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(54) **ELECTRONIC DEVICE CONTROLLING SCREEN BASED ON FOLDING EVENT AND METHOD FOR CONTROLLING THE SAME**

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H04N 5/45	(2006.01)
H04N 5/445	(2006.01)
G06F 1/16	(2006.01)

(52) **U.S. Cl.**

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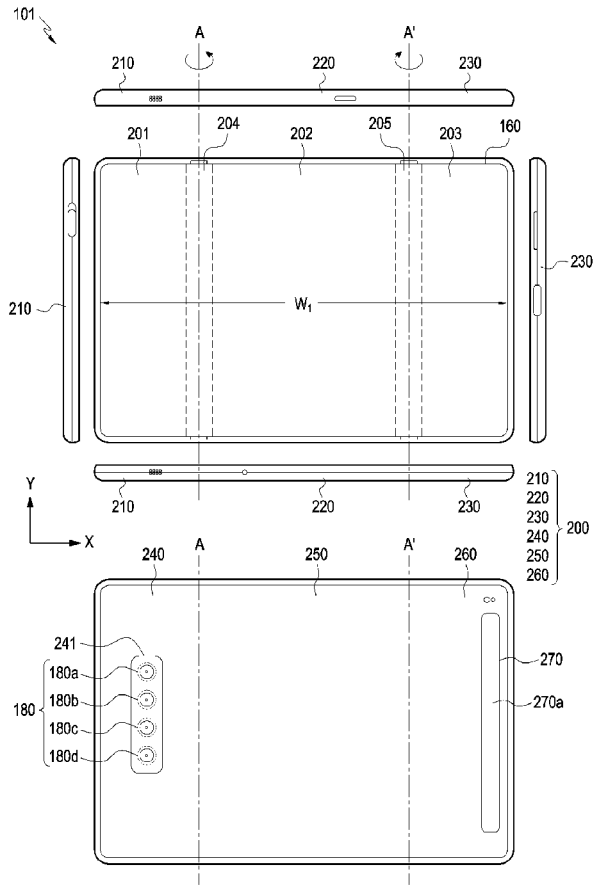
(57) **ABSTRACT**

An electronic device controlling a screen based on a folding event and a method for controlling the same. According to an embodiment, an electronic device comprises a plurality of cameras, a foldable housing including a first hinge structure and a second hinge structure, a flexible display at least partially exposed through the foldable housing, and at least one processor provided in the foldable housing. The at least one processor is configured to display on the flexible display a first screen including an object obtained by a first camera among the plurality of cameras, detect a folding event for at least one of the first hinge structure and the second hinge structure while displaying the obtained first screen on the flexible display, and display a second screen different from the first screen on the flexible display according to the detected folding event.



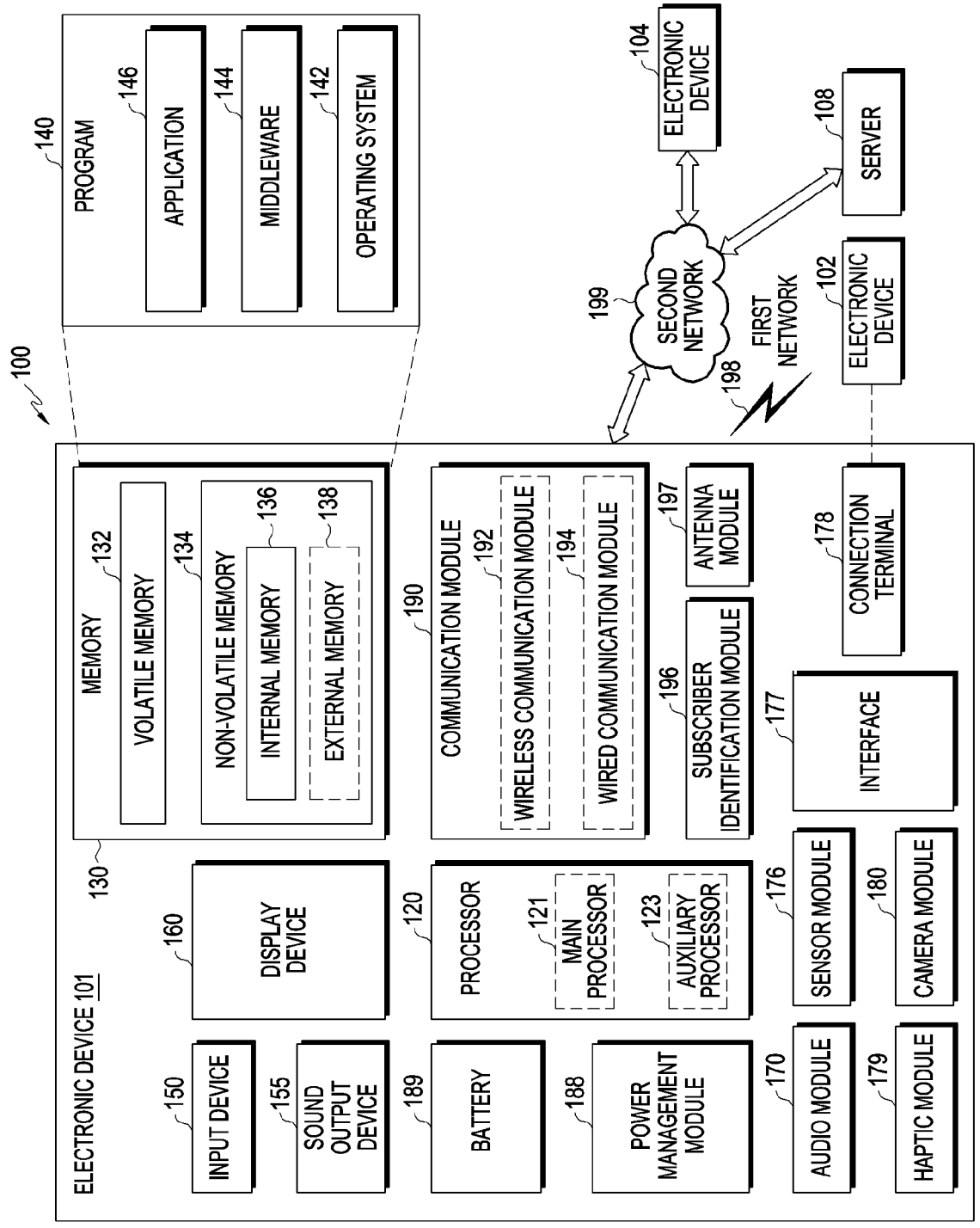

100
ELECTRONIC DEVICE 101
PROGRAM
140
APPLICATION
146
MIDDLEWARE
144
OPERATING SYSTEM
142
MEMORY
130
VOLATILE MEMORY
132
NON-VOLATILE MEMORY
134
INTERNAL MEMORY
136
EXTERNAL MEMORY
138
COMMUNICATION MODULE
190
WIRELESS COMMUNICATION MODULE
192
WIRED COMMUNICATION MODULE
194
ANTENNA MODULE
197
SUBSCRIBER IDENTIFICATION MODULE
196
CONNECTION TERMINAL
178
INTERFACE
177
DISPLAY DEVICE
160
PROCESSOR
120
MAIN PROCESSOR
121
AUXILIARY PROCESSOR
123
SENSOR MODULE
176
CAMERA MODULE
180
INPUT DEVICE
150
SOUND OUTPUT DEVICE
155
BATTERY
189
POWER MANAGEMENT MODULE
188
AUDIO MODULE
170
HAPTIC MODULE
179
199
SECOND NETWORK
198
FIRST NETWORK
ELECTRONIC DEVICE
104
SERVER
108
ELECTRONIC DEVICE
102

FIG.1

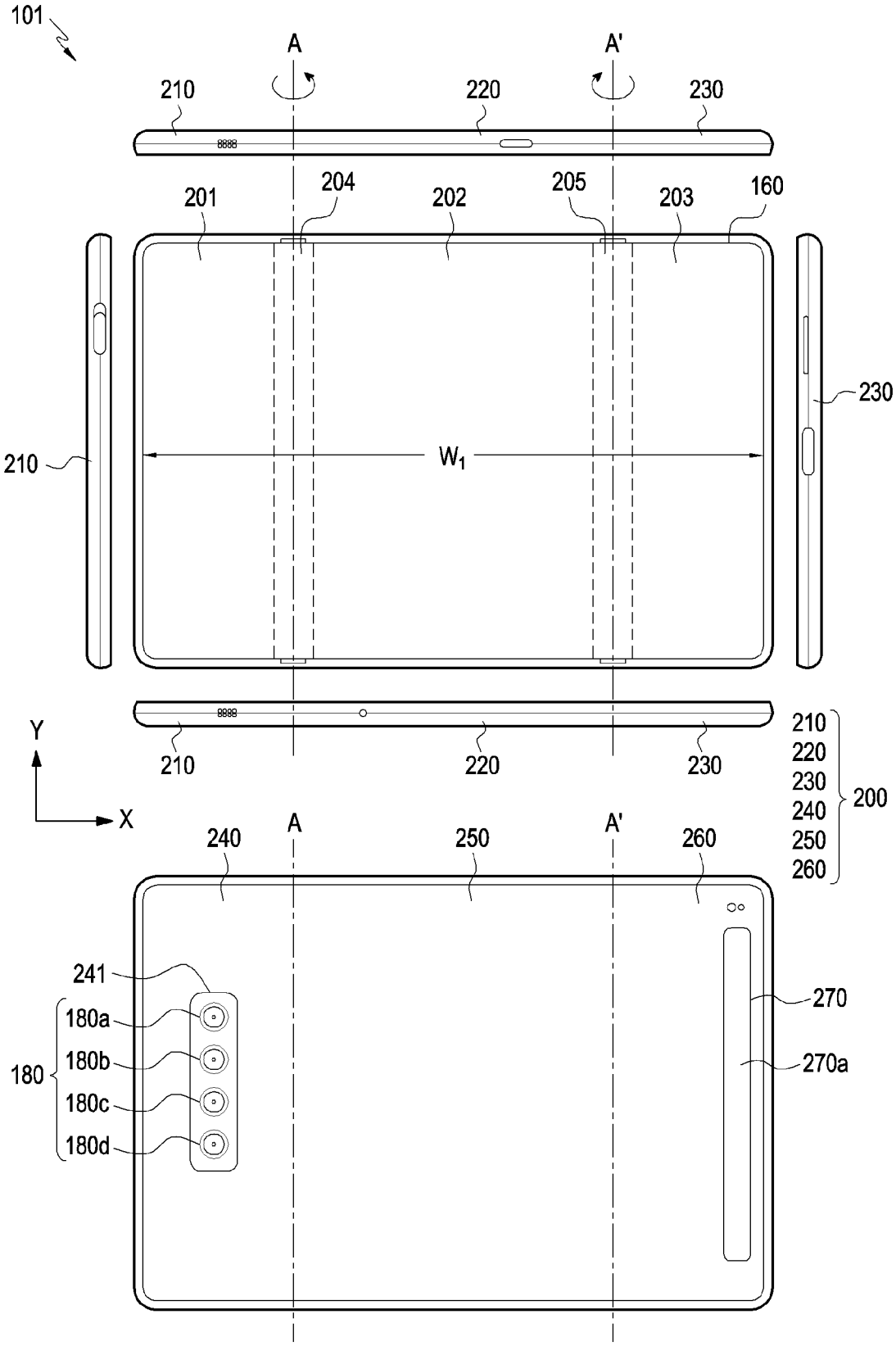

101
A
A'
210
220
230
201
204
202
205
203
160
210
W1
230
210
220
230
Y
X
210
220
230
240
250
260
200
240
A
250
A'
260
241
180a
180b
180c
180d
180
270
270a

FIG.2

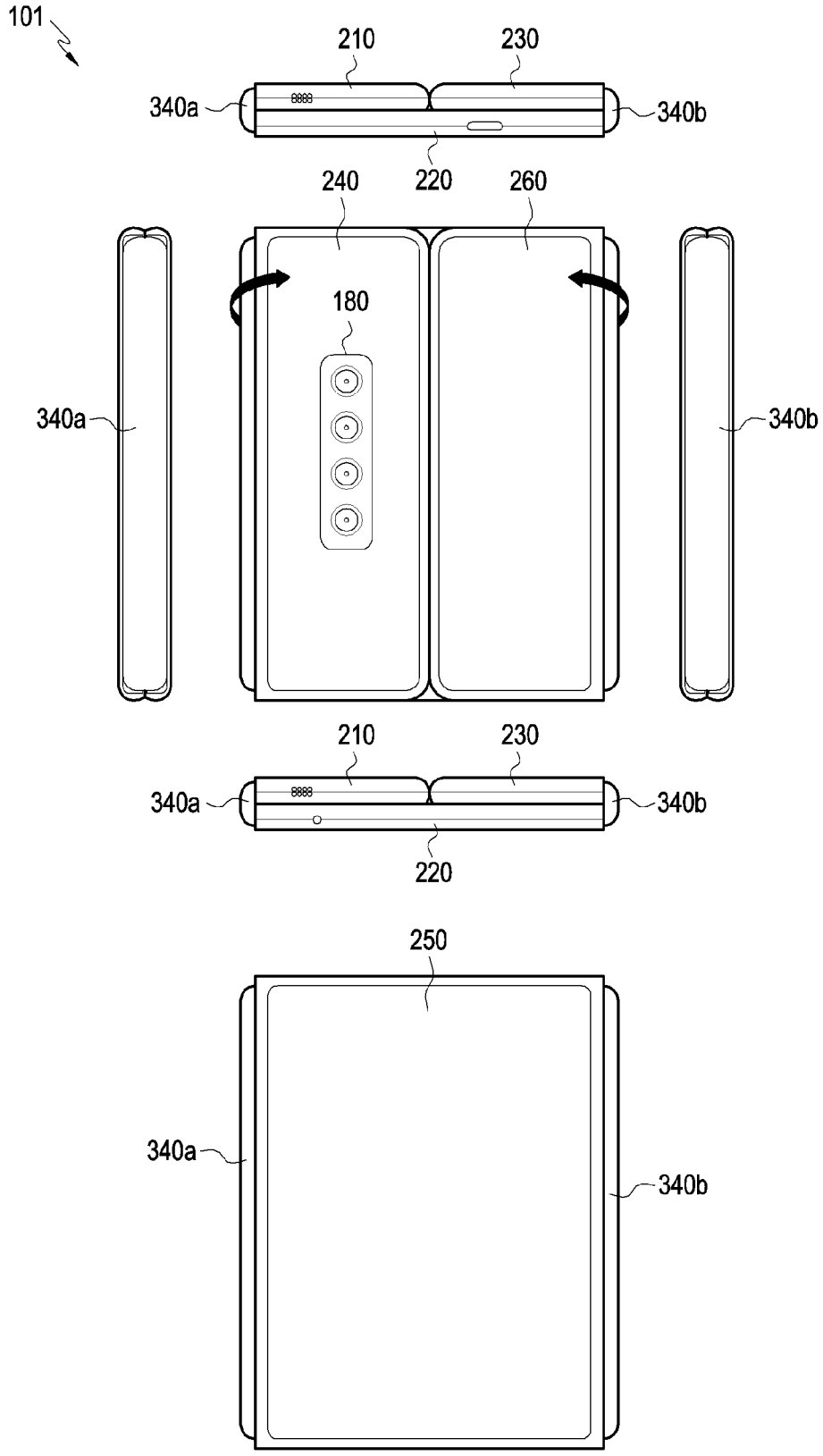

101
210
230
340a
340b
220
240
260
180
340a
340b
210
230
340a
340b
220
250
340a
340b

FIG.3

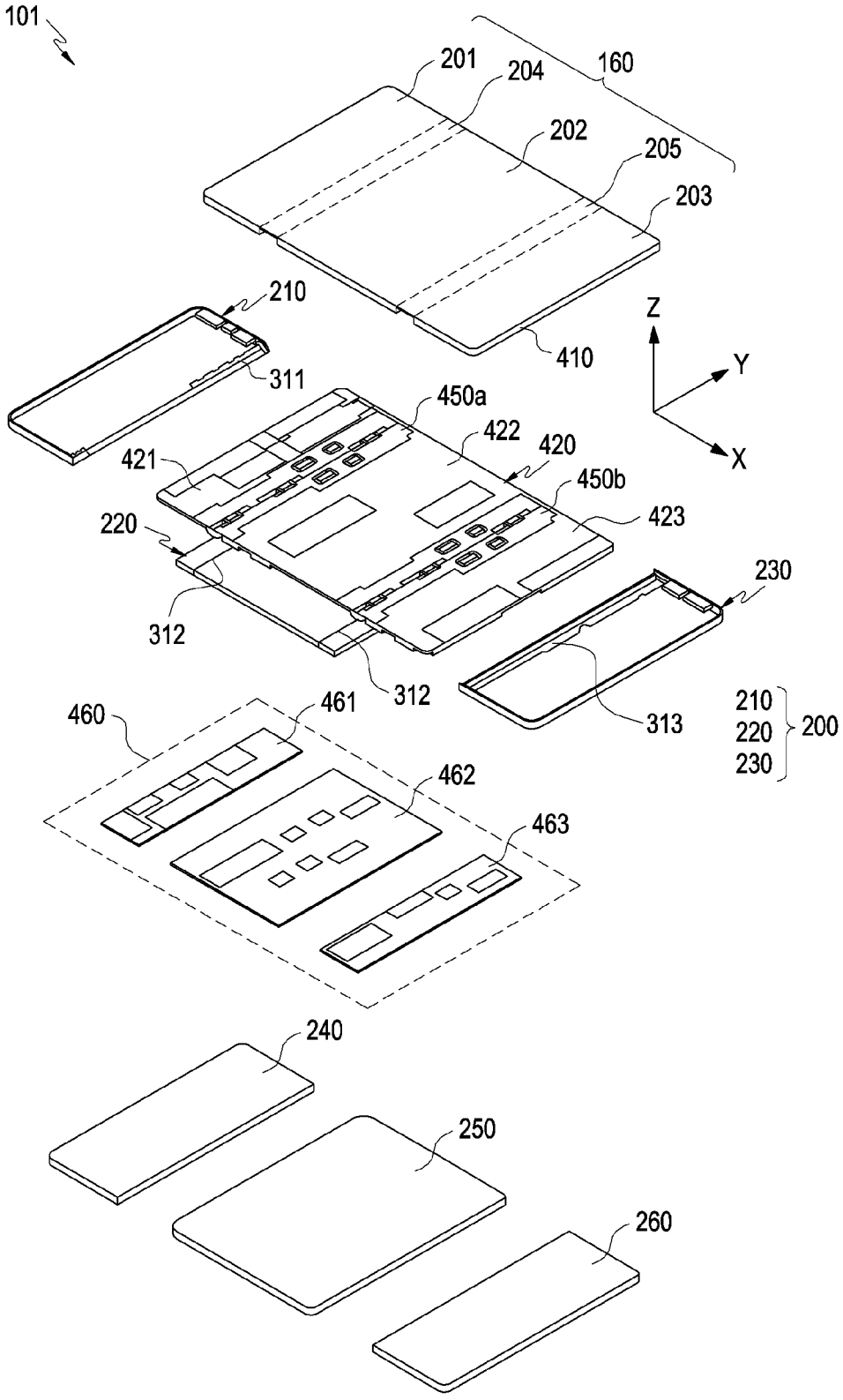

101
201
204
160
202
205
203
210
410
Z
Y
X
311
450a
422
420
421
450b
423
220
230
312
312
313
210
220
230
200
460
461
462
463
240
250
260

FIG.4

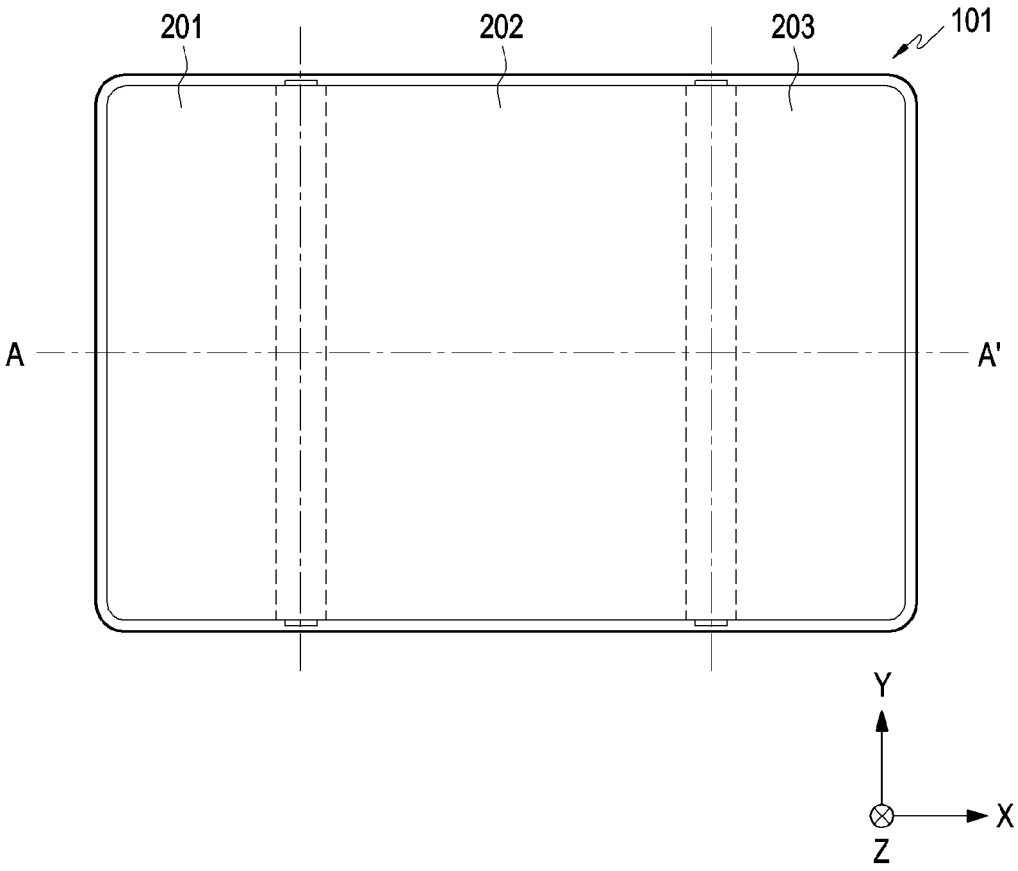


FIG.5A

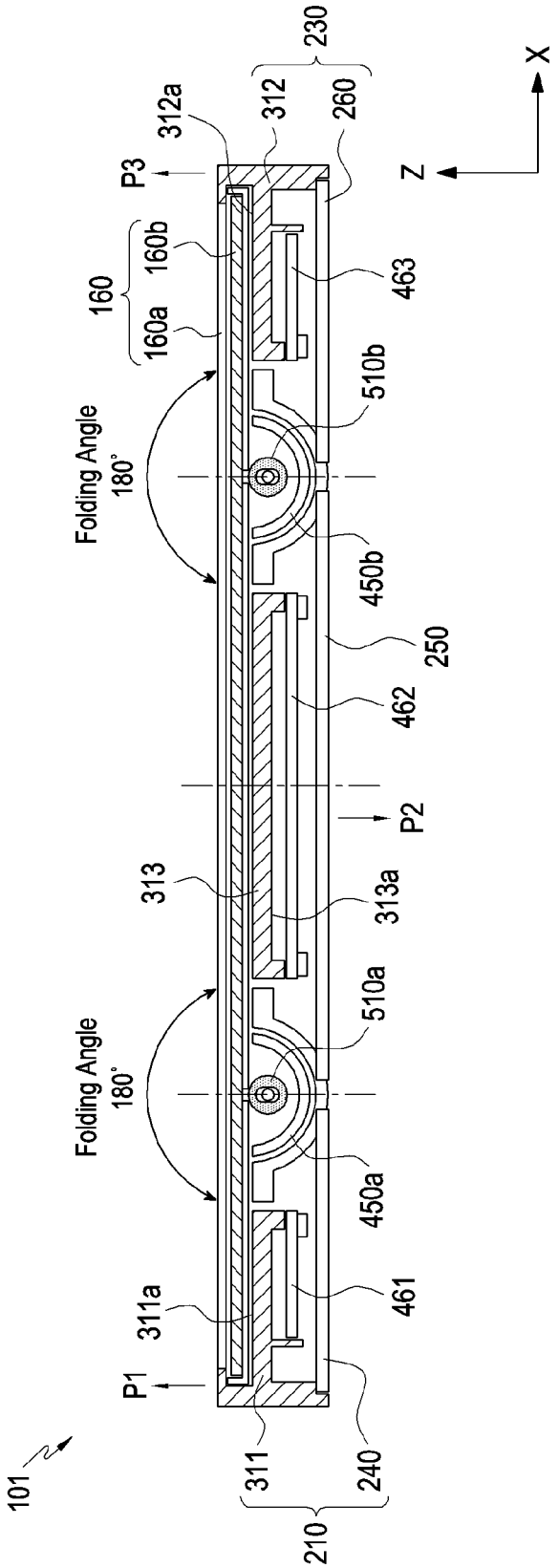

101
311
240
210
P1
311a
461
450a
510a
313
313a
462
P2
250
450b
510b
463
160
160b
160a
Folding Angle
180°
Folding Angle
180°
P3
312a
312
260
230
Z
X

