

ORDER PRINTING METHOD AND SYSTEM, AND STORAGE MEDIUM

TECHNICAL FIELD

[0001] This specification relates to the field of Internet technologies, and in particular, to an
5 order printing method and system, and a storage medium.

BACKGROUND

[0002] At present, with development of science and technology, business patterns of
merchants gradually become fully automated. Placing an order, paying, and order printing are
gradually performed by machines instead of human labor.

10 [0003] However, in the conventional technology, a merchant may simultaneously receive
orders from a plurality of platform apps (mini programs), each platform app uses an instruction set
of the platform app, and usually has a specific printing requirement for an order receipt, a label,
etc. If a printing device (for example, a printer that prints a receipt and a label machine that prints
a label) prints a content file from a platform app, an internal instruction set of the printing device
15 usually needs to be adapted to an instruction set of the platform app to implement fast printing. If
the internal instruction set of the printer is not adapted to the instruction set of the platform app, a
printing speed is limited when the printer executes an instruction from the platform app.
Consequently, in the conventional technology, one platform app usually needs to correspond to
one printing device with an adapted instruction set. For a market in which a plurality of platform
20 apps contend simultaneously, a merchant operating in such a market needs to purchase devices
corresponding to a plurality of platform apps simultaneously, especially printing devices. In this
case, device purchase and maintenance costs are too high. In addition, the merchant needs to
configure a correct network connection, a printing parameter, etc. for each printing device, and
ensure normal communication between the printing device and a platform. This increases
25 management difficulty and a workload of the merchant.

[0004] Content of the background part is merely information learned of by the inventor, and

neither means that the information has entered a public domain before an application date of the present disclosure, nor means that the information can become a conventional technology of the present disclosure.

SUMMARY

5 **[0005]** This specification provides an order printing method and system, and a storage medium, to simultaneously receive orders from a plurality of platform apps and smoothly and efficiently print materials related to these orders, without a need to purchase adapted printing devices for the plurality of platform apps.

10 **[0006]** According to a first aspect, this specification provides a printing method, applied to a POS device in an order management system. The method includes: receiving a plurality of orders from a plurality of platforms, where an order sent by each platform corresponds to a different instruction set, the plurality of orders include a target order, and the target order is derived from a target platform and includes a plurality of products; generating to-be-printed content corresponding to a target material based on order content of the target order in response to a
15 printing request for the target material; and sending the to-be-printed content to a printing device by using a digital image, so that the printing device prints the digital image. An instruction set of the printing device is not specifically adapted to instruction sets of all the plurality of platforms.

20 **[0007]** According to a second aspect, this specification further provides a printing system, including: a POS device, located in the offline operating entity of the target merchant, and configured to: receive a plurality of orders from a plurality of platforms, where an order sent by each platform corresponds to a different instruction set, the plurality of orders include a target order, and the target order is derived from a target platform and includes a plurality of products; generating to-be-printed content corresponding to a target material based on order content of the target order; and sending the to-be-printed content to a printing device by using a digital image;
25 and the printing device, located in the offline operating entity of the target merchant and communicatively connected to the POS device, and configured to receive and print the digital image. An instruction set of the printing device is not specifically adapted to instruction sets of all the plurality of platforms.

30 **[0008]** According to a third aspect, this specification further provides a computer-readable

non-volatile storage medium. The computer-readable non-volatile storage medium stores at least one instruction set, and when the at least one instruction set is executed by at least one processor, the printing method according to the first aspect is implemented.

[0009] It can be learned from the above-mentioned technical solutions that, according to the order printing method and system, and the storage medium provided in this specification, the POS device can print order content from different order placing manners. For example, the POS device can print order content generated based on an order placing operation on the POS device, or the POS device can receive and print order content from the target platform. The POS device can generate the to-be-printed content of the target material based on the order content of the target order, and send the to-be-printed content to the printing device by using a digital image. A same data format of the printing device is used in such a printing manner, to avoid a printing failure, a printing error, etc. caused by an incompatible data format. The printing device can directly perform printing based on information such as a color and a location of each pixel in the digital image, to reduce an extra data processing step, thereby accelerating a printing speed. All printers with high or low performance can directly perform printing based on a digital image, to improve adaptation of the printing device.

[0010] Other functions of the order printing method and system, and the storage medium provided in this specification are partially listed in the following descriptions. Creative aspects of the order printing method and system, and the storage medium provided in this specification can be fully explained by practice or by using the methods, apparatuses, and combinations described in the following detailed examples.

BRIEF DESCRIPTION OF DRAWINGS

[0011] To describe the technical solutions in the embodiments of this specification more clearly, the following briefly describes the accompanying drawings needed for describing the embodiments. Clearly, the accompanying drawings in the following descriptions show merely some embodiments of this specification, and a person of ordinary skill in the art can still derive other drawings from these accompanying drawings without creative efforts.

[0012] FIG. 1 is a schematic diagram of an application scenario of an order management system according to an embodiment of this specification;

[0013] FIG. 2 is a schematic diagram of a hardware structure of a computing device according to some embodiments of this specification;

[0014] FIG. 3 is a schematic flowchart of an order printing method according to an embodiment of this specification;

5 [0015] FIG. 4 is a schematic flowchart of an order printing method according to another embodiment of this specification;

[0016] FIG. 5 is a schematic diagram of an interaction procedure of a printing method according to another embodiment of this specification; and

[0017] FIG. 6 is a schematic flowchart of switching between a primary printing device and a
10 secondary printing device according to some embodiments of this specification.

DESCRIPTION OF EMBODIMENTS

[0018] Specific application scenarios and requirements of this specification are provided in the following descriptions, so that a person skilled in the art can manufacture and use content of this specification. For the person skilled in the art, various local modifications to the disclosed
15 embodiments are clear, and the general principles defined herein can be applied to other embodiments and applications without departing from the spirit and scope of this specification. Therefore, this specification is not limited to the shown embodiments, but has a widest scope consistent with that of the claims.

[0019] The terms used herein are only intended to describe a particular example embodiment,
20 but do not impose a limitation. For example, unless otherwise specified in the context, the singular forms "one", "a", and "the" used herein can also include a plural form. When used in this specification, the terms "include", "comprise", and/or "have" indicate/indicates existence of an associated integer, step, operation, element, and/or component, but does not exclude existence of one or more other features, integers, steps, operations, elements, components, and/or groups, or
25 another feature, integer, step, operation, element, component, and/or group can be added to the system/method.

[0020] In consideration of the following descriptions, these and other features of this specification, operations and functions of related components of the structure, and economy of combination and manufacturing of components can be significantly improved. With reference to

the accompanying drawings, all of these form a part of this specification. However, it should be clearly understood that the accompanying drawings are merely used for the purpose of illustration and description, and are not intended to limit the scope of this specification. It should be further understood that the accompanying drawings are not drawn to scale.

5 **[0021]** The flowchart used in this specification illustrates operations implemented by a system in some embodiments of this specification. It should be clearly understood that operations in the flowchart can be implemented out of sequence. On the contrary, operations can be implemented reversely or simultaneously. In addition, one or more other operations can be added to the flowchart. One or more operations can be removed from the flowchart.

10 **[0022]** In this specification, "X includes at least one of A, B, or C" means that X includes at least A, or X includes at least B, or X includes at least C. In other words, X can include only any one of A, B, and C, or simultaneously include any combination of A, B, and C and other possible content/elements. Any combination of A, B, and C can be A, B, C, AB, AC, BC, or ABC.

15 **[0023]** In this specification, unless expressly stated, an association relationship generated between structures can be a direct association relationship or an indirect association relationship. For example, when "A is connected to B" is described, unless it is explicitly stated that A is directly connected to B, it should be understood as that A can be directly connected to B or can be indirectly connected to B. For another example, when "A is above B" is described, unless it is explicitly stated that A is directly above B (A is adjacent to B and A is above B), it should be understood as
20 that A can be directly above B, or A can be indirectly above B (A is separated from B by another element and A is above B), and so on.

[0024] It should be noted that user data obtained in this specification is authorized by the user, and does not relate to user privacy.

25 **[0025]** Embodiments described in this specification can be applied to an order management scenario of a merchant. The merchant can be merchants that provide various products or services, including but not limited to a catering merchant, a store, a supermarket, a fruit and vegetable store, a flower store, a bookstore, a hotel, a beauty salon, a dry cleaning store, a barber store, etc. The merchant can be a small/micro merchant, a large merchant, a chain store, etc. This is not limited in this specification.

30 **[0026]** In some embodiments, the merchant can be a merchant that performs service development on an offline channel (in a real store). In this case, an order of the merchant can

include an offline order. In some embodiments, the merchant can alternatively be a merchant that performs service development on an online channel (Internet). In this case, an order of the merchant can include an online order. In some embodiments, the merchant can alternatively be a merchant that support service development on both an online channel and an offline channel. In this case, an order of the merchant can include an offline order and an online order.

[0027] In this specification, the online order is a product or service purchase request submitted by a consumer on the online channel (for example, a website or an application). The offline order is a product or service purchase request submitted by the consumer on the offline channel, for example, a product or service purchase request submitted by the consumer and a cashier in a face-to-face manner.

