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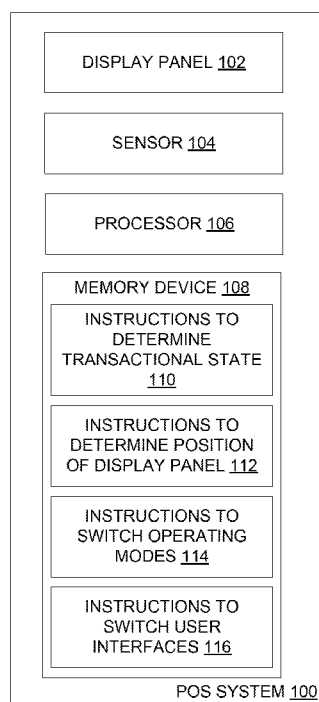


FIG. 1

(57) Abstract: In an example implementation according to aspects of the present disclosure, a method may include determining whether a point of sale (POS) system is in transactional use and determining whether a display panel of the POS system is facing in a first position or a second position. Upon determining the display panel is facing in the second position, if the POS system is not in transactional use, the POS system switches from a first operating mode to a second operating mode.



OPERATING MODES OF DISPLAY PANELS

BACKGROUND

[0001] Point of sale (POS) systems provide the ability for businesses to interact with their customers, such as completing a transaction. As technology continues to advance, computer terminals, known as kiosks, are becoming common in various industries, such as retail, food service, and hospitality, as an effort to improve customer service. Generally placed in high foot traffic settings, kiosks refer to computer terminals featuring software specialized, for example, for a merchant, to provide customers access to information and applications specific to the merchant.

BRIEF DESCRIPTION OF THE DRAWINGS

[0002] FIG. 1 illustrates a POS system with a display panel that can be automatically switched between a first position and second position, according to an example;

[0003] FIG. 2 illustrates a method at a POS system for switching a display panel of the POS system between a first position and a second position, according to an example; and

[0004] FIG. 3 is a flow diagram in accordance with an example of the present disclosure.

DETAILED DESCRIPTION

[0005] Examples disclosed herein provide the ability for a display panel of a POS system to switch between a first position and a second position, according to an example. As an example, while the display panel is in the first position, the POS system may be used in a first operating mode, for example, to complete a transaction between a retail associate and a customer. As will be further described, when the display panel is switched to the second position, the POS system may switch to a second operating mode, for example, kiosk mode. As an example, while in kiosk mode, customers may be able to use the POS system for self-checkout or other customer kiosk type activity. As businesses may include multiple POS systems at an establishment, enabling them to convert, for example, unused POS

systems, to the second operating mode, may enhance the customer experience and potentially create more business.

[0006] With reference to the figures, FIG. 1 illustrates a POS system 100 with a display panel 102 that can be automatically switched between a first position and second position, according to an example. As an example, the first position may correspond to the display panel 102 facing the merchant or associate, and the second position may correspond to the display 102 facing a customer, or facing the retail floor that attracts customer foot traffic. As an example of switching between the first and second positions, the POS system 100 may include a swivel feature that rotates the display panel 102 between the first and second positions. However, rather than including a swivel feature, the POS system 100 may include a hinge mechanism for tilting the display panel 102, for example, between the first and second positions. As an example, the POS system 100 may include a sensor 104 for determining whether the display panel 102 is in the first or second position.

[0007] The POS system 100 depicts a processor 106 and a memory device 108 and, as an example of the POS system 100 performing its operations, the memory device 108 may include instructions 110-116 that are executable by the processor 106. Thus, memory device 108 can be said to store program instructions that, when executed by processor 106, implement the components of the POS system 100. The executable program instructions stored in the memory device 108 include, as an example, instructions to determine transactional state (110), instructions to determine position of display panel 102 (112), instructions to switch operating modes (114), and instructions to switch user interfaces (116).

[0008] Instructions to determine transactional state (110) represent program instructions that when executed by the processor 106 cause the POS system 100 to determine a transactional state of the POS system 100. For example, the POS system 100 may be in transactional use, where a transaction, such as a sale of items, is being committed between a merchant and a customer, via the POS system 100. However, after the sale is completed, or when the POS system 100 is not in transactional use, the POS system 100 may be in a null transactional state, where the POS system 100 may not be utilized. As will be further described, in order to

provide the potential for a business, such as a retail establishment, to enhance its customer experience when the POS system 100 is not in transactional use, the POS system 100 may switch to kiosk mode once it is detected that the display panel is changed to the second position.