FIG.5B

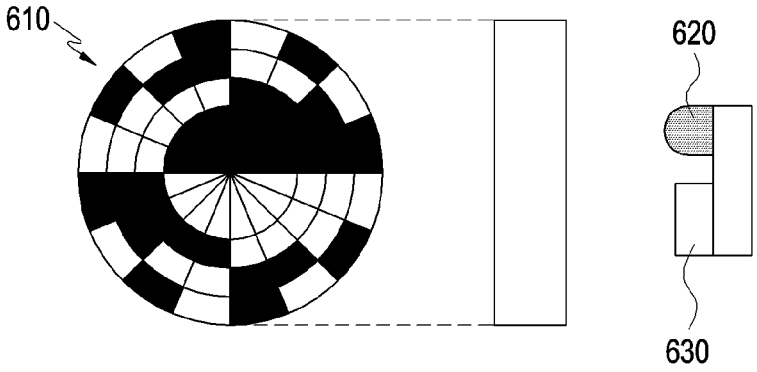


FIG.6A

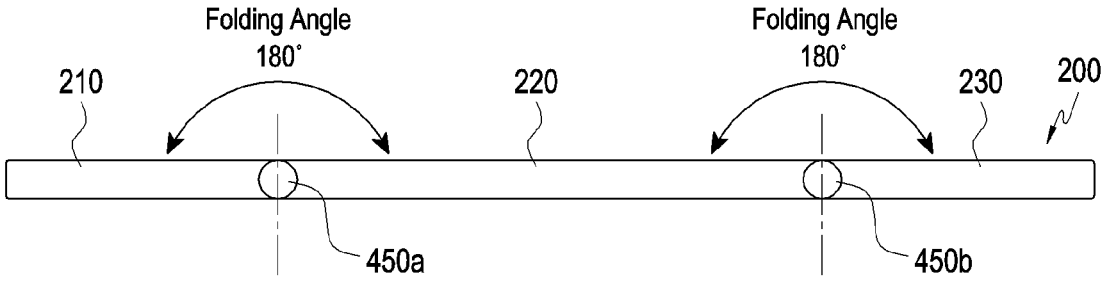


FIG.6B

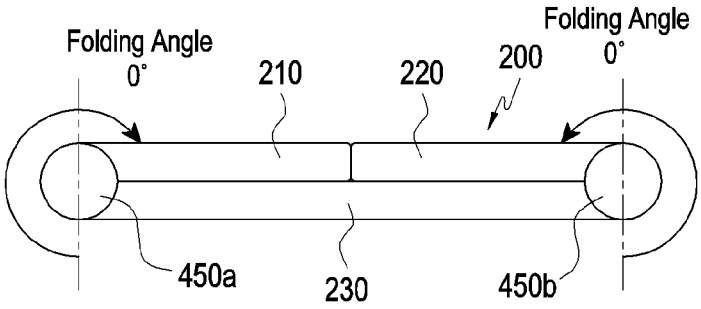


FIG.6C

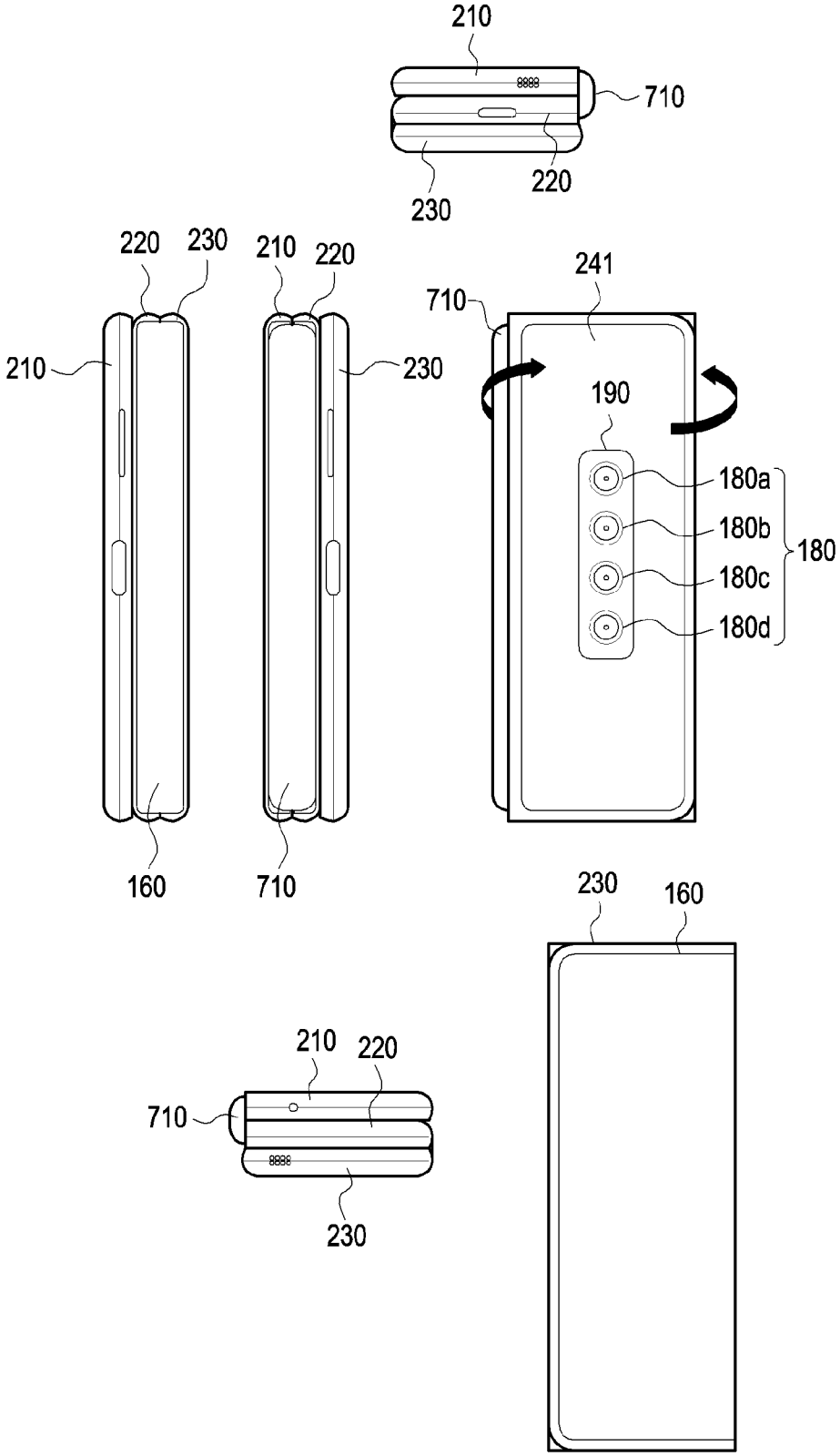

210
710
220
230
220
230
210
220
241
710
210
230
190
180a
180b
180c
180d
180
160
710
230
160
210
220
710
230

FIG.7

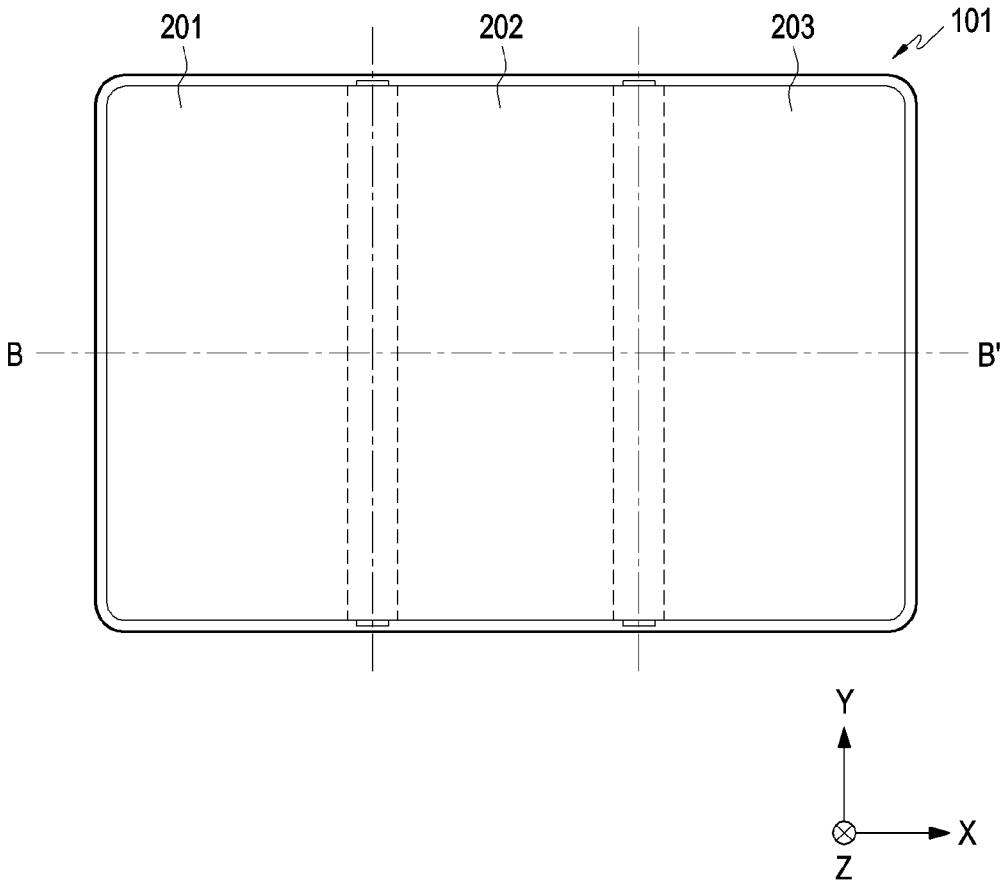


FIG.8A

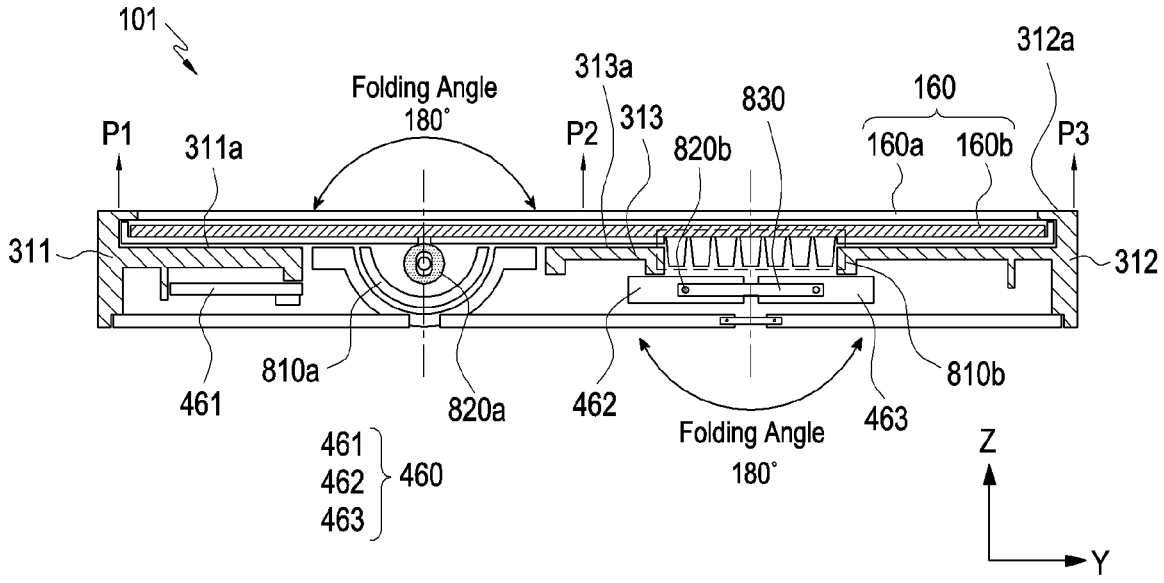

101
Folding Angle
180°
313a
313
830
160
312a
P1
311a
P2
820b
160a
160b
P3
311
312
461
810a
820a
462
463
810b
461
462
463
460
Folding Angle
180°
Z
Y

FIG.8B

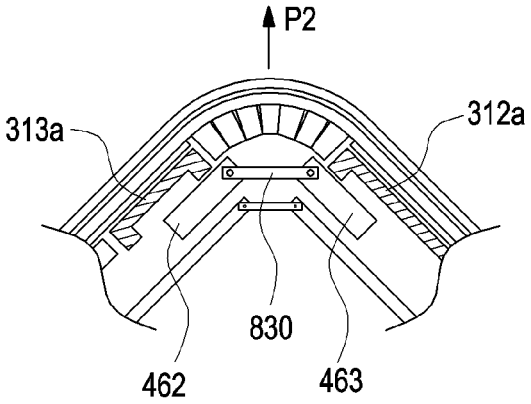

P2
313a
312a
830
462
463

FIG.8C

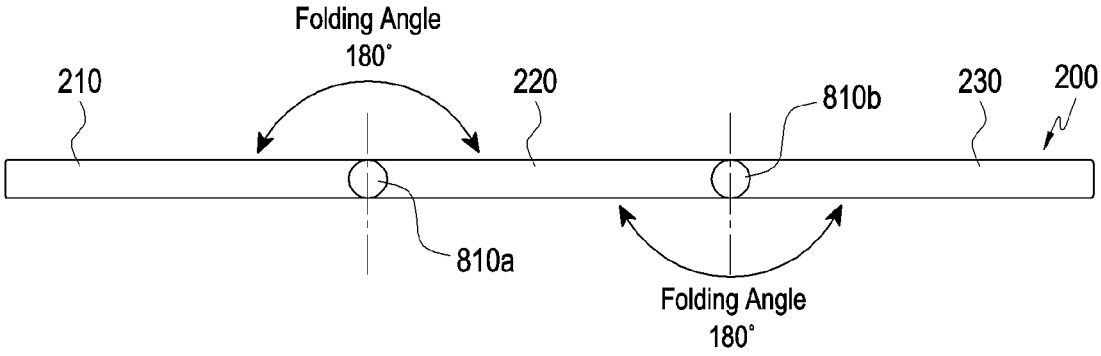

Folding Angle
180°
210
220
810b
230
200
810a
Folding Angle
180°

FIG.9A

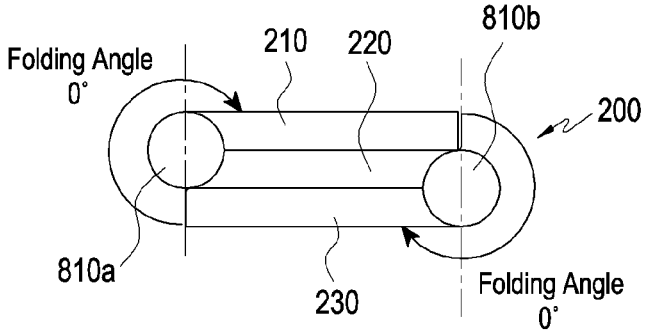

Folding Angle
0°
210
220
810b
200
810a
230
Folding Angle
0°

FIG.9B

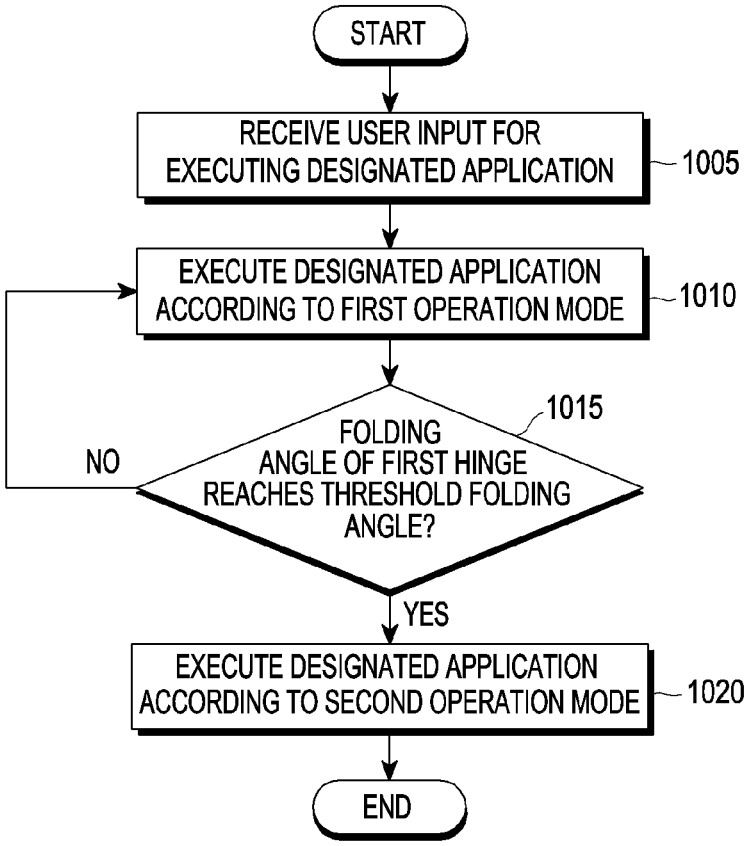

START
RECEIVE USER INPUT FOR EXECUTING DESIGNATED APPLICATION
1005
EXECUTE DESIGNATED APPLICATION ACCORDING TO FIRST OPERATION MODE
1010
FOLDING ANGLE OF FIRST HINGE REACHES THRESHOLD FOLDING ANGLE?
1015
NO
YES
EXECUTE DESIGNATED APPLICATION ACCORDING TO SECOND OPERATION MODE
1020
END

FIG.10A

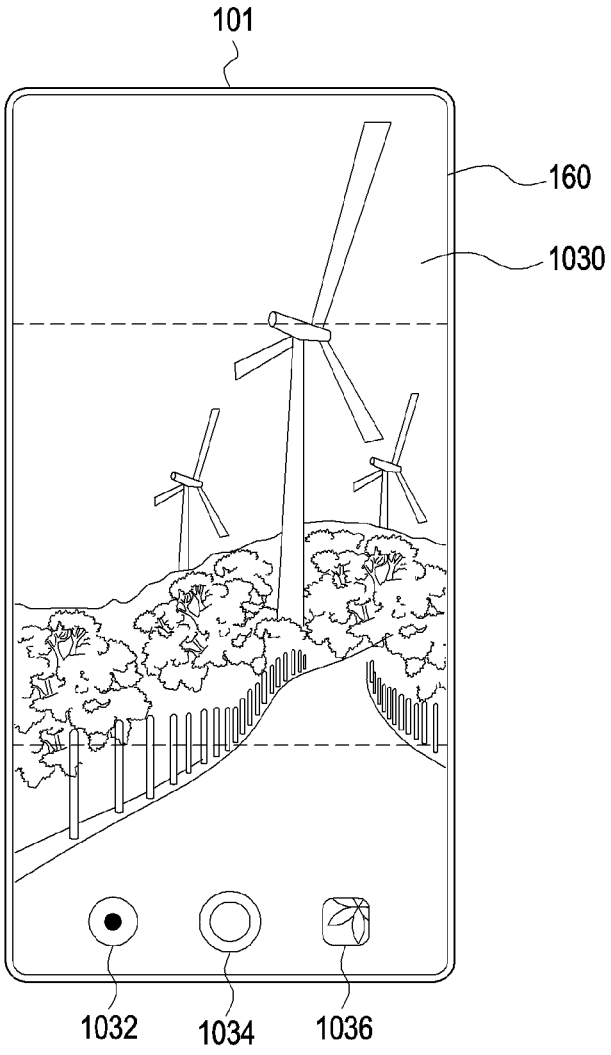


FIG.10B

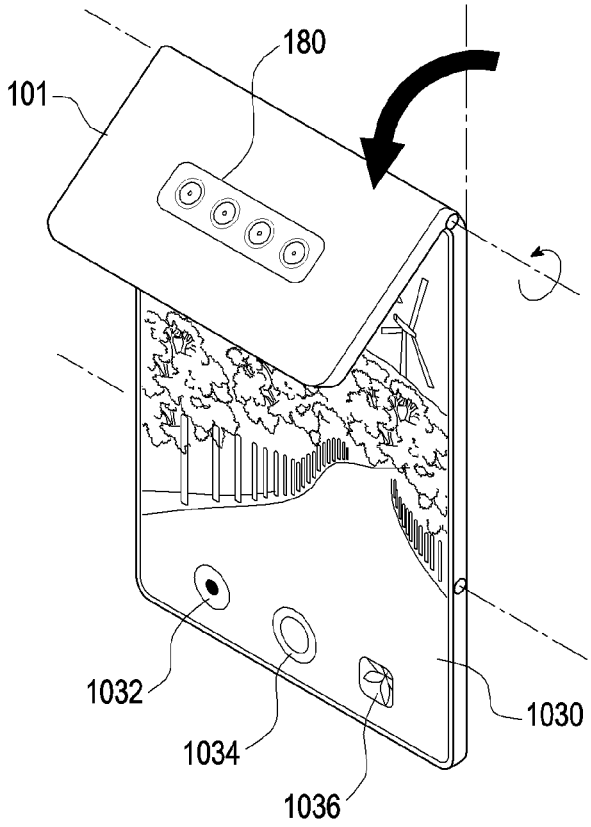


FIG.10C

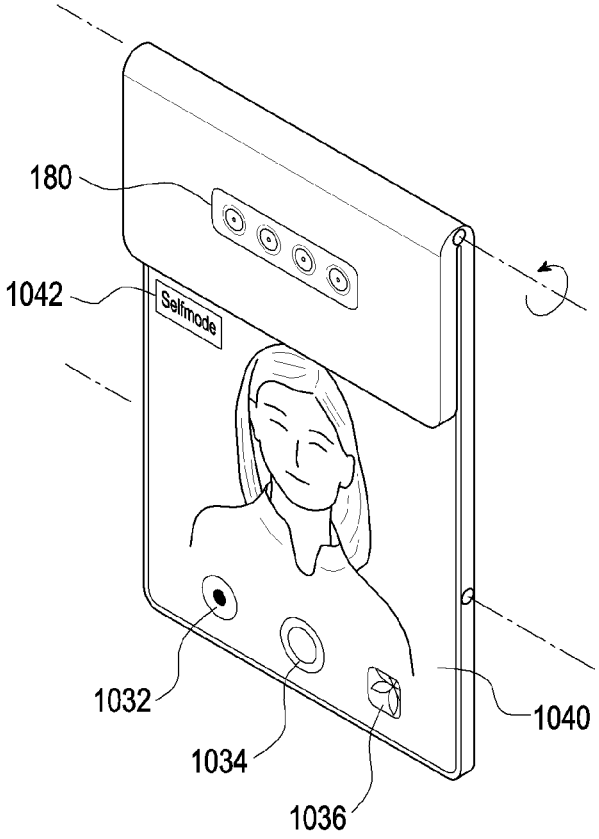


FIG.10D

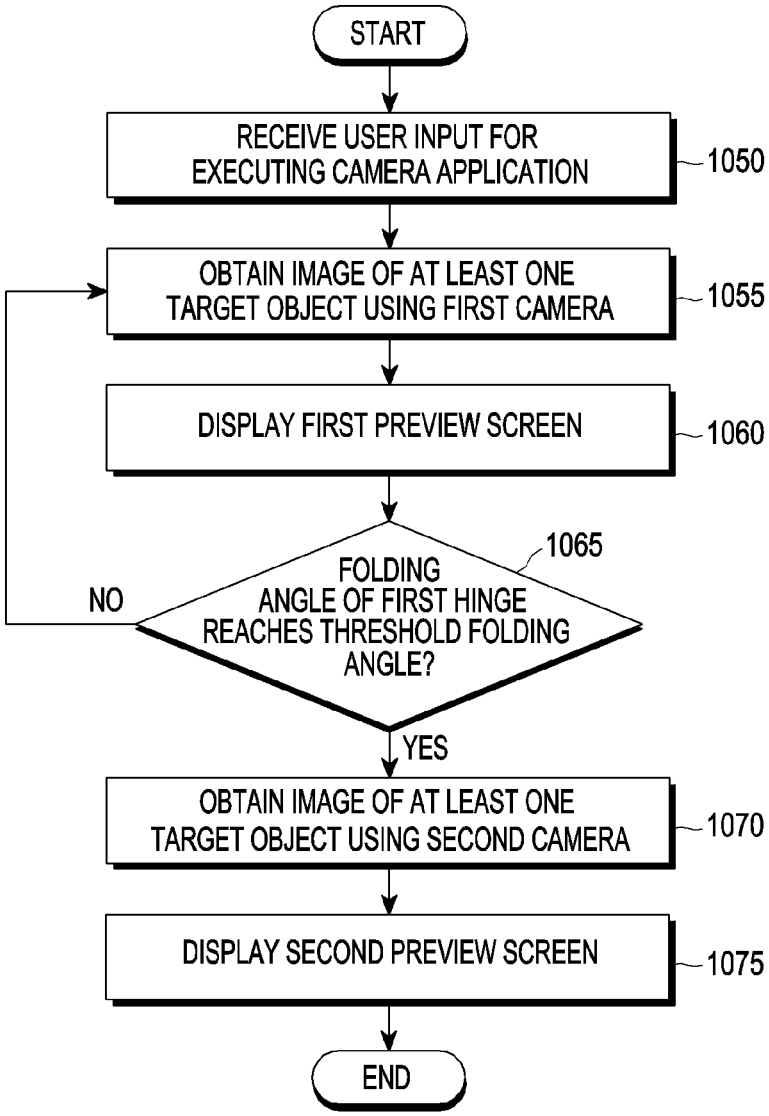

START
RECEIVE USER INPUT FOR EXECUTING CAMERA APPLICATION
1050
OBTAIN IMAGE OF AT LEAST ONE TARGET OBJECT USING FIRST CAMERA
1055
DISPLAY FIRST PREVIEW SCREEN
1060
1065
FOLDING ANGLE OF FIRST HINGE REACHES THRESHOLD FOLDING ANGLE?
NO
YES
OBTAIN IMAGE OF AT LEAST ONE TARGET OBJECT USING SECOND CAMERA
1070
DISPLAY SECOND PREVIEW SCREEN
1075
END

FIG.10E

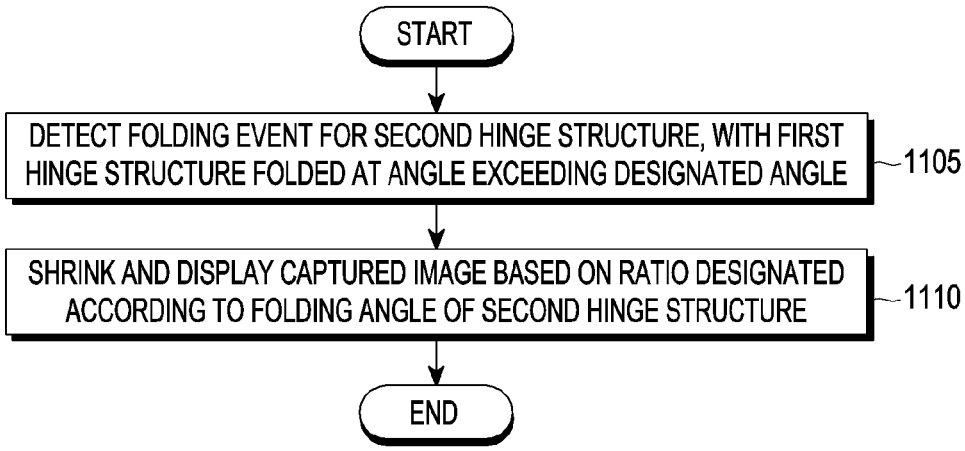

START
DETECT FOLDING EVENT FOR SECOND HINGE STRUCTURE, WITH FIRST HINGE STRUCTURE FOLDED AT ANGLE EXCEEDING DESIGNATED ANGLE
1105
SHRINK AND DISPLAY CAPTURED IMAGE BASED ON RATIO DESIGNATED ACCORDING TO FOLDING ANGLE OF SECOND HINGE STRUCTURE
1110
END