[0028] When the merchant needs to perform service development on the offline channel, the merchant needs to purchase a sales device, and further needs to purchase a dedicated financial appliance from an acquiring institution, to manage the offline order. The financial appliance and the acquiring institution are communicatively connected through a dedicated network. The sales device provides an interaction function, and can display a product or a service sold by the merchant. The cashier of the merchant can help the consumer select the product or service on the sales device and submit an order based on a purchase requirement of the consumer. The order is an offline order. The sales device sends the offline order to the financial appliance. After the consumer performs a payment operation (for example, card scanning or code scanning) on the financial appliance, the financial appliance generates a payment request for the offline order, and sends the payment request to the acquiring institution, so that the acquiring institution completes a payment procedure for the offline order.

[0029] In this specification, the acquiring institution is an institution that signs with the merchant and is responsible for processing a payment request on a merchant side. In some embodiments, the acquiring institution can be a financial institution such as a card issuing bank. In some embodiments, the acquiring institution can be, for example, a payment service provider of an electronic wallet. In some embodiments, the acquiring institution can alternatively be an aggregation service provider that aggregates a plurality of financial institutions or a plurality of payment service providers.

[0030] In an offline service development scenario, different consumers may select different payment channels for payment as payment manners are diversified. The merchant needs to be

interconnected to a plurality of acquiring institutions, to meet payment requirements of different consumers. In this case, the merchant needs to purchase a financial appliance from each acquiring institution. During service development, the merchant sends, based on a payment channel selected by the consumer, an order to a financial appliance corresponding to the payment channel, so that
5 the financial appliance sends a payment request of the order to an acquiring institution corresponding to the payment channel. Usually, a price of the financial appliance provided by the acquiring institution is relatively high. The merchant purchases the financial appliance from each of a plurality of acquiring institutions, and relatively high purchase costs are generated. In addition, a large quantity of financial appliances need to be placed on a working table of the merchant, and
10 the working table is crowded. In addition, in the face of so many financial appliances, the merchant may use a wrong financial appliance to collect cash, and consequently, cash collection fails, thereby affecting cash collection efficiency.

[0031] When the merchant performs service development on the online channel, the merchant can develop a store mini program (app), and dispose an access entry (for example, a two-
15 dimensional code) of the store mini program in a store or any other possible location. The consumer accesses the store mini program through the access entry, and submits the order in the store mini program.

[0032] When the merchant performs service development on the online channel, the merchant can further cooperate with different network platforms. The network platform can include but is
20 not limited to a delivery platform, a wallet platform, a social platform, etc. The merchant may be interconnected to different network platforms in different manners. For example, when cooperating with some platforms (for example, a delivery platform), the merchant can apply for opening an online store on these platforms, and place a product or a service of the merchant in the online store, so that a consumer places an order in the online store. For another example, when the
25 merchant cooperates with some other platforms (for example, the wallet platform or the social platform), the store mini program can be placed on these platforms, so that the consumer places an order in the store mini program.

[0033] In an online service development scenario, the merchant usually needs to cooperate with a plurality of network platforms, to attract more consumers. Therefore, an interconnection
30 between the merchant and the network platform needs to take a lot of effort. In particular, in some geographical areas, each network platform covers a small quantity of consumers, and there are a

large quantity of network platforms, for example, there may be hundreds or even thousands of network platforms. In such geographical areas, a quantity of network platforms that need to be interconnected to the merchant is huge, and it needs to take huge effort.

[0034] Apps of all network platforms are independently developed. The apps use different instruction sets, and usually have specific printing requirements for order receipts and labels. Therefore, different network platforms often have respectively matching hardware devices. For example, if a printing device (for example, a printer that prints a receipt and a label machine that prints a label) prints a content file (an order receipt and/or a product label) from a network platform, an internal instruction set of the printing device usually needs to be adapted to an instruction set of the platform app to implement fast printing. If the internal instruction set of the printer is not adapted to an instruction set of the network platform, a printing speed is limited when the printer executes an instruction from the network platform.

[0035] A sales device used by the merchant for offline service development can only process an offline order, and cannot receive an online order. To normally accept an order on the network platform, the merchant needs to purchase a dedicated order acceptance device from the network platform. Sometimes, a plurality of network platforms are active in the market, but no network platform is in a market monopoly position. In other words, the plurality of network platforms cover different consumer groups. In this case, if the merchant wants to operate normally, the merchant is forced to cooperate with each of the plurality of network platforms. When the merchant cooperates with the plurality of network platforms, the merchant needs to purchase the order acceptance device from the plurality of network platforms. Consequently, purchase costs are relatively high. In particular, the purchase costs of the merchant are huge when a relatively large quantity of network platforms are interconnected. In addition, a counter of the merchant is crowded if these order acceptance devices are placed on the counter. In addition, in the face of so many order acceptance devices, the merchant tends to be distracted, and does not process an order in a timely manner. Consequently, experience of the consumer is affected.

[0036] Further, when the merchant cooperates with the plurality of network platforms, the merchant has a relatively large quantity of order sources. Orders generated on different network platforms are stored in servers corresponding to the network platforms. When the merchant manages the online order, the merchant needs to visit service devices of different network platforms to perform order management (for example, an order query or order summary). The

merchant cannot perform unified management of all orders. In addition, different network platforms may have different operation manners for order management. The merchant needs to be familiar with operation manners of different network platforms. Due to the above-mentioned factors, an order management workload of the merchant is relatively large, and order management efficiency is relatively low.

[0037] Based on at least one of the technical problems described above, this specification provides an order management system. The order management system can help a merchant implement one-stop order management. To help a reader better understand one-stop order management, the following describes the order management system with reference to FIG. 1.

[0038] FIG. 1 is a schematic diagram of an application scenario 100 of an order management system according to an embodiment of this specification. For ease of understanding, an example in which a catering scenario is taken for description in FIG. 1. As shown in FIG. 1, the order management system can include a point of sale (POS) device 110 (or referred to as a POS device or a front-end device) and a service device 120 (or referred to as a server or a back-end device).

[0039] The POS device 110 is a multi-functional terminal. The POS device 110 can be considered as a client in the order management system. In some embodiments, the POS device 110 can be a mobile device, for example, a handheld device. The POS device 110 can be carried by a worker of a merchant to different locations in a store for operation, and there is relatively high convenience. In some embodiments, POS device 110 can be a non-mobile device. In this case, the POS device 110 is usually placed on a checkout counter in an offline store of the merchant.

[0040] In this specification, the POS device 110 can receive an offline order and an online order of the merchant. The POS device 110 can further perform cash collection processing for the offline order. The POS device 110 can also be referred to as a cash collection device or a sales device, or referred to as an all-in-one POS device.

[0041] The POS device 110 is an electronic device with a specific computing capability. In some embodiments, the POS device 110 can include a hardware device with a data processing function and a necessary program needed for driving the hardware device to work. The POS device 110 can manage an order by driving the hardware device to execute the program. For example, the POS device 110 can be installed with order management software (or an order management program). The POS device 110 can manage the order by running the order management software. The order management software can correspond to an operating system installed in the POS device

110, or can correspond to an application (APP) or an instruction set installed in the POS device 110. The order management software can be software preset in the hardware device of the POS device 110 (for example, software built in the POS device 110 when the POS device 110 is delivered from a factory), or can be software that is later installed in the POS device 110 by the worker of the merchant. This is not limited in this specification.

[0042] In some embodiments, the POS device 110 can have a display, or the POS device 110 can be externally connected to a display. The POS device 110 can provide an interaction capability through the display. For example, the POS device 110 displays, on the display, a product or a service sold by the merchant, and generates an offline order based on a product or a service selected by an operator (the worker of the merchant or a consumer). The POS device 110 can further display a cash collection entry on the display, so that an operator performs a cash collection operation for the offline order.

[0043] When cash collection is performed for the order, the POS device 110 supports a plurality of payment manners, including but not limited to cash payment, card scanning payment, code scanning payment, biological recognition (for example, facial recognition) based payment, near field communication (NFC) based payment, etc.

[0044] In some embodiments, when the POS device 110 supports cash payment, the POS device 110 can be provided with a cash box to store cash.

[0045] In some embodiments, a card reading apparatus 111 can be built in or externally connected to the POS device 110 when the POS device 110 supports card scanning payment. When a built-in manner is used, the card reading apparatus 111 can be disposed at any possible location of the POS device 110. This is not limited in this specification. When an externally connected manner is used, the POS device 110 can be connected to the card reading apparatus 111 in a wired or wireless manner. This is not limited in this specification. A wired connection manner can include but is not limited to a universal serial bus (USB) connection, an Ethernet connection, an optical fiber connection, etc. A wireless connection manner can include but is not limited to a Wi-Fi connection, a Bluetooth connection, etc.

