

METHOD AND DEVICE FOR REFERENCE DIAGRAM EDITING FOR CHART AND COMPUTER-READABLE STORAGE MEDIUM

CROSS-REFERENCE TO RELATED APPLICATION(S)

[1] This application claims priority to Chinese Patent Application No. 202010209012.0, filed on March 23, 2020, with the title “METHOD AND DEVICE FOR REFERENCE DIAGRAM EDITING FOR CHART AND COMPUTER-READABLE STORAGE MEDIUM”, the entire disclosure of which is hereby incorporated by reference.

TECHNICAL FIELD

[2] This disclosure relates to the field of computer technology, and more particularly to a method and a device for reference diagram editing for a chart and a computer-readable storage medium.

BACKGROUND

[3] At present, to facilitate users to view the financial market at any time, financial market software that can be run on mobile terminals has been developed. By using the financial market software, price trend charts of stocks, options, and so on can be viewed, and the user can analyze price trends according to the price trend charts.

[4] However, the existing financial market software of the mobile terminals can merely display the price trend charts, and the price trend analysis needs to be completed by the user. However, it is inconvenient for the user to analyze a price trend according to a price trend chart. Although the user can observe the price trend chart with eyes of the user and analyze the price trend, analysis results obtained in this way are not accurate. Alternatively, the user can take a screenshot of the price trend chart and print it out, and then analyze the price trend by manually drawing a reference diagram on the price trend chart, but this way is tedious.

SUMMARY

[5] Implementations of the disclosure mainly aim to provide a method and a device for reference diagram editing for a chart, and a computer-readable storage medium, in order to solve

the problem that the existing financial market software on the mobile terminals can only display the price trend charts and is inconvenient in price trend analysis of the price trend charts.

[6] In view of the technical problem above, embodiments of the present disclosure provide the following technical solutions.

[7] Implementations of the disclosure provide a method for reference diagram editing for a chart, which is performed on a mobile terminal. The method includes: detecting, during display of the chart, whether a chart operation object is selected; switching the chart to an editable state in response to detecting that the chart operation object is selected; detecting preset edit-touch events in a control region of an edit page corresponding to the chart after switching the chart to the editable state, the edit page including the control region and the chart, and the control region coinciding with a region where a main chart of the chart is located; and performing a reference diagram editing operation on the main chart of the chart according to the edit-touch events detected in the control region of the edit page, to edit a reference diagram on the main chart.

[8] Implementations of the disclosure further provide a device for reference diagram editing for a chart. The device includes memory, a processor and a computer program stored on the memory and executable on the processor. The computer program, when executed by the processor, causes the processor to perform steps of the method for reference diagram editing for the chart as described above.

[9] Implementations of the disclosure provide a computer-readable storage medium having a program for reference diagram editing for a chart stored thereon, and the program, when executed by a processor, implements steps of the method for reference diagram editing for the chart as described above.

[10] The implementations of the present disclosure have the following beneficial effects. According to the implementations of this disclosure, after a chart operation object is selected, a reference diagram of the main chart of the chart in the presentation can be edited in the control region of the edit page by means of touch operation. With the implementations of this disclosure, not only the chart can be displayed, and while displaying the chart, the reference diagram of the main chart of the chart can be also edited by means of the touch operation, so that the user can analyze the price trend of the main chart according to the reference diagram edited on the main chart.

BRIEF DESCRIPTION OF THE DRAWINGS

[11] The accompanying drawings illustrated herein are intended to provide a further understanding of the disclosure and constitute a part of the disclosure. The exemplary implementations of the disclosure and description thereof are used for explaining the disclosure and not used for limiting the disclosure.

[12] FIG. 1 is a flow chart illustrating a method for reference diagram editing for a chart according to an implementation of the disclosure.

[13] FIG. 2 is a schematic diagram illustrating a chart edit entry in a quotation page according to an implementation of the disclosure.

[14] FIG. 3 is a schematic diagram illustrating a change of pages after a chart edit entry is selected according to an implementation of the disclosure.

[15] FIG. 4 is a schematic diagram illustrating a change of pages after a chart edit entry is selected according to another implementation of the disclosure.

[16] FIG. 5 is a flow chart illustrating steps of creating a reference diagram according to an implementation of the disclosure.

[17] FIG. 6 is a schematic diagram illustrating a drawing line toolbar according to an implementation of the disclosure.

[18] FIG. 7 is a schematic diagram illustrating anchor-creation prompt information according to an implementation of the disclosure.

[19] FIG. 8 is a flow chart illustrating steps of modifying a position of a reference diagram according to an implementation of the disclosure.

[20] FIG. 9 is a flow chart illustrating steps of modifying an attribute of a reference diagram according to an implementation of the disclosure.

[21] FIG. 10 is a flow chart illustrating steps of modifying a shape of a reference diagram according to an implementation of the disclosure.

[22] FIG. 11 is a schematic diagram of enlarging an image and displaying the enlarged image according to an implementation of the disclosure.

[23] FIG. 12 is a flow chart illustrating steps of deleting a reference diagram according to an implementation of the disclosure.

[24] FIG. 13 is a schematic diagram of editing a line segment according to an implementation of the disclosure.

[25] FIG. 14 is a schematic diagram of editing a ray according to an implementation of the disclosure.

[26] FIG. 15 is a schematic diagram of editing a straight line according to an implementation of the disclosure.

[27] FIG. 16 is a schematic diagram of editing parallel lines according to an implementation of the disclosure.

[28] FIG. 17 is a schematic diagram of editing isoperiodic lines according to an implementation of the disclosure.

[29] FIG. 18 is a schematic diagram of editing channel lines according to an implementation of the disclosure.

[30] FIG. 19 is a schematic diagram of editing a triangle according to an implementation of the disclosure.

[31] FIG. 20 is a schematic diagram of editing a rectangle according to an implementation of the disclosure.

[32] FIG. 21 is a schematic diagram of editing a parallelogram according to an implementation of the disclosure.

[33] FIG. 22 is a schematic diagram of editing a circle according to an implementation of the disclosure.

[34] FIG. 23 is a schematic diagram of editing a three-wave line according to an implementation of the disclosure.

[35] FIG. 24 is a schematic structural diagram illustrating a device for reference diagram editing for a chart according to an implementation of the disclosure.

[36] FIG. 25 is a schematic structural diagram illustrating a processor according to an implementation of the disclosure.

DETAILED DESCRIPTION

[37] To describe objects, technical solutions, and advantages of the disclosure more clearly, the following will give a detailed description of implementations of the disclosure in conjunction with accompanying drawings.

[38] Implementations of the disclosure provide a method for reference diagram editing for a chart. FIG. 1 is a flow chart illustrating a method for reference diagram editing for a chart

according to an implementation of the disclosure.

[39] At step S110, whether a chart operation object is selected is detected during display of the chart; if the chart operation object is selected, the method proceeds to an operation at S120; otherwise, the method proceeds to step S110 to continue detecting whether the chart operation object is selected.

[40] The chart includes but is not limited to a main chart, a secondary chart, and chart information.

[41] The main chart refers to a price trend chart corresponding to a chart subject. The chart subject is a subject to which the price trend chart belongs. The chart subject is, for example, a company. The types of the price trend chart include, but are not limited to, underlying stocks, options, and indexes. The price trend chart includes but is not limited to a time-sharing chart, a daily K-line chart, a weekly K-line chart, a monthly K-line chart, a quarterly K-line chart, and an annual K-line chart, according to a period of the price trend chart.

[42] The secondary chart refers to an indicator line of the chart. The indicator line is a change rate, a capacity indicator, a trend indicator, and the like for example.