[0009] Instructions to determine position of display panel 102 (112) represent program instructions that when executed by the processor 106 cause the POS system 100, via sensor 104, to determine whether the display panel 102 of the POS system 100 is facing in the first position or the second position. As described above, the mechanism for switching the display panel 102 between the first and second positions may vary. As a result, the type of sensor for determining the position of the display may vary as well. For example, if the mechanism for switching the display panel 102 between the first and second positions includes the swivel feature, a first type of sensor may be used. For example, a potentiometer may be mounted to the swivel in order to monitor whether the display panel 102 is facing in the first or second position. If the reading from the potentiometer is at the lowest level, the display panel 102 may be facing an associate (e.g., the first position), and if the reading from the potentiometer is at the highest level, the display panel 102 may be facing in the second position. As an example, if the mechanism for switching the display panel 102 between the first and second positions includes the hinge mechanism for tilting the display panel 102 between the positions, a second type of sensor, other than a potentiometer, may be used. As a result, various sensors for detecting tilt or swivel may be used.

[0010] Instructions to switch operating modes (114) represent program instructions that when executed by the processor 106 cause the POS system 100, if it is not in transactional use, upon determining the display panel 102 is facing in the second position, to switch the POS system 100 from the first operating mode to the second operating mode. As described above, while in the second operating mode, such as kiosk mode, customers may be able to use the POS system 100 for self-checkout or other customer kiosk type activity. As businesses may include multiple POS systems at an establishment, enabling them to convert, for example, unused POS systems, to the second operating mode, may enhance the customer experience and potentially create more business.

[0011] As an example, switching the POS system 100 from the first operating mode to the second operating mode includes switching from a first application loaded on the POS system 100 to a second application loaded on the POS system 100. The first application may correspond to the application used by a merchant, for example, while the display panel 102 is facing in the first position. The second application may correspond to the kiosk mode that is made available for customers while the display panel 102 is facing in the second position. As an example, a control software running on the POS system 100 may switch between first and second application, based on the factors described above. For example, if the POS system 100 includes the potentiometer described above, for example, to detect whether the display panel 102 is swiveled to the first or second position, the control software may monitor the potentiometer and determine whether to switch to the first or second operating mode, based on the amount of swivel detected. As an example, positions in addition to the first and second positions may be detected, in order to accommodate additional operating modes. As a result, the use of a potentiometer may accommodate a wider range of checkout configurations.

[0012] As an example, while the display panel 102 of the POS system 100 is in the second position, and operating in the second operating mode, the POS system 100 may restrict access to a peripheral attached to the POS system 100, for example, via the control software. For example, a cash drawer coupled to the POS system 100 may be disabled while the display panel 102 is facing in the second position (e.g., kiosk mode), and only be accessible while the display panel 102 is facing in the first position (e.g., store associate mode). In addition to restricting access to peripherals, the POS system 100 may restrict to a feature of the POS system 100 as well, for example, via the control software. For example, the control software may prevent admin logins while the POS system 100 is in kiosk mode. In addition, a user of the POS system 100 while it is in kiosk mode, such as a customer, may be unable to access other applications loaded on the POS system 100, such as the first application made available only to store associates, for example, while the display panel 102 is facing in the first position (e.g., store associate mode).

[0013] As an example, while the display panel 102 of the POS system 100 is in the second position, and operating in the second operating mode, upon determining the display panel 102 is switched back to the first position, the POS system 100 may switch from the second operating mode back to the first operating mode. For security purposes, additional authentication may be required to switch from the second operating mode to the first operating mode, for example, from a store associate.

[0014] Instructions to switch user interfaces (116) represent program instructions that when executed by the processor 106 cause the POS system 100, if it is in transactional use, upon determining the display panel 102 is facing in the second position, to switch from a first user interface (UI) to a second UI. As an example, in addition to switching the display panel 102 from the first position to the second position when the POS system 100 is not in transactional use, the display panel 102 may also be switched from the first position to the second position when the POS system 100 is in transactional use, for example, upon nearing completion of a transaction, for a customer to complete the transaction (e.g., inputting a signature or scanning a QR code to authorize payment). As a result, rather than switching operating modes, for example, while the POS system 100 is not in transactional use, the POS system 100 may only switch its UI, for example, to display whatever is necessary for a customer to complete a transaction.