[0046] The card reading apparatus 111 is an apparatus that can read card information of a payment card (for example, a debit card or a credit card) of the consumer according to a preset payment specification. When the consumer selects card scanning payment, the POS device 110 can control the card reading apparatus 111 to enter a card reading mode. The card reading apparatus

111 can read the card information of the payment card according to the preset payment specification in response to that the consumer places the payment card close to, attaches the payment card to, or inserts the payment card into the card reading apparatus.

[0047] In some embodiments, a code scanning apparatus 112 can be built in or externally
5 connected to the POS device 110 when the POS device 110 supports code scanning payment. When a built-in manner is used, the code scanning apparatus 112 can be disposed at any possible location of the POS device 110. This is not limited in this specification. When an externally connected manner is used, the POS device 110 can be connected to the code scanning apparatus 112 in a wired or wireless manner. This is not limited in this specification. The code scanning
10 apparatus 112 is an apparatus with a code scanning capability. For example, the code scanning apparatus 112 can include a camera module. When the consumer chooses to pay the offline order by using a payment code, the POS device 110 can control the code scanning apparatus 112 to enter a scanning mode. In response to that the consumer aligns the payment code with the code scanning apparatus 112, the code scanning apparatus 112 scans code information of the payment code by
15 using the camera module.

[0048] In some embodiments, a photographing apparatus (not shown in FIG. 1) can be built in or externally connected to the POS device 110 when the POS device 110 supports biological recognition based payment. When a built-in manner is used, the photographing apparatus can be disposed at any possible location of the POS device 110. This is not limited in this specification.
20 When an externally connected manner is used, the POS device 110 can be connected to the photographing apparatus in a wired or wireless manner. This is not limited in this specification. For example, when the consumer chooses to use facial scanning payment, the POS device 110 can control the photographing apparatus to enter a photographing mode. In response to that the consumer aligns a face with the photographing apparatus, the photographing apparatus
25 photographs a face image of the consumer.

[0049] In some embodiments, a near field communication apparatus (not shown in FIG. 1) can be built in or externally connected to the POS device 110 when the POS device 110 supports near field communication based payment. The near field communication apparatus can be disposed at any possible location of the POS device 110. This is not limited in this specification. When the
30 consumer selects near field communication based payment, the POS device 110 can control the near field communication apparatus to enter a communication mode. When the consumer places a

terminal device with a near field communication component close to the near field communication apparatus, the near field communication apparatus communicates with the near field communication component in the terminal, to obtain payment information of the order.

5 [0050] In some embodiments, a printing apparatus 113 (or referred to as a printing device or a printing end) can be built in or externally connected to the POS device 110. When a built-in manner is used, the printing apparatus 113 can be disposed at any possible location of the POS device 110. This is not limited in this specification. When an externally connected manner is used, the POS device 110 can be connected to the printing apparatus 113 in a wired or wireless manner. This is not limited in this specification. A printing paper or a label paper can be disposed in the printing
10 apparatus 113. After the consumer successfully pays an order, the POS device 110 can control the printing apparatus 113 to print an order receipt, an order ticket, or an order label that is of the consumer and that corresponds to the order.

[0051] The order ticket is a ticket printed by the merchant after the customer submits the order (after the order can be paid or before the order is paid), and lists information such as a name and a
15 model of a product. This ticket can be printed at the foreground for the customer to check, or can be printed at the background (kitchen ticket) for the worker of the merchant to check when providing a service on the order. For example, in a restaurant, after the customer submits the order, the restaurant prints a dish list in the order at the foreground for the customer to check, and prints the dish list at the back of the kitchen for the worker to prepare dishes.

20 [0052] An order label is usually a label printed by the merchant and pasted on a product. In some embodiments, the order label lists product information for all products. In some other embodiments, each product corresponds to one order label. The order label lists information such as a product name of a corresponding product in the order, so that the product is checked by the consumer when being given to the consumer. For example, in a beverage store, the consumer
25 orders several different beverages. A store prints a label for each of the beverages, and then respectively pastes corresponding labels on cups of the beverages after preparing the beverages. The label includes detailed information about the product such as a small material type, a sweetness type, and a cold/hot type. For another example, in a restaurant, the order label is a label for a dish in the order, and product information on the order label may include a pungency degree
30 type, a taboo type, remark information, etc.

[0053] The order receipt is a payment voucher printed by the merchant after the customer pays

the order. The order receipt usually lists some information in the order such as product details ordered by the consumer. For example, the product details include information such as a product name of the product, a model, a simple description, a unit price, a total price, a discount, an actual payment amount, a change amount, a payment manner, a payment time, a store name, an address,
5 a telephone number, a cashier, an order number, a bank serial number, a consumer name, a telephone number, and/or a two-dimensional code corresponding to the order receipt.

[0054] In some embodiments, the POS device 110 can further include an audio output apparatus (not shown in FIG. 1). The audio output apparatus can be, for example, a speaker. For example, when receiving an online order, the POS device 110 can output voice information by
10 using the audio output apparatus, to remind the worker of the merchant to process the order in a timely manner. For another example, after the consumer performs a payment operation for an offline order by using the POS device 110, in response to that the POS device 110 receives a payment result of the order, the POS device 110 can output voice information by using the audio output apparatus, to indicate that the order is successfully paid or unsuccessfully paid.

[0055] Still as shown in FIG. 1, the service device 120 is a computing system with a specific computing capability, for example, a server. The service device 120 is communicatively connected to the POS device 110, and provides an order management service to the POS device 110. The service device 120 can correspond to a single computing device, or can correspond to a computing cluster including a plurality of computing devices. The service device 120 can be deployed locally,
20 or can be deployed remotely. For example, the service device 120 can be a cloud server. In some embodiments, the service device 120 can include a hardware device with a data processing function and a necessary program needed for driving the hardware device to work. The service device 120 can provide the order management service to the POS device by driving the hardware device to execute the program. In some embodiments, the service device 120 can provide the order
25 management service to the POS device in a software as a service (SaaS) mode.

[0056] In some embodiments, when the service device 120 is deployed remotely, the service device 120 can be connected to POS devices 110 of a plurality of merchants, and provide the order management service to the POS devices 110 of the plurality of merchants. In this case, the service device 120 can perform isolated management on orders of different merchants by using various
30 isolation technologies, to avoid mutual interference between order data of the different merchants, and improve security of the order data. A person skilled in the art can understand that content of

the order management service provided by the service device 120 to the POS devices 110 of the different merchants is similar. In the descriptions of this specification, only an example in which the service device 120 provides the order management service to a POS device 110 of one merchant is taken for description.

5 **[0057]** A service provided by the service device 120 to the POS device 110 can include an order management service for an offline order, and can further include an order management service for an online order.

[0058] The following describes a working process of the order management system by using a catering scenario as an example.

10 **[0059]** With reference to FIG. 1, a catering store can include a front-of-house area and a back-of-house area. The front-of-house area is used to receive a consumer and is used by the consumer for dining. The front-of-house area can also be referred to as a reception area. The back-of-house area is an area in which a cook cooks dishes. The back-of-house area can also be referred to as a preparation area. The POS device 110 is usually located in the front-of-house area. The service
15 device 120 can be located in the front-of-house area, or can be in a cloud.

[0060] A process in which the order management system processes the offline order is follows: As shown in FIG. 1, a consumer A goes to a store to have a dinner. The consumer A notifies a cashier of a required dish. The cashier selects a corresponding dish on the POS device 110, and places an order. The POS device 110 generates an offline order in response to an order placing
20 operation of the cashier. The POS device 110 sends the offline order to the service device 120, so that the service device 120 stores the offline order. In an example in which the consumer A uses card scanning payment, after the cashier initiates a cash collection operation, the POS device 110 obtains card information of a payment card by using the card reading apparatus 111, and sends the card information to the service device 120. The service device 120 can generate a payment request
25 for the offline order based on the card information, and send the payment request to an acquiring institution, so that the acquiring institution executes a payment procedure of the offline order. The service device 120 can send a payment result of the offline order to the POS device 110 after receiving the payment result from the acquiring institution.

[0061] The order management system can receive online orders from a plurality of online
30 channels. The following provides descriptions by using three cases as examples.

[0062] Case 1: As shown in FIG. 1, the service device 120 can be deployed with a store mini

program (app). A two-dimensional code of the store mini program is disposed on a dining table (or another location) of the store. A consumer B can scan the two-dimensional code by using a terminal device, to view a page of the store mini program (app). The consumer B selects a desired dish on the page of the mini program, and completes online payment. In this case, the service device 120
5 generates an online order, stores the online order, and then sends the online order to the POS device 110. Therefore, the POS device 110 receives the online order.

[0063] Case 2: As shown in FIG. 1, the merchant can place the store mini program on a network platform. The following provides descriptions by using an example in which the store mini program is placed on a wallet platform. When a consumer C uses the wallet platform, the
10 consumer C accesses the store mini program on the wallet platform, selects a desired dish on the page of the mini program, and completes online payment. In this case, the wallet platform generates an online order, and sends the online order to the service device 120. After storing the online order, the service device 120 sends the online order to the POS device 110. Therefore, the POS device 110 receives the online order.