[43] The chart information includes but is not limited to a name of the chart subject, a transaction status of the chart subject, and transaction information of the chart subject. The transaction status includes but is not limited to: trading hours and non-trading hours. The transaction information includes but is not limited to opening price, closing price, trading volume, and trading turnover.

[44] The chart operation object includes but is not limited to a chart edit entry and a reference diagram created on the main chart.

[45] The chart edit entry refers to an entry button used for switching the chart to an editable state. The chart edit entry can be provided in a first edit page and/or a second edit page of the chart. The first edit page of the chart may be a quotation page (portrait-screen display page) of the chart including the chart. The second edit page of the chart may be a landscape-screen display page including at least the main chart.

[46] The reference diagram created on the main chart is a diagram created on the main chart. Creating the reference diagram on the main chart can be used to analyze a shape of the main chart, so as to determine a current state and a subsequent trend of the main chart.

[47] At step S120, if the chart operation object is selected, the chart is switched to an

editable state.

[48] The state of the chart includes the editable state and a non-editable state. When the chart is in the editable state, it means that a reference diagram can be edited in the main chart. When the chart is in the non-editable state, it means that editing of a reference diagram is not allowed in the main chart. Editing a reference diagram includes creating, modifying, and/or deleting the reference diagram.

[49] If the reference diagram created on the main chart is selected, the chart is switched to the editable state, i.e., modifying and deleting of the reference diagram are allowed. Furthermore, when the reference diagram created on the main chart is selected, said switching the chart to the editable state includes: switching the reference diagram selected in the main chart to a selected state.

[50] If the chart edit entry is selected, the chart is switched to the editable state, i.e., creating, modifying, and deleting a reference diagram on the main chart are allowed.

[51] Furthermore, if the chart edit entry is selected, the second edit page is displayed, the chart is switched to the editable state in the second edit page, and a reference diagram is allowed to be created, modified, or deleted on the main chart of the second edit page. If the chart edit entry is closed, the chart is switched to the non-editable state, and a page state before the chart edit entry is selected is restored. As an example, if the chart edit entry is selected in the second edit page, display of the second edit page is maintained. If the chart edit entry is selected in the first edit page, switching from the first edit page to the second edit page is performed, and the first edit page is restored after the chart edit entry is closed.

[52] At step S130, after the chart is switched to the editable state, preset edit-touch events are detected in a control region of an edit page corresponding to the chart.

[53] The edit page shows the chart. The edit page includes the control region and the chart, and the control region coincides with a region where the main chart of the chart is located. The edit page includes the first edit page and the second edit page. The control region of the edit page refers to a region used for detecting edit-touch events for editing the reference diagram. The edit-touch events include but are not limited to: a touch-down event, a touch-move event, and a touch-up event. The touch-down event is an event that occurs when a finger of a user contacts a screen of a mobile terminal. The touch-move event is an event that occurs when the finger of the user moves (drags) on the screen of the mobile terminal. The touch-up event is an event that

occurs when the finger of the user leaves the screen of the mobile terminal.

[54] When the finger of the user touches the screen of the mobile terminal, the mobile terminal can detect a touch event and determine whether the touch event occurs in the control region of the edit page according to a position where the touch event occurs. If the touch event occurs in the control region of the edit page, and the touch event is the touch-down event, the touch-move event, or the touch-up event, it is considered that the edit-touch event is detected.

[55] At step S140, a reference diagram editing operation is performed on the main chart of the chart according to the edit-touch events detected in the control region of the edit page, to edit a reference diagram on the main chart.

[56] The reference diagram editing operation includes a reference diagram creating operation, a reference diagram modifying operation, and/or a reference diagram deleting operation.

[57] The reference diagram creating operation refers to creating a reference diagram on the main chart according to the edit-touch events detected in the control region of the edit page.

[58] The reference diagram modifying operation refers to modifying a position, an attribute, and/or a shape of a reference diagram already created on the main chart according to the edit-touch events detected in the control region of the edit page.

[59] The reference diagram deleting operation refers to deleting a reference diagram already created on the main chart according to the edit-touch events detected in the control region of the edit page.

[60] A reference diagram editing instruction can be provided before the reference diagram editing operation is performed on the main chart of the chart. The reference diagram editing instruction includes steps about how to create, modify, and delete the reference diagram. The method includes, upon detecting that an instruction display button is selected, jumping to a page for displaying the reference diagram editing instruction, and after the page for displaying the reference diagram editing instruction is closed, returning to a page before the jump. The page for displaying the reference diagram editing instruction may be an H5 page. H5 is short for HTML (hypertext markup language) 5, i.e., HTML 5.0.

[61] Since the main chart needs to be updated every preset time period, in order not to affect the accuracy of the main chart, the main chart can be continuously updated according to an update cycle of the main chart during performing of the reference diagram editing operation on

the main chart.

[62] The method may include, if the chart edit entry is selected in the first edit page, switching to the second edit page and then editing the reference diagram in the second edit page; and after the chart edit entry is closed, restoring the first edit page displayed before the chart edit entry is selected, and displaying the main chart with the edited reference diagram or with the edited reference diagram hidden in the first edit page. If the main chart with the edited reference diagram is displayed in the first edit page, after the edited reference diagram in the main chart is selected, display of the edited reference diagram can be maintained in the first edit page, and then the reference diagram can be modified or deleted in the first edit page.

[63] After the reference diagram editing operation is performed on the main chart of the chart, an editing result can be stored in a local storage or uploaded to a background server. When it is necessary to display the chart again, the previous editing result can be obtained from the local storage or from the background server, and the edited reference diagram can be displayed in the main chart according to the editing result. As an example, if a reference diagram was created last time, the reference diagram created last time can be displayed on the main chart while the main chart is viewed this time. Alternatively, if a color of the reference diagram was modified last time, the color-modified reference diagram can be displayed on the main chart while the main chart is viewed this time. Alternatively, if the reference diagram was deleted last time, the main chart without the reference diagram is displayed this time. Furthermore, as a preferred implementation, after the reference diagram editing operation is performed on the main chart, the editing result is uploaded to the background server, to synchronize the editing result between different mobile terminals.

[64] In order to facilitate the user to view the main chart, a reference diagram hide button and a reference diagram display button can be provided in the edit page. When the reference diagram hide button is selected, the reference diagram edited in the main chart is hidden. When the reference diagram display button is selected, the reference diagram edited in the main chart is displayed. Furthermore, the reference diagram display button is selected by default.

[65] To facilitate the user to analyze the main chart, the edit page can support display of a drawing line toolbar, enlarging and/or dwindling operations of the chart, chip distribution, cross-shaped mark, setting of buying and selling labels, setting of custom label, display of cost line, display of transaction details, and other functions. The drawing line toolbar is a tool used to edit

a reference diagram on the main chart. The drawing line toolbar at least includes multiple drawing line types and multiple attribute modify options. The drawing line toolbar may include two parts separately displayed, i.e., the multiple drawing line types as a first part and the multiple attribute modify options included in a second part are separately displayed. After the chart edit entry is selected or the reference diagram already created on the main chart is selected, the drawing line toolbar can be displayed in the edit page. When the drawing line toolbar is closed, i.e., when the edit page is closed or the chart edit entry is closed, the drawing line toolbar is not displayed. During performing of the reference diagram editing operation on the main chart, use of the cross-shaped mark, enlarging or dwindling of the main chart, switching of the chart subject, and switching of the cycle of the main chart are not allowed.