[0015] Memory device 108 represents generally any number of memory components capable of storing instructions that can be executed by processor 106. Memory device 108 is non-transitory in the sense that it does not encompass a transitory signal but instead is made up of at least one memory component configured to store the relevant instructions. As a result, the memory device 108 may be a non-transitory computer-readable storage medium. Memory device 108 may be implemented in a single device or distributed across devices. Likewise, processor 106 represents any number of processors capable of executing instructions stored by memory device 108. Processor 106 may be integrated in a single device or distributed across devices. Further, memory device 108 may be fully or partially integrated in the same device as processor 106, or it may be separate but accessible to that device and processor 106.

[0016] In one example, the program instructions 110-116 can be part of an installation package that when installed can be executed by processor 106 to implement the components of the POS system 100. In this case, memory device 108 may be a portable medium such as a CD, DVD, or flash drive or a memory maintained by a server from which the installation package can be downloaded and installed. In another example, the program instructions may be part of an application or applications already installed. Here, memory device 108 can include integrated memory such as a hard drive, solid state drive, or the like.

[0017] FIG. 2 illustrates a method 200 at a POS system for switching a display panel of the POS system between a first position and a second position, according to an example. In discussing FIG. 2, reference may be made to the example POS system 100 illustrated in FIG. 1. Such reference is made to provide contextual examples and not to limit the manner in which method 200 depicted by FIG. 2 may be implemented.

[0018] Method 200 begins at 202, where the POS system determines whether the display panel is switched from the first position (e.g., associate facing) to the second position (e.g., customer facing). If the display panel remains facing in the first position, method 200 returns to the beginning. For example, an associate may be using the POS system with the display panel facing in the first position. However, if the POS system determines that the display panel has been switched to the second position, method 200 proceeds to 204. As described above, sensor 104 of POS system 100 may be used for determining whether the display panel 102 of the POS system 100 has changed positions, particularly from the first position to the second position.

[0019] At 204, if the display panel has been switched from the first position to the second position, the POS system then determines whether it is in transactional use. As an example, the POS system may be in transactional use, where a transaction, such as a sale of items, is being committed between a merchant and a customer, via the POS system. However, after the sale is completed, or when the POS system is not in transactional use, the POS system may be in a null transactional state, where the POS system may not be utilized.

[0020] If the POS system is in transactional use, upon the display panel switching to the second position, at 206, the UI illustrated on the display panel of the POS system switches from a first UI to a second UI. As described above, upon nearing the completion of a transaction, once the display panel is switched to the second position, a customer may complete the transaction, for example, by inputting a signature or scanning a QR code to authorize payment. As a result, the POS system may switch its UI, for example, to display whatever is necessary for a customer to complete the transaction. Once the transaction is completed and the display panel is returned back to the first position (e.g., back to the associate), method 200 returns to 202.

[0021] At 208, if the POS system is not in transactional use, the POS system may switch from a first operating mode to a second operating mode. As described above, while in the second operating mode, such as kiosk mode, customers may be able to use the POS system for self-checkout or other customer kiosk type activity. As an example, switching the POS system from the first operating mode to the second operating mode includes switching from a first application loaded on the POS system to a second application loaded on the POS system. The first application may correspond to the application used by a merchant, for example, while the display panel is facing in the first position. The second application may correspond to the kiosk mode that is made available for customers while the display panel is facing in the second position. As an example, access to features of the POS system or peripherals attached to the POS system may be restricted while the display panel is facing in the second position, as described above.

[0022] At 210, the POS system determines whether the display panel has been switched from the second position back to the first position. If not, the POS system remains in kiosk mode and method 200 returns to 210. However, if the display panel is switched back to the first position, method 200 proceeds to 212, and POS system switches from the second operating mode back to the first operating mode (e.g., store associate mode), and method 200 then returns to 202. For security purposes, additional authentication may be required to switch from the second operating mode to the first operating mode, for example, from the store associate.

[0023] FIG. 3 is a flow diagram 300 of steps taken by a POS system to implement a method for switching a display panel of the POS system between a first position and second position, according to an example. Although the flow diagram of FIG. 3 shows a specific order of execution, the order of execution may differ from that which is depicted. For example, the order of execution of two or more blocks or arrows may be scrambled relative to the order shown. Also, two or more blocks shown in succession may be executed concurrently or with partial concurrence. All such variations are within the scope of the present invention.