[0064] Case 3: As shown in FIG. 1, the merchant can open an online store on a network platform. The following provides descriptions by using an example in which the online store is opened on a delivery platform. When a consumer D uses the delivery platform, the consumer D
15 accesses the online store of the merchant on the delivery platform, selects a required dish, and completes online payment. In this case, the delivery platform generates an online order, and sends the online order to the service device 120. After storing the online order, the service device 120
20 sends the online order to the POS device 110. Therefore, the POS device 110 receives the online order.

[0065] It can be learned from the above-mentioned descriptions that an offline order received by the merchant and online orders from all channels are stored in the service device 120. Therefore,
25 the merchant can implement unified management of all orders on the service device 120. Compared with a manner in which the merchant respectively manages orders on different channels, the order management system provided in this specification can improve convenience of order management of the merchant and improve order management efficiency.

[0066] The catering scenario continues to be taken as an example. After receiving an order, the
30 merchant needs to process and cook a dish in the order. In an actual application, after the POS device 110 receives an order (including an offline order and an online order), the POS device 110

can control the printing apparatus to print a kitchen ticket that includes dish content of the order, and the kitchen ticket is manually transferred to a back-of-house area. The cook cooks a dish based on the dish content in the kitchen order ticket. The order management system can further include one or more display devices 130. For example, in the catering scenario, the display device 130 can also be referred to as a kitchen display system (KDS). The display device 130 is disposed in the back-of-house area, and is communicatively connected to the POS device 110. The display device 130 can receive an order from the POS device 110, and display a to-be-cooked dish to the cook. In some embodiments, after a dish is cooked, the cook can further send a dish cooking completion notification to the POS device 110 by using the display device 130, so that the POS device 110 knows a cooking progress of the order.

[0067] In stores of some merchants, the back-of-house area include a plurality of ports. Different ports are equipped with different cooks who are responsible for cooking different types of dishes. With reference to FIG. 1, an example in which the back-of-house area includes a cold dish port and a hot dish port is used. A cook X1 is responsible for cooking a cold dish and a cook X2 is responsible for cooking a hot dish. In this case, one display device 130 can be disposed in the cold dish port, and is configured to display, to the cook X1, a cold dish that needs to be cooked. One display device 130 can be disposed in the hot dish port, and is configured to display, to the cook X2, a hot dish that needs to be cooked. In this way, dish cooking in different ports does not interfere with each other, to further improve cooking efficiency.

[0068] In the application scenario shown in FIG. 1, the POS device 110 can be connected to each of the service device 120 and the display device 130 through a network. The network is a medium used to provide a communication connection. The network can facilitate exchange of information or data. The network can be any type of wired or wireless network, or a combination thereof. For example, the network can include a cable network, a wired network, an optical fiber network, a telecommunications network, an intranet, the Internet, a local area network (LAN), a wide area network (WAN), a wireless local area network (WLAN), a metropolitan area network (MAN), a public switched telephone network (PSTN), a Bluetooth network, a ZigBee network, a near field communication (NFC) network, or a similar network. In some embodiments, the network can include one or more network access points. For example, the network can include a wired or wireless network access point, for example, a base station or an Internet switching point.

[0069] It should be noted that the catering scenario is used as an example in FIG. 1. It can be

understood by a person skilled in the art that when the order management system provided in this specification is applied to another scenario, an implementation solution and a technical effect of the order management system are similar to those of the catering scenario, and details are not described for another scenario in this specification.

5 [0070] It can be learned from the above-mentioned descriptions that the merchant can implement one-stop order management by using the order management system provided in this specification. The one-stop order management is embodied in at least the following aspects: (1) The merchant can use one POS device 110 to implement processing of the offline order or implement processing of the online orders from the plurality of online channels. The merchant
10 does not need to be interconnected to each of the plurality of online channels, thereby avoiding energy and time costs required for work docking. In addition, the merchant does not need to purchase an order acceptance device from each of the plurality of online channels, to reduce purchase costs of the merchant. (2) All orders received by the POS device 110 are sent to the display device 130 in the back-of-house area in real time, without a need to manually transfer the
15 kitchen ticket. This improves order processing efficiency. (3) All orders received by the merchant are stored in the service device 120, and the merchant can implement unified management such as order query or summary on all the orders on the service device 120. The merchant does not need to perform decentralized management on the orders on different network platforms, to improve order management efficiency. Order data of all platforms are collected at one POS end, so that the
20 merchant can store and back up the order data.

[0071] FIG. 2 is a schematic diagram of a hardware structure of a computing device 200 according to some embodiments of this specification. The computing device 200 can serve as the order management system in FIG. 1. In some embodiments, when a device cluster is used in the order management system, the computing device 200 can serve as any device in the order
25 management system. For example, devices such as a POS device and a service device (for example, a server) in the order management system can have a structure of the computing device 200.

[0072] As shown in FIG. 2, the computing device 200 includes at least one storage medium 230 and at least one processor 220. In some embodiments, the computing device 200 can further include an internal communication bus 210. In some embodiments, the computing device 200 can
30 further include a communication port 250. In some embodiments, the computing device 200 can further include an I/O component 260.

- [0073] The internal communication bus 210 can be connected to different system components, including a storage medium 230 and a processor 220. The I/O component 260 supports an input/output between the computing device 200 and another component.
- [0074] The communication port 250 is used for data communication between the computing device 200 and the outside. For example, the computing device 200 can be connected to a network through the communication port 250.
- [0075] The storage medium 230 can include a data storage apparatus. The data storage apparatus may be a non-transitory storage medium, or may be a transitory storage medium. For example, the data storage apparatus can include one or more of a disk 232, a read-only storage medium (ROM) 234, or a random access storage medium (RAM) 236. The storage medium 230 further includes at least one instruction set stored in the data storage apparatus. The instruction set is computer program code. The computer program code can include a program, a routine, an object, a component, a data structure, a process, a module, and the like for performing the order printing method provided in this specification.
- [0076] The at least one processor 220 is communicatively connected to the at least one storage medium 230 through the internal communication bus 210. The at least one processor 220 is configured to execute the at least one instruction set. When the order management system runs, the at least one processor 220 reads the at least one instruction set, and performs, based on an indication of the at least one instruction set, the order printing method provided in this specification.
- [0077] The processor 220 can perform all steps included in the order printing method. The processor 220 can be in a form of one or more processors. The processor 220 can send an execution instruction. The processor 220 can include one or more hardware processors, for example, a microcontroller, a microprocessor, a reduced instruction set computer (RISC), an application-specific integrated circuit (ASIC), an application-specific instruction set processor (ASIP), a central processing unit (CPU), a graphics processing unit (GPU), a physical processing unit (PPU), a microcontroller unit, a digital signal processor (DSP), a field programmable gate array (FPGA), an advanced RISC machine (ARM), a programmable logic device (PLD), any circuit or processor that can perform one or more functions, or any combination thereof.
- [0078] To merely describe a problem, only one processor 220 is shown in the computing device 200 in the accompanying drawings of this specification. However, it should be noted that the computing device 200 in this specification can further include a plurality of processors.

Therefore, the operations and/or method steps disclosed in this specification can be performed by one processor or can be performed jointly by a plurality of processors, as described in this specification. For example, if the processor 220 in the computing device 200 in this specification performs step A and step B, it should be understood as that step A and step B can be jointly or
5 separately performed by two different processors 220 (for example, a first processor performs step A, and a second processor performs step B, or a first processor and a second processor jointly perform steps A and B).

[0079] FIG. 3 is a schematic flowchart of an order printing method according to an embodiment of this specification. The order printing method P300 is applied to a POS device in
10 an order management system. The POS device is configured to: generate order content based on an order placing operation, or receive order content from a target platform. Specifically, the POS device includes at least one processor and at least one storage. The storage stores a series of instruction sets. When the POS device runs, the processor of the POS device invokes and executes the instruction set, to perform the method P300 in FIG. 3.

[0080] In addition, the order management system further includes a printing device. As described above, because a plurality of network platforms simultaneously contend together in the market, each platform app uses an instruction set of the platform app to drive a matching hardware device, for example, the printing device. If a merchant wants to cooperate with these network platforms and separately purchase corresponding hardware devices, operating costs of the
20 merchant are increased. Therefore, to resolve this problem, a common printing device can be used as the printing device (for example, a printer and a label machine) in this order management system. That is, an instruction set of the printing device in this specification is not specifically adapted to instruction sets of all the plurality of network platforms.

[0081] As shown in FIG. 3, the method P300 provided in this specification can include S305
25 to S330.

[0082] S305: Receive a plurality of orders from a plurality of platforms, where the plurality of orders include a target order.

[0083] As mentioned above, an order sent by each platform corresponds to a different instruction set. The target order is derived from a target platform and includes a plurality of
30 products.

[0084] S310: Generate to-be-printed content corresponding to a target material based on order

content of the target order.