FIG.11A

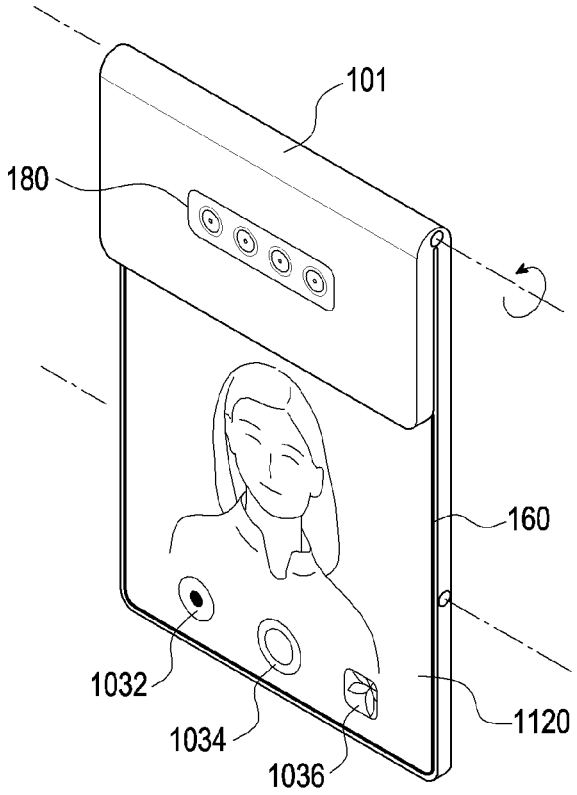


FIG.11B

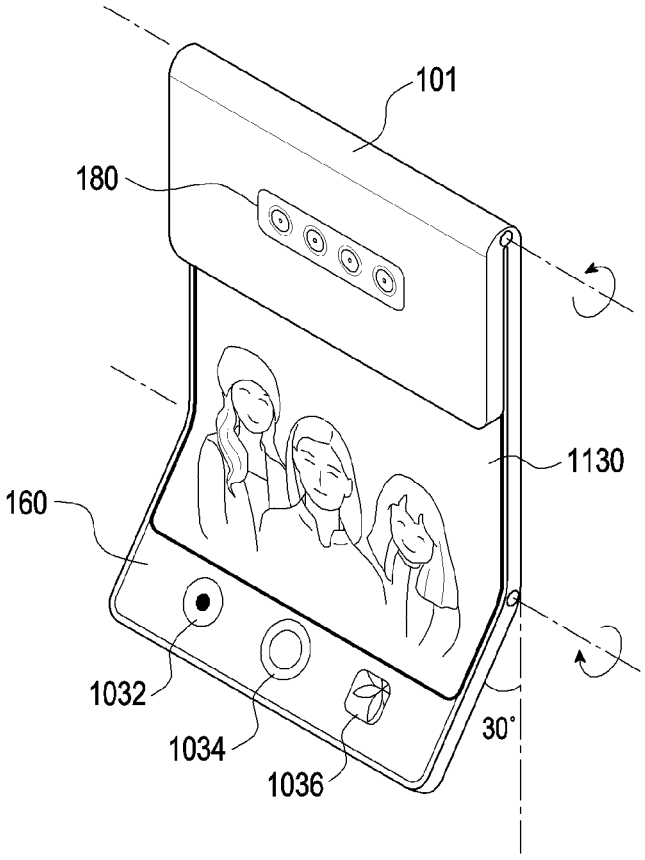


FIG.11C

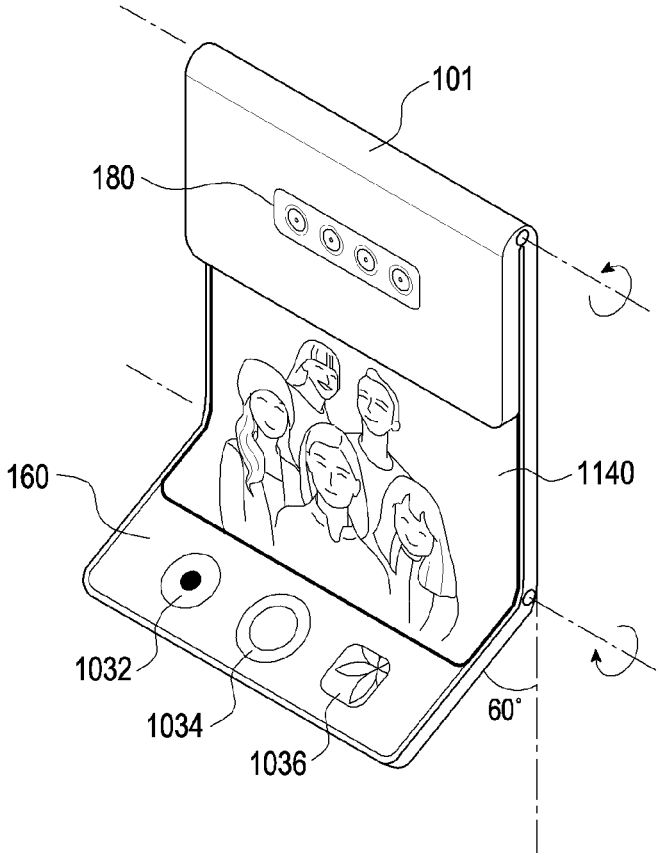


FIG.11D

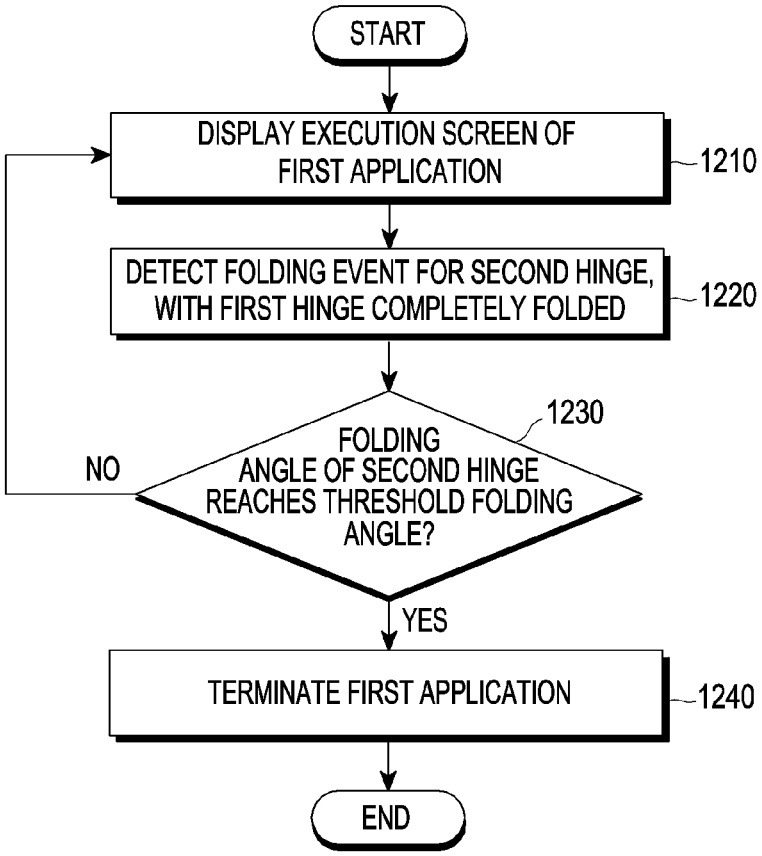

START
DISPLAY EXECUTION SCREEN OF FIRST APPLICATION
1210
DETECT FOLDING EVENT FOR SECOND HINGE, WITH FIRST HINGE COMPLETELY FOLDED
1220
1230
FOLDING ANGLE OF SECOND HINGE REACHES THRESHOLD FOLDING ANGLE?
NO
YES
TERMINATE FIRST APPLICATION
1240
END

FIG.12A

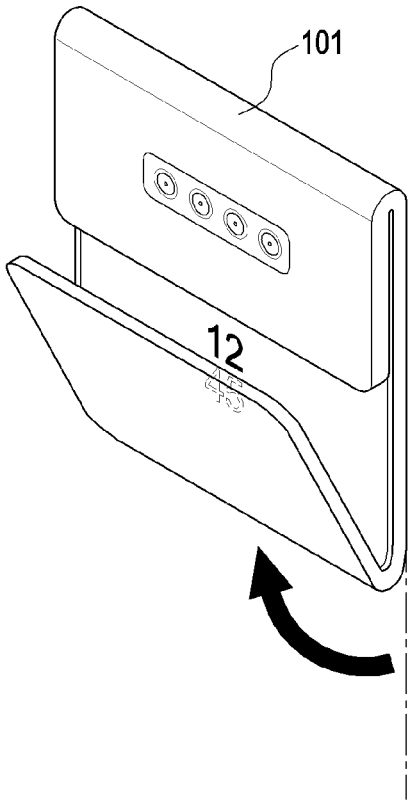


FIG.12B

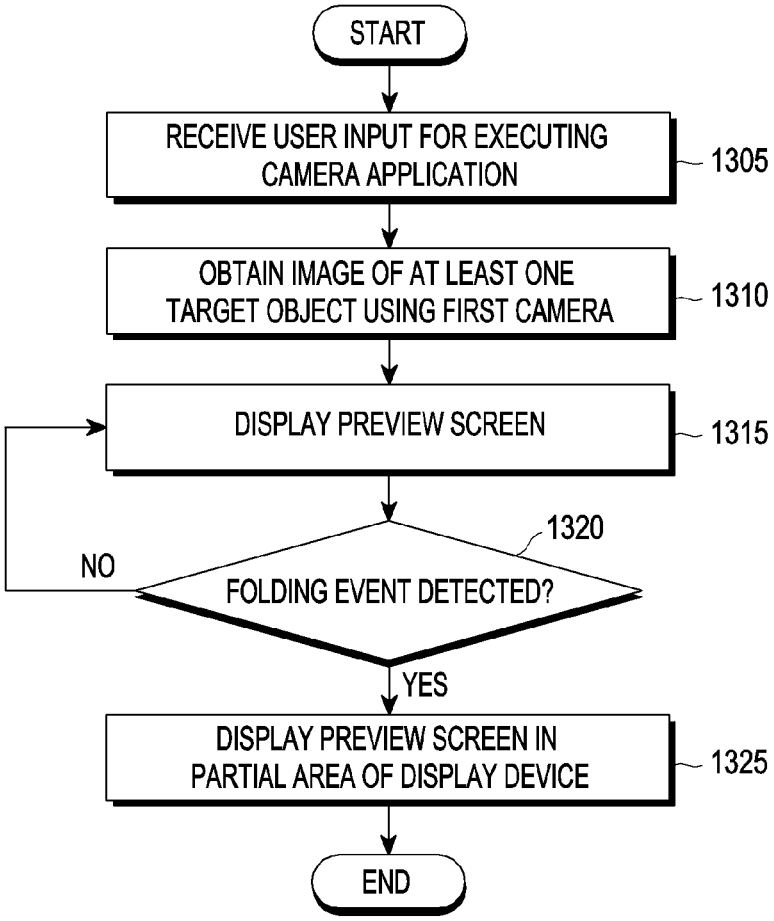

START
RECEIVE USER INPUT FOR EXECUTING CAMERA APPLICATION
1305
OBTAIN IMAGE OF AT LEAST ONE TARGET OBJECT USING FIRST CAMERA
1310
DISPLAY PREVIEW SCREEN
1315
1320
NO
FOLDING EVENT DETECTED?
YES
DISPLAY PREVIEW SCREEN IN PARTIAL AREA OF DISPLAY DEVICE
1325
END

FIG.13A

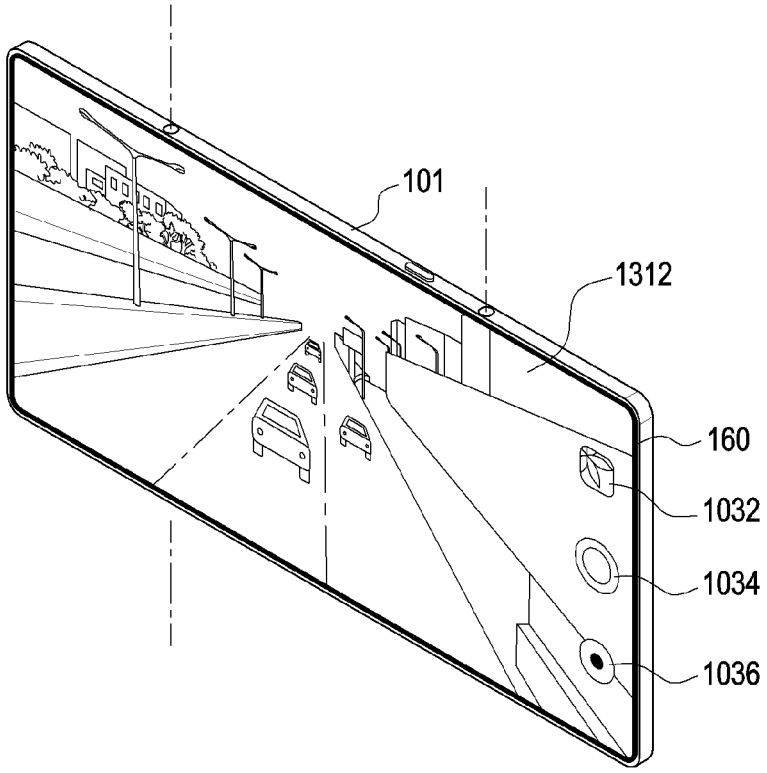


FIG.13B

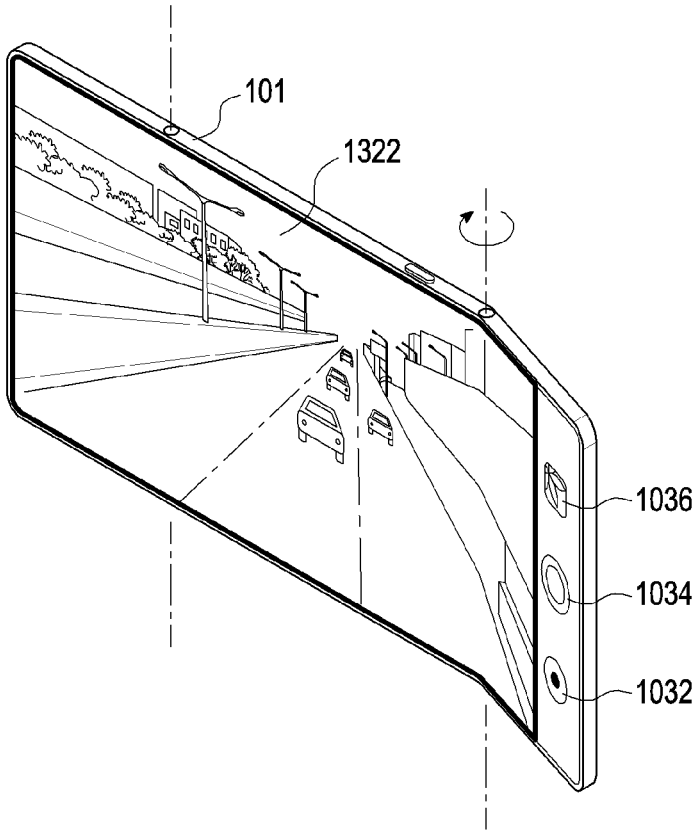


FIG.13C

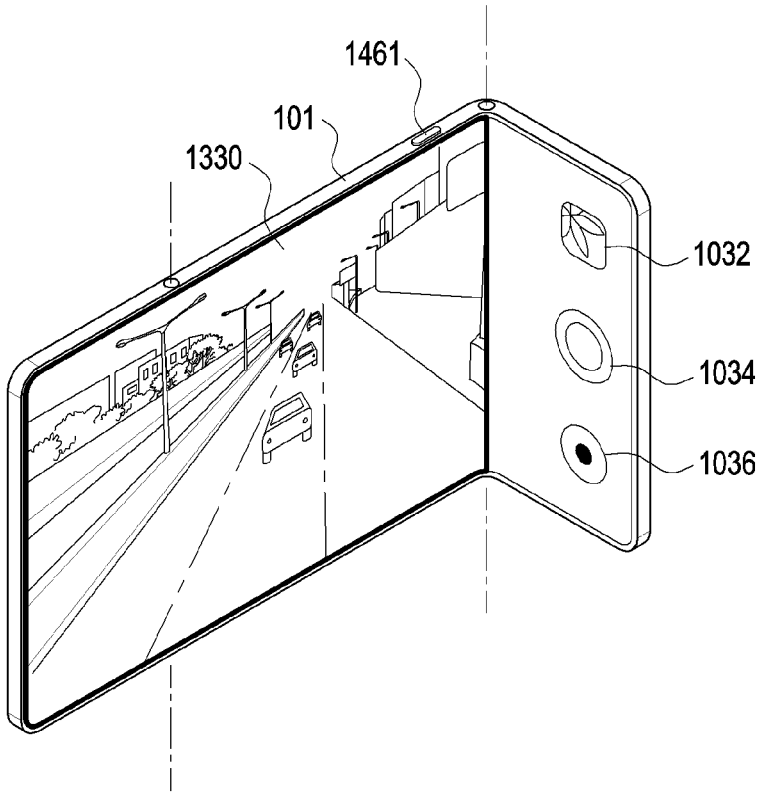


FIG.13D

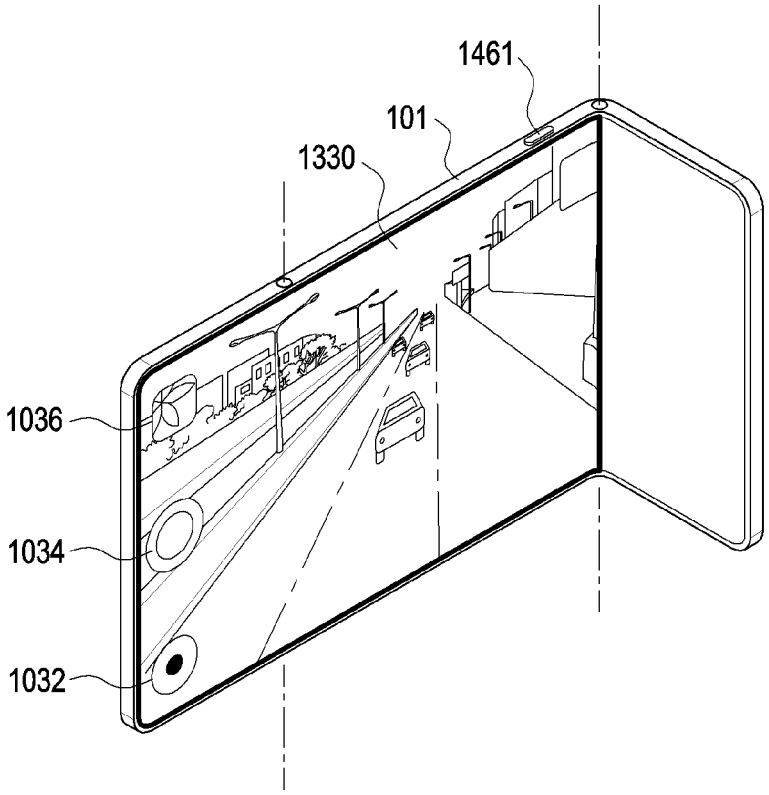


FIG.13E

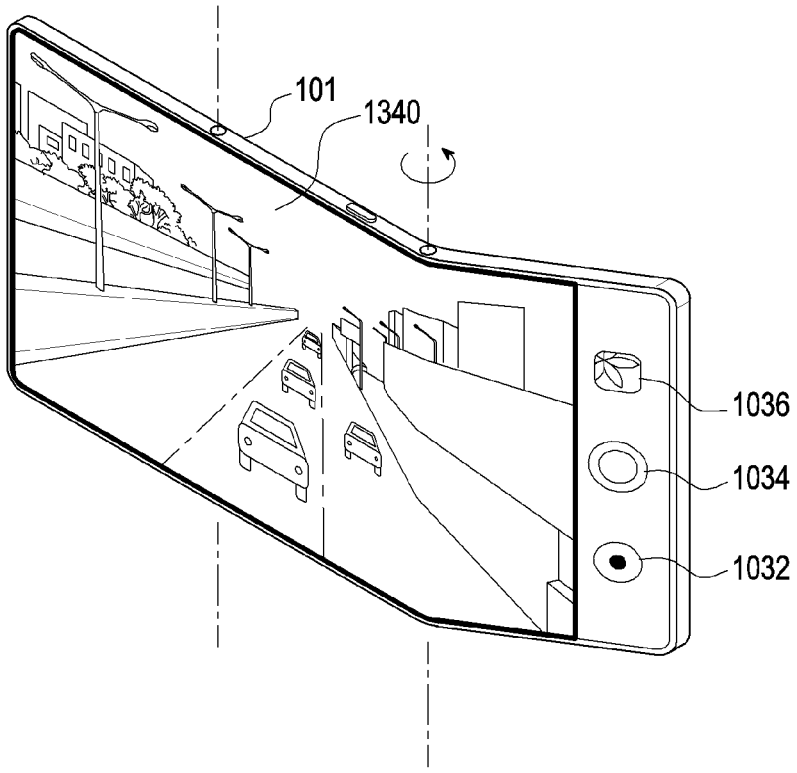


FIG.13F

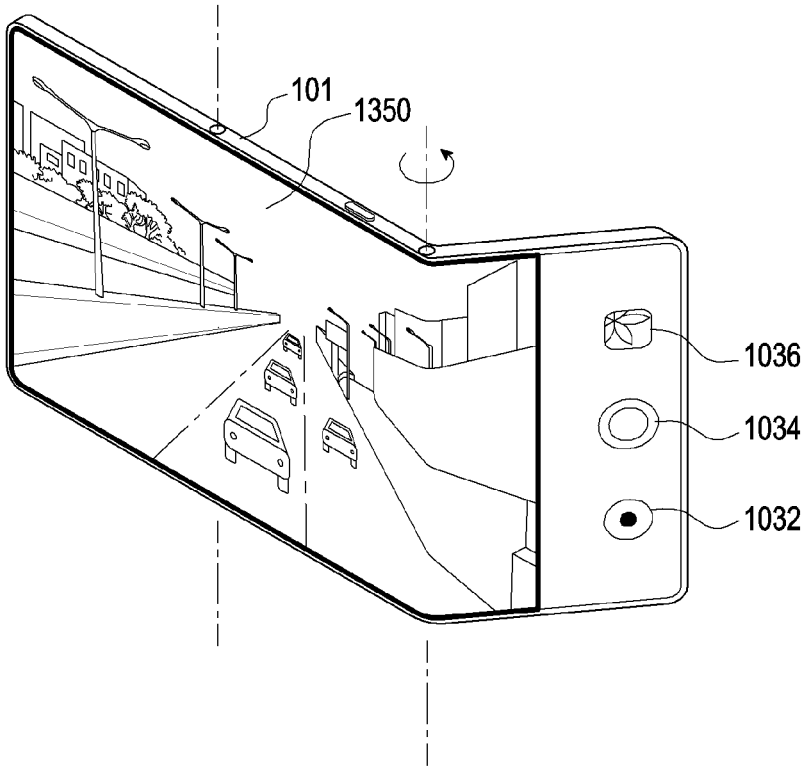


FIG.13G

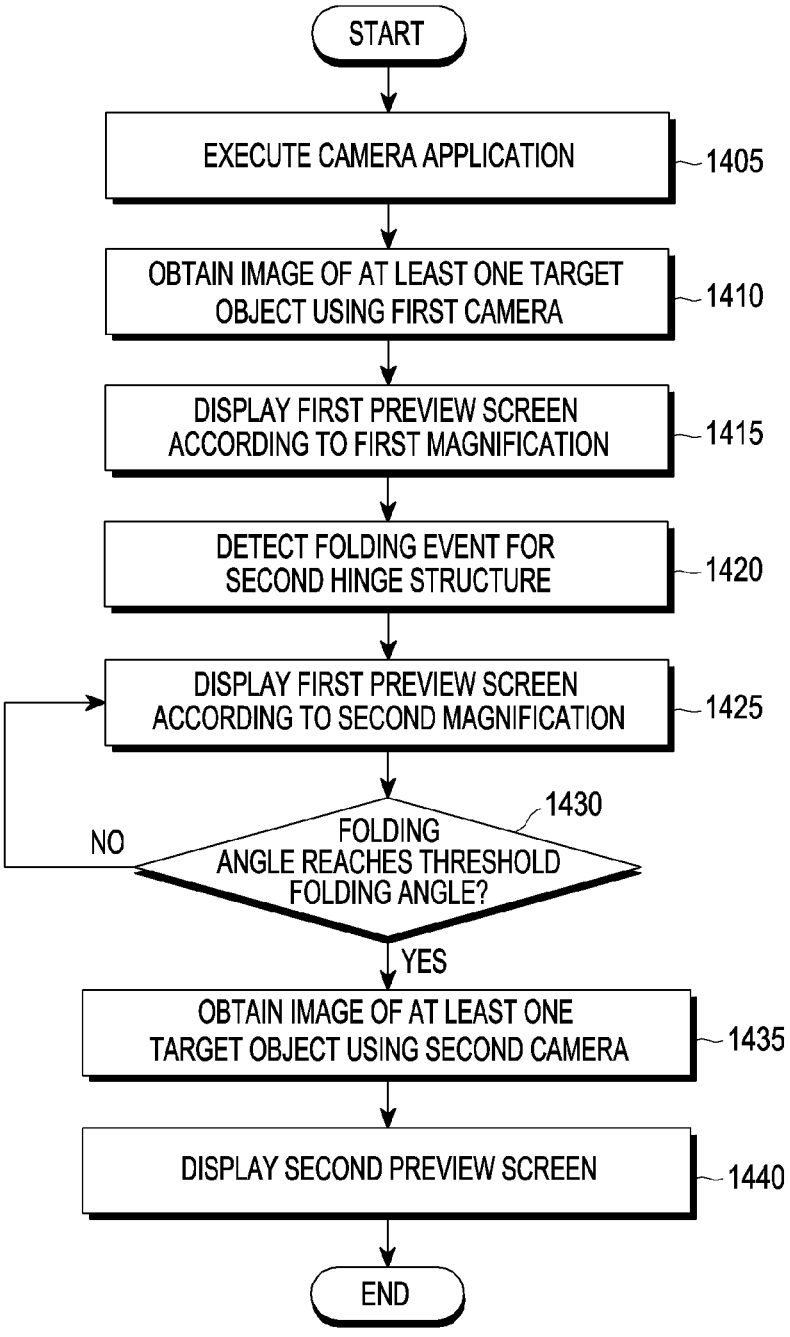

START
EXECUTE CAMERA APPLICATION
1405
OBTAIN IMAGE OF AT LEAST ONE TARGET OBJECT USING FIRST CAMERA
1410
DISPLAY FIRST PREVIEW SCREEN ACCORDING TO FIRST MAGNIFICATION
1415
DETECT FOLDING EVENT FOR SECOND HINGE STRUCTURE
1420
DISPLAY FIRST PREVIEW SCREEN ACCORDING TO SECOND MAGNIFICATION
1425
1430
FOLDING ANGLE REACHES THRESHOLD FOLDING ANGLE?
NO
YES
OBTAIN IMAGE OF AT LEAST ONE TARGET OBJECT USING SECOND CAMERA
1435
DISPLAY SECOND PREVIEW SCREEN
1440
END