[0024] At 310, the POS system determines whether the POS system is in transactional use. As an example, the POS system may be in transactional use, where a transaction, such as a sale of items, is being committed between a merchant and a customer, via the POS system. However, after the sale is completed, or when the POS system is not in transactional use, the POS system may be in a null transactional state, where the POS system may not be utilized. As a result, it may be beneficial for businesses to continue to make use of the POS system, for example, by having the POS system automatically switch to kiosk mode, for example, when the display panel is switched to another position. At 320, the POS system determines whether the display panel of the POS system is facing in the first or second position. As an example, a sensor may be used for determining whether the display panel is facing in the first or second position.

[0025] At 330, upon determining the display panel is facing in the second position, if the POS system is not in transactional use, the POS system switches from a first operating mode to a second operating mode, such as kiosk mode. As an example, switching the POS system from the first operating mode to the second operating mode may include switching from a first application loaded on the POS system to a second application loaded on the POS system. While the display panel of the POS system is in the second position, and operating in the second operating mode, the POS system may restrict access to peripherals attached to the POS system, and features of the POS system, for example, for security purposes.

[0026] As an example, while the display panel of the POS system is in the second position, and operating in the second operating mode, upon determining the display panel is switched back to the first position, the POS system switches from the second operating mode back to the first operating mode. For security purposes, additional authentication may be required to switch from the second operating mode to the first operating mode, for example, from the store associate.

[0027] It is appreciated that examples described may include various components and features. It is also appreciated that numerous specific details are set forth to provide a thorough understanding of the examples. However, it is appreciated that the examples may be practiced without limitations to these specific details. In other instances, well known methods and structures may not be described in detail to avoid unnecessarily obscuring the description of the examples. Also, the examples may be used in combination with each other.

[0028] Reference in the specification to “an example” or similar language means that a particular feature, structure, or characteristic described in connection with the example is included in at least one example, but not necessarily in other examples. The various instances of the phrase “in one example” or similar phrases in various places in the specification are not necessarily all referring to the same example.

[0029] It is appreciated that the previous description of the disclosed examples is provided to enable any person skilled in the art to make or use the present disclosure. Various modifications to these examples will be readily apparent to those skilled in the art, and the generic principles defined herein may be applied to other examples without departing from the scope of the disclosure. Thus, the present disclosure is not intended to be limited to the examples shown herein but is to be accorded the widest scope consistent with the principles and novel features disclosed herein.

CLAIMS

WHAT IS CLAIMED IS:

1. A method comprising:
determining whether a point of sale (POS) system is in transactional use;
determining whether a display panel of the POS system is facing in a first position or a second position; and
upon determining the display panel is facing in the second position, if the POS system is not in transactional use, switching the POS system from a first operating mode to a second operating mode.
2. The method of claim 1, comprising:
while the display panel of the POS system is in the second position and operating in the second operating mode, upon determining the display panel is switched back to the first position, switching the POS system from the second operating mode back to the first operating mode.
3. The method of claim 1, comprising:
while the display panel of the POS system is in the second position and operating in the second operating mode, restricting access to a peripheral attached to the POS system.
4. The method of claim 1, comprising:
while the display panel of the POS system is in the second position and operating in the second operating mode, restricting access to a feature of the POS system.
5. The method of claim 1, wherein switching the POS system from the first operating mode to the second operating mode comprises switching from a first application loaded on the POS system to a second application loaded on the POS system.

6. The method of claim 1, wherein upon determining the display panel is facing in the second position, if the POS system is in transactional use, switching from a first user interface (UI) to a second UI for a customer to complete a transaction.
7. A point of sale (POS) system comprising:
 - a display panel;
 - a sensor; and
 - a processor to:
 - determine whether the POS system is in transactional use;
 - determine, via the sensor, whether the display panel is facing in a first position or a second position; and
 - upon determining the display panel is facing in the second position, if the POS system is not in transactional use, switch the POS system from a first application loaded on the POS system to a second application loaded on the POS system.
8. The POS system of claim 7, wherein, while the display panel of the POS system is in the second position and running the second application, upon determining the display panel is switched back to the first position, the processor is to switch the POS system from the second application back to the first application.
9. The POS system of claim 7, wherein, while the display panel of the POS system is in the second position and running the second application, the processor is to restrict access to a peripheral attached to the POS system.
10. The POS system of claim 7, wherein, while the display panel of the POS system is in the second position and running the second application, the processor is to restrict access to a feature of the POS system.
11. The POS system of claim 7, wherein upon determining the display panel is facing in the second position, if the POS system is in transactional use, the processor is to switch from a first user interface (UI) to a second UI for a customer to complete a transaction.