[0085] Generation of the order content of the target order can be triggered based on an order placing operation of a cashier/consumer. The POS device can trigger generation of a target order corresponding to the order placing operation based on the order placing operation of the cashier/consumer. The target order includes order content of the plurality of products. In some embodiments, the cashier can perform an order placing operation on the POS device based on an ordering request of the consumer. Alternatively, the consumer can perform an order placing operation by using a store mini program at a dining table. Alternatively, the consumer can access the store mini program on a wallet platform, and perform an order placing operation on a mini program page. Alternatively, the consumer can access an online store of the merchant on an online store platform, and perform an order placing operation. A specific order placing manner can be flexibly adjusted based on an actual situation, and is not limited to that provided in the above-mentioned embodiment.

[0086] In some possible embodiments, the target material can be a ticket for the target order, for example, can be an order receipt or a kitchen ticket. As described above, the order receipt can include but is not limited to store information of the target order, an order placing time of the target order, number information of the target order, product content included in the target order, a quantity of products, a product unit price, a product total price, etc. Because the order receipt includes a price and payment information of the product, an amount actually paid by a user usually needs to be learned of after the consumer pays a product in an order. Therefore, the order receipt usually needs to prepare to be printed after payment is completed.

[0087] In some other possible embodiments, the target material can alternatively be labels for the plurality of products included in the target order. Label printing is used to indicate a worker of a store to prepare a product for the consumer based on label content. A quantity of labels can be determined based on a quantity of products in the target order. For example, each product in the target order can correspond to one label. A label of each product records detailed information of the product. For example, the product is tea with milk. The detailed information of the product may include: a small material type, a sweetness type, a cold/hot type, etc. For example, the product is a dish. The detailed information of the product may include: a pungency degree type, a taboo type, remark information, etc.

[0088] Alternatively, a product of each type in the target order can correspond to one label. In

a catering scenario, different product types can be classified based on cuisines, for example, a Chinese cuisine, a Western cuisine, and a French cuisine. Alternatively, different product types can be classified based on attributes of products, for example, a cold dish type, a hot dish type, a dessert type, and a snack type. In a department store scenario, different product types can be classified
5 based on attributes of products, for example, a skin care product type, a drug type, a catering type, and an office supplies type. Alternatively, different product types can be classified based on areas in which different products are processed. For example, different products may be stored in different warehouses. When printing labels, types of the products can be distinguished based on different warehouses. The types of the products may include a first warehouse type, a second
10 warehouse type, a third warehouse type, etc. It should be understood that the above-mentioned embodiment is merely an example for description, a form that may be specifically included in the target material, and content included in the target material in different forms can be flexibly adjusted according to a user requirement, and is not limited to the above-mentioned embodiment.

[0089] The order label usually does not involve an actual transaction price of the product.
15 Therefore, the order label can prepare to be printed after the consumer places an order (submit the order) and before the consumer completes payment.

[0090] Different target materials correspond to different to-be-printed content. A specific type corresponding to the target material can be flexibly adjusted based on a specific situation of a current merchant. The catering scenario is still used as an example for description. For example,
20 usually, at least a ticket of the target order needs to be printed in response to a successful operation of the order placing operation, so that the consumer can view specific content of order placing. In addition, some merchants further need to print labels to a kitchen food preparer, so that the food preparer prepares dishes based on the printed labels.

[0091] FIG. 4 is a schematic flowchart of an order printing method according to another
25 embodiment of this specification. As shown in FIG. 4, S310 further includes S311 and S313.

[0092] S311: Obtain a printing template from a server in an order management system in response to a printing request for a target material, where the printing template is determined by the server based on a type of the target material and a source of a target order.

[0093] Different target materials may include different content. For example, content included
30 in a ticket and a label in the above-mentioned embodiment is obviously different from each other. Therefore, different target materials may correspond to different printing templates. In addition,

the corresponding printing template may vary with the source of the target order. For example, an offline order and an online order may have different order templates. Even for the online order, different online order placing platforms may correspond to different order templates. Because different order platforms (for example, network platforms) have different instruction sets, order templates from different order platforms also correspond to different instruction sets during printing.

[0094] For example, a ticket template of the offline order usually includes a store name (a location/house number of a store) and a table number (a table number of a consumer) of order placing. A ticket template of an online placed delivery order usually includes an order placing platform and related information of the consumer. The related information of the consumer may include contact information, an address, an expected delivery manner, etc. of the consumer (the expected delivery manner can be independently selected by the consumer when the consumer places an order on a delivery platform; or is automatically set by the system by default when the consumer does not select the expected delivery manner; the expected delivery manner can include: placing a product at a gate of a community, placing a product in a doorway, placing a product at another specified location, etc.).

[0095] In some embodiments, the server periodically obtains corresponding printing templates and corresponding instruction sets of various different network platforms from the different network platforms. Therefore, after receiving the printing request for the target material, the POS device needs to obtain a corresponding printing template and a corresponding instruction set from the server based on the type of the target material and a source (for example, an offline order or an order from a network platform, or an order from a specific network platform) of order content.

[0096] In some possible embodiments, each time the POS device responds to the printing request for the target material, the POS device obtains the printing template from the server based on the type of the target material and the source of the target order.

[0097] Alternatively, in some other possible embodiments, after the POS device goes online for the first time, the POS device can obtain printing templates corresponding to a plurality of platforms and a plurality of different target materials from the server and cache the printing templates, to reduce a data transmission amount. In a subsequent use process, the POS device does not need to be repeatedly obtained. However, after the POS device is disconnected, a cache inside the POS device may be cleared, and consequently, a cached printing template is cleared. Therefore,

after the POS device successfully goes online for the first time after being disconnected, the POS device needs to obtain the printing templates respectively corresponding to the plurality of platforms and the plurality of different target materials again.

[0098] In addition, the server can obtain, in real time, an update status of a printing template and a corresponding instruction set that are of each platform and each target material. When a printing template of a specific platform/target material is updated, the server actively sends an updated printing template to the POS device, so that the POS device updates, based on the updated printing template sent by the server, the printing template cached in the POS device. A previous printing template (existing before updating) needs to be deleted when the updated printing template is obtained, to reduce memory occupation of the POS device. It should be understood that the above-mentioned embodiment is merely an example for description. A specific manner in which the POS device obtains the printing template can be flexibly adjusted according to a user requirement, and is not limited to that in the above-mentioned embodiment.

[0099] S313: Fill and/or replace corresponding content in the printing template based on order content of the target order, to generate to-be-printed content corresponding to the target material, where the printing template includes a plurality of pieces of to-be-replaced and/or to-be-filled content.

[0100] For example, the to-be-replaced content and/or the to-be-filled content are/is the above-mentioned product-related content.

[0101] For example, a plurality of pieces of variable content can be determined in the order content based on the order content and a preset printing template of the target order, to improve a speed of generating to-be-printed content corresponding to the target order. One piece of variable content can include information corresponding to one product involved in the order. For example, the information corresponding to one product may include a product name, a product quantity, a product unit price, and a product total price. Subsequently, corresponding content in the preset printing template is filled and/or replaced based on the plurality of pieces of variable content, to generate the to-be-printed content corresponding to the target order.

[0102] In the above-mentioned manner of generating the to-be-printed content corresponding to the target order, the corresponding content in the preset printing template is filled and/or replaced only based on the variable content, and processing of invariable content (content other than the variable content in the order content) can be skipped. In this way, filling and/or replacing

operations of related content in the printing template only focus on those parts that need to be filled and/or replaced, to reduce unnecessary operations and significantly improve a generation speed of the to-be-printed content.

[0103] In addition, an original format of a template and accuracy of fixed information can be maintained to maximum extent by filling and/or replacing only the variable content. Because a thread only operates the variable content, a fixed format element, important description information, etc. in the template are not affected. Therefore, integrity and accuracy of the invariable content in the preset printing template are ensured.

[0104] In addition, consumption of computing resources can be reduced by filling and/or replacing only the variable content. Because a workload of the thread mainly focuses on the variable content, computing resources do not need to be allocated for filling and/or replacing the invariable content. Occupation of storage resources is also reduced by filling and/or replacing only the variable content. Because additional space is not required for processing data related to filling and/or replacing the invariable content, so that resources can be used more efficiently in a process of generating the to-be-printed content.

[0105] In some other possible embodiments, the corresponding content in the preset printing template can be filled and/or replaced based on the plurality of pieces of variable content through a plurality of threads, to generate the to-be-printed content corresponding to the target order. For example, the target order comes from the target platform, and includes n products (for example, a plurality of dishes or a plurality of cups of beverages). Herein, n is a natural number. The target material is the target order and a label. Correspondingly, the corresponding to-be-printed content includes an order receipt and a label corresponding to the product. According to the template of the target platform, the order receipt needs to include details of the n products ordered by the consumer such as product names of all the products, models, brief descriptions, unit prices, total price, and discounts. The order receipt further needs to list transaction information, for example, information such as a total price of the n products, an actual payment amount, a change amount, a payment manner, a payment time, a store name, an address, a telephone number, a cashier, an order number, a bank serial number, a consumer name, a telephone number, and/or a two-dimensional code corresponding to the order receipt. In addition, each of the n products needs to print a corresponding label. Each label needs to list detailed information of a product, for example, a beverage name, a small material type, a sweetness type, a cold/hot type, etc.; or a dish name, a

pungency degree type, a taboo type, remark information, etc. To quickly allocate these printing tasks to printers and label machines, the POS device needs to split the order template specified on the target platform, to obtain invariable content and variable content. Then, a plurality of threads (for example, one main thread, n sub-threads, or less than n sub-threads) are started in batches, to
5 replace or fill the variable content. That is, the variable content is replaced with corresponding product information, or if the variable content is empty, corresponding product information is filled in corresponding variable content. Generated target order receipt and n labels are the target material. In some embodiments, these target materials can be htm files.