[66] After the chart edit entry is selected, in the control region of the edit page, the reference diagram editing operation can be performed on the main chart by means of touch operation. According to the implementations of the disclosure, not only can the chart be displayed, but the reference diagram editing operation can be performed on the main chart by means of the touch operation while the chart is displayed, so that the user can analyze the price trend of the main chart according to the reference diagram edited on the main chart.

[67] The following further describes setting of the chart edit entry.

[68] The chart edit entry can be implemented as a virtual button and/or physical button.

[69] If the chart edit entry is a physical button, the chart edit entry can be realized by using existing physical keys of the mobile terminal. For example, during display of the chart, pressing a HOME key for a preset time indicates that the chart edit entry is selected.

[70] If the chart edit entry is a virtual button, the chart edit entry can be provided in the first edit page and/or the second edit page for the chart. For example, the first edit page is a quotation page (portrait-screen display page) including the chart, and the second edit page is a landscape-screen display page including at least the main chart.

[71] As illustrated in FIG. 2 and FIG. 3, the chart edit entry is provided in the quotation page, and the virtual button “Drawing Line” corresponding to the chart edit entry is provided in a toolbar corresponding to the main chart. In FIG. 2, the chart edit entry “Drawing line” is used as a first-grade option button in the toolbar. In FIG. 3, after the chart edit entry “Drawing line” is selected, the first edit page is switched to the second edit page.

[72] As illustrated in FIG. 4, the chart edit entry is provided in the landscape-screen

display page. In the landscape-screen display page for the main chart, the virtual button “Drawing Line” corresponding to the chart edit entry is provided in the toolbar, and text “Drawing Line” is replaced with a brush-liked graph. After the chart edit entry “Drawing Line” is selected, display of the edit page (i.e., the landscape-screen display page) is maintained.

[73] If the chart edit entry provided in the second edit page for the chart is selected, display of the edit page for the chart is maintained. If the chart edit entry provided in the first edit page for the chart is selected, the second edit page for the chart is entered. When entering the edit page from the second edit page, transition effects can be used to enhance the sensory effect of the user.

[74] The following will further describe the reference diagram creating operation.

[75] FIG. 5 is a flow chart illustrating steps of creating a reference diagram according to an implementation of the disclosure.

[76] At S510, multiple drawing line types are preset in the edit page.

[77] The multiple drawing line types include but are not limited to line segment, horizontal line segment, vertical line segment, ray, straight line, horizontal straight line, parallel lines, isoperiodic lines, channel lines, triangle, rectangle, parallelogram, circle, three-wave line, five-wave line, and eight-wave line.

[78] If there are many kinds of drawing line types, in order to facilitate the user to find a required drawing line type, the multiple drawing line types can be classified into multi-grade types according to characteristics of each drawing line type. The multi-grade types include a first grade type and a second grade type. The first grade type is a parent type (a higher grade type), and the second grade type is a child type (a lower grade type) of the first grade type.

[79] The first grade type includes but is not limited to a line segment type, a polygon type, and a wavy line type.

[80] The second grade type of the line segment type includes line segment, horizontal straight line segment, vertical line segment, ray, straight line, horizontal straight line, parallel lines, isoperiodic lines, and channel lines. The drawing line toolbar as illustrated in FIG. 6 illustrates a menu of the first grade type and a menu of the second grade type of the line segment type.

[81] The second grade type of the polygon type includes triangle, rectangle, parallelogram, circle, and ellipse.

[82] The second grade type of the wavy line type includes three-wave line, five-wave line, eight-wave line, head and shoulders top, head and shoulders bottom, M-head and W-bottom, ABCD pattern, XABCD pattern, and triangle pattern.

[83] At step S520, whether a preset drawing line type is selected is detected in the edit page; if yes, the method proceeds to step S530; or otherwise, the method proceeds to the step S520.

[84] The method includes, after switching the chart to the editable state and before detecting the preset edit-touch events in the control region of the edit page corresponding to the chart, detecting in the edit page whether the preset drawing line type is selected.

[85] If merely a first grade type is included in the drawing line type, whether the preset drawing line type is selected is detected in the edit page. In response to detecting that the preset drawing line type is selected, the drawing line type selected is displayed in a preset color. Displaying the selected drawing line type in the preset color can enable the user to obviously know the drawing line type selected.

[86] If the drawing line type includes multi-grade types, whether a preset lowest-grade drawing line type is selected is detected in the edit page. If the preset lowest-grade drawing line type is selected, the lowest-grade drawing line type selected is displayed in the preset color. Alternatively, menus of low-grade drawing line types are folded, only a menu of highest-grade drawing line type is displayed, and a highest-grade drawing line type corresponding to the drawing line type selected is displayed in the preset color.

[87] At S530, a total anchor number corresponding to the drawing line type selected is determined in response to detecting that a preset drawing line type is selected.

[88] A total anchor number corresponding to each drawing line type can be preset. For example, line segment corresponds to two anchors in total, and triangle corresponds to three anchors in total.

[89] After a drawing line type is selected, anchors corresponding to the drawing line type can be created on the main chart. The number of anchors that need to be created is equal to the total anchor number corresponding to the drawing line type. When all the anchors are created, a reference diagram corresponding to the drawing line type selected is completely created on the main chart.

[90] At S540, at least one anchor is created on the main chart according to the edit-touch

events detected in the control region of the edit page.

[91] A region outside the control region of the edit page does not support the reference diagram editing operation, and therefore only the edit-touch events that occur in the control region are detected.

[92] The method includes, if the touch-down event is detected in the control region of the edit page, detecting the touch-up event in the control region; and if the touch-up event is detected in the control region, creating the anchors according to a position where the touch-up event occurs.

[93] Furthermore, a position where the touch-down event occurs is an initial coordinate position of a touch point, and a position where the touch-up event occurs is a final coordinate position of the touch point. The final coordinate position of the touch point can be directly used as a position for creating the anchor. Alternatively, other positions closer to the position of the touch point can also be used as the position for creating the anchor. After the touch-down event is detected in the control region of the edit page and before the touch-up event is detected in the control region of the edit page, whether the touch-move event occurs may be further detected. If the touch-move event is detected, a coordinate position of the touch point is modified. The coordinate position of the touch point is a latest position where the touch-move event occurs.

[94] In particular, an anchor is created according to the position where the touch-up event occurs, as follows. The anchor is created at the position where the touch-up event occurs. Alternatively, a magnetic attraction function is used during anchor creating. That is, if the touch-up event is detected in the control region of the edit page, whether a distance between the position where the touch-up event occurs and a first preset point on the main chart is less than a first preset distance threshold is detected. If it is detected that the distance between the position where the touch-up event occurs and the first preset point is less than the first preset distance threshold, the anchor is created at the first preset point. The distance threshold may be an empirical value or a value obtained through experiments, for example, the distance threshold is a distance of 10 pixels. The first preset point refers to a preset position in the price trend chart. The preset position can be determined according to needs. For example, the first preset point is a preset candle point of a candle in the K-line chart, such as a highest point, a lowest point, an opening point, or a closing point of the candle. The magnetic attraction function can be enabled and disabled by a magnetic attraction button. In implementations, enabled and disabled states of

the magnetic attraction function can be stored in the local mobile terminal or in the background server, so that the enabled and disabled states of the magnetic attraction function can be read when the edit page is opened again. When the magnetic attraction function is enabled or disabled, prompt information can be displayed in the edit page. The prompt information may be toast prompt information.

[95] Furthermore, after an anchor is created, the created anchor is in a selected state. After a touch-down event occurs on the anchor, the selected state of the anchor is canceled. After the selected state of the anchor is canceled, creating of another anchor can be performed.