FIG.14A

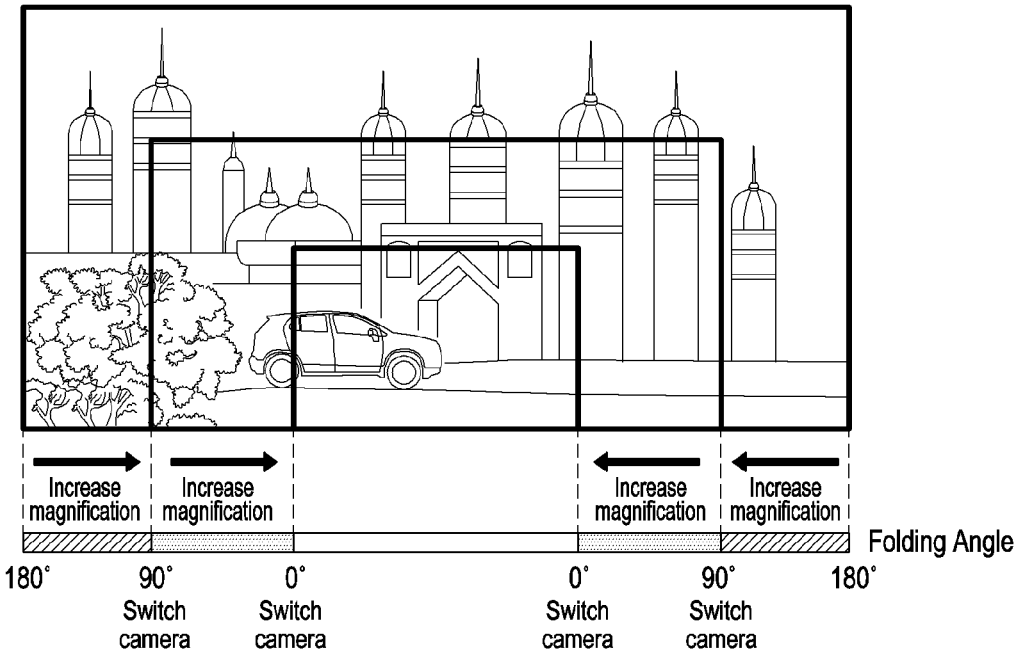


FIG.14B

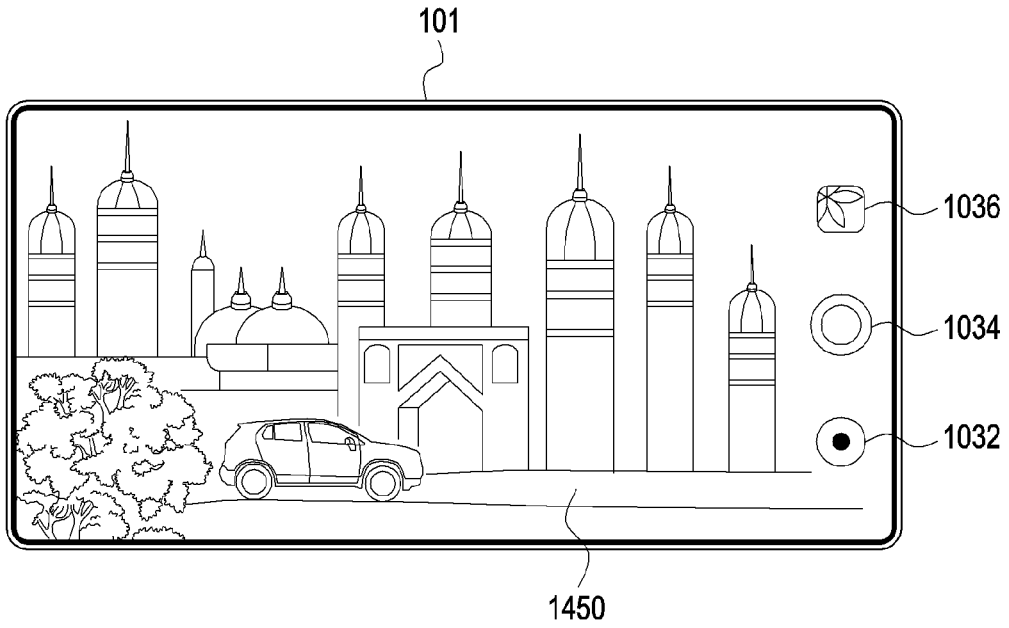


FIG.14C

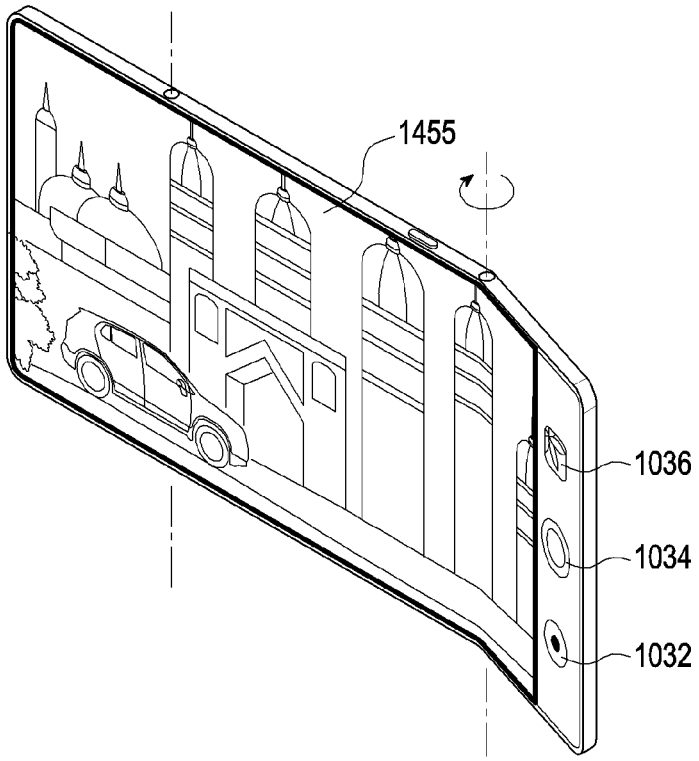


FIG.14D

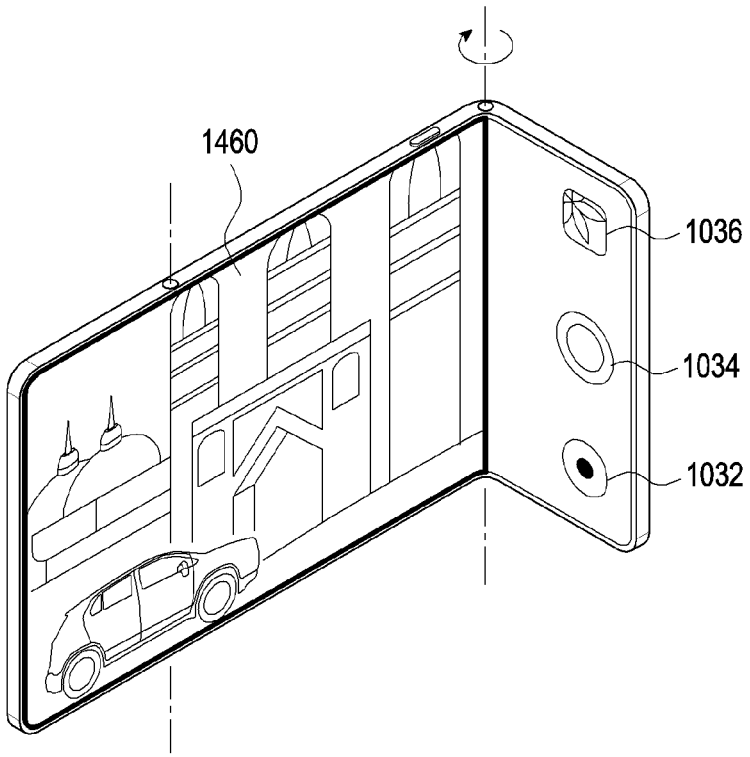


FIG.14E

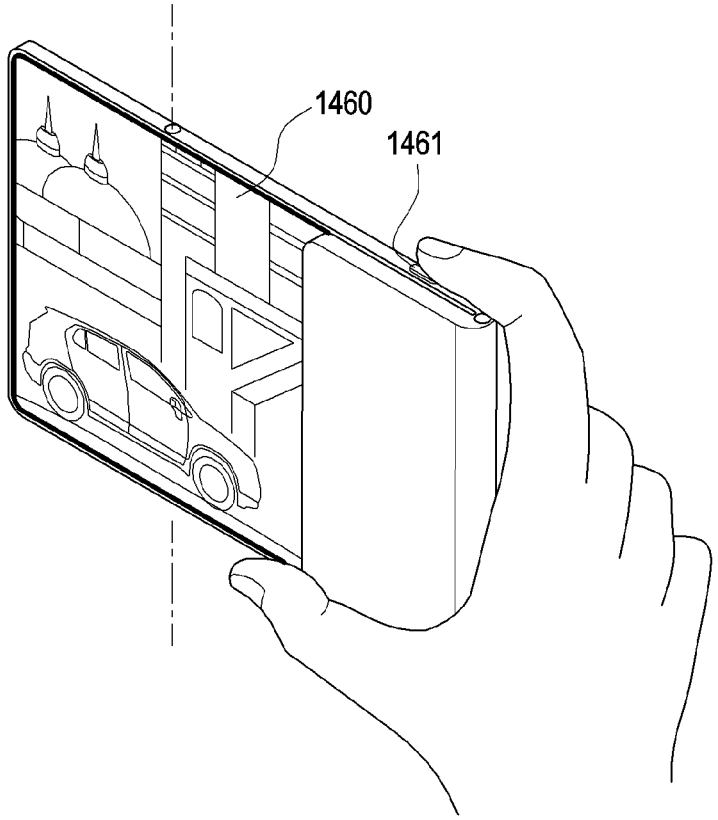


FIG.14F

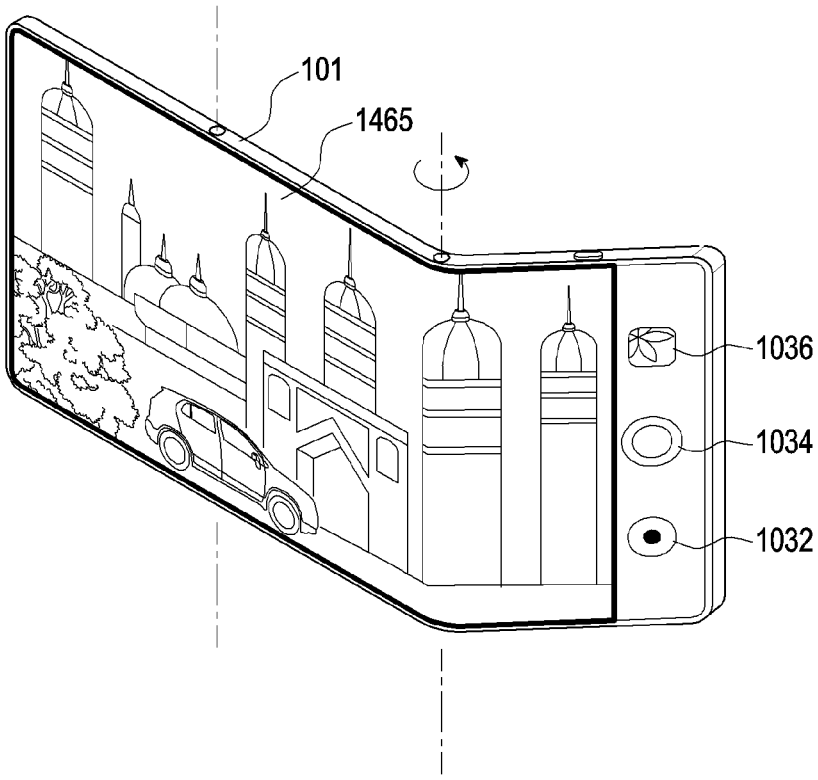


FIG.14G

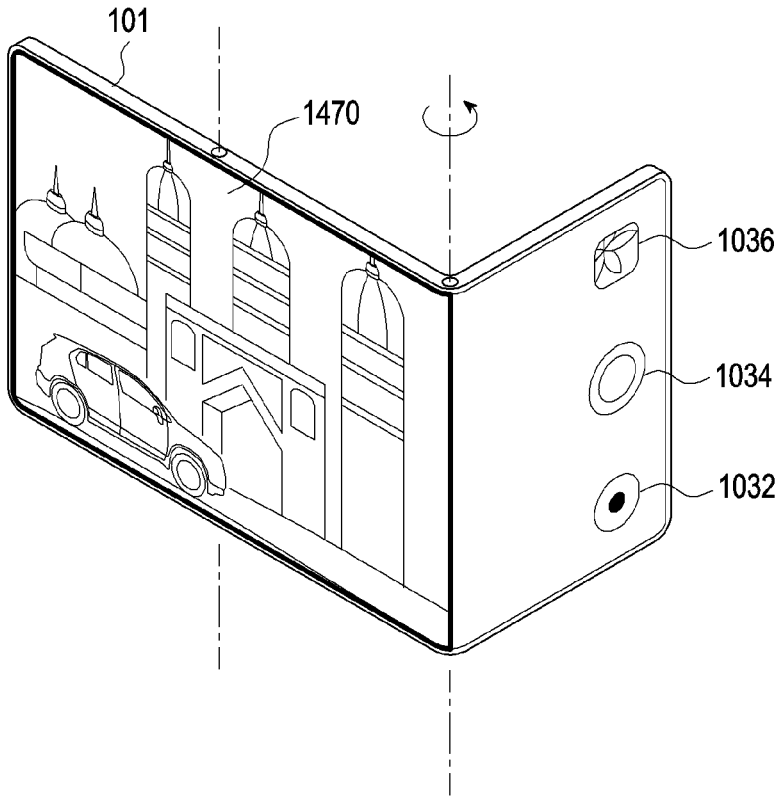


FIG.14H

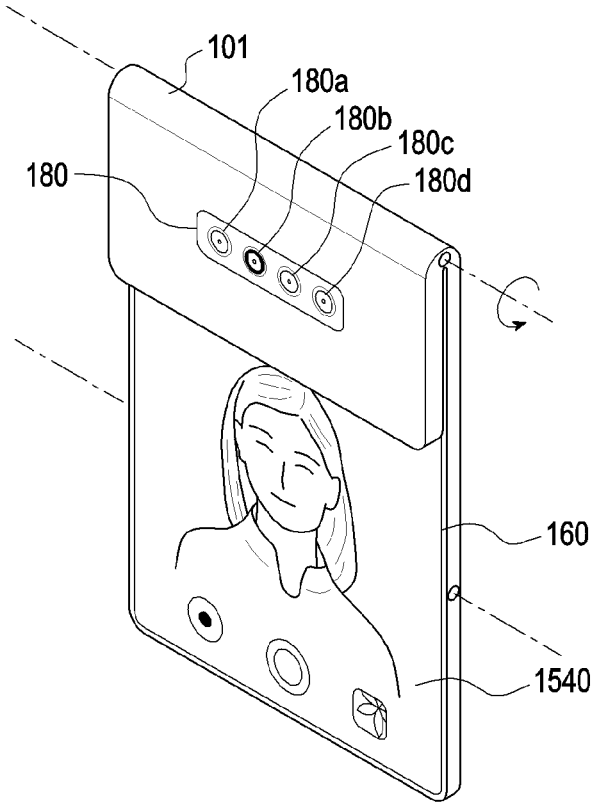


FIG.15A

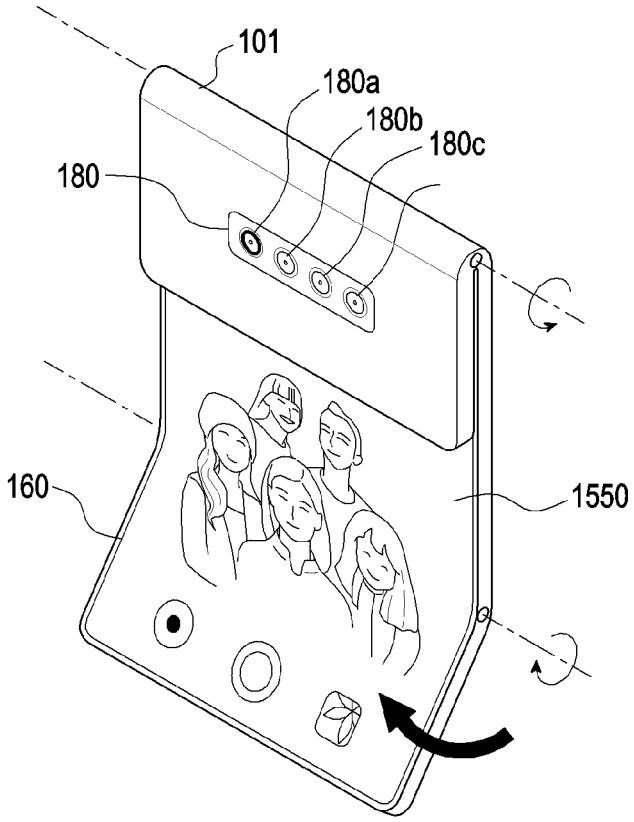


FIG.15B

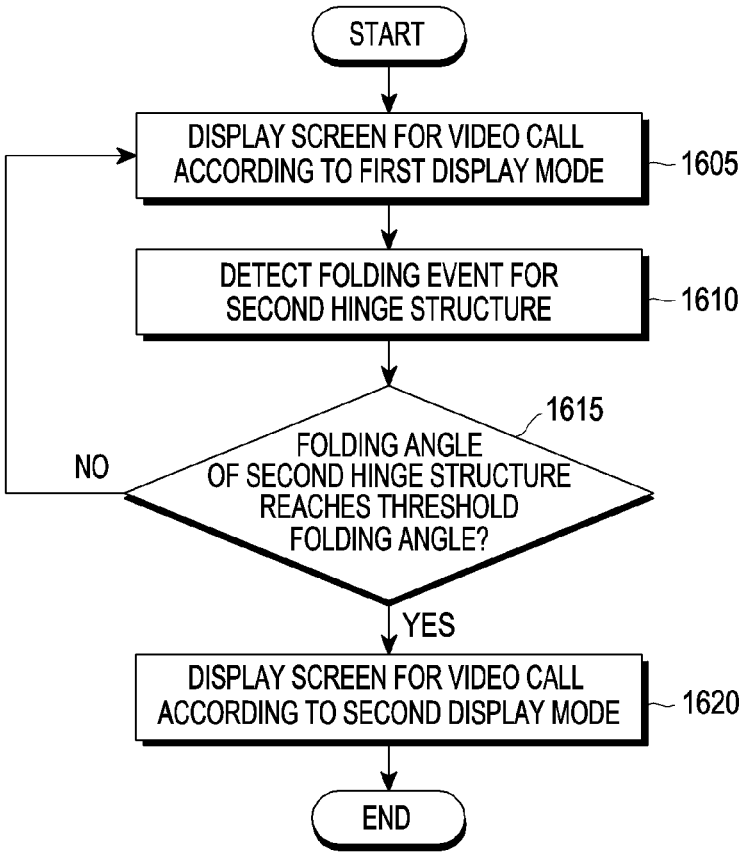

START
DISPLAY SCREEN FOR VIDEO CALL ACCORDING TO FIRST DISPLAY MODE
1605
DETECT FOLDING EVENT FOR SECOND HINGE STRUCTURE
1610
1615
FOLDING ANGLE OF SECOND HINGE STRUCTURE REACHES THRESHOLD FOLDING ANGLE?
NO
YES
DISPLAY SCREEN FOR VIDEO CALL ACCORDING TO SECOND DISPLAY MODE
1620
END

FIG.16A

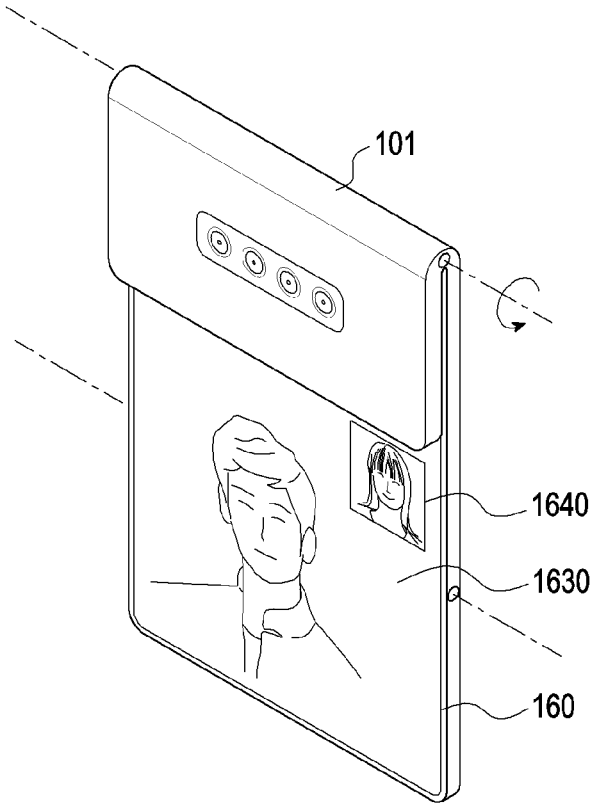


FIG.16B

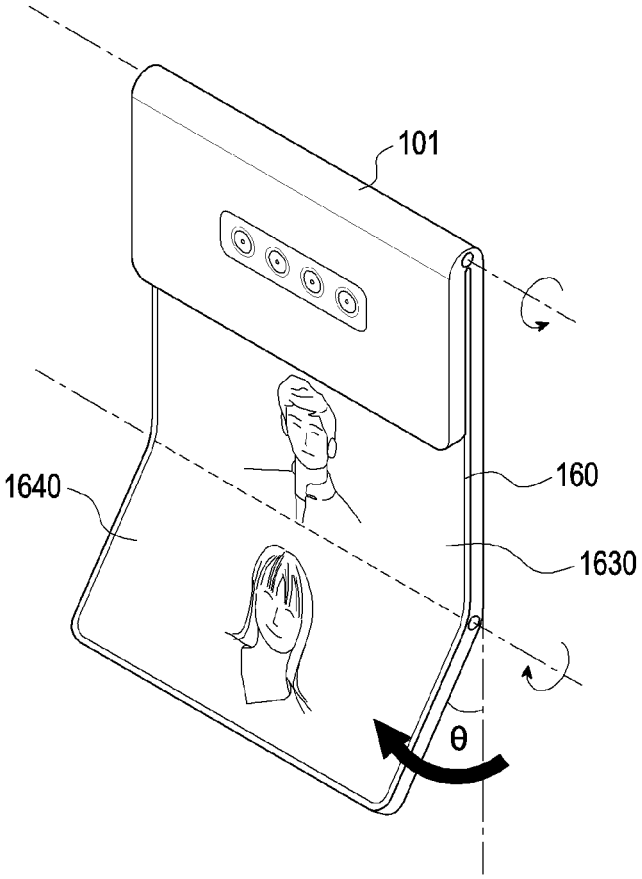


FIG.16C

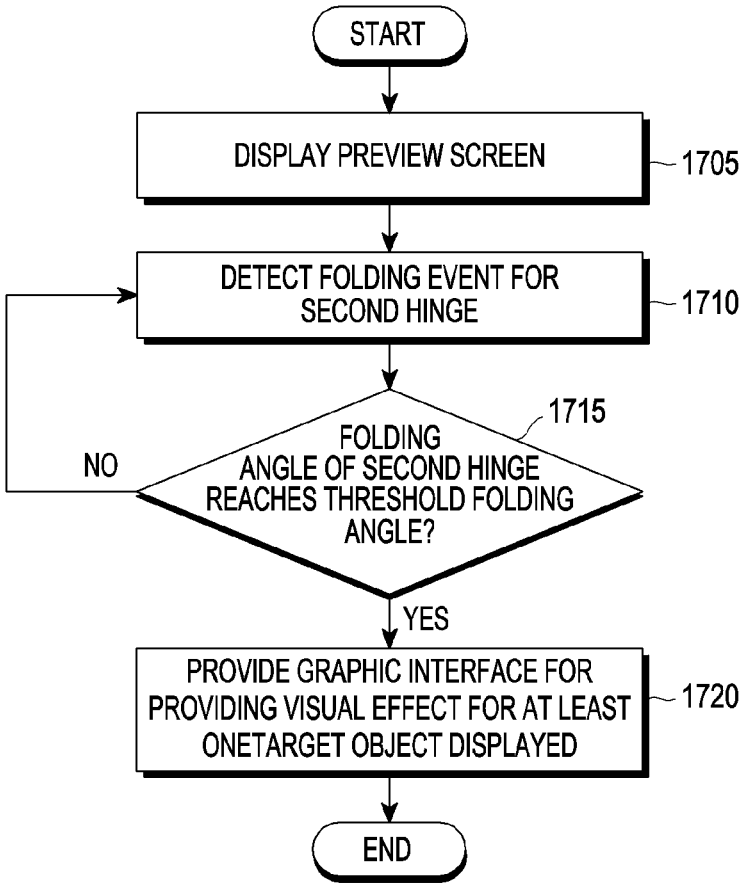

START
DISPLAY PREVIEW SCREEN
1705
DETECT FOLDING EVENT FOR SECOND HINGE
1710
1715
FOLDING ANGLE OF SECOND HINGE REACHES THRESHOLD FOLDING ANGLE?
NO
YES
PROVIDE GRAPHIC INTERFACE FOR PROVIDING VISUAL EFFECT FOR AT LEAST ONETARGET OBJECT DISPLAYED
1720
END

FIG.17A

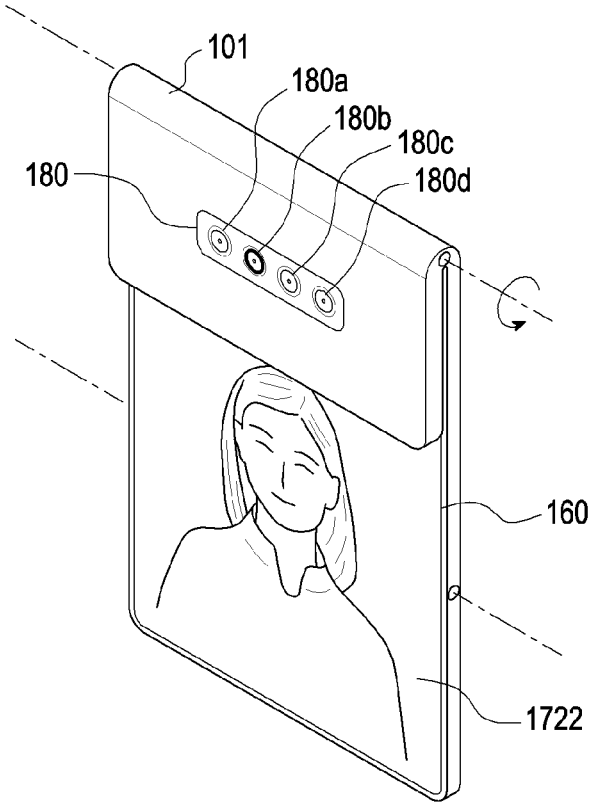


FIG.17B

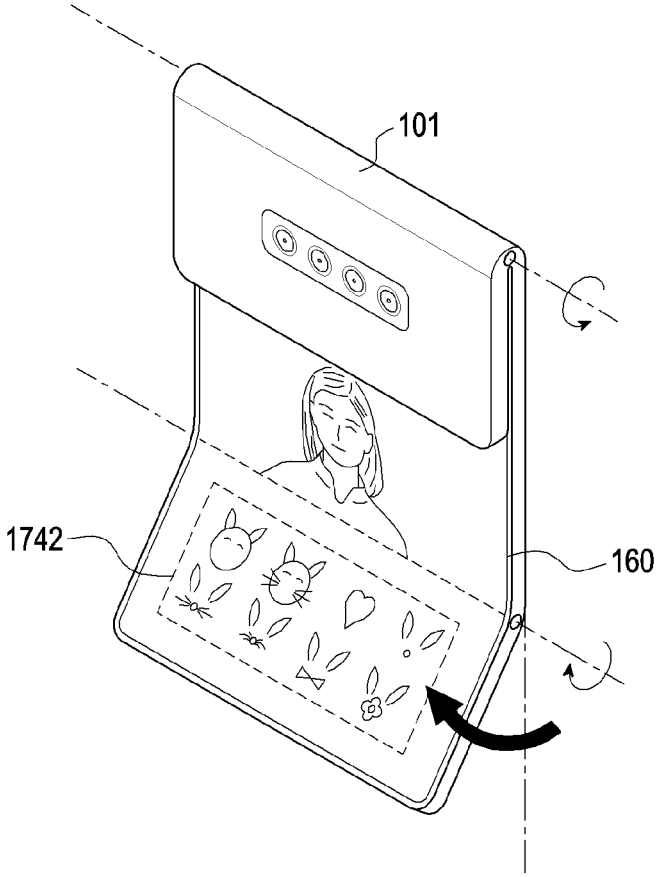


FIG.17C

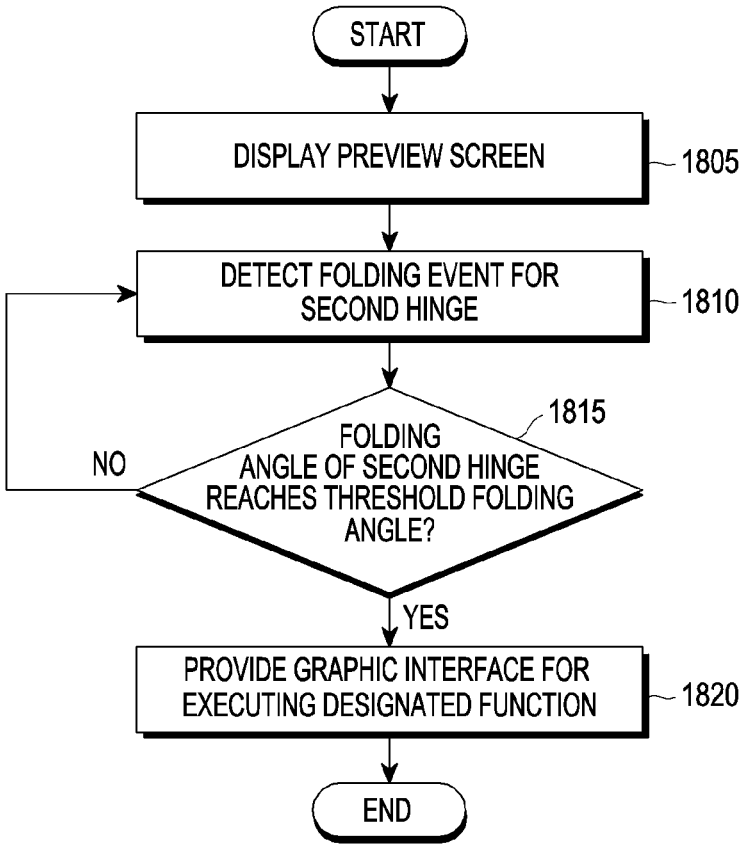

START
DISPLAY PREVIEW SCREEN
1805
DETECT FOLDING EVENT FOR SECOND HINGE
1810
1815
FOLDING ANGLE OF SECOND HINGE REACHES THRESHOLD FOLDING ANGLE?
NO
YES
PROVIDE GRAPHIC INTERFACE FOR EXECUTING DESIGNATED FUNCTION
1820
END

FIG.18A

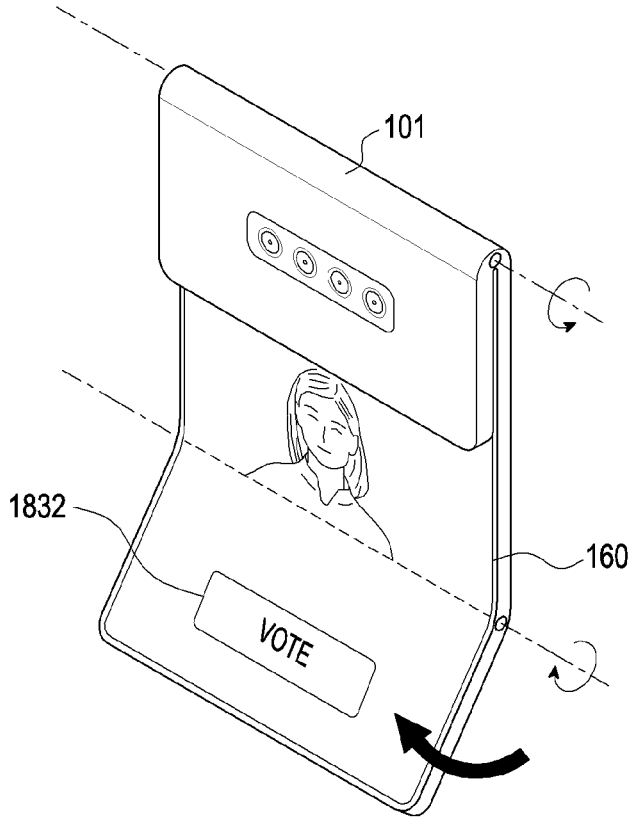


FIG.18B

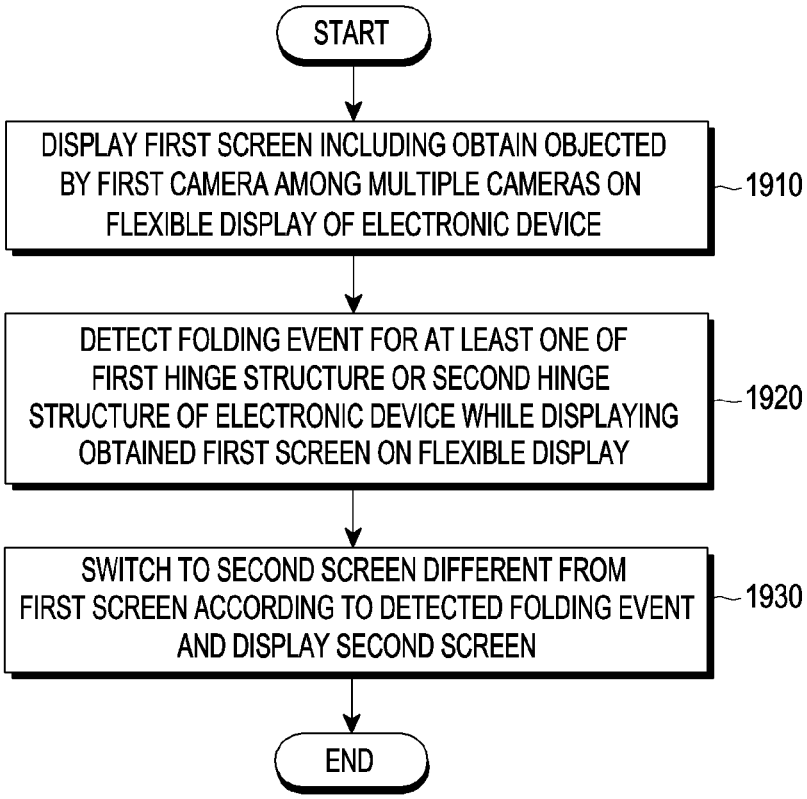

START
DISPLAY FIRST SCREEN INCLUDING OBTAIN OBJECTED BY FIRST CAMERA AMONG MULTIPLE CAMERAS ON FLEXIBLE DISPLAY OF ELECTRONIC DEVICE
1910
DETECT FOLDING EVENT FOR AT LEAST ONE OF FIRST HINGE STRUCTURE OR SECOND HINGE STRUCTURE OF ELECTRONIC DEVICE WHILE DISPLAYING OBTAINED FIRST SCREEN ON FLEXIBLE DISPLAY
1920
SWITCH TO SECOND SCREEN DIFFERENT FROM FIRST SCREEN ACCORDING TO DETECTED FOLDING EVENT AND DISPLAY SECOND SCREEN
1930
END

FIG.19

ELECTRONIC DEVICE CONTROLLING SCREEN BASED ON FOLDING EVENT AND METHOD FOR CONTROLLING THE SAME

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application is based on and claims priority under 35 U.S.C. 119 to Korean Patent Application No. 10-2019-0057757, filed on May 17, 2019, in the Korean Intellectual Property Office, the disclosure of which is herein incorporated by reference in its entirety.