[0106] In such a processing manner, a plurality of threads are used to replace the variable
10 content synchronously. Compared with a single thread replacement manner, in this manner, the speed of generating the to-be-printed content is further improved. In a high concurrency order processing scenario, efficiency of generating the to-be-printed content is improved more clearly.

[0107] In this embodiment of this specification, a quantity of the plurality of threads can be set to be consistent with a quantity of the plurality of pieces of variable content. In such a setting
15 manner, a higher degree of parallel processing can be implemented. Each thread can independently fill and/or replace variable content that the thread is responsible, and a plurality of filling and/or replacing operations can be performed simultaneously. In addition, when the quantity of threads is consistent with the quantity of variable content, a case in which a thread is idle and waits for a task or a task waits for a thread does not occur. A setting of a specific quantity of the plurality of threads
20 can be flexibly adjusted according to a user requirement, and is not limited to that provided in the above-mentioned embodiment.

[0108] S330: Send the to-be-printed content to a printing device by using a digital image, so that the printing device prints the digital image.

[0109] As mentioned above, if an instruction set in the printing device (for example, a printer
25 or a label machine) is adapted to the target platform, the POS device can directly send the htm files to the printer for direct printing. However, because the printing device is a common printing device, and the instruction set of the printing device is not specifically adapted to the target platform, the POS needs to further convert these htm files into digital images. Specifically, the POS device separately converts the htm files of the target order receipt into the digital images, and converts
30 the htm files corresponding to the n labels into n digital images.

[0110] In some possible embodiments, a format of the digital image can be a bitmap format.

An image in the bitmap format includes pixels, and each pixel includes color information. These pixels are arranged horizontally and vertically, to form a completed digital image.

[0111] Then, the main thread of the POS device checks whether each sub-thread replaces/fills all corresponding template content, and then stores a converted digital image in a memory of the POS device. Then, based on an actual situation, the POS device separately sends the digital image to the printing device corresponding to the POS device for printing. Different types of target materials correspond to different types of printing devices. When the to-be-printed content corresponding to the target material is a label, the printing device is a label machine. When the to-be-printed content corresponding to the target material is an order receipt (or referred to as an order ticket, a ticket, or a receipt), the printing device is a printer. A specific correspondence between a printing device and a target material can be flexibly adjusted based on an actual application situation, and is not limited to that provided in the above-mentioned embodiment.

[0112] The printing device can be in an offline operating entity of the target merchant, or can be a remote printing device. As described above, these printing devices can be printers that print order receipts or kitchen tickets, or can be label machines that print product labels. The instruction set of the printing device is not specifically adapted to instruction sets of all the plurality of platforms.

[0113] FIG. 5 is a schematic diagram of an interaction procedure of a printing method according to another embodiment of the present specification. As shown in FIG. 5, in this embodiment of the present specification, a POS device can send a printing template obtaining instruction to a service device after going online for the first time. A service device sends a printing template to the POS device based on the printing template obtaining instruction. The printing template sent by the service device includes printing templates corresponding to different printing devices on different order placing platforms.

[0114] In a payment process of a user, a payment amount may be inconsistent with an actual price of an order due to a discount activity, a store activity, etc. of payment software. Therefore, for printing of target materials that include payment information of the target order, for example, printing of a receipt ticket, a printing procedure can be started only after a consumer successfully pays the target order. Specifically, the POS device triggers a printing request for the target order in response to an operation result indicating that the target order is successfully paid. That is, the POS device can determine to-be-printed content corresponding to a printer based on the target order in

response to the operation result indicating that the target order is successfully paid, and convert the to-be-printed content into a digital image, to send the digital image to the printer, to indicate the printer to print the digital image. The receipt ticket includes the payment information of the target order. The payment information can include an actual payment amount of the user, an
5 original amount (before a discount is available) of the target order, a payment result of the user, a payment manner, etc.

[0115] In some other possible embodiments, for those target materials that do not include the payment information of the target order, a corresponding digital image does not need not to be prepared until payment succeeds. For example, a label does not need to display information such
10 as a price and a payment result. Therefore, to improve a label printing speed, the printing request for the target order can be triggered in response to an operation of initiating payment for the target order. Specifically, after the consumer initiates payment for the target order, the POS device can separately generate n label files based on content of the target order, where each label file includes information about one of the plurality of products; and then separately generate a plurality of
15 corresponding digital images based on the plurality of label files. Then, digital images corresponding to the n labels are sent to the printing device in response to the operation result indicating that the target order is successfully paid. The target material does not include the payment information (the actual payment amount of the user, the original price of the target order, the payment result of the user, the payment manner, etc.) of the target order. In such a label printing
20 manner, a waiting time of label printing is shortened. The to-be-printed content is prepared in a process in which the user initiates payment. Printing can be performed immediately once the user successfully pays.

[0116] In this embodiment of this specification, for those target materials that do not include the payment information of the target order, the to-be-printed content can be prepared in response
25 to the operation of initiating payment for the target order by the user, and the digital image corresponding to the to-be-printed content is generated, and the generated digital image is cached in a cache of the POS device. Then, in response to the payment result indicating that the target order is successfully paid, the digital image is obtained from the cache and sent to the printing device for printing. In response to a payment result indicating that the target order is unsuccessfully
30 paid, a digital image cached in the POS device is destroyed, to avoid occupation of the cache by unrelated content. Compared with starting preparation and printing only after payment succeeds,

in the above-mentioned manner, a time for preparing the to-be-printed content by the printing device is reduced.

[0117] That is, in the method provided in this specification, different occasions of converting the to-be-printed content into the digital image can be determined based on different target materials. A printing speed of the target material can be improved as much as possible while it is ensured that the target material is correctly printed.

[0118] In this embodiment of this specification, there may be a plurality of printing devices. The printing template may include preset printing templates respectively corresponding to a plurality of categories. A catering scenario is still used as an example for description. There may be a plurality of areas on a kitchen side, and each area is responsible for processing different types of food. Each area may correspond to a food category, and one printing device exists in an area corresponding to each food category. The printing device is configured to print a target material in a corresponding food category. A printable category of each printing device is configured for a plurality of printing devices in response to a configuration operation performed by an operator for the plurality of printing devices in advance. A merchant can flexibly adjust a configuration status of each printing device according to a requirement of the merchant.

[0119] For example, the kitchen side includes a cold dish area, a hot dish area, a dessert area, and a beverage area. A printing device corresponding to each area is disposed in the area, and is configured to print a target material corresponding to each area. After a successful order placing operation of the target order is obtained, the target order needs to be split to determine target to-be-printed content corresponding to each category.

[0120] For example, variable content included in the target order is: an order number, an order placing time, one serving of sweet and sour pork, one serving of braised beef, two servings of tomato salad, and four servings of cake. Splitting of the target order includes: splitting the target order to obtain product information of the target order; and splitting the product information to determine a food category corresponding to each piece of product information. Order-related information in the target order includes an order number and an order placing time. The product information in the target order includes: one serving of sweet and sour pork, one serving of braised beef, two servings of tomato salad, and four servings of cake.

[0121] After the product information of the target order is split, product information that is of the target order and that is included in the hot dish area (hot dish category) can be obtained: one

serving of sweet and sour pork and one serving of braised beef. Product content that is of the target order and that is included in the cold dish area (cold dish category) is two servings of tomato salad. Product content that is of the target order and that is included in the dessert area (dessert category) is four servings of cake. The target order corresponds to no product information in the beverage area (beverage category). That is, printing of the target order does not involve the beverage area. In this way, splitting of the target order is completed.

[0122] Then, for each food category, corresponding content in a target printing template corresponding to the food category is replaced based on variable content (order-related information and product information) included in each food category, to generate target printing content corresponding to the food category. Then, the target printing content corresponding to each food category is sent to a target printing device corresponding to each food category. The hot dish area is used as an example for description. Target printing content corresponding to the hot dish area can include related content (for example, a title/category name is hot dish; an order placing manner corresponding to the target order is a current store name; etc.) in a preset printing template corresponding to a hot dish category and variable content (the order number, the order time, one serving of sweet and sour pork, and one serving of braised beef) that is of the target order and that is included in the hot dish category.