[96] Furthermore, during anchor creating, if the drawing line type selected varies, the process illustrated in FIG. 5 is executed again.

[97] At step S550, according to the anchors created, a shape for creating the reference diagram is drawn on the main chart, where creating of the reference diagram is completed when the number of anchors created reaches the total anchor number.

[98] After the reference diagram is created, the created reference diagram is in a selected state, i.e., the reference diagram modifying operation and the reference diagram deleting operation are allowed to be performed on the reference diagram. After the touch-down event and the touch-up event occur on the reference diagram, the selected state of the created reference diagram is canceled.

[99] In implementations, after the reference diagram is created, the drawing line toolbar returns to an initial state, that is, a state where no drawing line type is selected. Alternatively, a continuous line-drawing function can be provided in the edit page. The continuous line drawing function means that after a previous reference diagram is created, the drawing line toolbar maintains its state, and another reference diagram will be created according to the drawing line type selected for creating the previous reference diagram. Furthermore, if the continuous line-drawing function is enabled, the number of anchors created during anchor creating is counted. When the number of the anchors created reaches the total anchor number corresponding to the drawing line type selected, creating of the reference diagram is completed. Thereafter, the number of the anchors created is recounted, so that when the number of anchors created reaches the total anchor number corresponding to the drawing line type selected again, creating of another reference diagram is completed.

[100] In implementations, during anchor creating, prompt can also be conducted according

to a relationship between the number of anchors that have been created and the total anchor number. In particular, when the number of the anchors created is less than or equal to the total anchor number, anchor-creation prompt information is displayed, where the anchor-creation prompt information includes at least one of: the drawing line type selected, the total anchor number, or the number of the anchors created; and/ or when the number of the anchors created is equal to the total anchor number, creation-completion prompt information is displayed. The anchor-creation prompt information and the creation-completion prompt information both can be implemented as toast prompt information.

[101] FIG. 7 is a schematic diagram illustrating anchor-creation prompt information. Two anchors corresponding to line segment need to be created. The anchor-creation prompt information indicates that it is necessary to “click two anchors”, and no anchor of the two anchors has been created. If the continuous line-drawing function is enabled, at the beginning of creating another reference diagram, content of anchor-creation prompt information needs to be changed to the number of anchors corresponding to the another reference diagram.

[102] In implementations, during anchor creating, deleting of the created anchor is allowed. Specifically, an anchor delete button is provided in the edit page. Upon detecting that the touch-down event occurs on the anchor, the anchor is switched to a selected state. Thereafter, if it is detected that the anchor delete button is selected, the anchor in the selected state is deleted. In addition, after a first anchor of a reference diagram is created and the first anchor is deleted, the drawing line toolbar may be restored to the initial state. If the continuous line-drawing function is enabled, the drawing line toolbar maintains its state, and there is no need to switch the drawing line toolbar to the initial state.

[103] In implementations, during anchor creating, a magnifying function can be enabled to display an image within a range. In particular, if the touch-down event is detected in the control region of the edit page and lasts for a first preset duration, an image within a first preset range of a position where the touch-down event occurs is enlarged by a first preset percentage and then the enlarged image is displayed; and/or if the touch-move event is detected in the control region of the edit page, an image within a second preset range of a position where the touch-move event occurs is enlarged by a second preset percentage and then the enlarged image is displayed. The first preset duration, the first preset percentage, the first preset range, the second preset percentage, and the second preset range are empirical values or values obtained through

experiments.

[104] The following will further describe the reference diagram modifying operation and the reference diagram deleting operation.

[105] If in the control region of the edit page the touch-down event is detected on a created reference diagram, the created reference diagram is switched to a selected state. After the created reference diagram is switched to the selected state, if the touch-move event is detected on the created reference diagram, a position of the created reference diagram is adjusted according to the touch-move event, and during adjusting of the position of the created reference diagram according to the touch-move event, if the touch-up event is detected on the created reference diagram, the position of the created reference diagram is fixed according to the touch-up event; and/or after the created reference diagram is switched to the selected state, if a preset attribute modify option is selected, an attribute of the created reference diagram is modified according to the attribute modify option selected; and/or after the created reference diagram is switched to the selected state, the created reference diagram is deleted if a preset graphic delete option is selected.

[106] If in the control region of the edit page the touch-down event is detected on an anchor of a created reference diagram, the anchor of the created reference diagram is switched to a selected state. After the anchor of the created reference diagram is switched to the selected state, if the touch-move event is detected on the anchor of the created reference diagram, a position of the anchor of the created reference diagram is adjusted according to the touch-move event, and a shape of the created reference diagram where the anchor is located is adjusted according to the adjusted position of the anchor. During adjusting of the position of the anchor according to the touch-move event, if the touch-up event is detected on the anchor, the adjusted position of the anchor is fixed according to the touch-up event and the shape of the created reference diagram where the anchor is located is fixed according to the fixed position of the anchor.

[107] In particular, modifying the reference diagram includes modifying a position of the reference diagram, modifying an attribute of the reference diagram, and/or modifying a shape of the reference diagram. Furthermore, during creating of the reference diagram, the attribute of the reference diagram is a preset default attribute. By modifying the attribute of the reference diagram, the default attribute of the reference diagram can be adjusted. Modifying the shape of the reference diagram can be achieved by modifying the position of the anchor of the reference diagram.

[108] Furthermore, a lock button can be provided in the edit page. After the lock button is selected, the position, the attribute, and/or the shape of the reference diagram are not allowed to be modified. That is, after the lock button is selected, even if the reference diagram or the anchor on the reference diagram is selected, the position, the attribute, and/or the shape of the reference diagram are not allowed to be modified.

[109] FIG. 8 is a flow chart illustrating steps of modifying a position of a reference diagram according to an implementation of the disclosure.

[110] At step S810, if in the control region of the edit page the touch-down event is detected on a created reference diagram, the created reference diagram is switched to a selected state.

[111] The selected state means that the created reference diagram is selected and can be edited.

[112] Furthermore, after creating of the reference diagram is completed, the user can select the reference diagram by touching the reference diagram with a finger.

[113] If the reference diagram is a line diagram, for example, if the reference diagram is a straight line, a ray, an ellipse, or the like, during determining whether the reference diagram is selected by touch, a distance between a touch point and a pixel on the reference diagram closest to the touch point can be calculated. If the distance is less than a preset response distance, it is determined that the touch-down event occurs on the reference diagram. The response distance is an empirical value or a value obtained through experiments.

[114] If the reference diagram is a region diagram, for example, the reference diagram is a rectangular region, determining whether the reference diagram is selected by touch is achieved by determining whether the touch point is within a range of the region diagram according to edge coordinates of the region diagram. If the touch point is within the range of the region diagram, it is determined that the touch-down event occurs on the reference diagram.

[115] The straight line is taken as an example of the reference diagram for illustration. A point-to-straight line distance formula is used to calculate a distance between the touch point and the straight line. If the distance is less than the response distance, it is determined that the touch-down event occurs on the straight line. For a scenario where the reference diagram is a ray, reference may be made to descriptions of a scenario where the reference diagram is the straight line. That is, an intersection point between the ray and a boundary of the control region can be

determined, and then a distance between the touch point and the ray can be calculated by calculating a distance between the touch point and a line segment between the intersection point and a starting point of the ray.

[116] For another example, the reference diagram is an ellipse. A distance between the touch point and the ellipse can be calculated according to a standard equation of the ellipse. If the distance is less than the response distance, it is determined that the touch-down event occurs on the ellipse.