12. A non-transitory computer-readable storage medium comprising program instructions which, when executed by a processor, cause the processor to:
- determine whether a point of sale (POS) system is in transactional use;
 - determine whether a display panel of the POS system is facing in a first position or a second position; and
 - upon determining the display panel is facing in the second position:
 - if the POS system is not in transactional use, switch the POS system from a first operating mode to a second operating mode, and
 - if the POS system is in transactional use, switch from a first user interface (UI) to a second UI.
13. The non-transitory computer-readable storage medium of claim 12, comprising program instructions which, when executed by the processor, cause the processor, while the display panel of the POS system is in the second position and operating in the second operating mode, upon determining the display panel is switched back to the first position, to switch the POS system from the second operating mode back to the first operating mode.
14. The non-transitory computer-readable storage medium of claim 12, comprising program instructions which, when executed by the processor, cause the processor, while the display panel of the POS system is in the second position and operating in the second operating mode, to restrict access to a peripheral attached to the POS system.
15. The non-transitory computer-readable storage medium of claim 12, comprising program instructions which, when executed by the processor, cause the processor, while the display panel of the POS system is in the second position and operating in the second operating mode, to restrict access to a feature of the POS system.

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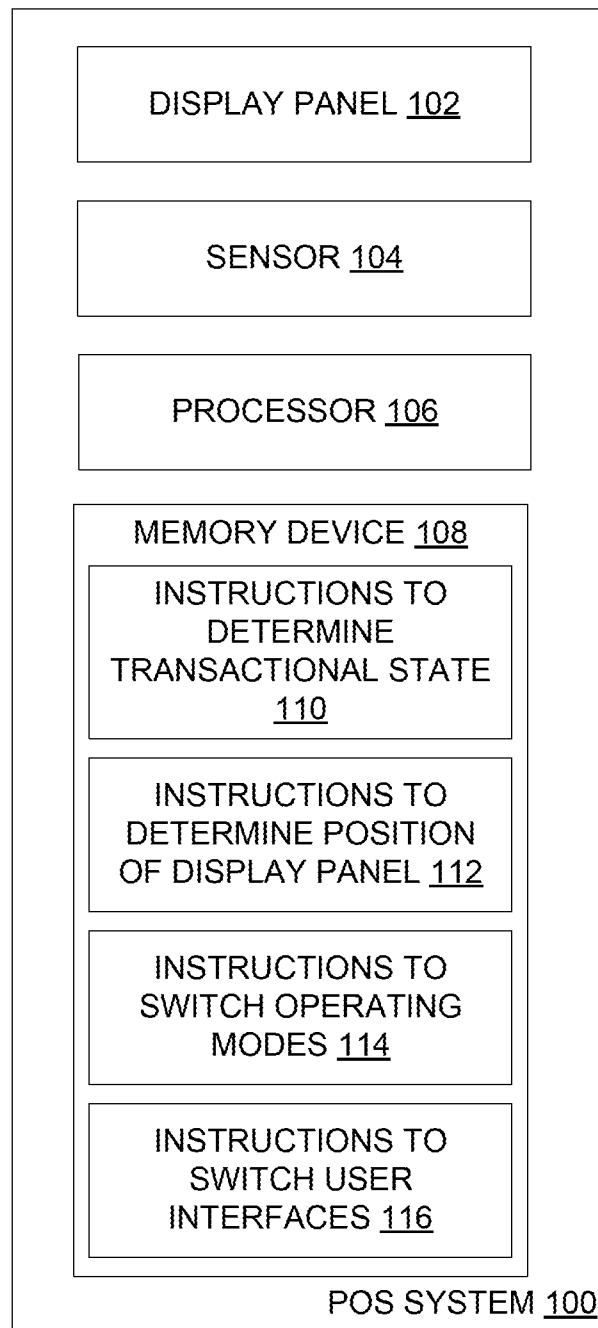