[0123] A corresponding printing device is configured in an area of each food category, so that target content printed in the hot dish area is only related content in the hot dish category. Target content printed in the cold dish area is only related content in the cold dish category. Target content printed in the dessert area is only related content in the dessert category. A worker of each area of a kitchen can clearly determine, based on target printing content printed by the target printing device, a product that each area needs to be responsible for, to reduce interference of other unrelated information. In addition, dish production in different areas can be performed simultaneously. Production procedures and times of the cold dish, the hot dish, the dessert, and the beverage are different. After printing is performed in each area, the area can start to prepare dishes based on a dish preparation procedure. For example, the cold dish area can immediately start to make a cold salad, the hot dish area simultaneously prepares a fried dish, the dessert area makes a dessert, and the beverage area makes a beverage, to further improve a serving speed.

[0124] In conclusion, in the order printing method P300 provided in this specification, the POS device can print order content in different order placing manners. For example, the POS device

can print order content generated based on an order placing operation on the POS device, or the POS device can receive and print order content from the target platform. The POS device generates the to-be-printed content of the target material based on the order content of the target order, and sends the to-be-printed content to the printing device by using a digital image. In such a printing manner, the to-be-printed content is sent to the printing device in a form of a digital image, and a same data format of the printing device is used, to avoid a printing failure, a printing error, etc. caused by an incompatible data format. In addition, printing devices differ in hardware and software, for example, a printing resolution, a color mode, or a font library. The to-be-printed content is sent in a form of a digital image. The printing device only needs to print the digital image, does not need to consider format details, and does not need to parse and convert a complex text format, typesetting format, etc. Because pixel information of the digital image is explicit, the printing device can directly perform printing based on information such as a color and a location of each pixel in the digital image without performing complex operations such as character recognition and font rendering like processing of text content. These additional data processing steps are reduced, thereby accelerating a printing speed. All printers with high or low performance can directly perform printing based on a digital image sent by the POS device, to improve adaptation of the printing device.

[0125] It is considered that in a normal operating process of the merchant, the printing device can be faulty due to various reasons and cannot perform printing normally. For example, there may be a problem in a network connection of the printing device, and a printing instruction cannot be normally received. Alternatively, there is a problem in running of the printing device (hardware of the printer is damaged, etc.). Even if the printing instruction is received, printing cannot be normally performed. Alternatively, when a primary printing device needs to perform routine maintenance, software upgrade, or consumable replacement, the primary printing device cannot normally work temporarily.

[0126] Obviously, such a problem affects normal running of the merchant. In the catering scenario, especially a catering peak period, even a short time fault causes a loss to the merchant. In some other possible embodiments, the printing device can include the primary printing device and at least one secondary printing device. An initial state of the primary printing device is an active state, and an initial state of the secondary printing device is an inactive state. When the primary printing device is faulty or cannot be used normally, a state of the primary printing device

can be switched to an inactive state, and a state of the secondary printing device is switched to an active state.

[0127] FIG. 6 is a schematic flowchart of switching between a primary printing device and a secondary printing device according to some embodiments of this specification. As shown in FIG.

5 6, A manner of triggering switching between the primary printing device and the secondary printing device can be: in response to a received switching instruction sent by a server, switching a state of the primary printing device to an inactive state, activating the secondary printing device, and switching a state of the secondary printing device to an active state.

[0128] Alternatively, a manner of triggering switching between the primary printing device
10 and the secondary printing device can alternatively be that the POS device displays a prompt page on the POS device in response to a result indicating that printing fails; and in response to a switching operation entered by an operator on the prompt page, a state of the primary printing device is switched to an inactive state, the secondary printing device is activated, and a state of the secondary printing device is switched to an active state.

15 **[0129]** That is, a printing device switching operation can be triggered by a switching instruction delivered by the server when detecting that the primary printing device is abnormal. Alternatively, the printing device switching operation can be triggered by a switching operation that is entered on the prompt page when an operator finds that the primary printing device is abnormal. A specific manner of triggering switching between the primary printing device and the
20 secondary printing device can be flexibly adjusted according to a user requirement, and is not limited to that provided in the above-mentioned embodiment.

[0130] A setting of the primary printing device and the secondary printing device increases reliability of an order management system. When a primary printing device encounters a software fault, a hardware damage, or a network problem, a secondary printer can serve as a backup to
25 normally complete a printing task. This ensures consistency of a catering procedure and reduces a risk that the order management system cannot be used normally due to a single fault point of the printer. This minimizes interference to normal operation of the merchant.

[0131] In the order printing method provided in this specification, the POS device can print order content in different order placing manners. For example, the POS device can print order
30 content generated based on an order placing operation on the POS device, or the POS device can receive and print order content from the target platform. Therefore, the merchant does not need to

configure an order receiving device for each platform. All-platform orders can be received based on POS end. All orders are centrally managed on one POS device. The merchant can view and process orders from various platforms in one interface, to reduce time for switching between different systems and checking orders. In response to a printing request for a target material, the

5 POS device generates to-be-printed content of the target material based on order content of a target order, and sends the to-be-printed content to a printing device by using a digital image. In such a printing manner, the to-be-printed content is sent to the printing device in a form of a digital image, and a same data format of the printing device is used, to avoid a printing failure, a printing error, etc. caused by an incompatible data format. In addition, printing devices differ in hardware and

10 software, for example, a printing resolution, a color mode, or a font library. The to-be-printed content is sent in a form of a digital image. The printing device only needs to print the digital image, does not need to consider format details, and does not need to parse and convert a complex text format, typesetting format, etc. Because pixel information of the digital image is explicit, the printing device can directly perform printing based on information such as a color and a location

15 of each pixel in the digital image without performing complex operations such as character recognition and font rendering like processing of text content. These additional data processing steps are reduced, thereby accelerating a printing speed. All printers with high or low performance can directly perform printing based on a digital image, to improve adaptation of the printing device.

[0132] Another aspect of this specification provides a computer-readable non-transitory

20 storage medium, storing at least one instruction set that includes executable instructions for performing order printing. When the at least one instruction set is executed by a processor, the at least one instruction set instructs the processor to implement the steps in the order printing method P300 in this specification. In some possible implementations, aspects of this specification can further be implemented in a form of a program product, including program code. When the

25 program product runs on a POS device in an order management system, the program code is used to enable the POS device in the order management system to perform the steps of the method P300 described in this specification. The program product configured to implement the above-mentioned method can be a portable compact disc read-only memory (CD-ROM) that includes program code, and can run on the POS device in the order management system. However, the

30 program product in this specification is not limited thereto. In this specification, a readable storage medium can be any tangible medium that includes or stores a program, and the program can be

used by or in combination with an instruction execution system. The program product can be any combination of one or more readable media. The readable medium can be a readable signal medium or a readable storage medium. The readable storage medium can be, for example, an electrical system, apparatus, or device, a magnetic system, apparatus, or device, an optical system, apparatus, or device, an electromagnetic system, apparatus, or device, an infrared system, apparatus, or device, or a semiconductor system, apparatus, or device, or any combination thereof. More specific examples of the readable storage medium include: an electrical connection including one or more conducting wires, a portable disk, a hard disk, a random access memory (RAM), a read-only memory (ROM), an erasable programmable read-only memory (EPROM or flash memory), an optical fiber, a portable compact disc read-only memory (CD-ROM), an optical storage component, a magnetic storage component, or any proper combination thereof. The computer-readable storage medium can include a data signal propagated in a baseband or as part of a carrier, and carries readable program code. The propagated data signal can be in a plurality of forms, and includes but is not limited to an electromagnetic signal, an optical signal, or any proper combination thereof. The readable storage medium can further be any readable medium other than the readable storage medium, and the readable medium can be used to send, propagate, or transmit a program used by or in combination with an instruction execution system, apparatus, or component. The program code included in the readable storage medium can be transmitted in any proper medium, including but not limited to a wireless medium, a wired medium, optical cable, an RF medium, or any proper combination thereof. Program code for performing an operation of this specification can be written in any combination of one or more program design languages. The program design language includes an object-oriented program design language, for example, Java or C++, and further includes a conventional procedural program design language, for example, "C" language, or a similar program design language.

[0133] Specific embodiments of this specification are described above. Other embodiments fall within the scope of the appended claims. In some cases, the actions or steps described in the claims can be performed in an order different from that in the embodiments, and the desired results can still be achieved. In addition, the process depicted in the accompanying drawings does not necessarily need a particular order or consecutive order to achieve the desired results. In some implementations, multitasking and parallel processing are possible or may be advantageous.

[0134] In conclusion, after reading the detailed disclosure, a person skilled in the art can

understand that the detailed disclosure can be presented only in an example manner, and can impose no limitation. Although it is not explicitly stated here, a person skilled in the art can understand that the requirements of this specification include various proper changes, improvements, and modifications to the embodiments. These changes, improvements, and
5 modifications are intended to be presented in this specification, and fall within the spirit and scope of the example embodiments of this specification.

[0135] In addition, some terms in this specification are used to describe the embodiments of this specification. For example, "one embodiment", "an embodiment", and/or "some embodiments" mean that particular features, structures, or characteristics described with reference
10 to the embodiments can be included in at least one embodiment of this specification. Therefore, it can be emphasized and understood that two or more of "an embodiment", "one embodiment", or "alternative embodiments" referred in parts of this specification do not necessarily indicate the same embodiment. In addition, particular features, structures, or characteristics can be properly combined in one or more embodiments of this specification.