BACKGROUND

1. Field

[0002] Various embodiments of the disclosure relate to an electronic device controlling the screen based on a folding event and method for controlling the same.

2. Description of Related Art

[0003] More and more services and additional functions are being provided through electronic devices, e.g., smartphones, or other portable electronic devices. To meet users' various needs and raise use efficiency of electronic devices, communication service carriers or device manufacturers are jumping into competitions to develop electronic devices with differentiated and diversified functionalities. Accordingly, various functions that are provided through electronic devices are evolving more and more.

[0004] A foldable electronic device, e.g., a single foldable electronic device with one hinge structure, may have a specific state (e.g., active state/inactive state) defined depending on when it is folded or unfolded. However, a multi-foldable electronic device with a plurality of hinge structures, unlike the single foldable electronic device, may have various states defined depending on when it is folded or unfolded.

[0005] The above information is presented as background information only to assist with an understanding of the disclosure. No determination has been made, and no assertion is made, as to whether any of the above might be applicable as prior art with regard to the disclosure.

SUMMARY

[0006] According to an embodiment, there is provided a multi-foldable electronic device with a plurality of hinge structures, capable of providing various functions depending on folding angles of the hinge structures.

[0007] According to an embodiment, there is provided a method for controlling a multi-foldable electronic device with a plurality of hinge structures, capable of providing various functions depending on folding states (e.g., angles) of the hinge structures.

[0008] In accordance with various embodiments, an electronic device comprises a plurality of cameras, a foldable housing including a first hinge structure and a second hinge structure, a flexible display at least partially exposed through the foldable housing, and at least one processor provided in the foldable housing, the at least one processor configured to display a first screen including an object obtained by a first camera among the plurality of cameras on the flexible display, detect a folding event for at least one of the first hinge structure and the second hinge structure while displaying the obtained first screen on the flexible display, and display a second screen different from the first screen on the flexible display according to the detected folding event.

[0009] In accordance with various embodiments, a method for controlling an electronic device comprises displaying a first screen including an object obtained by at least one of a plurality of cameras of the electronic device on a flexible display of the electronic device, detecting a folding event for a first hinge structure of the electronic device while displaying the obtained first screen on the flexible display, the first hinge structure connected with a first housing having the plurality of cameras, and switching a second screen different from the first screen and display the second screen according to the detected folding event.

[0010] Other aspects, advantages, and salient features of the disclosure will become apparent to those skilled in the art from the following detailed description, which, taken in conjunction with the annexed drawings, discloses exemplary embodiments of the disclosure.

[0011] Before undertaking the DETAILED DESCRIPTION below, it may be advantageous to set forth definitions of certain words and phrases used throughout this patent document: the terms "include" and "comprise," as well as derivatives thereof, mean inclusion without limitation; the term "or," is inclusive, meaning and/or; the phrases "associated with" and "associated therewith," as well as derivatives thereof, may mean to include, be included within, interconnect with, contain, be contained within, connect to or with, couple to or with, be communicable with, cooperate with, interleave, juxtapose, be proximate to, be bound to or with, have, have a property of, or the like; and the term "controller" means any device, system or part thereof that controls at least one operation, such a device may be implemented in hardware, firmware or software, or some combination of at least two of the same. It should be noted that the functionality associated with any particular controller may be centralized or distributed, whether locally or remotely.

[0012] Moreover, various functions described below can be implemented or supported by one or more computer programs, each of which is formed from computer readable program code and embodied in a computer readable medium. The terms "application" and "program" refer to one or more computer programs, software components, sets of instructions, procedures, functions, objects, classes, instances, related data, or a portion thereof adapted for implementation in a suitable computer readable program code. The phrase "computer readable program code" includes any type of computer code, including source code, object code, and executable code. The phrase "computer readable medium" includes any type of medium capable of being accessed by a computer, such as read only memory (ROM), random access memory (RAM), a hard disk drive, a compact disc (CD), a digital video disc (DVD), or any other type of memory. A "non-transitory" computer readable medium excludes wired, wireless, optical, or other communication links that transport transitory electrical or other signals. A non-transitory computer readable medium includes media where data can be permanently stored and media where data can be stored and later overwritten, such as a rewritable optical disc or an erasable memory device.

[0013] Definitions for certain words and phrases are provided throughout this patent document, those of ordinary skill in the art should understand that in many, if not most

instances, such definitions apply to prior, as well as future uses of such defined words and phrases.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014] A more complete appreciation of the disclosure and many of the attendant aspects thereof will be readily obtained as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying drawings, wherein:

[0015] FIG. **1** illustrates a block diagram illustrating an electronic device in a network environment according to an embodiment;

[0016] FIG. **2** is a view illustrating an unfolded state of an electronic device according to an embodiment;

[0017] FIG. **3** is a view illustrating a folded state of an electronic device according to an embodiment;

[0018] FIG. **4** is an exploded perspective view illustrating an electronic device according to an embodiment;

[0019] FIG. **5**A is a view illustrating an unfolded state of an electronic device according to an embodiment;

[0020] FIG. **5**B is a cross-sectional view schematically illustrating a side surface of an electronic device according to an embodiment;

[0021] FIG. **6**A is a view illustrating an angle sensor according to an embodiment;

[0022] FIGS. **6**B and **6**C are views illustrating a folding angle according to an embodiment;

[0023] FIG. **7** is a view illustrating a folded state of an electronic device according to an embodiment;

[0024] FIG. **8**A is a view illustrating an unfolded state of an electronic device according to an embodiment;

[0025] FIG. **8**B is a cross-sectional view schematically illustrating a side surface of an electronic device according to an embodiment;

[0026] FIG. **8**C is a view illustrating an operation of folding an electronic device according to an embodiment;

[0027] FIGS. **9**A and **9**B are views illustrating a folding angle according to an embodiment;

[0028] FIGS. **10**A, **10**B, **10**C, and **10**D are views illustrating a function or operation of switching an operation mode of a camera application according to first hinge structure folds;

[0029] FIG. **10**E is a view illustrating an example of changing a camera as an example of switching an operation mode of a camera application as a first hinge structure folds;

[0030] FIGS. **11**A, **11**B, **11**C, and **11**D are views illustrating a function or operation of shrinking a display area where a screen is displayed when a folding event on a second hinge structure occurs, with a first hinge structure folded;

[0031] FIGS. **12**A and **12**B are views illustrating a function or operation of terminating an application being executed when a folding event occurs on a second hinge structure, with a first hinge structure folded;

[0032] FIGS. **13**A, **13**B, **13**C, **13**D, **13**E, **13**F, and **13**G are views illustrating a function or operation of shrinking a display area where a screen is displayed when a folding event on a second hinge structure occurs, with a first hinge structure unfolded;

[0033] FIGS. **14**A, **14**B, **14**C, **14**D, **14**E, **14**F, **14**G, and **14**H are views illustrating a function or operation of continuously (e.g., seamlessly) switching screens when a folding event on a second hinge structure occurs, with a first hinge structure unfolded;

[0034] FIGS. **15**A and **15**B are views illustrating a function or operation of continuously (e.g., seamlessly) switching screens when a folding event occurs on a second hinge structure, with a first hinge structure folded;

[0035] FIGS. **16**A, **16**B, and **16**C are views illustrating a function or operation of switching the screen being displayed on an electronic device when a folding event occurs on a second hinge structure;

[0036] FIGS. **17**A, **17**B, and **17**C are views illustrating a function or operation of providing a designated graphic interface for applying a visual effect to an object being displayed on an electronic device when a folding event occurs on a second hinge structure;

[0037] FIGS. **18**A and **18**B are views illustrating a function or operation for providing a graphic interface for executing a designated function when a folding event occurs on a second hinge structure; and

[0038] FIG. **19** is a view illustrating a method of operating an electronic device according to an embodiment.

[0039] Throughout the drawings, like reference numerals will be understood to refer to like parts, components, and structures.

DETAILED DESCRIPTION

[0040] FIGS. **1** through **19**, discussed below, and the various embodiments used to describe the principles of the present disclosure in this patent document are by way of illustration only and should not be construed in any way to limit the scope of the disclosure. Those skilled in the art will understand that the principles of the present disclosure may be implemented in any suitably arranged system or device.

[0041] FIG. **1** is a block diagram illustrating an electronic device **101** in a network environment **100** according to an embodiment.

[0042] Referring to FIG. **1**, the electronic device **101** in the network environment **100** may communicate with an electronic device **102** via a first network **198** (e.g., a short-range wireless communication network), or an electronic device **104** or a server **108** via a second network **199** (e.g., a long-range wireless communication network). According to an embodiment, the electronic device **101** may communicate with the electronic device **104** via the server **108**. According to an embodiment, the electronic device **101** may include a processor **120**, memory **130**, an input device **150**, a sound output device **155**, a display device **160**, an audio module **170**, a sensor module **176**, an interface **177**, a haptic module **179**, a camera module **180**, a power management module **188**, a battery **189**, a communication module **190**, a subscriber identification module (SIM) **196**, or an antenna module **197**. In some embodiments, at least one (e.g., the display device **160** or the camera module **180**) of the components may be omitted from the electronic device **101**, or one or more other components may be added in the electronic device **101**. In some embodiments, some of the components may be implemented as single integrated circuitry. For example, the sensor module **176** (e.g., a fingerprint sensor, an iris sensor, or an illuminance sensor) may be implemented as embedded in the display device **160** (e.g., a display).

[0043] The processor **120** may execute, e.g., software (e.g., a program **140**) to control at least one other component (e.g., a hardware or software component) of the electronic device **101** connected with the processor **120** and may process or compute various data. According to one embodi-

ment, as at least part of the data processing or computation, the processor **120** may load a command or data received from another component (e.g., the sensor module **176** or the communication module **190**) in volatile memory **132**, process the command or the data stored in the volatile memory **132**, and store resulting data in non-volatile memory **134**. According to an embodiment, the processor **120** may include a main processor **121** (e.g., a central processing unit (CPU) or an application processor (AP)), and an auxiliary processor **123** (e.g., a graphics processing unit (GPU), an image signal processor (ISP), a sensor hub processor, or a communication processor (CP)) that is operable independently from, or in conjunction with, the main processor **121**. Additionally or alternatively, the auxiliary processor **123** may be adapted to consume less power than the main processor **121**, or to be specific to a specified function. The auxiliary processor **123** may be implemented as separate from, or as part of the main processor **121**.

[0044] The auxiliary processor **123** may control at least some of functions or states related to at least one component (e.g., the display device **160**, the sensor module **176**, or the communication module **190**) among the components of the electronic device **101**, instead of the main processor **121** while the main processor **121** is in an inactive (e.g., sleep) state, or together with the main processor **121** while the main processor **121** is in an active state (e.g., executing an application). According to an embodiment, the auxiliary processor **123** (e.g., an image signal processor or a communication processor) may be implemented as part of another component (e.g., the camera module **180** or the communication module **190**) functionally related to the auxiliary processor **123**.

[0045] The memory **130** may store various data used by at least one component (e.g., the processor **120** or the sensor module **176**) of the electronic device **101**. The various data may include, for example, software (e.g., the program **140**) and input data or output data for a command related thereto. The memory **130** may include the volatile memory **132** or the non-volatile memory **134**.

[0046] The program **140** may be stored in the memory **130** as software, and may include, for example, an operating system (OS) **142**, middleware **144**, or an application **146**.

[0047] The input device **150** may receive a command or data to be used by other component (e.g., the processor **120**) of the electronic device **101**, from the outside (e.g., a user) of the electronic device **101**. The input device **150** may include, for example, a microphone, a mouse, a keyboard, or a pen input device (e.g., a stylus pen).

[0048] The sound output device **155** may output sound signals to the outside of the electronic device **101**. The sound output device **155** may include, for example, a speaker or a receiver. The speaker may be used for general purposes, such as playing multimedia or playing record, and the receiver may be used for an incoming calls. According to an embodiment, the receiver may be implemented as separate from, or as part of the speaker.

[0049] The display device **160** may visually provide information to the outside (e.g., a user) of the electronic device **101**. The display device **160** may include, for example, a display, a hologram device, or a projector and control circuitry to control a corresponding one of the display, hologram device, and projector. According to an embodiment, the display device **160** may include touch circuitry adapted to detect a touch, or sensor circuitry (e.g., a pressure sensor) adapted to measure the intensity of force incurred by the touch.

[0050] The audio module **170** may convert a sound into an electrical signal and vice versa. According to an embodiment, the audio module **170** may obtain a sound through the input device **150** or output a sound through the sound output device **155** or an external electronic device (e.g., an electronic device **102** (e.g., a speaker or a headphone) directly or wirelessly connected with the electronic device **101**.

[0051] The sensor module **176** may detect an operational state (e.g., power or temperature) of the electronic device **101** or an environmental state (e.g., a state of a user) external to the electronic device **101**, and then generate an electrical signal or data value corresponding to the detected state. According to an embodiment, the sensor module **176** may include, for example, a gesture sensor, a gyro sensor, an atmospheric pressure sensor, a magnetic sensor, an acceleration sensor, a grip sensor, a proximity sensor, a color sensor, an infrared (IR) sensor, a biometric sensor, a temperature sensor, a humidity sensor, or an illuminance sensor.

[0052] The interface **177** may support one or more specified protocols to be used for the electronic device **101** to be coupled with the external electronic device (e.g., the electronic device **102**) directly (e.g., wiredly) or wirelessly. According to an embodiment, the interface **177** may include, for example, a high definition multimedia interface (HDMI), a universal serial bus (USB) interface, a secure digital (SD) card interface, or an audio interface.

[0053] A connecting terminal **178** may include a connector via which the electronic device **101** may be physically connected with the external electronic device (e.g., the electronic device **102**). According to an embodiment, the connecting terminal **178** may include, for example, a HDMI connector, a USB connector, a SD card connector, or an audio connector (e.g., a headphone connector).

[0054] The haptic module **179** may convert an electrical signal into a mechanical stimulus (e.g., a vibration or motion) or electrical stimulus which may be recognized by a user via his tactile sensation or kinesthetic sensation. According to an embodiment, the haptic module **179** may include, for example, a motor, a piezoelectric element, or an electric stimulator.

[0055] The camera module **180** may capture a still image or moving images. According to an embodiment, the camera module **180** may include one or more lenses, image sensors, image signal processors, or flashes.

[0056] The power management module **188** may manage power supplied to the electronic device **101**. According to one embodiment, the power management module **188** may be implemented as at least part of, for example, a power management integrated circuit (PMIC).

[0057] The battery **189** may supply power to at least one component of the electronic device **101**. According to an embodiment, the battery **189** may include, for example, a primary cell which is not rechargeable, a secondary cell which is rechargeable, or a fuel cell.

[0058] The communication module **190** may support establishing a direct (e.g., wired) communication channel or wireless communication channel between the electronic device **101** and an external electronic device (e.g., the electronic device **102**, the electronic device **104**, or the server **108**) and performing communication through the established communication channel. The communication

module **190** may include one or more communication processors that are operable independently from the processor **120** (e.g., the application processor (AP)) and supports a direct (e.g., wired) communication or a wireless communication. According to an embodiment, the communication module **190** may include a wireless communication module **192** (e.g., a cellular communication module, a short-range wireless communication module, or a global navigation satellite system (GNSS) communication module) or a wired communication module **194** (e.g., a local area network (LAN) communication module or a power line communication (PLC) module). A corresponding one of these communication modules may communicate with the external electronic device via the first network **198** (e.g., a short-range communication network, such as Bluetooth™, wireless-fidelity (Wi-Fi) direct, or infrared data association (IrDA)) or the second network **199** (e.g., a long-range communication network, such as a cellular network, the Internet, or a computer network (e.g., LAN or wide area network (WAN)). These various types of communication modules may be implemented as a single component (e.g., a single chip), or may be implemented as multi components (e.g., multi chips) separate from each other. The wireless communication module **192** may identify and authenticate the electronic device **101** in a communication network, such as the first network **198** or the second network **199**, using subscriber information (e.g., international mobile subscriber identity (IMSI)) stored in the subscriber identification module **196**.

[0059] The antenna module **197** may transmit or receive a signal or power to or from the outside (e.g., the external electronic device) of the electronic device **101**. According to an embodiment, the antenna module **197** may include one antenna including a radiator formed of a conductor or conductive pattern formed on a substrate (e.g., a printed circuit board (PCB)). According to an embodiment, the antenna module **197** may include a plurality of antennas. In this case, at least one antenna appropriate for a communication scheme used in a communication network, such as the first network **198** or the second network **199**, may be selected from the plurality of antennas by, e.g., the communication module **190**. The signal or the power may then be transmitted or received between the communication module **190** and the external electronic device via the selected at least one antenna. According to an embodiment, other parts (e.g., radio frequency integrated circuit (RFIC)) than the radiator may be further formed as part of the antenna module **197**.

[0060] At least some of the above-described components may be coupled mutually and communicate signals (e.g., commands or data) therebetween via an inter-peripheral communication scheme (e.g., a bus, general purpose input and output (GPIO), serial peripheral interface (SPI), or mobile industry processor interface (MIPI)).

[0061] According to an embodiment, commands or data may be transmitted or received between the electronic device **101** and the external electronic device **104** via the server **108** coupled with the second network **199**. The external electronic devices **102** and **104** each may be a device of the same or a different type from the electronic device **101**. According to an embodiment, all or some of operations to be executed at the electronic device **101** may be executed at one or more of the external electronic devices **102**, **104**, or **108**. For example, if the electronic device **101** should perform a function or a service automatically, or in response to a request from a user or another device, the electronic device **101**, instead of, or in addition to, executing the function or the service, may request the one or more external electronic devices to perform at least part of the function or the service. The one or more external electronic devices receiving the request may perform the at least part of the function or the service requested, or an additional function or an additional service related to the request, and transfer an outcome of the performing to the electronic device **101**. The electronic device **101** may provide the outcome, with or without further processing of the outcome, as at least part of a reply to the request. To that end, a cloud computing, distributed computing, or client-server computing technology may be used, for example.

[0062] FIG. **2** is a view illustrating an unfolded state of an electronic device **101** according to an embodiment. FIG. **3** is a view illustrating a folded state of an electronic device **101** according to an embodiment.

[0063] Referring to FIGS. **2** and **3**, an electronic device **101** may include a foldable housing **200**, a hinge cover (e.g., a first hinge cover **340***a* and second hinge cover **340***b* of FIG. **3**) covering a foldable portion of the foldable housing **200**, and a display device **160** (e.g., a flexible or foldable display) disposed in a space formed by the foldable housing **200**. In this disclosure, for ease of description, the surface where the display device **160** is disposed is defined as a front surface of the electronic device **101**, and the surface facing away from the front surface is defined as a back surface of the electronic device **101**. The surface surrounding the space between the front and back surfaces is defined as a side surface of the electronic device **101**.

[0064] According to an embodiment, the foldable housing **200** may include a first housing structure **210**, a second housing structure **220**, a third housing structure **230**, a first back cover **240**, a second back cover **250**, a third back cover **260**, and a hinge structure (e.g., the first hinge structure **450***a* and second hinge structure **450***b* of FIG. **4**). According to an embodiment, the foldable housing **200** of the electronic device **101** is not limited to the shape and coupling shown in FIGS. **2** and **3** but may rather be implemented in other shapes or via a combination and/or coupling of other components. For example, according to another embodiment, the first housing structure **210** and the first back cover **240** may be integrally formed with each other, and the second housing structure **220** and the second back cover **250** may be integrally formed with each other. The third housing structure **230** and the third back cover **260** may be integrally formed with each other.

[0065] According to an embodiment, the first housing structure **210** may be connected to the hinge structure (e.g., the first hinge structure **450***a* of FIG. **4**) and may include a first surface facing in a first direction and a second surface facing in a second direction opposite to the first direction. According to an embodiment, the second housing structure **220** may be connected to the hinge structure (e.g., the first hinge structure **450***a* and second hinge structure **450***b* of FIG. **4**) and may include a third surface facing in a third direction and a fourth surface facing in a fourth direction opposite to the third direction. According to an embodiment, the first housing structure **210** may rotate from the second housing structure **220** on the hinge structure (e.g., the first hinge structure **450***a* of FIG. **4**). Thus, the electronic device **101** may turn into a folded state or unfolded state. According

to an embodiment, in the folded state of the electronic device **101**, the first surface may face the third surface and, in the unfolded state, the third direction may be identical to the first direction. According to an embodiment, the third housing structure **230** may be connected to the hinge structure (e.g., the second hinge structure **450***b* of FIG. **4**) and may include a fifth surface facing in a fifth direction and a sixth surface facing in a sixth direction opposite to the fifth direction. According to an embodiment, the third housing structure **230** may rotate from the second housing structure **220** on the hinge structure (e.g., the second hinge structure **450***b* of FIG. **4**). Thus, the electronic device **101** may turn into a folded state or unfolded state. According to an embodiment, in the folded state of the electronic device **101**, the fifth surface may face the third surface and, in the unfolded state, the fifth direction may be identical to the third direction.

[0066] According to an embodiment, the first housing structure **210** and the second housing structure **220** may be disposed on both sides of a folding axis A, and the second housing structure **220** and the third housing structure **230** may be disposed on both sides of a folding axis A'. As set forth above, the first housing structure **210**, the second housing structure **220**, and the third housing structure **230** may have different angles or distances formed therebetween depending on whether the electronic device **101** is in the unfolded, folded, or partially unfolded state. According to an embodiment, as shown in FIG. **2**, the first housing structure **210**, the second housing structure **220**, and the third housing structure **230** together may form a recess for receiving the display device **160**. According to an embodiment, the recess may have a first width w**1**.

[0067] According to an embodiment, the first housing structure **210** and the second housing structure **220** may at least partially be formed of a metal or non-metallic material with a rigidity selected to support the display device **160**. According to an embodiment, at least a portion formed of metal may provide a ground plane of the electronic device **101** and may be electrically connected with a ground line formed on a printed circuit board (e.g., the board unit **460** of FIG. **4**).

[0068] According to an embodiment, the first back cover **240** may be disposed on one side of the folding axis on the back surface of the electronic device **101** and have a substantially rectangular periphery which may be surrounded by the first housing structure **210**. Similarly, the second back cover **250** may be disposed on the opposite side of the folding axis A on the back surface of the electronic device **101** and its periphery may be surrounded by the second housing structure **220**. Similarly, the third back cover **260** may be disposed on the opposite side of the folding axis A' on the back surface of the electronic device **101** and its periphery may be surrounded by the third housing structure **230**. According to an embodiment, the first back cover **240** may be integrally formed with the first housing structure **210**, and the second back cover **250** may be integrally formed with the second housing structure **220**. The third back cover **260** may be integrally formed with the third housing structure **230**.

[0069] According to an embodiment, the first back cover **240**, the second back cover **250**, the third back cover **260**, the first housing structure **210**, the second housing structure **220**, and the third housing structure **230** may form a space where various components (e.g., a printed circuit board or battery) of the electronic device **101** may be arranged. According to an embodiment, one or more components may be arranged or visually exposed on/through the back surface of the electronic device **101**. For example, at least a portion of a sub display **270***a* may be visually exposed through a first back surface area **270** of the third back cover **260**. According to an embodiment, one or more components or sensors may be visually exposed through a designated area of the third back cover **260** or second back cover **250**. According to an embodiment, the sub display **270***a* may take up most of the third back cover **260** or may be disposed on another back cover.

[0070] According to an embodiment, the camera **180** exposed through the designated back surface area **241** of the first back cover **240** may include one or more lenses, an image sensor, and/or an image signal processor. According to an embodiment, the camera **180** may include at least one of a plurality of cameras (e.g., a first camera **180***a*, a second camera **180***b*, a third camera **180***c*, and a fourth camera **180***d*). According to an embodiment, the first camera **180***a* may include a wide angle camera. According to an embodiment, the wide angle camera may include a lens with an angle of view ranging from 60 degrees to 120 degrees. According to an embodiment, the second camera **180***b* may include a telephoto camera. According to an embodiment, the second camera **180***b* may include a telephoto lens. According to an embodiment, the second camera **180***b* may have an angle of view (e.g., 30 degrees or less) smaller in range than the first camera. According to an embodiment, the third camera **180***c* may include a normal camera with a standard lens. According to an embodiment, the third camera **180***c* may include a lens with an angle of view (e.g., ranging from 40 degrees to 50 degrees) between that of the first camera **180***a* and that of the second camera **180***b*. According to an embodiment, the fourth camera **180***d* may include a depth camera capable of identifying the depth of the target object.