FIG. 1

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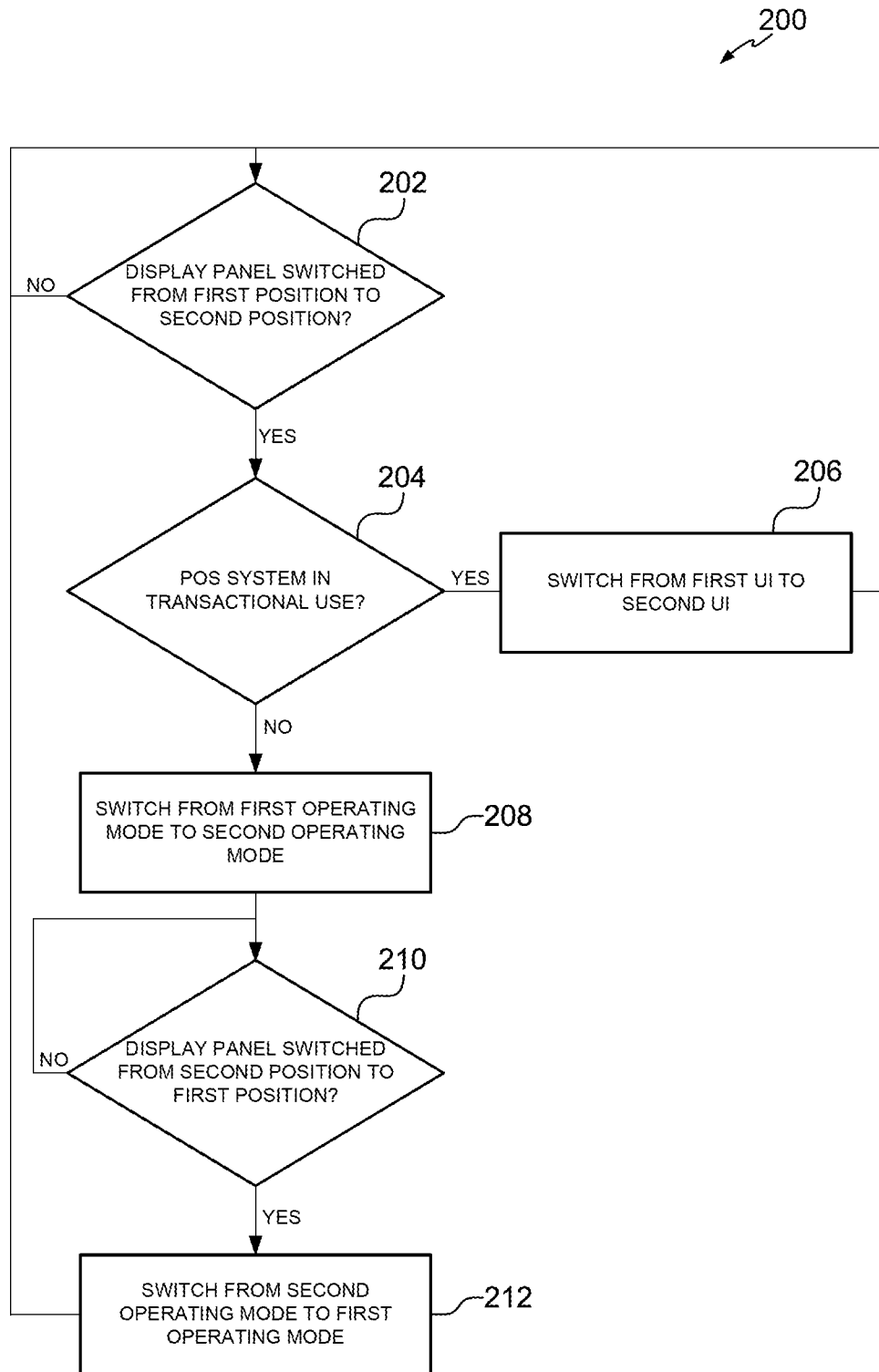


