 or claim 18, wherein the server includes an optical character recognition (OCR) software module arranged to convert the receipt information to searchable text.
20. The transaction reward system of claim 19, wherein the system is arranged to compare the text with information in the authentication code in order to make a determination as to whether the purchase transaction is valid.

21. The transaction reward system of claim 20, wherein the text derived from the receipt includes date and/or time information and the system is arranged to make a determination as to whether the purchase transaction is valid based on the date and/or time information obtained from the receipt.

5

22. The transaction reward system of any one of the preceding claims, wherein the mobile device comprises a reward application operable by a user of the mobile device to carry out at least one of the following:

- register as a member of a loyalty program;
- 10 update personal particulars;
- enter transaction data;
- view reward balances;
- view a transaction history;
- view offers and promotions;
- 15 submit a redemption request;
- submit a forgotten password request; and/or
- change a password.

23. The transaction reward system of any one of the preceding claims, wherein the
20 transaction reward system is arranged so as cause information indicative of a most recent transaction to be communicated to the mobile device.

24. The transaction reward system of any one of the preceding claims, wherein the mobile device and the server are arranged to facilitate communications between each
25 other through the Internet and/or a mobile telephone communications network.

25. The transaction reward system of any one of the preceding claims, wherein the server is arranged so as to facilitate access to the server using a web browser.

30 26. The transaction reward system of claim 25, wherein the web browser is arranged to provide an administration screen usable to add, maintain, and/or modify operational data associated with operation of the transaction reward system.

27. The transaction reward system of claim 26, wherein the operational data includes loyalty program provider data indicative of loyalty program providers associated with the system, merchant data indicative of merchants associated with the system, campaign rules and reward offers relevant to loyalty programs associated with the system, authentication code data, member data indicative of members associated with the system, and electronic catalogue data indicative of reward items available with the loyalty programs associated with the system.
28. The transaction reward system of any one of the preceding claims, wherein the server is arranged to store transaction records indicative of purchase transactions in respect of which a valid authentication code has been received at the server.
29. The transaction reward system of claim 28, wherein the transaction records comprise merchant identification information; customer identification information; date and time information; transaction amount information, receipt number information, information of product purchased with special offer, reward information, and information indicative of an image of a receipt of each said purchase transaction.
30. The transaction reward system of claim 28 or 29, wherein the transaction records are accessible for verification purposes.
31. The transaction reward system of any one of the preceding claims, wherein the server is arranged to facilitate access to the server so that a customer or an administrator on behalf of a customer is able to perform redemption of reward entitlements allocated to the customer.
32. The transaction reward system of claim 31, wherein the server is arranged to generate a one-time code (OTC), to send the OTC to a mobile device associated with a customer desiring to perform redemption of a reward entitlement, and to subsequently receive the OTC to thereby verify that the OTC has been received by the customer.

33. The transaction reward system as claimed in any one of the preceding claims,
wherein the mobile device is arranged to receive at the point of sale a merchant
identification code identifying the point of sale, and to communicate the merchant
identification code to the server;
- 5 wherein the server is arranged to make a determination as to whether the
received merchant identification code is valid, and to retrieve a customer reward
balance associated with rewards earned by the customer;
- wherein the mobile device is further arranged to receive redemption information
indicative of a redemption transaction made by the customer, and to communicate the
10 redemption information to the server;
- wherein the server is further arranged to:
- update the customer reward balance in response to the redemption
transaction;
- retrieve a SKU redemption code associated with a catalogue item
15 selected by the customer to form the basis of the redemption transaction; and
communicate the SKU redemption code to the mobile device; and
- wherein the system comprises a point of sale system arranged to:
- receive purchase transaction information indicative of a purchase
transaction;
- 20 receive an SKU redemption code;
- validate the SKU redemption code against SKU redemption codes
associated with the point of sale system; and
- compute the net amount of the purchase transaction by deducting an
amount associated with the SKU redemption code from an amount associated with the
25 purchase transaction if the SKU redemption code is determined to be valid.
34. A transaction reward system for enabling a customer to redeem a reward at
point of sale, the system comprising:
- a mobile device arranged to receive at the point of sale a merchant identification
30 code identifying the point of sale; and
- a server remotely located relative to the mobile device and arranged to
communicate wirelessly with the mobile device;

wherein the mobile device is arranged to communicate the merchant identification code to the server;

wherein the server is arranged to make a determination as to whether the received merchant identification code is valid, and to retrieve a customer reward
5 balance associated with rewards earned by the customer;

wherein the mobile device is further arranged to receive redemption information indicative of a redemption transaction made by the customer, and to communicate the redemption information to the server;

wherein the server is further arranged to:
10 update the customer reward balance in response to the redemption transaction;

retrieve a SKU redemption code associated with a catalogue item selected by the customer to form the basis of the redemption transaction; and

communicate the SKU redemption code to the mobile device; and
15 wherein the system comprises a point of sale system arranged to:

receive purchase transaction information indicative of a purchase transaction;

receive an SKU redemption code;

validate the SKU redemption code against SKU redemption codes
20 associated with the point of sale system; and

compute the net amount of the purchase transaction by deducting an amount associated with the SKU redemption code from an amount associated with the purchase transaction if the SKU redemption code is determined to be valid.