[0071] Referring to FIG. **3**, according to an embodiment, the first hinge cover **340***a* may be disposed between the first housing structure **210** and the second housing structure **220** to hide the internal components (e.g., the first hinge structure **450***a* of FIG. **4**). According to an embodiment, the second hinge cover **340***b* may be disposed between the second housing structure **220** and the third housing structure **230** to hide the internal components (e.g., the second hinge structure **450***b* of FIG. **4**). According to an embodiment, the hinge cover (e.g., the first hinge cover **340***a* or second hinge cover **340***b*) may be hidden by a portion of the first housing structure **210**, second housing structure **220**, and the third housing structure **230** or be exposed to the outside depending on the state (e.g., the unfolded (or flat) state, intermediate state, or folded state) of the electronic device **101**.

[0072] According to an embodiment, as shown in FIG. **2**, in the unfolded state of the electronic device **101**, the hinge cover **340***a* or **340***b* may be hidden, and thus not be exposed, by the first housing structure **210**, the second housing structure **220**, and the third housing structure **230**. According to an embodiment, as shown in FIG. **3**, in the folded state (e.g., the fully folded state) of the electronic device **101**, the first hinge cover **340***a* may be exposed to the outside between the first housing structure **210** and the second housing structure **220**. As shown in FIG. **3**, in the folded state (e.g., the fully folded state) of the electronic device **101**, the second hinge cover **340***b* may be exposed to the outside between the second housing structure **220** and the

third housing structure **230**. According to an embodiment, in an intermediate state in which the first housing structure **210** and the second housing structure **220** are folded with a certain angle, a portion of the first hinge cover **340***a* may be exposed to the outside between the first housing structure **210** and the second housing structure **220**. In an intermediate state in which the second housing structure **220** and the third housing structure **230** are folded with a certain angle, a portion of the second hinge cover **340***b* may be exposed to the outside between the second housing structure **220** and the third housing structure **230**. In this case, the exposed area may be smaller than when the electronic device **101** is in the fully folded state. According to an embodiment, the first hinge cover **340***a* and the second hinge cover **340***b* may have a curved surface.

[0073] According to an embodiment, the display device **160** may be disposed in a space formed by the foldable housing **200**. For example, the display device **160** may be seated in a recess formed by the foldable housing **200** and may occupy most of the front surface of the electronic device **101**. For example, the front surface of the electronic device **101** may include the display device **160**, a partial area of the first housing structure **210**, a partial area of the second housing structure **220**, and a partial area of the third housing structure **230**, which are adjacent to the display device **160**. The back surface of the electronic device **101** may include the first back cover **240**, a partial area of the first housing structure **210**, which is adjacent to the first back cover **240**, the second back cover **250**, a partial area of the second housing structure **220**, which is adjacent to the second back cover **250**, the third back cover **260**, and a partial area of the third housing structure **230**, which is adjacent to the third back cover **260**.

[0074] According to an embodiment, the display device **160** may include a display with at least a partial area turning flat or curved. According to an embodiment, the display device **160** may include a first folding area **204**, a first area **201** on a side (e.g., the left side of the first folding area **204** of FIG. **2**) of the first folding area **204** and a second area **202** on the opposite side (e.g., the right side of the first folding area **204** of FIG. **2** or the left side of the second folding area **205**) of the first folding area **204**, and a third area **203** on a side (e.g., the right side of the second folding area **205**) of the second folding area **205**. According to an embodiment, the display device **160** may be disposed to be coupled with, or adjacent, a touch detecting circuit, a pressure sensor capable of measuring the strength (pressure) of touches, and/or a digitizer for detecting a magnetic field-type stylus pen.

[0075] Described below are the operation of the first housing structure **210**, the second housing structure **220**, and the third housing structure **230** and each area of the display device **160** depending on the state (e.g., the folded, unfolded, or intermediate state) of the electronic device **101**.

[0076] According to an embodiment, in the unfolded state (e.g., as shown in FIG. **2**) of the electronic device **101**, the first housing structure **210**, the second housing structure **220**, and the third housing structure **230** may be arranged to be substantially 180-degree angled therebetween while facing in the same direction. According to an embodiment, the surface of the first area **201**, surface of the second area **202**, and surface of the third area **203** of the display device **160** are angled at 180 degrees therebetween while facing in the same direction (e.g., forward of the front surface of the electronic device). According to an embodiment, the first folding area **204** and the second folding area **205** may be flush with the first area **201**, second area **202**, and third area **203**.

[0077] According to an embodiment, when the electronic device **101** is in the folded state (e.g., the state as shown in FIG. **3**), the first housing structure **210** and the second housing structure **220** may face each other. According to an embodiment, when the electronic device **101** is in the folded state (e.g., the state as shown in FIG. **3**), the second housing structure **220** and the third housing structure **230** may face each other. According to an embodiment, the surface of the first area **201** of the display device **160** and the surface of the second area **202** may be angled at a small angle (e.g., ranging from 0 degrees to 10 degrees) therebetween. According to an embodiment, the surface of the second area **202** of the display device **160** and the surface of the third area **203** may be angled at a small angle (e.g., ranging from 0 degrees to 10 degrees) therebetween. According to an embodiment, the first folding area **204** and the second folding area **205** may have at least a portion which is a curved surface with a predetermined curvature.

[0078] According to an embodiment, in the intermediate state of the electronic device **101**, the first housing structure **210** and the second housing structure **220** may be arranged at a certain angle therebetween. According to an embodiment, in the intermediate state of the electronic device **101**, the second housing structure **220** and the third housing structure **230** may be arranged at a certain angle therebetween. According to an embodiment, the surface of the first area **201** of the display device **160** and the surface of the second area **202** may be positioned therebetween at an angle which is larger than the angle in the folded state and smaller than the angle in the unfolded state. According to an embodiment, the surface of the second area **202** of the display device **160** and the surface of the third area **203** may be positioned therebetween at an angle which is larger than the angle in the folded state and smaller than the angle in the unfolded state. According to an embodiment, the first folding area **204** and the second folding area **205** may have at least a portion which is a curved surface with a predetermined curvature. The curvature may be smaller than that in the folded state.

[0079] FIG. **4** is an exploded perspective view illustrating an electronic device according to an embodiment.

[0080] Referring to FIG. **4**, according to an embodiment, an electronic device **101** may include a foldable housing **200**, a display device **160**, and a board unit **460**. According to an embodiment, the foldable housing **200** may include a first housing structure **210**, a second housing structure **220**, a third housing structure **230**, a first back cover **240**, a second back cover **250**, a third back cover **260**, a bracket assembly **420**, a first hinge structure **450***a*, and a second hinge structure **450***b*.

[0081] According to an embodiment, the display device **160** may include a display panel (e.g., a flexible display panel) and one or more plates or layers (e.g., a supporting plate **410**) on which the display panel is seated. According to an embodiment, the supporting plate **410** may be disposed between the display panel and the bracket assembly **420**. According to an embodiment, an adhesive structure may be positioned between the supporting plate **410** and the bracket assembly **420**, attaching the supporting plate **410** and the bracket assembly **420**.

[0082] According to an embodiment, the bracket assembly **420** may include a first supporting plate **421**, a second supporting plate **422**, and a third supporting plate **423**. According to an embodiment, the first hinge structure **450***a* may be disposed between the first supporting plate **421** and the second supporting plate **422** and, when viewed from above the back surface, with the first hinge structure **450***a* unfolded, a hinge cover **340***a* covering the first hinge structure **450***a* may be disposed. According to an embodiment, the second hinge structure **450***b* may be disposed between the second supporting plate **422** and the third supporting plate **423** and, when viewed from above the back surface, with the second hinge structure **450***b* unfolded, the hinge cover **340***b* covering the second hinge structure **450***b* may be disposed. According to an embodiment, a printed circuit board (e.g., a flexible printed circuit board (FPCB)) may be disposed to cross the first supporting plate **421**, the second supporting plate **422**, and the third supporting plate **423**.

[0083] According to an embodiment, the board unit **460** may include a first main circuit board **461** disposed on a side of the first supporting plate **421**, a second main circuit board **462** disposed on a side of the second supporting plate **422**, and a third main circuit board **463** disposed on a side of the third supporting plate **423**. According to an embodiment, the first main circuit board **461**, the second main circuit board **462**, and the third main circuit board **463** may be disposed in a space formed by the bracket assembly **420**, the first housing structure **210**, the second housing structure **220**, the third housing structure **230**, the first back cover **240**, the second back cover **250**, and the third back cover **260**. According to an embodiment, components for implementing various functions of the electronic device **101** may be mounted on the first main circuit board **461**, the second main circuit board **462**, and the third main circuit board **463**.

[0084] According to an embodiment, the first housing structure **210** and the third housing structure **230** may be assembled together to be fitted at both sides of the bracket assembly **420**, with the display device **160** combined with the bracket assembly **420**. For example, the first housing structure **210** and the third housing structure **230** may slide to both sides of the bracket assembly **420** and fit with the bracket assembly **420**. According to an embodiment, the second housing structure **220** may be assembled to fit with the bracket assembly **420** from one side to another (e.g., from down to up), with the first housing structure **210** and the third housing structure **230** fitted with the bracket assembly **420**. For example, the second housing structure **220** may slide from one side to another (e.g., from down to up), with the first housing structure **210** and the third housing structure **230** fitted with the bracket assembly **420**, and may be joined with the bracket assembly **420**, the first housing structure **210**, and the third housing structure **230**.

[0085] According to an embodiment, the first housing structure **210** may include a first rotation supporting surface **311**, and the third housing structure **230** may include a second rotation supporting surface **313**. According to an embodiment, the second housing structure **220** may include third rotation supporting surfaces **312** individually corresponding to the first rotation supporting surface **311** and the second rotation supporting surface **313**. According to an embodiment, the first rotation supporting surface **311**, second rotation supporting surface **313**, and third rotation supporting surfaces **312** may include a curved surface corresponding to the hinge cover (e.g., the first hinge cover **340***a* or second hinge cover **340***b* of FIG. **3**).

[0086] According to an embodiment, in the unfolded state of the electronic device **101** (e.g., as in the electronic device of FIG. **2**), the first rotation supporting surface **311** and the second rotation supporting surface **313**, respectively, may cover the first hinge cover **340***a* and the second hinge cover **340***b*, allowing for no or minimal exposure of the first hinge cover **340***a* and second hinge cover **340***b* to the back surface of the electronic device **101**. According to an embodiment, in the folded state of the electronic device **101** (e.g., as in the electronic device of FIG. **3**), the first rotation supporting surface **311**, the second rotation supporting surface **313**, and the third rotation supporting surfaces **312** may rotate along the curved surfaces of the first hinge cover **340***a* and second hinge cover **340***b*, allowing for maximal exposure of the first hinge cover **340***a* and second hinge cover **340***b* to the back surface of the electronic device **101**.

[0087] FIG. **5**A is a view illustrating an unfolded state of an electronic device **101** according to an embodiment. According to an embodiment, the hinge structures (e.g., the first hinge structure **450***a* and the second hinge structure **450***b*) of the electronic device **101** may rotate in different directions.

[0088] FIG. **5**B is a cross-sectional view schematically illustrating a side surface of an electronic device **101** according to an embodiment. For example, FIG. **5**B is a cross-sectional view taken along line A-A' of the electronic device **101** as shown in FIG. **5**A.

[0089] According to an embodiment, the first housing structure **210** may include a first surface **311***a* facing in a first direction P**1**. According to an embodiment, the second housing structure **220** may include a second surface **313***a* facing in a second direction P**2**. According to an embodiment, the third housing structure **330** may include a third surface **312***a* facing in a third direction. According to an embodiment, the first direction P**1**, the second direction P**2**, and the third direction P**3** may turn from the same to opposite as the first hinge structure **450***a* and the second hinge structure **450***b* rotate. For example, in the folded state of the foldable housing **200**, the first surface **311***a* may face the second surface **313***a* and, in the unfolded state, the third direction may be the same as the first direction.

[0090] According to an embodiment, the display device **160** may be disposed on the first surface **311***a* through on the third surface **312***a*. According to an embodiment, the display device **160** may include a front plate **160***a* and a display panel **160***b*, and a bracket assembly (e.g., the bracket assembly **420** of FIG. **4**) may be disposed under the display device **160** to support the display device **160**.

[0091] According to an embodiment, the front plate **160***a* may be formed at least partially of a substantially transparent material. For example, the front plate **160***a* may be formed of a glass plate or polymer plate with various coat layers.

[0092] According to an embodiment, the display panel **160***b* may be shown through a significant portion of the front plate **160***a*. According to an embodiment, the edge of the display panel **160***b* may be formed to have substantially the same shape as the adjacent periphery of the front plate **160***a*. According to an embodiment, to increase the area where the display panel **160***b* is shown, the edge-to-edge interval of the display panel **160***b* may be substantially the same as the edge-to-edge interval of the front plate **160***a*.

[0093] According to an embodiment, the display device **160** may, at least partially, be formed of a material that transmits radio waves or magnetic fields. According to an embodiment, the display panel **160***b* and/or touch panel may be equipped in the display device **160**. For example, the display device **160** may be utilized as an input device packing touchscreen functionality as well as an output device for outputting screen. According to an embodiment, the display panel **160***b* (e.g., an (active-matrix) organic light emitting diode) may include a display element layer with at least one pixel(s) and a thin film transistor (TFT) layer connected with the display element layer.

[0094] According to an embodiment, the bracket assembly (e.g., the bracket assembly **420** of FIG. **4**) may be disposed on the back and/or side surface of the display panel **160***b* to at least partially surround the front plate **160***a* and display panel **160***b*, supporting them. According to an embodiment, the bracket assembly (e.g., the bracket assembly **420** of FIG. **4**) may include one or more plates, e.g., sus plate, where the display device **160** sits.

[0095] According to an embodiment, at least one sensor (first sensor **510***a* and second sensor **510***b*) may be disposed in the foldable housing and sense the operation state of the foldable housing. According to an embodiment, at least one sensor (first sensor **510***a* and second sensor **510***b*) may include at least one of, e.g., an angle sensor, a gesture sensor, a gyro sensor, an atmospheric pressure sensor, a magnetic sensor, an acceleration sensor, a grip sensor, a proximity sensor, a color sensor, an infrared (IR) sensor, a biometric sensor, a temperature sensor, a humidity sensor, or an illuminance sensor. The at least one sensor may sense the operation state and generate an electrical signal or data corresponding to the sensed state.

[0096] According to an embodiment, the at least one sensor (e.g., the first sensor **510***a*) may include an angle sensor (e.g., a rotary sensor), and the angle sensor may be disposed to connect with a hinge structure (e.g., the first hinge structure **450***a*) to measure the angle between the surfaces facing each other in the folded state. According to an embodiment, the at least one sensor (e.g., the second sensor **510***b*) may include an angle sensor (e.g., a rotary sensor), and the angle sensor may be disposed to connect with a hinge structure (e.g., the second hinge structure **450***b*) to measure the angle between the surfaces facing each other in the folded state. According to an embodiment, the at least one sensor (e.g., the first sensor **510***a* and the second sensor **510***b*) may include a magnetic sensor (e.g., a hall sensor) and may be disposed in the first housing structure **210**, the second housing structure **220**, or the third housing structure **230**. According to an embodiment, the magnetic sensor may sense the folded state of the foldable housing. According to an embodiment, the at least one sensor may include a stretch sensor capable of determining the degree of folding of the hinge structure (e.g., the first hinge structure **450***a* or second hinge structure **450***b*).

[0097] According to an embodiment, the electronic device may include a processor **120** and a memory **130**. According to an embodiment, the processor **120** may execute, for example, software to control at least one other component (e.g., a hardware or software component) of the electronic device **101** coupled with the processor **120**, and may perform various data processing or computation. For example, according to an embodiment, the processor **120** may be disposed in the first housing structure **210**, the second housing structure **220**, and/or the third housing structure **230** and may be operatively connected with the display device **160** and at least one sensor (first sensor **510***a* or second sensor **510***b*). According to an embodiment, the processor **120** may provide an instruction or data received from at least one of the display device **160** or the at least one sensor (first sensor **510***a* or second sensor **510***b*) to the volatile memory of the memory **130**, process the instruction or data stored in the volatile memory, and store the resultant data in the non-volatile memory. According to an embodiment, the memory **130** may store various data used by at least one component (e.g., the processor **120**) of the electronic device **101**.

[0098] According to an embodiment, the electronic device **101** may include a hinge structure (e.g., the first hinge structure **450***a* or second hinge structure **450***b*) and a board unit **460**. According to an embodiment, the hinge structure (e.g., the first hinge structure **450***a* or second hinge structure **450***b*) may be disposed on a left or right side of the center of the foldable housing, and the first housing structure **210** may rotate from the second housing structure **220** on the first hinge structure **450***a*. According to an embodiment, the third housing structure **230** may rotate from the second housing structure **220** on the second hinge structure **450***b*.

[0099] According to an embodiment, the first housing structure **210** may be connected with the first hinge structure **450***a* and may include the first main circuit board **461**. According to an embodiment, the second housing structure **220** may be connected with the first hinge structure **450***a* and the second hinge structure **450***b* and may include the second main circuit board **462**. According to an embodiment, the third housing structure **230** may be connected with the second hinge structure **450***b* and may include the third main circuit board **463**. According to an embodiment, when viewed from outside, the hinge structure (e.g., the first hinge structure **450***a* or second hinge structure **450***b*) may include a hinge cover covering the hinge structure (e.g., the first hinge structure **450***a* or second hinge structure **450***b*), and the hinge cover may be disposed to face the display device **160**. According to an embodiment, a flexible printed circuit board (FPCB) may be disposed to cross the first housing structure **210** and the second housing structure **220**, and the second housing structure **220** and the third housing structure **230**.

[0100] FIG. **6**A is a view illustrating an angle sensor according to an embodiment.

[0101] According to an embodiment, the angle sensor may include an angle sensor of an angle encoder manner. According to an embodiment, the angle sensor may emit light to a pattern **610** attached to a portion of the hinge structure (e.g., the first hinge structure **450***a* or second hinge structure **450***b*) and receive the light reflected by the pattern **610**, allowing the image sensor **630** or processor to identify the pattern **610**. According to an embodiment, light may be output from a light emitting element **620** (e.g., an LED). According to an embodiment, the pattern **610** may be engraved or colored every predetermined angle and, thus, when irradiated with light, differences in light absorption or reflection may occur. According to an embodiment, the image sensor **630** or processor (e.g., the processor **120** of FIG. **1**) may identify the light reflected by the pattern **610**, thereby identifying the rotating angle of the hinge structure (e.g., the first hinge structure **450***a* or second hinge structure **450***b*). According to an embodiment, the image sensor **630** or processor (e.g., the

processor **120** of FIG. **1**) may identify the angle every 22.5 degrees, but this is merely an example.

[0102] FIGS. **6**B and **6**C are views illustrating a folding angle according to an embodiment.

[0103] Referring to FIG. **6**B, according to an embodiment, the foldable housing **200** may include a hinge structure (e.g., the first hinge structure **450***a* or second hinge structure **450***b*), a first housing structure **210**, a second housing structure **220**, and a third housing structure **230**. FIG. **6**B illustrates an example in which the first housing structure **210**, second housing structure **220**, and third housing structure **230** are in the fully unfolded state. In the disclosure, for ease of description, the folding angle in the fully unfolded state of the first housing structure **210**, second housing structure **220**, and third housing structure **230** may be defined as 180 degrees. However, this is merely an example. The folding angle in the fully unfolded state of the first housing structure **210**, second housing structure **220**, and third housing structure **230** may be defined as 0 degrees.

[0104] Referring to FIG. **6**C, according to an embodiment, the foldable housing **200** may include a hinge structure (e.g., the first hinge structure **450***a* or second hinge structure **450***b*), a first housing structure **210**, a second housing structure **220**, and a third housing structure **230**. FIG. **6**C illustrates an example in which the first housing structure **210**, second housing structure **220**, and third housing structure **230** are in the fully folded state. In the disclosure, for ease of description, the folding angle in the fully folded state of the first housing structure **210**, second housing structure **220**, and third housing structure **230** may be defined as 0 degrees. However, this is merely an example. The folding angle in the fully unfolded state of the first housing structure **210**, second housing structure **220**, and third housing structure **230** may be defined as 180 degrees.

[0105] FIG. **7** is a view illustrating a folded state of an electronic device **101** according to an embodiment.

[0106] Referring to FIG. **7**, according to an embodiment, the electronic device **101** may include a first housing structure **210**, a second housing structure **220**, and a third housing structure **230**. According to an embodiment, the first housing structure **210** may rotate on the third hinge structure (e.g., the third hinge structure **810***a* of FIG. **8**B) in a first direction. According to an embodiment, the third housing structure **230** may rotate on the fourth hinge structure (e.g., the fourth hinge structure **810***b* of FIG. **8**B) in a second direction. According to an embodiment, the first direction may be the same as the second direction.

[0107] According to an embodiment, the camera **180** exposed through the designated back surface area **241** of the first back cover **240** may include one or more lenses, an image sensor, and/or an image signal processor. According to an embodiment, the camera **180** may include at least one of a plurality of cameras (e.g., a first camera **180***a*, a second camera **180***b*, a third camera **180***c*, and a fourth camera **180***d*). According to an embodiment, the first camera **180***a* may include a wide angle camera. According to an embodiment, the wide angle camera may include a lens with an angle of view ranging from 60 degrees to 120 degrees. According to an embodiment, the second camera **180***b* may include a telephoto camera. According to an embodiment, the second camera **180***b* may include a telephoto lens. According to an embodiment, the second camera **180***b* may have an angle of view (e.g., 30 degrees or less) smaller in range than the first camera. According to an embodiment, the third camera **180***c* may include a normal camera with a standard lens. According to an embodiment, the third camera **180***c* may include a lens with an angle of view (e.g., ranging from 40 degrees to 50 degrees) between that of the first camera **180***a* and that of the second camera **180***b*. According to an embodiment, the fourth camera **180***d* may include a depth camera capable of identifying the depth of the target object.

[0108] According to an embodiment, the third hinge cover **710** may be disposed between the first housing structure **210** and the second housing structure **220** to hide the internal components (e.g., the third hinge structure **810***a* of FIG. **8**). According to an embodiment, the hinge cover (e.g., the third hinge cover **710**) may be hidden, or exposed to the outside, by a portion of the first housing structure **210** and the second housing structure **220** depending on the state (e.g., the flat, intermediate, or folded state) of the electronic device **101**. According to an embodiment, the third hinge structure **810***a* may be folded in an in-folding manner (e.g., the display device **160** is folded inwards), and the fourth hinge structure **810***b* may be folded in an out-folding manner (e.g., the back cover is folded outwards). Thus, if the first hinge structure and the second hinge structure both are fully folded, at least a portion of the flexible display **160** may be exposed to the outside.

[0109] FIG. **8**A is a view illustrating an unfolded state of an electronic device according to an embodiment. According to an embodiment, the hinge structures (e.g., the first hinge structure **450***a* and the second hinge structure **450***b*) of the electronic device **101** may rotate in the same direction.

[0110] FIG. **8**B is a cross-sectional view schematically illustrating a side surface of an electronic device **101** according to an embodiment. For example, FIG. **8**B is a cross-sectional view taken along line B-B' of the electronic device **101** as shown in FIG. **8**A.

[0111] According to an embodiment, the first rotation supporting surface **311** may include a first surface **311***a* facing in a first direction P**1**. According to an embodiment, the second rotation supporting surface **313** may include a second surface **313***a* facing in a second direction P**2**. According to an embodiment, the third rotation supporting surface **312** may include a third surface **312***a* facing in a third direction P**3**. According to an embodiment, the first direction and the second direction may turn from the same to opposite as the third hinge structure **810** rotates. For example, in the folded state of the foldable housing **200**, the first surface **311***a* may face the second surface **313***a* and, in the unfolded state, the second direction P**2** may be the same as the first direction P**1**. According to an embodiment, the second direction P**2** and the third direction P**3** may turn from the same to opposite as the fourth hinge structure **810***b* rotates. For example, in the unfolded state of the foldable housing **200**, the third direction P**3** may be the same as the second direction P**2** and, in the folded state, the third surface **312***a* may be disposed to face away from the second surface **313***a*.

[0112] According to an embodiment, the display device **160** may be disposed on the first surface **311***a* through on the third surface **312***a*. According to an embodiment, the display device **160** may include a front plate **160***a* and a display panel **160***b*, and a bracket assembly (e.g., the bracket assembly **420** of FIG. **4**) may be disposed under the display device **160** to support the display device **160**.

[0113] According to an embodiment, the front plate **160***a* may be formed at least partially of a substantially transparent material. For example, the front plate **160***a* may be formed of a glass plate or polymer plate with various coat layers.

[0114] According to an embodiment, the display panel **160***b* may be shown through a significant portion of the front plate **160***a*. According to an embodiment, the edge of the display panel **160***b* may be formed to have substantially the same shape as the adjacent periphery of the front plate **160***a*. According to an embodiment, to increase the area where the display panel **160***b* is shown, the edge-to-edge interval of the display panel **160***b* may be substantially the same as the edge-to-edge interval of the front plate **160***a*.

[0115] According to an embodiment, the display device **160** may, at least partially, be formed of a material that transmits radio waves or magnetic fields. According to an embodiment, the display panel **160***b* and/or touch panel may be equipped in the display device **160**. For example, the display device **160** may be utilized as an input device packing touchscreen functionality as well as an output device for outputting screen. According to an embodiment, the display panel **160***b* (e.g., an (active-matrix) organic light emitting diode) may include a display element layer with at least one pixel(s) and a thin film transistor (TFT) layer connected with the display element layer.

[0116] According to an embodiment, at least one sensor (third sensor **820***a* and fourth sensor **820***b*) may be disposed in the foldable housing **200** and sense the operation state of the foldable housing **200**. According to an embodiment, at least one sensor (third sensor **820***a* and fourth sensor **820***b*) may include at least one of, e.g., an angle sensor, a gesture sensor, a gyro sensor, an atmospheric pressure sensor, a magnetic sensor, an acceleration sensor, a grip sensor, a proximity sensor, a color sensor, an infrared (IR) sensor, a biometric sensor, a temperature sensor, a humidity sensor, or an illuminance sensor. The at least one sensor may sense the operation state and generate an electrical signal or data corresponding to the sensed state.

[0117] According to an embodiment, the at least one sensor (e.g., the third sensor **820***a*) may include an angle sensor (e.g., a rotary sensor), and the angle sensor may be disposed to connect with a hinge structure (e.g., the third hinge structure **810***a*) to measure the angle between the first surface **311***a* and the second surface **313***a*. According to an embodiment, the at least one sensor (e.g., the fourth sensor **820***b*) may include an angle sensor (e.g., a rotary sensor). According to an embodiment, the at least one sensor (e.g., the fourth sensor **820***b*) may measure the angle between the second housing structure **220** and the third housing structure **230**. According to an embodiment, the at least one sensor (e.g., the third sensor **820***a* and the fourth sensor **820***b*) may include a magnetic sensor (e.g., a hall sensor) and may be disposed in the first housing structure **210**, the second housing structure **220**, or the third housing structure **230**. According to an embodiment, the magnetic sensor may sense the folded state of the foldable housing **200**. According to an embodiment, the at least one sensor may include a stretch sensor capable of determining the degree of folding of the hinge structure (e.g., the third hinge structure **810***a* or fourth hinge structure **810***b*).

[0118] According to an embodiment, the electronic device **101** may include a hinge structure (e.g., the third hinge structure **810***a* or fourth hinge structure **810***b*) and a board unit **460**. According to an embodiment, the hinge structure (e.g., the third hinge structure **810***a* or fourth hinge structure **810***b*) may be disposed on a left or right side of the center of the foldable housing **200**, and the first housing structure **210** may rotate from the second housing structure **220** on the third hinge structure **810***a*.