[117] For yet another example, the reference diagram is a rectangular region. In this case, it can be calculated whether the touch point is within the rectangular region, and if the touch point is within the rectangular region, it is determined that the touch-down event occurs on the rectangular region.

[118] At S820, after the created reference diagram is switched to the selected state, whether the touch-move event occurs on the created reference diagram is detected.

[119] If it is detected that position coordinates of a position where the touch-move event occurs (that is, the position coordinates of a touch point corresponding to the touch-move event) are located on the reference diagram, it is determined that the touch-move event occurs on the reference diagram.

[120] At S830, if the touch-move event is detected on the created reference diagram, the position of the created reference diagram is adjusted according to the touch-move event.

[121] The position coordinates of the touch point corresponding to the touch-move event are detected, and the touch point corresponding to the touch-move event is in the reference diagram. The position of the reference diagram is adjusted according to a change of the position coordinates of the touch point.

[122] At S840, during adjusting of the position of the created reference diagram according to the touch-move event, if the touch-up event is detected on the created reference diagram, the position of the created reference diagram is fixed according to the touch-up event.

[123] Position coordinates of the touch point corresponding to the touch-up event are detected, the touch point corresponding to the touch-up event is in the reference diagram, and the position of the reference diagram is fixed to the position coordinates of the touch point corresponding to the touch-up event. Furthermore, the position coordinates of the touch point corresponding to the touch-up event is final position coordinates of the touch point

corresponding to the touch-move event.

[124] After the position of the reference diagram is fixed and modifying of the position of the reference diagram is completed, the reference diagram is still in the selected state. When another touch-down event and another touch-up event are detected on the reference diagram, the selected state of the reference diagram is canceled.

[125] FIG. 9 is a flow chart illustrating steps of modifying an attribute of a reference diagram according to an implementation of the disclosure.

[126] At step S910, if in the control region of the edit page the touch-down event is detected on a created reference diagram, the created reference diagram is switched to the selected state.

[127] At step S920, after the created reference diagram is switched to the selected state, if a preset attribute modify option is selected, an attribute of the created reference diagram is modified according to the attribute modify option selected.

[128] The preset attribute modify option includes but is not limited to: color, thickness, and line type. The line type includes short dashed line, long dashed line, and double lines.

[129] After the attribute of the reference diagram is modified, the reference diagram is still in the selected state. When another touch-down event and another touch-up event are detected on the reference diagram, the selected state of the reference diagram is canceled.

[130] FIG. 10 is a flow chart illustrating steps of modifying a shape of a reference diagram according to an implementation of the disclosure.

[131] At step S1010, if in the control region of the edit page the touch-down event is detected on an anchor of a created reference diagram, the anchor is switched to a selected state.

[132] If it is detected that position coordinates of a position where the touch-move event occurs (that is, the position coordinates of the touch point corresponding to the touch-move event) are located on the anchor, it is determined that the touch-move event occurs on the anchor.

[133] At step S1020, after the anchor is switched to the selected state, if the touch-move event is detected on the anchor, a position of the anchor is adjusted according to the touch-move event.

[134] Position coordinates of the touch point corresponding to the touch-up event are detected, the touch point corresponding to the touch-up event is on the anchor, and the position of the anchor is fixed to the position coordinates of the touch point corresponding to the touch-up

event. Furthermore, the position coordinates of the touch point corresponding to the touch-up event are the final position coordinates of the touch point corresponding to the touch-move event.

[135] During modifying of the position of the anchor, if the modified position of the anchor coincides with a position of another anchor or a distance between the modified position of the anchor and a position of another anchor is less than a first preset distance threshold, the anchor is moved to enable a distance between the moved position of the anchor and the position of the another anchor to be greater than a second preset distance threshold. The first preset distance threshold and the second preset distance threshold are empirical values or values obtained through experiments.

[136] At step S1030, a shape of the created reference diagram where the anchor is located is adjusted according to the adjusted position of the anchor.

[137] Since the reference diagram consists of continuous anchors, adjustment in the position of the anchor will lead to change in the shape of the reference diagram.

[138] At step S1040, during adjusting of the position of the anchor according to the touch-move event, if the touch-up event is detected on the anchor, the adjusted position of the anchor is fixed according to the touch-up event and the shape of the created reference diagram is fixed according to the fixed position of the anchor.

[139] In implementations, the adjusted position of the anchor of the created reference diagram is fixed according to the touch-up event, as follows. The anchor is fixed at a position where the touch-up event occurs. Alternatively, a magnetic attraction function can also be enabled during adjusting of the position of the anchor. That is, whether a distance between the position where the touch-up event occurs and a second preset point on the main chart is less than a second preset distance threshold is detected; and if it is detected that the distance between the position where the touch-up event occurs and the second preset point is less than the second preset distance threshold, the anchor is moved to the second preset point and fixed at the second preset point. The second preset distance threshold is an empirical value or a value obtained through experiments. For example, the second preset distance threshold is a distance of 10 pixels. The second preset point refers to a preset position in the price trend chart. The preset position can be determined according to needs. For example, the second preset point is a preset candle point of a candle in the K-line chart, such as a highest point, a lowest point, an opening point, or a closing point of the candle.

[140] In implementations, if the touch-down event is detected on a line of a created reference diagram or on an anchor of the created reference diagram and lasts for a second preset duration, the created reference diagram or the anchor where the touch-down event occurs is switched to a selected state, and an image within a third preset range of a position where the touch-down event occurs is enlarged by a third preset percentage and then displayed; and/or if the touch-move event is detected on a line of a created reference diagram or on an anchor of the created reference diagram, an image within a fourth preset range of a position where the touch-move event occurs is enlarged by a fourth preset percentage and then displayed; and/or if the touch-down event is detected on a line of a created reference diagram or on an anchor of the created reference diagram, the created reference diagram or the anchor is switched to a selected state, and after the created reference diagram or the anchor is switched to the selected state, the created reference diagram or the anchor in the selected state is displayed in a preset manner. The second preset duration, the third preset percentage, the third preset range, the fourth preset percentage, and the fourth preset range are empirical values or values obtained through experiments. If the touch-down event occurs on the line of the created reference diagram, the reference diagram is switched to the selected state. If the touch-down event occurs on the anchor of the created reference diagram, the anchor of the created reference diagram is switched to the selected state.

[141] Furthermore, if the created reference diagram or the anchor of the created reference diagram is selected and the selecting of the created reference diagram or the anchor of the created reference diagram lasts for the second preset duration, the image within the third preset range centered on the touch point is enlarged by the third preset percentage and then displayed. If the selected reference diagram or the selected anchor is dragged, an image within the fourth preset range centered on the touch point is enlarged by the fourth preset percentage for display. In this way, from selecting the reference diagram or the anchor to lifting the finger (the touch-up event), the image around the touch point is enlarged and then displayed, so that the user can better observe the situation around the touch point, to drag the selected reference diagram or the selected anchor to a more suitable position.

[142] Due to limitation of the size of the screen of the mobile terminal, a magnifying display safe region can be provided, and thus the enlarged image can be displayed in the magnifying display safe region, so that the enlarged image is always not blocked by a hand of the

user. For example, a display region of the screen is divided into left and right parts. If the touch point is on the left side of the screen, the right side of the screen can be determined as the magnifying display safe region, and therefore the enlarged image can be displayed on the right side of the screen. If the touch point is on the right side of the screen, the left side of the screen can be determined as the magnifying display safe region, and therefore the enlarged image can be displayed on the left side of the screen. Alternatively, if the touch point is on a division line of the left side and right side of the screen, either the left side or the right side of the screen can be determined as the magnifying display safe region. FIG. 11 is a schematic diagram of enlarging an image and displaying the enlarged image according to an implementation of the disclosure. The user selects a right end of a straight line in the main chart, and the right end of the straight line is located on the right side of the screen. In this case, the enlarged image can be displayed on the left side of the screen. For the manner in which the image is enlarged and displayed during creating of the reference diagram, reference may be made to that in which the image is enlarged and displayed during adjusting of the position of the anchor.