25 35. The transaction reward system as claimed in claim 33 or claim 34, wherein the mobile device is arranged to display catalogue items available for redemption by the customer and associated with the merchant identification code.

36. The transaction reward system as claimed in any one of claims 33 to 35,
30 wherein the merchant identification code includes information indicative of a point of

sale of a participating merchant's outlet such that the merchant identification code is different for each point of sale.

37. The transaction reward system as claimed in any one of claims 33 to 36,
5 wherein the merchant identification code is a two-dimensional code; a quick response (QR) code; a barcode or other optical, machine-readable code; a code with alphanumeric and special characters; or a code associated with a radio frequency identification (RFID) tag.

10 38. The transaction reward system as claimed in claim 37, wherein the merchant identification code includes a cryptographic checksum generated by the server using a secret key.

39. The transaction reward system as claimed in any one of claims 33 to 38,
15 wherein the merchant identification code for a point of sale is displayed publicly at the point of sale.

40. The transaction reward system as claimed in any one of claims 33 to 39,
wherein the mobile device is arranged to receive the merchant identification code of a
20 point of sale by scanning the merchant identification code displayed at the point of sale.

41. The transaction reward system as claimed in any one of claims 33 to 39,
wherein the mobile device is arranged to receive the merchant identification code of a
point of sale by selecting from a list of point of sale of participating merchants
25 displayed on the mobile device, wherein each point of sale in the list has a unique associated merchant identification code.

42. The transaction reward system as claimed in any one of claims 33 to 41,
wherein the SKU redemption code includes information indicative of a catalogue item
30 associated with an electronic catalogue of the system which is available for redemption at a specific point of sale of a participating merchant's outlet such that the SKU redemption code is different for each catalogue item.

43. The transaction reward system as claimed in any one of claims 33 to 42, wherein each SKU redemption code specific to a point of sale of a participating merchant is generated by the server in a format that conforms to the format of SKUs acceptable to the participating merchant.

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44. The transaction reward system as claimed in any one of claims 33 to 43, wherein the point of sale system of each point of sale is arranged to store the SKU redemption codes which are specific to the point of sale such that the SKU redemption codes are recognisable and accepted only by the point of sale system of the specific point of sale.

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45. A method of performing a reward transaction for rewarding a purchasing customer at point of sale, the method comprising:

providing a mobile device;

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carrying out a purchase transaction;

receiving at the mobile device at the point of sale purchase transaction

information indicative of the purchase transaction;

displaying the transaction information on a display of the mobile device;

showing the displayed transaction information to a cashier at the point of sale;

20

receiving an authentication code from the cashier if the cashier considers the displayed transaction information accurately represents the purchase transaction;

communicating the authentication code and the purchase transaction information from the mobile device to a remote server in communication with the mobile device;

making a determination at the server as to whether the received authentication

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code is valid; and

allocating a reward to the purchasing customer based on the purchase

transaction if the authentication code is determined to be valid.

46. The method as claimed in claim 45, comprising generating an authentication code indicative of a cashier at the point of sale such that the authentication code is different for each cashier.

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47. The method as claimed in claim 45 or claim 46, comprising generating an authentication code that includes information indicative of a work shift at the point of sale such that the authentication code is different for each work shift.

5 48. The method of any one of claims 45 to 47, comprising generating an authentication code that includes information indicative of a product associated with a reward offer.

49. The method of claim 48, comprising receiving at the mobile device multiple
10 authentication codes, each authentication code including information indicative of a product associated with a reward offer.

50. The method of claim 45, comprising generating the authentication code automatically based on a defined time schedule.

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51. The method of claim 45, comprising generating the authentication code on demand.

52. The method of any one of claims 45 to 51, comprising generating an
20 authentication code that includes information indicative of a valid date and time period, and making a determination at the server as to whether the received authentication code is valid using the valid date and time period information.

53. The method of claim 52, wherein the valid date and time period corresponds to a
25 work shift.

54. The method of any one of claims 45 to 53, wherein the authentication code is a two-dimensional code; a quick response (QR) code; a barcode or other optical, machine-readable code; a code with alphanumeric and special characters; or a code
30 associated with a radio frequency identification (RFID) tag.

55. The method of any one of the claims 45 to 54, wherein the authentication code includes a cryptographic checksum generated by the server using a secret key.

56. The method of any one of claims 45 to 55, comprising arranging the mobile
5 device so as to not display the authentication code when the authentication code is received by the mobile device.

57. The method of any one of claims 45 to 56, comprising arranging the mobile
device so as to remove the authentication code from the mobile device after the
10 authentication code is communicated to the server.

58. The method of any one of claims 45 to 57, comprising storing at the server
information indicative of registered mobile devices, and accepting an authentication
code communicated from a mobile device only if the mobile device is a registered
15 mobile device.

59. The method of any one of claims 45 to 58, wherein the transaction information
includes receipt information indicative of a receipt associated with the purchase
transaction.

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60. The method of claim 59, comprising arranging the mobile device to receive the
receipt information by scanning a receipt associated with the purchase transaction.