[0119] According to an embodiment, the first housing structure (e.g., the first housing structure **210** of FIG. **7**) may be connected with the third hinge structure **810***a* and may include the first main circuit board **461**. According to an embodiment, the second housing structure (e.g., the second housing structure **220** of FIG. **7**) may be connected with the third hinge structure **810***a* and fourth hinge structure **810***b* and may include the second main circuit board **462**. According to an embodiment, the third housing structure (e.g., the third housing structure **230** of FIG. **7**) may be connected with the fourth hinge structure **810***b* and may include the third main circuit board **463**. According to an embodiment, when viewed from above the back surface in the unfolded state, the hinge structure (e.g., the third hinge structure **810***a*) may include a hinge cover covering the hinge structure (e.g., the third hinge structure **810***a*), and the hinge cover may be disposed to face the display device **160**. According to an embodiment, a flexible printed circuit board (FPCB) may be disposed to cross the first housing structure **210** and the second housing structure **220**, and the second housing structure **220** and the third housing structure **230**. According to an embodiment, the second main circuit board **462** and the third main circuit board **463** may be connected via a connecting member **830**. According to an embodiment, the connecting member **830** may rotatably fasten the second main circuit board **462** and the third main circuit board **463**. According to an embodiment, if a folding event occurs on the fourth hinge structure **810***b*, the second main circuit board **462** and third main circuit board **463** may push up the fourth hinge structure **810***b* in a first direction (e.g., the P**2** direction) as shown in FIG. **8**C. According to an embodiment, as the second main circuit board **462** and the third main circuit board **463** push up the fourth hinge structure **810***b*, the fourth hinge structure **810***b* may be folded. According to an embodiment, there may be included another structure in which the connecting member **830** is alternatively/interchangeably connected to the circuit board (e.g., the second main circuit board **462** or third main circuit board **463**).

[0120] FIGS. **9**A and **9**B are views illustrating a folding angle according to an embodiment.

[0121] Referring to FIG. **9**A, according to an embodiment, the foldable housing **200** may include a hinge structure (e.g., the third hinge structure **810***a* or fourth hinge structure **810***b*), a first housing structure **210**, a second housing structure **220**, and a third housing structure **230**. FIG. **9**A illustrates an example in which the first housing structure **210**, second housing structure **220**, and third housing structure **230** are in the fully unfolded state. In the disclosure, for ease of description, the folding angle in the fully unfolded state of the first housing structure **210**, second housing structure **220**, and third housing structure **230** may be defined as 180 degrees. However, this is merely an example. The folding angle in the fully unfolded state of the first housing structure **210**, second housing structure **220**, and third housing structure **230** may be defined as 0 degrees.

[0122] Referring to FIG. **9**B, according to an embodiment, the foldable housing **200** may include a hinge structure (e.g.,

the third hinge structure **810***a* or fourth hinge structure **810***b*), a first housing structure **210**, a second housing structure **220**, and a third housing structure **230**. FIG. **9**B illustrates an example in which the first housing structure **210**, second housing structure **220**, and third housing structure **230** are in the fully folded state. In the disclosure, for ease of description, the folding angle in the fully folded state of the first housing structure **210**, second housing structure **220**, and third housing structure **230** may be defined as 0 degrees. However, this is merely an example. The folding angle in the fully unfolded state of the first housing structure **210**, second housing structure **220**, and third housing structure **230** may be defined as 180 degrees.

[0123] FIGS. **10**A, **10**B, **10**C, and **10**D are views illustrating a function or operation of switching an operation mode of a camera application according to first hinge structure (e.g., the first hinge structure **450***a* of FIG. **4** or the third hinge structure **810***a* of FIG. **8**) folds.

[0124] Referring to FIG. **10**A, according to an embodiment, an electronic device (e.g., the processor **120** of FIG. **1**) may receive a user input for executing a designated application (e.g., a camera application) in operation **1005**. According to an embodiment, the user input may include a touch input on a camera application icon.

[0125] According to an embodiment, the electronic device (e.g., the processor **120** of FIG. **1**) may execute the designated application (e.g., a camera application) according to a first operation mode in operation **1010**. According to an embodiment, the first operation mode may include a normal mode (standard mode or default mode) for capturing an object positioned in the same direction as the direction in which the user views. According to an embodiment, the first operation mode may include various operation modes, e.g., a virtual reality (AR) capturing mode, a slow motion capturing mode, or a video recording mode.

[0126] According to an embodiment, the electronic device (e.g., the processor **120** of FIG. **1**) may identify whether the folding angle of the first hinge structure (e.g., the first hinge structure **450***a* of FIG. **4**) reaches a threshold folding angle in operation **1015**. According to an embodiment, the threshold folding angle may be, e.g., 20 degrees, but this is a mere example. According to an embodiment, unless the folding angle of the first hinge structure (e.g., the first hinge structure **450***a* of FIG. **4**) reaches the threshold folding angle (no in operation **1015**), the camera application may keep running according to the first operation mode.

[0127] According to an embodiment, when the folding angle of the first hinge structure (e.g., the first hinge structure **450***a* of FIG. **4**) reaches the threshold folding angle (yes in operation **1015**), the electronic device (e.g., the processor **120** of FIG. **1**) may execute the designated application according to a second operation mode in operation **1020**. According to an embodiment, the second operation mode may include a mode different from the first operation mode. According to an embodiment, the second operation mode may include a mode for capturing an object positioned in the same direction as the direction in which the electronic device faces the user. For example, the second operation mode may include various capturing modes, such as a selfie mode for capturing the user herself, an augmented reality capturing mode, a landscape (e.g., horizontal to the ground) slow motion capturing mode, or a landscape video recording mode. According to an embodiment, in the selfie mode, a screen different from the first operation mode (e.g., the normal mode) may be provided. For example, in the selfie mode, the electronic device (e.g., the processor **120**) may display a graphic interface for applying various visual effects (e.g., a sticker) to the object included in the captured screen (e.g., preview screen), display a graphic interface for transmitting the captured image to other device, display a graphic interface for checking the user's current eye or skin condition, or display at least one of graphic interfaces for identifying the user's health condition based on the current skin color.

[0128] Referring to FIG. **10**B, according to an embodiment, the electronic device **101** may display a first preview screen **1030** on the display device **160** in the normal mode. FIG. **10**B illustrates an example in which the folding angle of the hinge structure (e.g., the first hinge structure **450***a* or second hinge structure **450***b*) is 180 degrees according to an embodiment. According to an embodiment, the preview screen may include at least one object captured by the user. According to an embodiment, a first graphic interface **1032** for recording video, a second graphic interface **1034** for capturing still images, and a third graphic interface **1036** for running a designated application (e.g., a gallery application) may be displayed on the first preview screen **1030**.

[0129] FIGS. **10**C and **10**D illustrate an example in which the folding angle of the electronic device **101** reaches the threshold folding angle according to an embodiment. According to an embodiment, when the folding angle of the electronic device **101** (e.g., the first hinge structure **450***a*) reaches the threshold folding angle, the operation mode of the electronic device **101** or camera application may switch. According to an embodiment, as shown in FIG. **10**D, as the operation mode of the electronic device **101** or camera application switches, the screen displayed on the electronic device **101** may switch from a first screen (e.g., the first preview screen **1030**) to a second preview screen **1040** (e.g., a screen for taking selfie). Referring to FIG. **10**D, according to an embodiment, a fourth graphic interface **1042** indicating the current operation mode of the electronic device **101** or camera application may be displayed on the second preview screen **1040**. According to an embodiment, the fourth graphic interface **1042** may not be displayed. According to an embodiment, when the operation mode of the electronic device **101** or camera application switches, the currently active camera (e.g., the camera having captured the target object) may remain as it is while the operation mode switches. According to an embodiment, when the operation mode of the electronic device **101** or camera application switches, the currently active camera may switch to another camera (e.g., from a telephoto camera to a standard camera). According to an embodiment, when the capturing direction of the camera is changed, the electronic device (e.g., the processor **120** of FIG. **1**) may change the display direction of the preview screen (e.g., the second preview screen **1040**) according to the changed camera capturing direction.

[0130] FIG. **10**E is a view illustrating an example of changing a camera as an example of switching an operation mode of a camera application as a first hinge structure (e.g., the first hinge structure **450***a* of FIG. **4**) folds.

[0131] According to an embodiment, the electronic device (e.g., the processor **120** of FIG. **1**) may receive a user input for executing a camera application in operation **1050**.

[0132] According to an embodiment, the electronic device (e.g., the processor **120** of FIG. **1**) may obtain an image of

at least one target object using a first camera (e.g., the first camera **180***a* of FIG. **2**) in operation **1055**.

[0133] According to an embodiment, the electronic device (e.g., the processor **120** of FIG. **1**) may display a first preview screen in operation **1060**. In operation **1060**, according to an embodiment, the first preview screen may include a preview screen including an image of at least one target object using the first camera.

[0134] According to an embodiment, the electronic device (e.g., the processor **120** of FIG. **1**) may identify whether the folding angle of the first hinge structure (e.g., the first hinge structure **450***a* of FIG. **4**) reaches a threshold folding angle in operation **1065**. According to an embodiment, the threshold folding angle may be, e.g., 20 degrees, but this is a mere example. According to an embodiment, unless the folding angle of the first hinge structure (e.g., the first hinge structure **450***a* of FIG. **4**) reaches the threshold folding angle (no in operation **1065**), the first preview screen may keep being displayed.

[0135] According to an embodiment, when the folding angle of the first hinge structure (e.g., the first hinge structure **450***a* of FIG. **4**) is identified to reach the threshold folding angle (yes in operation **1065**), the electronic device (e.g., the processor **120** of FIG. **1**) may obtain an image of at least one target object using a second camera (e.g., the second camera **180***b* of FIG. **2**) in operation **1070**.

[0136] According to an embodiment, the electronic device (e.g., the processor **120** of FIG. **1**) may display a second preview screen in operation **1075**. In operation **1075**, according to an embodiment, the second preview screen may include a screen including an image of at least one target object using the second camera. According to an embodiment, the angle of view of the preview screen may be varied depending on variations in the folding angle of the electronic device **101**. Thus, when the folding angle is identified to reach the threshold angle, the electronic device (e.g., the processor **120** of FIG. **1**) may change the camera for capturing the target object (e.g., from the first camera to the second camera) so as to provide a seamless preview screen to the user.

[0137] FIGS. **11**A, **11**B, **11**C, and **11**D are views illustrating a function or operation of shrinking a display area where a screen is displayed when a folding event on a second hinge structure (e.g., the second hinge structure **450***b* of FIG. **4**) occurs, with a first hinge structure (e.g., the first hinge structure **450***a* of FIG. **4**) folded.

[0138] Referring to FIG. **11**A, according to an embodiment, the electronic device (e.g., the processor **120** of FIG. **1**) may detect a folding event on the second hinge structure (e.g., the second hinge structure **450***b* of FIG. **4**), with the first hinge structure (e.g., the first hinge structure **450***a* of FIG. **4**) folded at an angle exceeding a designated angle (e.g., 20 degrees) in operation **1105**.

[0139] According to an embodiment, the electronic device (e.g., the processor **120** of FIG. **1**) may shrink and display the captured image based on a designated ratio according to the folding angle of the second hinge structure (e.g., the second hinge structure **450***b* of FIG. **4**), in operation **1110**.

[0140] Referring to FIG. **11**B, according to an embodiment, the electronic device **101** may display the third preview screen **1120** on the display device **160**, with the first hinge structure (e.g., the first hinge structure **450***a* of FIG. **4**) folded at an angle exceeding the designated angle. According to an embodiment, the electronic device **101** may display the third preview screen **1120** in the area (e.g., the preview screen display area) marked with the bold line in FIG. **11**B. According to an embodiment, the third preview screen **1120** may not be displayed in the area covered by the first housing structure (e.g., the first housing structure **210** of FIG. **1**). The bold line in FIG. **11**B is provided for ease of description and is not actually displayed.

[0141] Referring to FIG. **11**C, according to an embodiment, the electronic device **101** may detect a folding event on the second hinge structure (e.g., the second hinge structure **450***b* of FIG. **4**). According to an embodiment, the folding event may be detected based on a variation in the folding angle of the second hinge structure detected by the angle sensor. FIG. **11**C illustrates an example in which the electronic device **101** is folded at a designated angle (e.g., 30 degrees) with respect to the fully unfolded state of the electronic device **101** (e.g., when the folding angle is 150 degrees). According to an embodiment, as the folding event occurs on the second hinge structure (e.g., the second hinge structure **450***b* of FIG. **4**), the electronic device **101** may shrink the area where the third preview screen **1120** is displayed according to a designated ratio. According to an embodiment, the electronic device **101** may shrink and display the screen based on information (e.g., a mapping table) that defines the relationship between folding angle and size of screen (e.g., preview screen). According to an embodiment, the electronic device **101** may display a fourth preview screen **1130** which is the third preview screen **1120** shrunken in the designated ratio on the display device **160**. According to an embodiment, the fourth preview screen **1130** may include the screen shrunken in the designated ratio from the third preview screen **1120**. In other words, according to an embodiment, the electronic device **101** may shrink the preview screen while decreasing the magnification of the screen, and display the same. According to an embodiment, the electronic device **101** may shrink the area where the screen is displayed while maintaining the magnification of the screen. According to an embodiment, the electronic device **101** may display various graphic interfaces (e.g., the first graphic interface **1032**, the second graphic interface **1034**, and the third graphic interface **1036**) in the area where the preview screen (e.g., the fourth preview screen **1130**) is not displayed. According to an embodiment, as the magnification increases or decreases, the number or size of objects included in the preview screen may be varied (e.g., when the magnification reduces, the number of objects in the preview screen may increase and the size of objects may reduce). In the disclosure, the term of "increasing magnification" may be replaced with the term "zooming-in" or "reducing angle of view." In the disclosure, the term of "decreasing magnification" may be replaced with the term "zooming-out" or "increasing angle of view."

[0142] Referring to FIG. **11**D, according to an embodiment, the electronic device **101** may detect a folding event with the fourth preview screen **1130** displayed. FIG. **11**D illustrates an example in which the electronic device **101** turns from fully unfolded to 60-degree folded (e.g., when the folding angle is 120 degrees). According to an embodiment, the electronic device **101** may display, on the display device **160**, a fifth preview screen **1140** reduced in at least one of size and magnification from the fourth preview screen **1130** based on information (e.g., the mapping table) in which folding angles and screen (e.g., preview screen) shrinking ratios are defined. According to an embodiment, if the

folding angle reaches a designated angle, the preview screen (e.g., the fifth preview screen **1140**) may be displayed on the display device **160** in such a manner as to change the camera for capturing a specific object. In this case, according to an embodiment, the electronic device **101** may switch cameras based on the information (e.g., mapping table) in which the relationship between folding angle and time of switching cameras is defined. According to an embodiment, the electronic device **101** may display at least one graphic interface (e.g., the first graphic interface **1032**, the second graphic interface **1034**, and the third graphic interface **1036**) in the area where the preview screen (e.g., the fifth preview screen **1140**) is not displayed. Although FIGS. **11**C and **11**D illustrate an example in which the magnification of preview screen is reduced as a folding event occurs, according to an embodiment, the preview screen may be displayed on the display device **160** so that the magnification of the preview screen increases as a folding event occurs.

[0143] FIGS. **12**A and **12**B are views illustrating a function or operation of terminating an application being executed when a folding event occurs on a second hinge structure (e.g., the second hinge structure **450***b* of FIG. **4**), with a first hinge structure (e.g., the first hinge structure **450***a* of FIG. **4**) folded.

[0144] Referring to FIG. **12**A, according to an embodiment, the electronic device (e.g., the processor **120** of FIG. **1**) may display an execution screen of a first application in operation **1210**.

[0145] According to an embodiment, the electronic device (e.g., the processor **120** of FIG. **1**) may detect a folding event on the first hinge structure (e.g., the first hinge structure **450***a* of FIG. **4**) in operation **1220**.

[0146] According to an embodiment, the electronic device (e.g., the processor **120** of FIG. **1**) may identify whether the folding angle of the first hinge structure (e.g., the first hinge structure **450***a* of FIG. **4**) reaches a threshold folding angle in operation **1230**. According to an embodiment, the threshold folding angle may be, e.g., 20 degrees. In other words, if the electronic device **101** is folded at 160 degrees with respect to the fully unfolded state (e.g., when the folding angle is 20 degrees), the electronic device **101** may identify that it has reached the threshold folding angle.

[0147] According to an embodiment, when the folding angle of the first hinge structure (e.g., the first hinge structure **450***a* of FIG. **4**) reaches the threshold folding angle (yes in operation **1230**), the electronic device (e.g., the processor **120** of FIG. **1**) may terminate the first application being executed in operation **1240**. Referring to FIG. **12**B, according to an embodiment, if a specific hinge structure (e.g., the first hinge structure (e.g., the first hinge structure **450***a* of FIG. **4**)) is in the fully folded state, and the folding angle of another hinge structure (e.g., the second hinge structure (e.g., the second hinge structure **450***b* of FIG. **4**)) reaches the threshold folding angle, the electronic device (e.g., the processor **120** of FIG. **1**) may terminate the first application being executed and display the home screen on the display device **160**.

[0148] According to an embodiment, unless the folding angle of the first hinge structure (e.g., the first hinge structure **450***a* of FIG. **4**) reaches the threshold folding angle (no in operation **1230**), the electronic device **101** may keep on displaying the execution screen of the first application.

[0149] FIGS. **13**A, **13**B, **13**C, **13**D, **13**E, and **13**F are views illustrating a function or operation of shrinking a display area where a screen is displayed when a folding event on a second hinge structure (e.g., the second hinge structure **450***b* of FIG. **4** or the fourth hinge structure **810***b* of FIG. **8**), with a first hinge structure (e.g., the first hinge structure **450***a* of FIG. **4** or the third hinge structure **810***a* of FIG. **8**) unfolded.

[0150] Referring to FIG. **13**A, according to an embodiment, the electronic device (e.g., the processor **120** of FIG. **1**) may receive a user input for executing a camera application in operation **1305**.

[0151] According to an embodiment, the electronic device (e.g., the processor **120** of FIG. **1**) may obtain an image for at least one target object using a first camera in operation **1310**.

[0152] According to an embodiment, the electronic device (e.g., the processor **120** of FIG. **1**) may display a preview screen in operation **1315**. According to an embodiment, the preview screen may include a screen including an image of at least one target object using the first camera (e.g., the first camera **180***a* of FIG. **2**).

[0153] According to an embodiment, the electronic device (e.g., the processor **120** of FIG. **1**) may identify whether a folding event is detected in operation **1320**.

[0154] According to an embodiment, upon identifying that a folding event is detected (yes in operation **1320**), the electronic device (e.g., the processor **120** of FIG. **1**) may display a preview screen on a partial area of the display device in operation **1325** (e.g., the display device **160** of FIG. **1**). According to an embodiment, if no folding event occurs (no in operation **1320**), the electronic device (e.g., the processor **120** of FIG. **1**) may keep on displaying the preview screen.

[0155] Referring to FIG. **13**B, according to an embodiment, the electronic device **101** may display a screen (e.g., the sixth preview screen **1312**) on the display device **160** in the fully unfolded state. According to an embodiment, the electronic device **101** may display at least one graphic interface (e.g., the first graphic interface **1032**, the second graphic interface **1034**, and the third graphic interface **1036**) on the sixth preview screen **1312**. In FIG. **13**B, for ease of description, the area where the preview screen (e.g., the sixth preview screen **1312**) is displayed is denoted with a bold line. According to an embodiment, the bold line for denoting the display area may be a virtual line shown for illustration purposes and is not actually displayed on the display device **160**.

[0156] Referring to FIG. **13**C, according to an embodiment, upon detecting a folding event on the second hinge structure (e.g., the hinge structure **450***b* of FIG. **4**), the electronic device **101** may display a seventh preview screen **1322** shrunken from the sixth preview screen **1312** according to a designated ratio on the display device **160**. According to an embodiment, the electronic device **101** may shrink and display the screen (e.g., the sixth preview screen **1312**) on the display device **160** based on information (e.g., a mapping table) that defines the relationship between folding angle and size of screen (e.g., preview screen). According to an embodiment, the size of the graphic interface (e.g., the first graphic interface **1032**, second graphic interface **1034**, or third graphic interface **1036**) may be maintained, increased, or decreased depending on a variation (e.g., reduction) in the folding angle.

[0157] Referring to FIG. **13**D, according to an embodiment, upon detecting a folding event (e.g., when the folding

angle is 90 degrees) on the second hinge structure (e.g., the hinge structure **450***b* of FIG. **4**), the electronic device **101** may display an eighth preview screen **1330** shrunken from the seventh preview screen **1322** according to a designated ratio on the display device **160**. According to an embodiment, the center of the screen may be shifted to meet the center of the display area as the screen is shrunken. According to an embodiment, if the folding angle reaches a designated angle (e.g., 90 degrees), the electronic device **101** may display the screen (e.g., the eighth preview screen **1330**) in a first area (e.g., the first area **201** and second area **202** of FIG. **2**) of the display device **160**. FIGS. **13**B to **13**D illustrate an example in which the size of preview screen is adjusted (e.g., reduced) as the folding event occurs. However, according to an embodiment, as a folding event occurs, the magnification of screen may be adjusted (e.g., increased or reduced) as the size of the preview screen is adjusted (e.g., reduced or increased). According to an embodiment, if the third housing structure (e.g., the third housing structure **230** of FIG. **2**) fully covers the second housing structure (e.g., the second housing structure **220** of FIG. **2**), the preview screen may be displayed in a portion of the first area (e.g., the first area **201** of FIG. **2**) and second area (e.g., the second area **202**) of the display device **160**. According to an embodiment, if the folding angle reaches a designated angle (e.g., 90 degrees), at least one graphic interface (e.g., the first graphic interface **1032**, the position in which the second graphic interface **1034**, and/or third graphic interface **1036**) is displayed may be changed as shown in FIG. **13**E. According to an embodiment, if the folding angle reaches a designated angle (e.g., 90 degrees), at least some of functions performed on the at least one graphic interface (e.g., the first graphic interface **1032**, second graphic interface **1034**, and/or third graphic interface **1036**) may be performed by pressing a physical key (e.g., the button **1416**).

[0158] Referring to FIGS. **13**F and **13**G, according to an embodiment, the electronic device **101** may detect a folding event on the second hinge structure (e.g., the fourth hinge structure **810***b* of FIG. **8**). According to an embodiment, upon detecting the folding event, the electronic device **101** may display a screen (e.g., a ninth preview screen **1340** or tenth preview screen **1350**) shrunken further than the screen displayed on the display device **160** in the fully unfolded state of the electronic device **101**. According to an embodiment, the size of the area where the ninth preview screen **1340** is displayed on the display device **160** may be larger than the size of the area where the tenth preview screen **1350** is displayed on the display device **160**. In FIGS. **13**B to **13**G, for ease of description, the area where the screen (e.g., the preview screen) is displayed is denoted with a bold line. The bold line is shown for illustration purposes, and is not indeed displayed on the screen (e.g., the preview screen). FIGS. **13**F and **13**G illustrate an example in which the size of preview screen is adjusted (e.g., reduced) as the folding event occurs. However, according to an embodiment, as a folding event occurs, the magnification of screen may be adjusted (e.g., increased or reduced) as the size of the preview screen is adjusted (e.g., reduced or increased).

[0159] FIGS. **14**A, **14**B, **14**C, **14**D, **14**E, **14**F, **14**G, and **14**H are views illustrating a function or operation of continuously (e.g., seamlessly) switching screens when a folding event on a second hinge structure (e.g., the second hinge structure **450***b* of FIG. **4** or the fourth hinge structure **810***b* of FIG. **8**) occurs, with a first hinge structure (e.g., the first hinge structure **450***a* of FIG. **4** or the third hinge structure **810***a* of FIG. **8**) unfolded.

[0160] Referring to FIG. **14**A, according to an embodiment, an electronic device (e.g., the processor **120** of FIG. **1**) may execute a camera application in operation **1405**.

[0161] According to an embodiment, the electronic device (e.g., the processor **120** of FIG. **1**) may obtain an image for at least one target object using a first camera in operation **1410**. According to an embodiment, the first camera may include, e.g., a wide-angle camera (e.g., the first camera **180***a* of FIG. **2**).

[0162] According to an embodiment, the electronic device (e.g., the processor **120** of FIG. **1**) may display a preview screen according to a first magnification in operation **1415**. According to an embodiment, the first magnification may be a magnification (e.g., one time) predesignated as initial value for the first camera **180***a*. According to an embodiment, the first preview screen in operation **1415** may include a preview screen including a target object image obtained using the first camera (e.g., the first camera **180***a* of FIG. **2**).

[0163] According to an embodiment, the electronic device (e.g., the processor **120** of FIG. **1**) may detect a folding event on the second hinge structure (e.g., the second hinge structure **450***b* of FIG. **2** or the fourth hinge structure **810***b* of FIG. **8**) in operation **1420**. According to an embodiment, the folding event may be detected (or identified) by the electronic device (e.g., the processor **120** of FIG. **1**) based on the angle detected by the angle sensor.

[0164] According to an embodiment, the electronic device (e.g., the processor **120** of FIG. **1**) may display the preview screen according to the second magnification on the display device **160**, based on detection of the folding event in operation **1425**. According to an embodiment, an example relationship between folding angle and second magnification is shown in Table 1 below.

TABLE 1

folding angle (°)	second magnification (times)
180 (when fully unfolded)	1.00 (first camera)
179	1.01 (first camera)
178	1.02 (first camera)
177	1.03 (first camera)
176	1.04 (first camera)
175	1.05 (first camera)
174	1.06 (first camera)
173	1.07 (first camera)
172	1.08 (first camera)
171	1.09 (first camera)
170	1.10 (first camera)
. . .	. . .
90	1.90 (first camera)/ 1.00 (third camera)
89	1.01 (third camera)
88	1.02 (third camera)
87	1.03 (third camera)
. . .	. . .
0 (when fully folded)	1.00 (second camera)

[0165] According to an embodiment, by the nature of foldable devices, the user may use the electronic device **101** more frequently when fully unfolded, folded at 90 degrees, or fully folded than in other cases. Thus, a screen (e.g., default screen) with a 1× (one-times) magnification for each camera at 180 degrees, 90 degrees, and 0 degrees may be

displayed to provide the sharpest screen in such cases. According to an embodiment, screen upscaling technology may be applied during the course of changing the magnification.

[0166] According to an embodiment, upon detecting the folding event on the second hinge structure (e.g., the second hinge structure **450***b* of FIG. **4** or the fourth hinge structure **810***b* of FIG. **8**) in operation **1425**, a continuous (e.g., seamless) screen switch may be possible. According to an embodiment, upon detecting the folding event on the second hinge structure (e.g., the second hinge structure **450***b* of FIG. **4** or the fourth hinge structure **810***b* of FIG. **8**), the area where the screen is displayed may be reduced while increasing the magnification of the screen (e.g., the preview screen including an image of at least one target object).

[0167] According to an embodiment, the electronic device (e.g., the processor **120** of FIG. **1**) may identify whether the folding angle reaches the threshold folding angle in operation **1430**. According to an embodiment, the threshold folding angle may include an angle at which, for example, the screen in which the first preview image is magnified at a designated magnification becomes identical to the second preview screen (e.g., the preview screen when the magnification of the second camera (e.g., the third camera **180***c* of FIG. **2**) is x1.0). This is described with reference to Table 1. Since the case where "1.90 times" as the magnification of the first preview screen becomes identical the magnification (1.00 times) of the image (e.g., the third camera **180***c*) first obtained by the second camera (e.g., the third camera **180***c* of FIG. **2**) at a folding angle of 90 degrees, the folding angle "90 degrees" may be identified (e.g., determined) as the threshold folding angle by the electronic device (e.g., the processor **120** of FIG. **1**). According to an embodiment, the threshold folding angle (e.g., 90 degrees) may be predetermined. In this case, according to an embodiment, the electronic device (e.g., the processor **120** of FIG. **1**) may seamlessly switch preview screens using one camera without simultaneously activating the plurality of cameras (in other words, without activating the second camera at a specific time).

[0168] According to an embodiment, the electronic device (e.g., the processor **120** of FIG. **1**) may activate all of the two cameras (e.g., the first camera (e.g., the first camera **180***a* of FIG. **2**)) and the second camera (e.g., the third camera **180***c* of FIG. **2**) (e.g., capturing using all of the two cameras) at a specific time (e.g., the time when the first preview screen is displayed at the default magnification) so as to identify the threshold folding angle. Thus, according to an embodiment, the electronic device (e.g., the processor **120** of FIG. **1**) may identify the time when the screens objected via the different cameras become identical (e.g., the threshold folding angle).