[143] Furthermore, the created reference diagram or the anchor of the created reference diagram in the selected state is displayed in the preset manner, as follows. The created reference diagram or the anchor in the selected state is displayed in a preset color. Alternatively, the created reference diagram or the anchor in the selected state is displayed along with a shadow. This disclosure is not limited hereto.

[144] After the position of the anchor is adjusted, the anchor is still in the selected state. When another touch-down event and another touch-up event are detected on the anchor, the selected state of the anchor is canceled.

[145] In implementations, all the created reference diagrams can be deleted, or some of the created reference diagrams can be deleted.

[146] FIG. 12 is a flow chart illustrating steps of deleting a reference diagram according to an implementation of the disclosure.

[147] At step S1210, if in the control region of the edit page the touch-down event is detected on a created reference diagram, the created reference diagram is switched to a selected state.

[148] At step S1220, after the created reference diagram is switched to the selected state, the created reference diagram in the selected state is deleted in response to detecting that a preset

graphic delete option is selected.

[149] In implementations, in addition to deleting the selected reference diagram, all the reference diagrams edited on the main chart can be deleted. A reference diagram empty button can be provided in the edit page, and if it is detected that the reference diagram empty button is selected, all the reference diagrams edited on the main chart are deleted. The reference diagram empty button is, for example, an “Empty Canvas” button in FIG. 6 or an “Empty All” button in FIG. 7.

[150] Furthermore, a second confirmation pop-up window may be provided. The second confirmation pop-up window includes deleting prompt information, a cancel option, and a confirm option. The content of the prompt information popped up can be determined according to needs, for example, indicative of deleting all drawn lines in the current cycle. The second confirmation pop-up window is popped up in response to detecting that the graphic delete option is selected. If the cancel option in the second confirmation pop-up window is selected, the deleting of the selected reference diagram or all reference diagrams created on the main chart is canceled. If the confirm option in the second confirmation pop-up window is selected, the selected reference diagram or all the reference diagrams created on the main chart is deleted.

[151] After all the reference diagrams created on the main chart are deleted, delete-completion prompt information can be displayed on the edit page. The delete-completion prompt information may be toast prompt information.

[152] Some examples are given below to illustrate the processes of the reference diagram editing operation in implementations of the disclosure. After the reference diagram editing operation is completed, the editing result can be stored to the background server, so that the editing result can be viewed when the edit page is opened again or another mobile terminal is used.

[153] FIG. 13 is a schematic diagram of editing a line segment according to an implementation of the disclosure.

[154] The line segment corresponds to two anchors in total. That is, it is necessary to create two anchors in the control region of the edit page. In the control region, a first target position on the main chart is touched and clicked once, and a first anchor is created at the first target position when the finger is lifted. A second target position on the main chart is touched and clicked once (i.e., a second time), and when the finger is lifted, a second anchor at the second target position is

created. The first anchor is automatically connected to the second anchor to create a line segment.

[155] FIG. 14 is a schematic diagram of editing a ray according to an implementation of the disclosure.

[156] The ray corresponds to two anchors in total. That is, it is necessary to create two anchors in the control region of the edit page. In the control region, a first target position on the main chart is touched and clicked once, and a first anchor at the first target position is created when the finger is lifted. A second target position on the main chart is touched and clicked once (i.e., a second time), and when the finger is lifted, a second anchor at the second target position is created. A ray is created by taking the first anchor as a starting point of the ray and the second anchor as any point on the ray, and extending a non-starting end of the ray extends to the boundary of the main chart.

[157] FIG. 15 is a schematic diagram of editing a straight line according to an implementation of the disclosure.

[158] The straight line includes a specific straight line and an arbitrary straight line. The specific straight line may be a horizontal straight line. The horizontal straight line corresponds to one anchor in total. The horizontal straight line is created by simply creating an anchor in the control region and making the horizontal straight line pass through the anchor.

[159] The arbitrary straight line is straight line other than the specific straight line. The arbitrary straight line corresponds to two anchors in total.

[160] As illustrated in FIG. 15, it is necessary to create two anchors in the control region of the edit page. In the control region, a first target position on the main chart is touched and clicked once, and a first anchor at the first target position is created when the finger is lifted. A second target position on the main chart is touched and clicked once (i.e., a second time), and when the finger is lifted, a second anchor is created at the second target position. A straight line is created by taking both the first anchor and the second anchor as points on the straight line, and extending both ends of the straight line to the boundary of the main chart.

[161] FIG. 16 is a schematic diagram of editing parallel lines according to an implementation of the disclosure.

[162] The parallel lines correspond to three anchors in total. That is, it is necessary to create three anchors in the control region of the edit page. In the control region, a first target position on the main chart is touched and clicked once, and a first anchor is created at the first target position

when the finger is lifted. A second target position on the main chart is touched and clicked once (i.e., a second time), and when the finger is lifted, a second anchor is created at the second target position. A first straight line is created by take both the first anchor and the second anchor as points on the first straight line and extending both ends of the first straight line to the boundary of the main chart. A third target position on the main chart is touched and clicked once and a third anchor is created at the third target position when the finger is lifted. A second straight line is created by taking the third anchor as a point on the second straight line and making the second straight line parallel to the first straight line. In this way, the creation of the parallel lines is completed.

[163] After a straight line of the parallel lines is switched to a selected state, the selected straight line can be dragged to adjust a distance between the two straight lines.

[164] FIG. 17 is a schematic diagram of editing isoperiodic lines according to an implementation of the disclosure.

[165] The isoperiodic lines correspond to two anchors in total.

[166] That is, it is necessary to create two anchors in the control region of the edit page. In the control region, a first target position on the main chart is touched and clicked once, and a first anchor is automatically created at the first target position when the finger is lifted. A first vertical straight line is automatically created by taking the first anchor as a point on the first vertical straight line. A second target position on the main chart is touched and clicked once (i.e., a second time), and when the finger is lifted, a second anchor is automatically created at the second target position. A second vertical straight line is automatically created by taking the second anchor as a point on the second vertical straight line. Other vertical straight lines of the isoperiodic lines are created by taking a distance between the first vertical straight line and the second vertical straight line as a periodic distance of the isoperiodic lines.

[167] After one of the anchors is switched to a selected state, the selected anchor can be dragged to adjust the periodic distance of the isoperiodic lines.

[168] FIG. 18 is a schematic diagram of editing channel lines according to an implementation of the disclosure.

[169] The channel lines correspond to three anchors in total.

[170] That is, it is necessary to create three anchors in the control region of the edit page. In the control region, a first target position on the main chart is touched and clicked once, and a first

anchor is created at the first target position when the finger is lifted. A second target position on the main chart is touched and clicked once (i.e., a second time), and when the finger is lifted, a second anchor is created at the second target position. A first straight line is created by taking both the first anchor and the second anchor as points on the first straight line and extending both ends of the first straight line to the boundary of the main chart. A third target position on the main chart is touched and clicked once and a third anchor is created at the third target position when the finger is lifted. A second straight line is created by taking the third anchor as a point on the second straight line, and making the second straight line parallel to the first straight line. A line symmetrical to the first straight line is created by using the second straight line as an axis of symmetry, to obtain a third straight line, so as to complete the creation of the channel lines.