61. The method of claim 60, comprising carrying out multiple scans of the receipt in
25 order to capture the whole receipt.

62. The method of claim 60 or claim 61, comprising using an optical character
recognition (OCR) software module arranged to convert the receipt information to
searchable text.

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63. The method of claim 62, comprising comparing the text with information in the authentication code in order to make a determination as to whether the purchase transaction is valid.

5 64. The method of claim 63, wherein the text derived from the receipt includes date and/or time information and the method comprises making a determination as to whether the purchase transaction is valid based on the date and/or time information obtained from the receipt.

10 65. The method of any one of claims 45 to 64, comprising installing a reward application on the mobile device, the reward application operable by a user of the mobile device to carry out at least one of the following:

register as a member of a loyalty program;

update personal particulars;

15 enter transaction data;

view reward balances;

view a transaction history;

view offers and promotions;

submit a redemption request;

20 submit a forgotten password request; and/or

change a password.

66. The method of any one of claims 45 to 65, comprising arranging the server so as to facilitate access to the server using a web browser.

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67. The method of claim 66, comprising arranging the web browser to provide an administration screen usable to add, maintain, and/or modify operational data associated with rewards transactions.

30 68. The method of claim 67, wherein the operational data includes loyalty program provider data indicative of loyalty program providers, merchant data indicative of merchants, campaign rules and reward offers relevant to loyalty programs,

authentication code data, member data indicative of members, and electronic catalogue data indicative of reward items available with the loyalty programs.

69. The method of any one of claims 45 to 68, comprising storing transaction
5 records indicative of purchase transactions in respect of which a valid authentication code has been received at the server.

70. The method of claim 69, wherein the transaction records comprise merchant
10 identification information; customer identification information; date and time information; transaction amount information, receipt number information and information indicative of an image of a receipt of each said purchase transaction.

71. The method of claim 69 or 70, comprising facilitating access to the transaction
15 records for verification purposes.

72. The method of any one of claims 45 to 71, comprising facilitating access to the server so that a customer or an administrator on behalf of a customer is able to perform redemption of reward entitlements allocated to the customer.

20 73. The method of claim 72, comprising generating a one-time code (OTC), sending the OTC to a mobile device associated with a customer desiring to perform redemption of a reward entitlement, and subsequently receiving the OTC at the server to thereby verify that the OTC has been received by the customer.

25 74. The method of any one of claims 45 to 73, comprising:
receiving at the mobile device at the point of sale a merchant identification code identifying the point of sale;
communicating the merchant identification code from the mobile device to the server;
30 making a determination at the server as to whether the received merchant identification code is valid;

retrieving at the server a customer reward balance associated with rewards earned by the customer;

receiving at the mobile device at the point of sale redemption information indicative of a redemption transaction made by the customer;

5 communicating the redemption transaction information from the mobile device to the server;

 updating the customer reward balance in response to the redemption transaction at the server;

 retrieving at the server a SKU redemption code associated with a catalogue item
10 selected by the customer to form the basis of the redemption transaction;

 communicating the SKU redemption code from the server to the mobile device;

 displaying the SKU redemption code on the mobile device;

 showing the displayed SKU redemption code to a cashier at the point of sale;

 wherein the system comprises a point of sale system arranged to:

15 receiving at a point of sale purchase transaction information indicative of a purchase transaction;

 receiving at the point of sale an SKU redemption code;

 validating the SKU redemption code against SKU redemption codes associated with the point of sale system at the point of sale system; and

20 computing the net amount of the purchase transaction by deducting an amount associated with the SKU redemption code from an amount associated with the purchase transaction if the SKU redemption code is determined to be valid.

75. The method of any one of claims 45 to 74, comprising holding the
25 authentication code privately and showing the authentication code to a customer only if the cashier determines that the purchase transaction information displayed on the mobile device is correct.

76. A mobile device for a transaction reward system arranged to reward a
30 purchasing customer at point of sale, the mobile device including a network interface arranged to facilitate wireless communications with a remote server, and the mobile device arranged to:

receive at the point of sale purchase transaction information indicative of a purchase transaction;

5 receive an authentication code confirming at the point of sale that the received purchase transaction information accurately represents the purchase transaction and that the purchase transaction defined by the received purchase transaction information occurred at the point of sale;

communicate the authentication code and the information indicative of the purchase transaction to the server; and

10 receive a communication from the server indicative that a reward is allocated to the customer if a determination is made by the server that the authentication code is valid.

77. The mobile device as claimed in claim 76, the mobile device arranged to:

15 receive at the point sale a merchant identification code identifying the point of sale;

communicate the merchant identification code to the server;

receive at the point of sale redemption information indicative of a redemption transaction made by the customer;

communicate the redemption transaction information to the server;

20 receive a SKU redemption code associated with a catalogue item selected by the customer to form the basis of the redemption transaction from the server; and

present the SKU redemption code to a cashier at the point of sale for entering into a point of sale system to compute the net amount of the purchase transaction by deducting the amount of the SKU redemption code from the amount of the purchase transaction, if a determination is made by the point of sale system that the SKU redemption code is valid.

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