[0136] It should be understood that in the above-mentioned descriptions of the embodiments of this specification, to help understand a feature, for the purpose of simplifying this specification, various features are combined in a single embodiment, accompanying drawing, or description thereof in this specification. However, this does not mean that the combination of these features is necessary. It is entirely possible for a person skilled in the art to mark some devices and understand
20 the devices as separate embodiments when reading this specification. In other words, the embodiments in this specification can also be understood as an integration of a plurality of secondary embodiments. Content of each secondary embodiment is also true when features are less than all features in one of the above-mentioned disclosed embodiments.

[0137] Each patent, patent application, publication of the patent application, and other
25 materials, for example, articles, books, specification, publications, documents, literature, etc. (excluding any historical examination documents related thereto) that are cited in the present disclosure are incorporated by reference for all purposes related to the present disclosure, such as in the description and claims of the present disclosure. However, if there is any inconsistency or conflict between the description, definition, and/or term of the above-mentioned material and use
30 of the description, definition, and/or term in the present disclosure, the description, definition, and/or terminology used in the present disclosure shall prevail.

[0138] Finally, it should be understood that the principles of the implementation solutions of this specification are described in the implementation solutions of the application disclosed in this specification. Other modified embodiments also fall within the scope of this specification. Therefore, the embodiments disclosed in this specification are merely examples and not limitations.

- 5 A person skilled in the art can use an alternative configuration according to the embodiments of this specification to implement the application in this specification. Therefore, the embodiments of this specification are not limited to the embodiments accurately described in the application.

CLAIMS

What is claimed is:

1. A printing method, applied to a POS device in an order management system, wherein the method comprises:

5 receiving a plurality of orders from a plurality of platforms, wherein the plurality of orders comprise a target order, and the target order is derived from a target platform and comprises a plurality of products;

generating to-be-printed content corresponding to a target material based on order content of the target order; and

10 sending the to-be-printed content to a printing device by using a digital image, so that the printing device prints the digital image.

2. The method according to claim 1, wherein the digital image is in a bitmap format.

3. The method according to claim 1, wherein the to-be-printed content corresponding to the target material comprises payment information of the target order; and

15 the sending the to-be-printed content to a printing device by using a digital image comprises: converting the to-be-printed content into a digital image in response to an operation result indicating that the target order is successfully paid, and indicating the printing device to print the digital image.

4. The method according to claim 3, wherein the to-be-printed content corresponding to the target material is an order receipt, and the printing device is a printer.

5. The method according to claim 1, wherein the to-be-printed content corresponding to the target material does not comprise payment information of the target order; and

the sending the to-be-printed content to a printing device by using a digital image comprises: converting the to-be-printed content into a digital image in response to an operation of
25 initiating payment for the target order; and

sending the digital image to the printing device in response to an operation result indicating that the target order is successfully paid, and indicating the printing device to print the digital image.

6. The method according to claim 5, wherein the to-be-printed content corresponding to the target material is a label, the printing device is a label machine, and the target order comprises an
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order for a plurality of products; and

the sending the to-be-printed content to a printing device by using a digital image comprises:

separately generating a plurality of label files based on content of the target order in response to the operation of initiating payment for the target order, wherein each label file comprises one of the plurality of products;

separately generating a plurality of corresponding digital images based on the plurality of label files; and

sequentially sending the plurality of digital images to the label machine for printing in response to the operation result indicating that the target order is successfully paid.

7. The method according to claim 1, wherein the order management system further comprises a server, and the method further comprises:

obtaining a printing template from the server in the order management system, wherein the printing template is determined by the server based on a type of the target material and a platform corresponding to the target order; and

the generating to-be-printed content corresponding to the target material based on order content of a target order comprises:

filling and/or replacing corresponding content in the printing template based on the order content of the target order, to generate the to-be-printed content corresponding to the target material, wherein the printing template comprises a plurality of pieces of to-be-replaced and/or to-be-filled content, and the to-be-replaced content and/or to-be-filled content is product-related content.

8. The method according to claim 7, wherein the filling and/or replacing corresponding content in the printing template based on the order content of the target order, to generate the to-be-printed content corresponding to the target material comprises:

determining a plurality of pieces of variable content from the order content based on the order content and a preset printing template of the target order, wherein the plurality of pieces of variable content comprise information corresponding to the plurality of products; and

filling and/or replacing the corresponding content in the printing template based on the plurality of pieces of variable content, to generate the to-be-printed content corresponding to the target order.

9. The method according to claim 8, wherein the filling and/or replacing the corresponding

content in the printing template based on the plurality of pieces of variable content, to generate the to-be-printed content corresponding to the target order comprises:

filling and/or replacing the corresponding content in the printing template based on the plurality of pieces of variable content through a plurality of threads, to generate the to-be-printed content corresponding to the target order.

10. The method according to claim 9, wherein a quantity of the plurality of threads is consistent with a quantity of the plurality of pieces of variable content.

11. The method according to claim 8, wherein the printing template comprises preset printing templates respectively corresponding to a plurality of categories, there are a plurality of printing devices, and the filling and/or replacing the corresponding content in the printing template based on the plurality of pieces of variable content, to generate the to-be-printed content corresponding to the target order comprises:

determining a product category corresponding to each of the plurality of pieces of variable content, to split the plurality of pieces of variable content into a plurality of categories; and

for each category, filling and/or replacing corresponding content in a preset printing template corresponding to the category based on variable content comprised in the category, to generate target to-be-printed content corresponding to the category; and

the sending the to-be-printed content to a printing device by using a digital image comprises:

converting the target to-be-printed content corresponding to each category into at least one digital image; and

sending the at least one digital image to a target printing device corresponding to the category.

12. The method according to claim 11, wherein the method further comprises:

configuring a corresponding printable category for the plurality of printing devices in response to a configuration operation performed by an operator on the plurality of printing devices.

13. The method according to claim 1, wherein the order management system further comprises a server, the printing device comprises a primary printing device and at least one secondary printing device, an initial state of the primary printing device is an active state, an initial state of the secondary printing device is an inactive state, and the method further comprises:

in response to a received switching instruction sent by the server, switching a state of the primary printing device to an inactive state, activating the secondary printing device, and switching a state of the secondary printing device to an active state.

14. The method according to claim 1, wherein the printing device comprises a primary printing device and a secondary printing device, an initial state of the primary printing device is an active state, an initial state of the secondary printing device is an inactive state, and the method further comprises:

5 displaying a prompt page on the POS device in response to a result indicating that printing fails; and

 in response to a switching operation entered by an operator on the prompt page, switching a state of the primary printing device to an inactive state, activating the secondary printing device, and switching a state of the secondary printing device to an active state.

10 15. A printing system, comprising:

 a POS device, located in an offline operating entity of a target merchant, and configured to:
 receive a plurality of orders from a plurality of platforms, wherein the plurality of orders comprise a target order, and the target order is derived from a target platform and comprises a plurality of products;

15 generate to-be-printed content corresponding to a target material based on order content of the target order; and

 send the to-be-printed content to a printing device by using a digital image; and

 the printing device, located in the offline operating entity of the target merchant and communicatively connected to the POS device, and configured to receive and print the digital
20 image.

 16. The system according to claim 15, wherein the system further comprises:

 a server, communicatively connected to the POS device, and configured to send a preset printing template to the POS device, wherein the preset printing template corresponds to the target platform and a type of the target material, wherein

25 the POS device is configured to fill and/or replace corresponding content in the printing template based on the order content of the target order, to generate the to-be-printed content corresponding to the target material, wherein the printing template comprises a plurality of pieces of to-be-replaced and/or to-be-filled content, and the to-be-replaced and/or to-be-filled content is product-related content.

30 17. The system according to claim 15, wherein there are a plurality of printing devices.

 18. The system according to claim 17, wherein the POS device is further configured to

configure a corresponding printable category for a plurality of printing devices in response to a configuration operation performed by an operator on the plurality of printing devices.

19. The system according to claim 15, wherein the printing device comprises a primary printing device and at least one secondary printing device, an initial state of the primary printing device is an active state, and an initial state of the secondary printing device is an inactive state; and

the POS device is configured to: based on a switching operation entered by an operator, switch a state of the primary printing device to an inactive state, activate the secondary printing device, and switch a state of the secondary printing device to an active state.

20. The system according to claim 17, wherein the printing device comprises a primary printing device and at least one secondary printing device, an initial state of the primary printing device is an active state, an initial state of the secondary printing device is an inactive state, and the system further comprises: a server, communicatively connected to the POS device, and configured to send a switching instruction to the POS device when detecting that the primary printing device is abnormal, so that the POS device switches a state of the primary printing device to an inactive state based on the switching instruction, activates the secondary printing device, and switches a state of the secondary printing device to an active state.

21. A computer-readable non-volatile storage medium, wherein the computer-readable non-volatile storage medium stores at least one instruction set, and when the at least one instruction set is executed by at least one processor, the order printing method according to any one of claims 1 to 14 is implemented.