[171] Further, after a straight line of the three straight lines is switched to a selected state, the selected straight line can be dragged to adjust a distance between the three straight lines. If the second straight line is dragged, a straight line of the other two straight lines with an increased distance from the second straight line is not moved, and a position of another straight line of the other two straight lines with a decreased distance from the second straight line is adjusted.

[172] FIG. 19 is a schematic diagram of editing a triangle according to an implementation of the disclosure.

[173] The triangle corresponds to three anchors in total.

[174] That is, it is necessary to create three anchors in the control region of the edit page. In the control region, a first target position on the main chart is touched and clicked once, and a first anchor is created at the first target position when the finger is lifted. A second target position on the main chart is touched and clicked once (i.e., a second time), and when the finger is lifted, a second anchor is created at the second target position. The first anchor is connected to the second anchor. A third target position on the main chart is touched and clicked once and a third anchor is created at the third target position when the finger is lifted. The first anchor is further connected to the third anchor, and the second anchor is further connected to the third anchor, to complete the creation of the triangle.

[175] FIG. 20 is a schematic diagram of editing a rectangle according to an implementation of the disclosure.

[176] The rectangle corresponds to two anchors in total.

[177] That is, it is necessary to create two anchors in the control region of the edit page. In

the control region, a first target position on the main chart is touched and clicked once, and a first anchor is created at the first target position when the finger is lifted. A second target position on the main chart is touched and clicked once (i.e., a second time), and when the finger is lifted, a second anchor is created at the second target position. A rectangle is created by taking the first anchor and the second anchor as diagonal vertices of the rectangle.

[178] After an anchor of the anchors is switched to a selected state, the anchor can be dragged to adjust a length and width of the rectangle.

[179] FIG. 21 is a schematic diagram of editing a parallelogram according to implementations of the disclosure.

[180] The parallelogram corresponds to three anchors in total.

[181] That is, it is necessary to create three anchors in the control region. In the control region, a first target position on the main chart is touched and clicked, and a first anchor is created at the first target position when the finger is lifted. A second target position on the main chart is touched and clicked once (i.e., a second time), and when the finger is lifted, a second anchor is created at the second target position. A first line segment is created by connecting the first anchor and the second anchor. A third target position on the main chart is touched and clicked once (i.e., a third time) and a third anchor is created at the third target position when the finger is lifted. A second line segment is created by connecting the second anchor and the third anchor. A third line segment is created by drawing a parallel line of the first line segment using the third anchor as an end point of the parallel line. A fourth line segment is created by drawing a parallel line of the second line segment using the first anchor as an end point of the parallel line of the second line segment. A closed figure formed by the first line segment, the second line segment, the third line segment, and the fourth line segment is the created parallelogram.

[182] FIG. 22 is a schematic diagram of editing a circle according to an implementation of the disclosure.

[183] The circle corresponds to two anchors in total.

[184] That is, it is necessary to create two anchors in the control region of the edit page. In the control region, a first target position on the main chart is touched and clicked once, and a first anchor is created at the first target position when the finger is lifted. A second target position on the main chart is touched and clicked once (i.e., a second time), and when the finger is lifted, a second anchor is created at the second target position. A circle is created by using the first anchor

as a center of the circle and a distance between the first anchor and the second anchor as a radius. Alternatively, a circle is created by using the first anchor as a point on the circle and a distance between the first anchor and the second anchor as a diameter of the circle.

[185] After an anchor of the anchors is switched to a selected state, the anchor can be dragged to adjust the diameter of the circle.

[186] FIG. 23 is a schematic diagram of editing a three-wave line according to an implementation of the disclosure.

[187] The three-wave line corresponds to four anchors in total. That is, it is necessary to create four anchors in the control region of the edit page. In the control region, a first target position on the main chart is touched and clicked once, and a first anchor is created at the first target position when the finger is lifted. A second target position on the main chart is touch and click once (i.e., a second time), and when the finger is lifted, a second anchor is created at the second target position. A first-wave line segment is created by connecting the first anchor and the second anchor. A third target position on the main chart is touched and clicked once (i.e., a third time), and a third anchor is created at the third target position when the finger is lifted. A second-wave line segment is created by connecting the second anchor and the third anchor. A fourth target position on the main chart is touched and clicked once (i.e., a fourth time), and a fourth anchor is created at the fourth target position when the finger is lifted. A fourth-wave line segment is created by connecting the third anchor and the fourth anchor. In this way, the creation of the three-wave line is completed.

[188] After an anchor of the anchors is switched to a selected state, the anchor can be dragged to adjust the lengths and angles of the line segments connected to the anchor.

[189] The reference diagram created on the main chart can be used to analyze the shape of the main chart, so as to determine the current situation and subsequent trend of the main chart. For example, the straight line can be used as a trend line to predict a future price trend of the stock. One end of the trend line is connected to a highest stock price point and the other end of the trend line is connected to a lowest stock price point within a time period. The angle of the trend line can reflect a rising or falling trajectory of the stock price. For example, at the bottom of the stock market, the energy of short positions is gradually weakening, but the energy advantage of long positions is slowly revealed rather than suddenly increased, which may cause an arc bottom to appear in the K-line chart. In this case, a circular or elliptical reference diagram

can be created to determine whether the K-line chart has an arc bottom. For another example, the three-wave line is a simplification of the eight-wave line. The three-wave line includes three-wave trends of A, B, and C. In the rising process, wave A is a first wave, wave B is a correction wave (a second wave), and wave C is a main rising wave (a third wave). According to the three-wave trends of A, B, and C, the rebound at the initial rising stage can be noted, and the stock at the lowest point is bought accordingly, thereby enjoying a greater increase later.

[190] Implementations of the disclosure provide a device for reference diagram editing for a chart. FIG. 24 is a schematic structural diagram illustrating a device for reference diagram editing for a chart according to an implementation of the disclosure.

[191] In the implementation, the device includes but is not limited to a processor 2410 and a memory 2420.

[192] The processor 2410 is configured to perform reference diagram editing programs for a chart, which are stored in the memory 2420, to perform the above method for reference diagram editing for the chart. Since the method has been described in detail above, it will not be repeated herein.

[193] In particular, as illustrated in FIG. 25, the processor 2410 includes a user interface (UI) unit 2510, a gesture controller 2520, and a graphic calculating unit 2530. The gesture controller 2520 and the graphic calculating unit 2530 can be separately provided or can be integrated as one unit.

[194] The user interface unit 2510 is configured to: detect whether a chart operation object is selected during display of the chart; switch the chart to an editable state in response to detecting that the chart operation object is selected; detect, after switching the chart to the editable state, touch events that occur in an edit page; and report information of the touch events detected to the gesture controller 2520.

[195] The information of the touch events includes position coordinates of positions where the touch events occur.

[196] The gesture controller 2520 is configured to: receive the touch events reported by the user interface unit 2510, conduct validity verification on the touch events; determine that preset edit-touch events are detected in the control region of the edit page corresponding to the chart if the validity verification of the touch events passes; and transmit information of the edit-touch events to the graphic calculating unit 2530.

[197] The edit page includes the control region and the chart, and the control region coincides with a region where a main chart of the chart is located.

[198] The information of the edit-touch events includes position coordinates of positions where the edit-touch events occur.

[199] The conducting of the validity verification includes: determining whether the position coordinates of the position where the touch event occurs are within the control region; and if the position coordinates of the position where the touch event occurs are within the control region, determining that the validity verification passes; or otherwise, determine that the validity verification fails.

