

event and bend event, transmitted, respectively, from the touch sensor 140 and the flexible sensor 150, by referring to the function table 171. The controller 160 may include a sensor recognizing unit 161 and a function applying unit 163, as shown in FIG. 2.

[0035] Referring to FIG. 2, the sensor recognizing unit 161 is configured to detect the touch event and the bend event from the touch sensor 140 and the flexible sensor 150, respectively, and to output the touch signal and the bend signal to the function applying unit 163. The sensor recognizing unit 161 can control a time at which the touch sensor 140 and the flexible sensor 150 are activated. For example, the sensor recognizing unit 161 can load the touch sensor operating program Touch Sensor OP 173 from the storage unit 170 after the flexible display device 100 is booted, and can initialize and activate the touch sensor 140. The sensor recognizing unit 161 can activate the flexible sensor 150 and can load the flexible sensor operating program Flexible Sensor OP 175 from the storage unit 170 if a touch event has occurred at the touch sensor 140. The sensor recognizing unit 161 can simultaneously initialize and activate the touch sensor 140 and the flexible sensor 150. When the display unit 130 is turned on, the sensor recognizing unit 161 can load the touch sensor operating program Touch Sensor OP 173 and the flexible sensor operating program Flexible Sensor OP 175 from the storage unit 170, and can activate the touch sensor 140 and the flexible sensor 150. If the display unit 130 is turned off or is operating in a sleep mode, the sensor recognizing unit 161 can deactivate the touch sensor 140 and the flexible sensor 150 by controlling the electrical power supplied to the touch sensor 140 and the flexible sensor 150.

[0036] The function applying unit 163 can receive a touch signal and a bend signal from the sensor recognizing unit 161, respectively, and can load a function table 171 from the storage unit 170. The function applying unit 163 can then control an activated application program by referring to the function table 171. The function applying unit 163 may control the display unit 130 to output the contents 177 from the storage unit 170 according to the touch signal and the bend signal. That is, the function applying unit 163 may provide a proper display environment so that the user can easily and rapidly view the contents 177 that are being displayed on the display unit 130. The function applying unit 163 may change the output contents 177 according to the generated touch signal and the generated bend signal. The function applying unit 163 can also control output of contents 177. In addition, the function applying unit 163 can control the settings for the output contents 177 according to the input touch event and the input bend event.

[0037] As described above, the flexible display device 100 may control outputs and modifications of contents displayed on the display unit 130, according to a touch signal and a bend signal generated by the touch sensor 140 and flexible sensor 150, respectively, thereby allowing the user to smoothly search for information.

[0038] FIG. 3, FIG. 4, FIG. 5, and FIG. 6 are diagrams of a flexible display device 100 supporting various data displaying modes associated with operating a flexible display device by bending the corner, according to exemplary embodiments of the invention.

[0039] Referring to FIG. 3, a user may hold both sides of the display unit 130 of the flexible display device 100 as shown in still shot 201. The thumbs of both hands may touch both sides of the display unit 130. The touch sensors can detect touch

events generated by both thumbs and can then output the touch signals to the controller 160. If the controller 160 determines that a touch event has occurred, the controller 160 may control the display unit 130 to display a preset content.

[0040] As shown in still shot 203, the user may bend a corner A0 at the upper right of the device 100, at a certain angle, using the right index finger, while the user is holding the device 100 with both hands. The touch sensor 140 of the device 100 may detect the touch events generated at both sides of the device 100, and may send corresponding touch signals to the controller 160. Simultaneously, the flexible sensor 150 may generate a bend event at the corner A0 at the upper right of the device 100. The corner A0 may be bent at various angles, and may be bent, for example, at more than a determined angle. When the corner A0 at the upper right portion of the device 100 is bent, the display unit 130 may output a corresponding portion of a page currently being displayed on the bent corner A0. The controller 160 may also activate the flexible sensor 150 before or when the touch sensor generates a touch signal.

[0041] When the controller 160 receives a touch signal and a bend signal from the touch sensor 140 and the flexible sensor 150, respectively, the controller 160 may control the display unit 130 to display a folded image B0 at the upper right corner A0 of the device 100 where the bend event has occurred, as shown in still shot 205. That is, the controller 160 may load the function table 171 from the storage unit 170, and may output a folded image B0 according to the bend event and touch event detected at the corner A0. The controller 160 can change the property of the content on which the folded image B0 is displayed. That is, the controller 160 may recognize the content currently being output as a user's bookmark, and may thus perform a control operation so that property information can be described in the file information of the content. When a touch event occurs on the folded image B0, the controller 160 may display a list of contents having a bookmark property on the display unit 130.

[0042] Although the touch events can be generated when a user touches both sides of the device 100, it should be understood that the invention is not limited thereto. For example, the functions of displaying the folded image B0 and of changing the property of content file information according to the display of the folded image B0 can be performed according to a touch event. The functions can be executed by a touch event generated at a first location on the device 100, and a bend event generated at a bend location, as the function table is established or is a user's function table is changed. The touch sensor can be initialized in an area where a menu image B1 is output, instead of initializing all the touch sensors in the device 100.

[0043] Referring to FIG. 4, initially, a user may hold both sides of the display unit 130 of the flexible display device 100 as shown in still shot 211. The touch sensors 140 may detect touch events by one or both thumbs and may then output corresponding touch signals to the controller 160. If the controller 160 determines that the touch events have occurred, the controller 160 may control the display unit 130 to display a preset content. For example, the controller 160 may control the display unit 130 to display pages corresponding to a book of the contents 177 stored in the storage unit 170. The controller 160 may activate the flexible sensor 150 before or when the touch sensor 140 generates the touch signal.

[0044] As shown in still shot 213 of FIG. 4, the user may bend a corner A1 at the lower right of the device 100, at a