[0169] According to an embodiment, upon identifying that the folding angle reaches the threshold folding angle (yes in operation **1430**), the electronic device (e.g., the processor **120** of FIG. **1**) may object an image of at least one target object using the second camera in operation **1435**. According to an embodiment, the electronic device (e.g., the processor **120** of FIG. **1**) may provide seamless screens using various techniques, e.g., image stitching, for seamless screen display despite switching cameras for capturing objects. According to an embodiment, upon identifying that the folding angle does not reach the threshold folding angle (no in operation **1430**), the electronic device (e.g., the processor **120** of FIG. **1**) may keep on displaying the first preview screen according to the second magnification.

[0170] According to an embodiment, the electronic device (e.g., the processor **120** of FIG. **1**) may display a second preview screen in operation **1440**. According to an embodiment, in operation **1440**, the second preview screen may include a preview screen including an image for at least one target object objected using the second camera (e.g., the third camera **180***c* of FIG. **2**).

[0171] Referring to FIG. **14**B, according to an embodiment, the electronic device (e.g., the electronic device **101** of FIG. **1**) may increase the magnification of the preview screen as the folding angle reduces (e.g., as the second hinge structure (e.g., the second hinge structure **450***b* of FIG. **4** or the fourth hinge structure **810***b* of FIG. **8**) folds). According to an embodiment, when the folding angle reaches the threshold folding angle (e.g., when the screen objected by the first camera (e.g., the first camera **180***a* of FIG. **2**) becomes identical to the screen first obtained by the other camera (e.g., the third camera **180***c* of FIG. **2**)), the electronic device (e.g., the electronic device **101** of FIG. **1**) may switch the camera (e.g., from the first camera **180***a* to the third camera **180***c*). An example has been described above in connection with FIG. **14**B where the threshold folding angles for switching cameras are 90 degrees (e.g., switching from the first camera **180***a* to the third camera **180***c*) and 0 degrees (e.g., when fully folded) (e.g., switching from the third camera **180***c* to the second camera **180***b*).

[0172] Referring to FIG. **14**C, according to an embodiment, the electronic device **101** may display a screen (e.g., an eleventh preview screen **1450**) including at least one target object in the fully unfolded state of the electronic device **101**. FIG. **14**C illustrates an example in which a preview screen is provided via the first camera (e.g., the first camera **180***a* FIG. **2**).

[0173] Referring to FIG. **14**D, according to an embodiment, the electronic device **101** may display a twelfth preview screen **1455** magnified in a designated ratio further than the eleventh preview screen **1450** according to detection of a folding event on the second hinge structure (e.g., the second hinge structure **450***b* of FIG. **4**). FIG. **14**D illustrates an example in which the angle varied by the folding event does not reach the threshold folding angle and thus the object obtained by the first camera **180***a* is provided as a preview screen. In FIG. **14**D, the area where the object captured by the user is displayed is shown in a bold line for ease of description. As shown in FIG. **14**D, the area where the preview screen is displayed may be shrunken according to detection of a folding event. According to an embodiment, in an area other than the area defined in the bold line, at least one graphic interface (e.g., the first graphic interface **1032**, the second graphic interface **1034**, and the third graphic interface **1036**) may be displayed.

[0174] Referring to FIGS. **14**E and **14**F, according to an embodiment, the electronic device **101** may detect a folding event in which the folding angle becomes 90 degrees (e.g., the threshold folding angle). According to an embodiment, the electronic device **101** may display, on the display device **160**, a thirteenth preview screen **1460** reduced in size and increased in magnification as compared with the twelfth preview screen **1455** as the folding event occurs. According to an embodiment, as the folding angle reaches 90 degrees, the electronic device **101** may switch the camera (e.g., from the first camera **180***a* to the third camera **180***c*) and object an

image of the target object. According to an embodiment, the electronic device **101** may shift the center of the preview screen to meet the center of the display area (e.g., the area defined in the bold line) while shrinking the screen. According to an embodiment, if the folding angle becomes less than 90 degrees (e.g., when the second hinge structure **450***b* is fully folded), the user may capture the target object via an input on a button **1461** provided on one side surface of the electronic device **101** as shown in FIG. **14**F.

[0175] Referring to FIGS. **14**G and **14**H, according to an embodiment, the electronic device **101** may detect a folding event on the second hinge structure (e.g., the fourth hinge structure **810***b* of FIG. **8**). According to an embodiment, the electronic device **101** may provide a screen in which the preview screen (e.g., the fourteenth preview screen **1465**) continuously reduces in size while increasing in magnification according to detection of the folding event. In FIG. **14**D, the area where the object captured by the user is displayed is shown in a bold line for ease of description. As shown in FIG. **14**G, the area **1465** where the object captured by the user is displayed according to detection of the folding event may be shrunken as compared with the eleventh preview screen **1450**. According to an embodiment, in an area other than the area defined in the bold line, at least one graphic interface (e.g., the first graphic interface **1032**, the second graphic interface **1034**, and the third graphic interface **1036**) may be displayed. Referring to FIG. **14**H, a fifteenth preview screen **1470** in which the area where the object captured by the user is displayed is shrunken as compared with the fourteenth preview screen **1465** may be displayed on the display device **160** according to detection of the folding event. According to an embodiment, the fifteenth preview screen **1470** may be one for when the folding angle exceeds the threshold folding angle and may include at least one target object captured by a camera (e.g., the second camera **180***b* of FIG. **2**) different from the camera that has captured the twelfth preview screen **1455**.

[0176] FIGS. **15**A and **15**B are views illustrating a function or operation of continuously (e.g., seamlessly) switching screens when a folding event occurs on a second hinge structure (e.g., the second hinge structure **450***b* of FIG. **4**), with a first hinge structure (e.g., the first hinge structure **450***a* of FIG. **4**) folded.

[0177] Referring to FIGS. **15**A and **15**B, according to an embodiment, when the first hinge structure is fully folded, the electronic device **101** may display, on the display device **160**, a preview screen (e.g., a sixteenth preview screen **1540**) including at least one object obtained using the second camera (e.g., the second camera **180***b* of FIG. **2**). According to an embodiment, upon detecting a folding event on the second hinge structure (e.g., the second hinge structure **450***b* of FIG. **4**), the electronic device **101** may switch cameras (e.g., from the second camera (e.g., the second camera **180***b* of FIG. **2**)) to the first camera (e.g., the first camera **180***a* of FIG. **1**) while continuously varying the magnification and size of the preview screen. According to an embodiment, the electronic device may display, on the display device **160**, a preview screen (e.g., a seventeenth preview screen **1550**) including at least one object obtained via the switched camera (e.g., the first camera (e.g., the first camera **180***a* of FIG. **1**)).

[0178] FIGS. **16**A, **16**B, and **16**C are views illustrating a function or operation of switching the screen being displayed on an electronic device (e.g., the electronic device **101** of FIG. **1**) when a folding event occurs on a second hinge structure.

[0179] Referring to FIG. **16**A, according to an embodiment, the electronic device (e.g., the processor **120** of FIG. **1**) may display a screen for video call according to a first display mode in operation **1605**. According to an embodiment, the first display mode may include a mode in which a screen **1630** for the caller of the video call and a screen **1640** for the recipient of the video call are displayed on a single screen in a picture-in-picture (PIP) manner as shown in FIG. **16**B.

[0180] According to an embodiment, the electronic device (e.g., the processor **120** of FIG. **1**) may detect a folding event on the second hinge structure (e.g., the second hinge structure **450***b* of FIG. **4**) in operation **1610**.

[0181] According to an embodiment, the electronic device (e.g., the processor **120** of FIG. **1**) may identify whether the folding angle of the second hinge structure reaches the threshold folding angle in operation **1615**. According to an embodiment, the threshold folding angle (e.g., a folding angle of 150 degrees) may include a reference angle for displaying a screen for video call according to a second display mode. According to an embodiment, the second display mode may include a mode in which a screen **1630** for the caller of the video call and a screen **1640** for the recipient of the video call are displayed separately in a split view manner as shown in FIG. **16**C.

[0182] According to an embodiment, the electronic device (e.g., the processor **120** of FIG. **1**) may display a screen for video call according to the second display mode if the folding angle of the second hinge structure reaches the threshold folding angle (yes in operation **1615**), in operation **1620**. According to an embodiment, unless the folding angle of the second hinge structure reaches the threshold folding angle (no in operation **1615**), the screen for video call may be displayed according to the first display mode. According to an embodiment, when the folding angle of a certain specific hinge structure (e.g., the second hinge structure (e.g., the second hinge structure **450***b* of FIG. **4**)) becomes 0 degrees (e.g., when fully folded), the electronic device **101** may terminate the video call.

[0183] FIGS. **17**A, **17**B, and **17**C are views illustrating a function or operation of providing a designated graphic interface for applying a visual effect to an object being displayed on an electronic device **101** when a folding event occurs on a second hinge structure (e.g., the second hinge structure **450***b* of FIG. **4**).

[0184] Referring to FIG. **17**A, according to an embodiment, the electronic device (e.g., the processor **120** of FIG. **1**) may display a preview screen (e.g., an eighth preview screen **1722**), as shown in FIG. **17**B, in operation **1705**.

[0185] According to an embodiment, the electronic device (e.g., the processor **120** of FIG. **1**) may detect a folding event on the second hinge structure (e.g., the second hinge structure **450***b* of FIG. **4**) in operation **1710**.

[0186] According to an embodiment, the electronic device (e.g., the processor **120** of FIG. **1**) may identify whether the folding angle of the second hinge structure (e.g., the second hinge structure **450***b* of FIG. **4**) reaches a threshold folding angle in operation **1715**. According to an embodiment, the threshold folding angle may include a reference angle for providing a designated graphic interface for applying a visual effect to the object being displayed on the electronic

device **101**. According to an embodiment, the designated graphic interface for applying the visual effect may include a sticker **1742** as shown in FIG. **17**C, as an example.

[0187] According to an embodiment, when the folding angle of the second hinge structure (e.g., the second hinge structure **450***b* of FIG. **4**) reaches the threshold folding angle (yes in operation **1715**), the electronic device (e.g., the processor **120** of FIG. **1**) may provide a graphic interface for providing a designated visual effect to at least one target object displayed on the display device **160**, in operation **1720**. According to an embodiment, unless the folding angle of the second hinge structure (e.g., the second hinge structure **450***b* of FIG. **4**) reaches the threshold folding angle (no in operation **1715**), the preview screen may keep on being displayed.

[0188] FIGS. **18**A and **18**B are views illustrating a function or operation for providing a graphic interface for executing a designated function when a folding event occurs on a second hinge structure (e.g., the second hinge structure **450***b* of FIG. **4**).

[0189] Referring to FIG. **18**A, according to an embodiment, the electronic device (e.g., the processor **120** of FIG. **1**) may display a preview screen in operation **1805**.

[0190] According to an embodiment, the electronic device (e.g., the processor **120** of FIG. **1**) may detect a folding event on the second hinge structure (e.g., the second hinge structure **450***b* of FIG. **4**) in operation **1810**.

[0191] According to an embodiment, the electronic device (e.g., the processor **120** of FIG. **1**) may identify whether the folding angle of the second hinge structure (e.g., the second hinge structure **450***b* of FIG. **4**) reaches a threshold folding angle in operation **1815**. According to an embodiment, the threshold folding angle may include a reference angle for providing a graphic interface for executing a designated function. According to an embodiment, the designated function may include various functions, such as voting for a certain topic, call sending/receiving, message sending, checking received messages, or running a specific application. According to an embodiment, the electronic device (e.g., the processor **120** of FIG. **1**) may display a graphic interface **1832** for executing a designated function (e.g., vote) in a designated area (e.g., the third area **203** of FIG. **2**) of the display device **160** as shown in FIG. **18**B.

[0192] According to an embodiment, when the folding angle of the second hinge structure (e.g., the second hinge structure **450***b* of FIG. **4**) reaches the threshold folding angle (yes in operation **1815**), the electronic device (e.g., the processor **120** of FIG. **1**) may provide a graphic interface for executing the designated function in operation **1820**. According to an embodiment, unless the folding angle of the second hinge structure (e.g., the second hinge structure **450***b* of FIG. **4**) reaches the threshold folding angle (no in operation **1815**), the preview screen may keep on being displayed.

[0193] FIG. **19** is a view illustrating an example method of operating an electronic device (e.g., the electronic device **101** of FIG. **1**) according to an embodiment.

[0194] Referring to FIG. **19**, according to an embodiment, the electronic device (e.g., the processor **120** of FIG. **1**) may display, on the flexible display of the electronic device, a first screen including an object by a first camera among a plurality of cameras (e.g., the camera **180** of FIG. **2**) of the electronic device (e.g., the electronic device **101** of FIG. **1**) in operation **1910**.

[0195] According to an embodiment, the electronic device (e.g., the processor **120** of FIG. **1**) may detect a folding event on at least one of the first hinge structure (e.g., the first hinge structure **450***a* of FIG. **4** or the third hinge structure **810***a* of FIG. **8**) or the second hinge structure (e.g., the second hinge structure **450***b* of FIG. **4** or the fourth hinge structure **810***b* of FIG. **8**) of the electronic device while displaying the obtained first screen on the flexible display in operation **1920**.

[0196] According to an embodiment, the electronic device (e.g., the processor **120** of FIG. **1**) may switch to the second screen different from the first screen and display the same according to the detected folding event in operation **1930**.

[0197] According to an embodiment, an electronic device (e.g., the electronic device **101** of FIG. **1**) comprises a plurality of cameras (e.g., the camera module **180** of FIG. **1**), a foldable housing (e.g., the foldable housing **200** of FIG. **2**) including a first hinge structure (e.g., the first hinge structure **450***a* of FIG. **4**) and a second hinge structure (e.g., the second hinge structure **450***b*), a flexible display (e.g., the display device **160** of FIG. **1**) at least partially exposed through the foldable housing, and at least one processor (e.g., the processor **120** of FIG. **1**) provided in the foldable housing, the at least one processor configured to display a first screen (e.g., the first preview screen **1030** of FIG. **10***b*) including an object obtained by a first camera (e.g., the first camera **180***a* of FIG. **2**) among the plurality of cameras on the flexible display, detect a folding event for at least one of the first hinge structure and the second hinge structure while displaying the obtained first screen on the flexible display, and display a second screen (e.g., the second preview screen **1040** of FIG. **10***d*) different from the first screen on the flexible display according to the detected folding event.

[0198] According to an embodiment, the processor (e.g., the processor **120** of FIG. **1**) may be configured to increase or decrease a magnification of the first screen according to a variation in angle of at least one of the first hinge structure or the second hinge structure.

[0199] According to an embodiment, the processor may be configured to switch the first camera into a second camera (e.g., the third camera **180***c* of FIG. **2**) when an angle formed by at least one of the first hinge structure or the second hinge structure is rendered to reach a designated angle by the angle variation.

[0200] According to an embodiment, an area where the first screen (e.g., the first preview screen **1030** of FIG. **10**B) is displayed on the flexible display may be larger than an area where the second screen (e.g., the first preview screen **1030** of FIG. **10**B) is displayed on the flexible display.

[0201] According to an embodiment, the processor (e.g., the processor **120** of FIG. **1**) may be configured to switch an operation mode of a camera application according to detection of the folding event.

[0202] According to an embodiment, when the second hinge structure is folded at a designated second angle or more, with the first hinge structure folded at a designated first angle or more, the processor may be configured to terminate a designated application being executed.

[0203] According to an embodiment, an object (e.g., the screen **1630** for the caller of a video call) obtained by at least one of the plurality of cameras and information (e.g., the screen **1640** for the recipient of the video call) about another party to a call are displayed on the first screen in a picture-in-picture (PIP) manner, and an object (e.g., the screen **1630**

for the caller of a video call) obtained by at least one of the plurality of cameras and information (e.g., the screen **1640** for the recipient of the video call) about another party to a call are displayed on the second screen in a split view manner.

[0204] According to an embodiment, the processor (e.g., the processor **120** of FIG. **1**) may be configured to display, on the flexible display, a menu for executing a designated function according to detection of the folding event.

[0205] According to an embodiment, the electronic device (e.g., the electronic device **101** of FIG. **1**) may further comprise an angle sensor (e.g., the first sensor **510***a*, the second sensor **510***b*, the third sensor **820***a*, and/or the fourth sensor **820***b*). The processor may be configured to detect an occurrence of the folding event based on a variation in angle of the first hinge structure and the second hinge structure, sensed by the angle sensor.

[0206] According to an embodiment, a least one of the first hinge structure or the second hinge structure may be folded in an in-folding manner.

[0207] According to an embodiment, a method for controlling an electronic device (e.g., the electronic device **101** of FIG. **1**) comprises displaying a first screen (e.g., the first preview screen **1030** of FIG. **10**B) including an object obtained by a first camera (e.g., the first camera **180***a* of FIG. **2**) of a plurality of cameras (e.g., the camera module **180** of FIG. **1**) of the electronic device on a flexible display of the electronic device, detecting a folding event for a first hinge structure of the electronic device while displaying the obtained first screen on the flexible display, the first hinge structure connected with a first housing having the plurality of cameras, and switching a second screen (e.g., the second preview screen **1040** of FIG. **10**D) different from the first screen and display the second screen according to the detected folding event.

[0208] According to an embodiment, an electronic device (e.g., the electronic device **101** of FIG. **1**) comprises a plurality of cameras (e.g., the camera module **180** of FIG. **1**), a foldable housing (e.g., the foldable housing **200** of FIG. **2**) including a first housing (e.g., the first housing structure **210** of FIG. **2**) having the plurality of cameras, a second housing (e.g., the second housing structure **220** of FIG. **2**) connected with the first housing via a first hinge structure, and a third housing (e.g., the third housing structure **230** of FIG. **2**) connected with the second housing via a second hinge structure, a flexible display (e.g., the display device **160** of FIG. **1**) at least partially exposed through the foldable housing, and at least one processor (e.g., the processor **120** of FIG. **1**) provided in the foldable housing, the at least one processor configured to detect an occurrence of a folding event for the foldable housing, change a capturing mode of the plurality of cameras in response to the occurrence of the folding event on the first hinge structure, and adjust a size of a screen displayed on the flexible display according to a designated magnification and display the screen in response to the occurrence of the folding event on the second hinge structure.

[0209] According to an embodiment, the processor (e.g., the processor **120** of FIG. **1**) may be configured to continuously increase or decrease a magnification of the screen according to a variation in angle of the second hinge structure.

[0210] According to an embodiment, the electronic device (e.g., the electronic device **101** of FIG. **1**) may further comprise an angle sensor (e.g., the first sensor **510***a*, the second sensor **510***b*, the third sensor **820***a*, and/or the fourth sensor **820***b*). Detecting an occurrence of the folding event may include detecting the occurrence of the folding event based on a variation in angle of at least one of the first hinge structure or the second hinge structure, sensed by the angle sensor.

[0211] According to an embodiment, the processor may be configured to display, on the flexible display, a menu (e.g., the graphic interface **1832** for executing a designated function of FIG. **18**B) for executing a designated function according to detection of the folding event for the second hinge structure.

[0212] The electronic device according to various embodiments may be one of various types of electronic devices. The electronic devices may include, for example, a portable communication device (e.g., a smart phone), a computer device, a portable multimedia device, a portable medical device, a camera, a wearable device, or a home appliance. According to an embodiment of the disclosure, the electronic device is not limited to the above-listed embodiments.

[0213] It should be appreciated that various embodiments of the disclosure and the terms used therein are not intended to limit the technological features set forth herein to particular embodiments and include various changes, equivalents, or replacements for a corresponding embodiment. With regard to the description of the drawings, similar reference numerals may be used to refer to similar or related elements. It is to be understood that a singular form of a noun corresponding to an item may include one or more of the things, unless the relevant context clearly indicates otherwise. As used herein, each of such phrases as "A or B," "at least one of A and B," "at least one of A or B," "A, B, or C," "at least one of A, B, and C," and "at least one of A, B, or C," may include all possible combinations of the items enumerated together in a corresponding one of the phrases. As used herein, such terms as "1st" and "2nd," or "first" and "second" may be used to simply distinguish a corresponding component from another, and does not limit the components in other aspect (e.g., importance or order). It is to be understood that if an element (e.g., a first element) is referred to, with or without the term "operatively" or "communicatively", as "coupled with," "coupled to," "connected with," or "connected to" another element (e.g., a second element), it means that the element may be coupled with the other element directly (e.g., wiredly), wirelessly, or via a third element.

[0214] As used herein, the term "module" may include a unit implemented in hardware, software, or firmware, and may interchangeably be used with other terms, for example, "logic," "logic block," "part," or "circuitry". A module may be a single integral component, or a minimum unit or part thereof, adapted to perform one or more functions. For example, according to an embodiment, the module may be implemented in a form of an application-specific integrated circuit (ASIC).

[0215] Various embodiments as set forth herein may be implemented as software (e.g., the program **140**) including one or more instructions that are stored in a storage medium (e.g., internal memory **136** or external memory **138**) that is readable by a machine (e.g., the electronic device **101**). For example, a processor (e.g., the processor **120**) of the machine (e.g., the electronic device **101**) may invoke at least one of the one or more instructions stored in the storage

medium, and execute it, with or without using one or more other components under the control of the processor. This allows the machine to be operated to perform at least one function according to the at least one instruction invoked. The one or more instructions may include a code generated by a complier or a code executable by an interpreter. The machine-readable storage medium may be provided in the form of a non-transitory storage medium. Wherein, the term "non-transitory" simply means that the storage medium is a tangible device, and does not include a signal (e.g., an electromagnetic wave), but this term does not differentiate between where data is semi-permanently stored in the storage medium and where the data is temporarily stored in the storage medium.

[0216] According to an embodiment, a method according to various embodiments of the disclosure may be included and provided in a computer program product. The computer program products may be traded as commodities between sellers and buyers. The computer program product may be distributed in the form of a machine-readable storage medium (e.g., compact disc read only memory (CD-ROM)), or be distributed (e.g., downloaded or uploaded) online via an application store (e.g., Play Store™), or between two user devices (e.g., smart phones) directly. If distributed online, at least part of the computer program product may be temporarily generated or at least temporarily stored in the machine-readable storage medium, such as memory of the manufacturer's server, a server of the application store, or a relay server.

[0217] According to various embodiments, each component (e.g., a module or a program) of the above-described components may include a single entity or multiple entities. According to various embodiments, one or more of the above-described components may be omitted, or one or more other components may be added. Alternatively or additionally, a plurality of components (e.g., modules or programs) may be integrated into a single component. In such a case, according to various embodiments, the integrated component may still perform one or more functions of each of the plurality of components in the same or similar manner as they are performed by a corresponding one of the plurality of components before the integration. According to various embodiments, operations performed by the module, the program, or another component may be carried out sequentially, in parallel, repeatedly, or heuristically, or one or more of the operations may be executed in a different order or omitted, or one or more other operations may be added.

[0218] As is apparent from the foregoing description, according to an embodiment, there is provided a multi-foldable electronic device with a plurality of hinge structures, capable of providing various functions depending on folding angles of the hinge structures.

[0219] The effects set forth herein are not limited thereto, and it is apparent to one of ordinary skill in the art that various effects may be disclosed herein.

[0220] While the disclosure has been shown and described with reference to certain exemplary embodiments thereof, it will be understood by those skilled in the art that various changes in form and details may be made therein without departing from the spirit and scope of the disclosure as defined by the appended claims and their equivalents.

[0221] Although the present disclosure has been described with various embodiments, various changes and modifications may be suggested to one skilled in the art. It is intended that the present disclosure encompass such changes and modifications as fall within the scope of the appended claims.

What is claimed is:

1. An electronic device, comprising:

a plurality of cameras;

a foldable housing including a first hinge structure and a second hinge structure;

a flexible display at least partially exposed through the foldable housing; and

at least one processor provided in the foldable housing, the at least one processor configured to:

display on the flexible display a first screen including an object obtained by a first camera among the plurality of cameras,

detect a folding event for at least one of the first hinge structure and the second hinge structure while displaying the first screen on the flexible display, and

display a second screen different from the first screen on the flexible display according to the detection of the folding event.

wherein the processor is further configured to increase or decrease a magnification of the first screen according to a variation in angle of at least one of the first hinge structure or the second hinge structure.

2. The electronic device of claim **1**, wherein the processor is further configured to switch the first camera into a second camera when an angle formed by at least one of the first hinge structure or the second hinge structure is rendered to reach a designated angle by the variation in angle.

3. The electronic device of claim **1**, wherein an area where the first screen is displayed on the flexible display is larger than an area where the second screen is displayed on the flexible display.

4. The electronic device of claim **1**, wherein the processor is further configured to switch an operation mode of a camera application according to the detection of the folding event.

5. The electronic device of claim **1**, wherein, when the second hinge structure is folded at a designated second angle or more and the first hinge structure is folded at a designated first angle or more, the processor is further configured to terminate a designated application being executed.

6. The electronic device of claim **1**, wherein:

an object obtained by at least one of the plurality of cameras and information about another party to a call are displayed on the first screen in a picture-in-picture (PIP) manner; and

an object obtained by at least one of the plurality of cameras and information about another party to a call are displayed on the second screen in a split view manner.

7. The electronic device of claim **1**, wherein the processor is further configured to display on the flexible display a menu for executing a designated function according to the detection of the folding event.

8. The electronic device of claim **1**, further comprising an angle sensor,

wherein the processor is further configured to detect an occurrence of the folding event based on a variation in angle of each of the first hinge structure and the second hinge structure sensed by the angle sensor.

9. The electronic device of claim **1**, wherein at least one of the first hinge structure or the second hinge structure is folded in an in-folding manner.

10. A method for controlling an electronic device, the method comprising:

displaying on a flexible display of the electronic device a first screen including an object obtained by at least one of a plurality of cameras of the electronic device;

detecting a folding event for a first hinge structure of the electronic device while displaying the first screen on the flexible display, wherein the first hinge structure is connected with a first housing comprising the plurality of cameras; and

displaying a second screen different from the first screen according to the detection of the folding event.

11. The method of claim **10**, wherein an area where the first screen is displayed on the flexible display is larger than an area where the second screen is displayed on the flexible display.

12. The method of claim **10**, further comprising switching an operation mode of a camera application according to the detection of the folding event.

13. The method of claim **10**, further comprising terminating an application being executed when a second hinge structure is folded at a designated second angle or more and the first hinge structure is folded at a designated first angle or more.

14. The method of claim **10**, wherein:

an object obtained by at least one of the plurality of cameras and information about another party to a call are displayed on the first screen in a picture-in-picture (PIP) manner; and

an object obtained by at least one of the plurality of cameras and information about another party to a call are displayed on the second screen in a split view manner.

15. The method of claim **10**, further comprising displaying on the flexible display a menu for executing a designated function according to the detection of the folding event.

16. The method of claim **10**, wherein:

the electronic device includes an angle sensor; and

detecting an occurrence of the folding event includes detecting the occurrence of the folding event based on a variation in angle of each of the first hinge structure and a second hinge structure sensed by the angle sensor.

17. An electronic device, comprising:

a plurality of cameras;

a foldable housing including:

a first housing comprising the plurality of cameras,

a second housing connected with the first housing via a first hinge structure, and

a third housing connected with the second housing via a second hinge structure;

a flexible display at least partially exposed through the foldable housing; and

at least one processor provided in the foldable housing, the at least one processor configured to:

detect an occurrence of a folding event for the foldable housing,

change a capturing mode of the plurality of cameras in response to the detection of the occurrence of the folding event of the first hinge structure, and

adjust a size of a screen displayed on the flexible display according to a designated magnification, and display the screen in response to the detection of the occurrence of the folding event of the second hinge structure.

18. The electronic device of claim **17**, wherein the processor is further configured to continuously increase or decrease a magnification of the screen according to a variation in angle of the second hinge structure.

19. The electronic device of claim **17**, further comprising an angle sensor,

wherein detecting an occurrence of the folding event includes detecting the occurrence of the folding event based on a variation in angle of at least one of the first hinge structure or the second hinge structure sensed by the angle sensor.

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