FIG. 2

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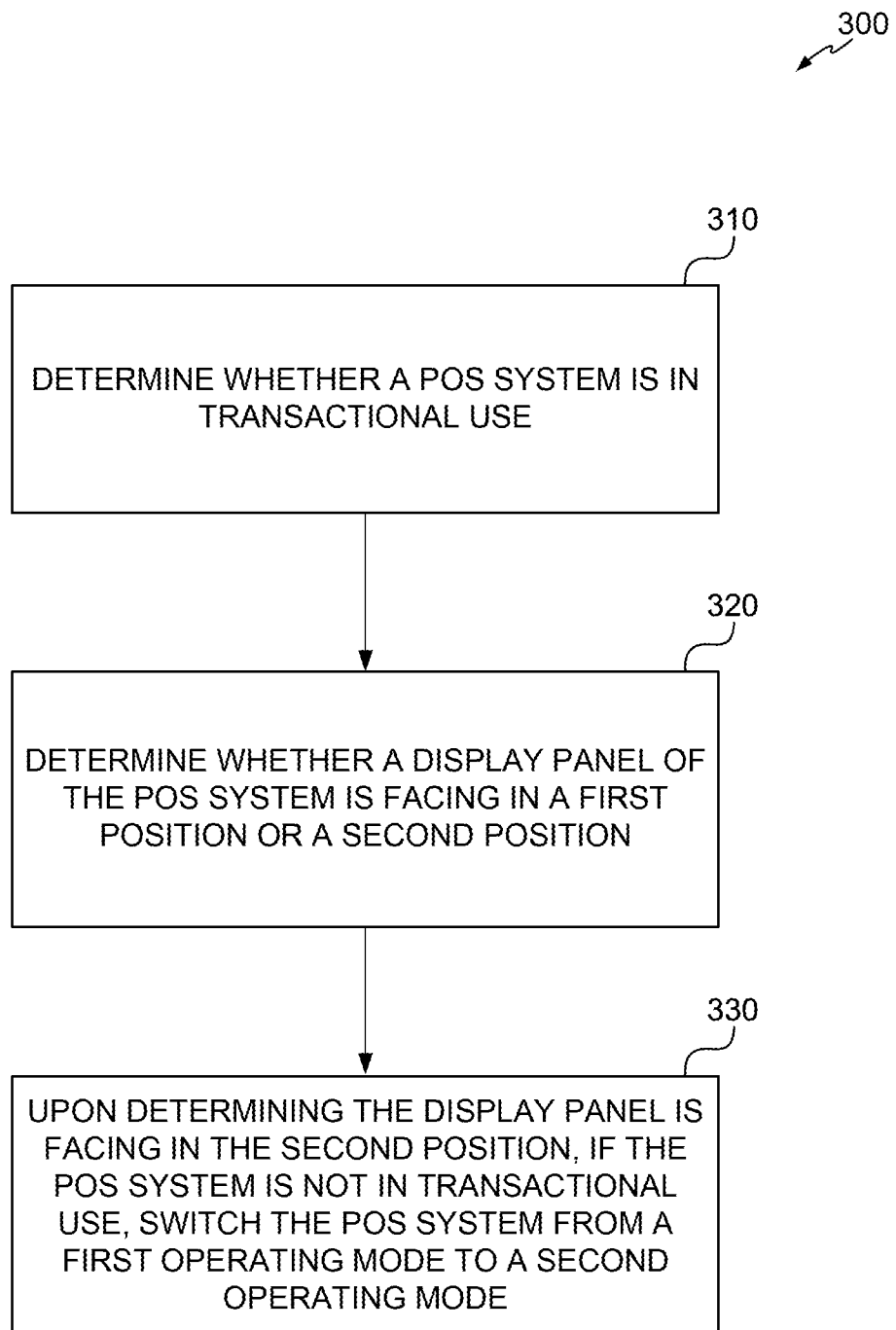


FIG. 3

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 2018/044284

A. CLASSIFICATION OF SUBJECT MATTER <i>G06Q20/20(2012.01)</i> According to International Patent Classification (IPC) or to both national classification and IPC				
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) G06Q Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) Espacenet, USPTO, RUPTO, PatSearch				
C. DOCUMENTS CONSIDERED TO BE RELEVANT				
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.		
X	US 2015/0199668 A1, (FERNANDO ET ALL.), 16.07.2015, [0038], [0055], [0091], [0094], [0218], claim)	1-15		
☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.				
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Date of the actual completion of the international search 08 April 2019 (08.04.2019)		Date of mailing of the international search report 25 April 2019 (25.04.2019)		
Name and mailing address of the ISA/RU: Federal Institute of Industrial Property, Berezhkovskaya nab., 30-1, Moscow, G-59, GSP-3, Russia, 125993 Facsimile No: (8-495) 531-63-18, (8-499) 243-33-37		Authorized officer S. Zhuravlev Telephone No. (8499)240-25-91		