[200] The graphic calculating unit 2530 is configured to perform a reference diagram editing operation on the main chart according to the edit-touch events detected in the control region of the edit page, that is, to edit a reference diagram on the main chart.

[201] The graphic calculating unit 2530 is further configured to transmit a reference diagram edited on the main chart to the user interface unit 2510. The user interface unit 2510 is further configured to receive the reference diagram edited on the main chart and transmitted by the graphic calculating unit 2530 and display the reference diagram on the main chart in the edit page.

[202] Furthermore, the user interface unit 2510 is further configured to detect in the edit page whether a preset drawing line type is selected after switching the chart to the editable state and prior to detecting the preset edit-touch events in the control region of the edit page corresponding to the chart. The user interface unit 2510 is further configured to determine, in response to detecting that a preset drawing line type is selected, a total anchor number corresponding to the drawing line type selected, and transmit the total anchor number corresponding to the drawing line type selected to the graphic calculating unit 2530. The graphic calculating unit 2530 is configured to create at least one anchor on the main chart of the chart according to the edit-touch events detected in the control region of the edit page, and draw on the main chart, based on the at least one anchor created, a shape for creating the reference diagram. The creating of the reference diagram is completed when the number of anchors created reaches the total anchor number.

[203] Furthermore, the edit-touch events include a touch-down event and a touch-up event. The graphic calculating unit 2530 is configured to detect the touch-up event in the control region

of the edit page in response to detecting the touch-down event in the control region of the edit page, and create an anchor according to a position where the touch-up event occurs in response to detecting the touch-up event in the control region

[204] Furthermore, the edit-touch events further include a touch-move event. The graphic calculating unit 2530 is further configured to: in the process of creating the at least one anchor in the main chart of the chart according to the edit-touch events detected in the control region of the edit page, enlarge, by a first preset percentage, an image within a first preset range of a position where the touch-down event occurs and display the enlarged image, in response to detecting the touch-down event in the control region of the edit page and when the touch -down event lasts for a first preset duration, and/or enlarge, by a second preset percentage, an image within a second preset range of a position where the touch-move event occurs and display the enlarged image, in response to detecting the touch-move event in the control region of the edit page. The graphic calculating unit 2530 is configured to create an anchor at the position where the touch-up event occurs, or create an anchor at a first preset point on the main chart when a distance between the position where the touch-up event occurs and the first preset point is less than a first preset distance threshold.

[205] Furthermore, the graphic calculating unit 2530 is configured to determine the number of anchors created and transmit the number of the anchors created to the user interface unit 2510, during creating of the at least one anchor on the main chart according to the edit-touch events detected in the control region of the edit page. The user interface unit 2510 is configured to display anchor-creation prompt information when the number of the anchors created is less than or equal to the total anchor number, and/or display creation-completion prompt information when the number of the anchors created is equal to the total anchor number. The anchor-creation prompt information includes at least one of: the drawing line type selected, the total anchor number, or the number of the anchors created.

[206] Furthermore, the edit-touch events include a touch-down event, a touch-move event, and a touch-up event. The user interface unit 2510 is further configured to switch a created reference diagram to a selected state in response to detecting in the control region of the edit page that the touch-down event occurs on the created reference diagram.

[207] The user interface unit 2510 is further configured to report information of the touch-move event to the graphic calculating unit 2530 in response to detecting the touch-move event on

the created reference diagram, after switching the created reference diagram to the selected state. The graphic calculating unit 2530 is further configured to adjust a position of the created reference diagram according to the touch-move event. The user interface unit 2510 is further configured to detect an occurrence of the touch-up event on the created reference diagram and report information of the touch-up event to the graphic calculating unit 2530 in response to detecting the touch-up event on the created reference diagram, during adjusting the position of the created reference diagram according to the touch-move event. The graphic calculating unit 2530 is further configured to fix the position of the created reference diagram according to the touch-up event. The user interface unit 2510 is further configured to modify an attribute of the created reference diagram according to a preset attribute modify option, in response to detecting that the attribute modify option is selected, after switching the created reference diagram to the selected state. The user interface unit 2510 is further configured to delete the created reference diagram in response to detecting that a preset graphic delete option is selected, after switching the created reference diagram to the selected state.

[208] Furthermore, the edit-touch events include a touch-down event, a touch-move event, and a touch-up event. The user interface unit 2510 is further configured to switch an anchor of a created reference diagram to a selected state in response to detecting in the control region of the edit page that the touch-down event occurs on the anchor of the created reference diagram. The user interface unit 2510 is further configured to report information of the touch-move event to the graphic calculating unit 2530 in response to detecting the touch-move event on the anchor of the created reference diagram, after switching the anchor of the created reference diagram to the selected state. The graphic calculating unit 2530 is further configured to adjust a position of the anchor of the created reference diagram according to the touch-move event and adjust a shape of the created reference diagram according to the adjusted position of the anchor of the created reference diagram. The user interface unit 2510 is further configured to report the touch-up event to the graphic calculating unit 2530 in response to detecting the touch-up event on the anchor of the created reference diagram, during adjusting of the position of the anchor of the created reference diagram according to the touch-move event. The graphic calculating unit 2530 is further configured to fix the adjusted position of the anchor of the created reference diagram according to the touch-up event and fix the shape of the created reference diagram according to the fixed position of the anchor of the created reference diagram. The graphic calculating unit

2530 is further configured to transmit the position-adjusted anchor and the shape-adjusted reference diagram to the user interface unit 2510 for display. Fixing the adjusted position of the anchor of the created reference diagram according to the touch-up event includes: fixing the anchor of the created reference diagram at a position where the touch-up event occurs; or, moving the anchor to a second preset point on the main chart and fixing the anchor at the second preset point, when a distance between the position where the touch-up event occurs and the second preset point is less than a second preset distance threshold.

[209] Furthermore, the edit-touch events include a touch-down event and a touch-move event. The user interface unit 2510 is further configured to: during performing the reference diagram editing operation on the main chart of the chart, switch a created reference diagram or an anchor of a created reference diagram to a selected state in response to detecting the touch-down event on a line of the created reference diagram or on the anchor of the created reference diagram and when the touch-down event lasts for a second preset duration, and enlarge, by a third preset percentage, an image within a third preset range of a position where the touch-down event occurs and display the enlarged image; and/or enlarge, by a fourth preset percentage, an image within a fourth preset range of a position where the touch-move event occurs and display the enlarged image, in response to detecting the touch-move event on a line of a created reference diagram or on an anchor of a created reference diagram; and/or switch a created reference diagram or an anchor of a created reference diagram to a selected state in response to detecting the touch-down event on a line of the created reference diagram or on the anchor of the created reference diagram, and display in a preset manner the created reference diagram or the anchor of the created reference diagram in the selected state after switching the created reference diagram or the anchor of the created reference diagram to the selected state.

[210] The user interface unit 2510 is further configured to: after a reference diagram is edited on the main chart, upload the edited reference diagram on the main chart to the memory 2420 and/or a background server.

[211] Implementations of the disclosure further provide a computer-readable storage medium. The computer-readable storage medium has one or more programs stored thereon. The computer-readable storage medium may include a transitory memory, such as a random access memory. The computer-readable storage medium may also include a non-transitory memory, such as a read-only memory, a flash memory, a hard disk, or a solid-state hard disk. The

computer-readable storage medium may also include a combination of the above memories. The one or more programs, when executed by one or more processors, cause the one or more processors to perform the above method for reference diagram editing for the chart. Since the method has been described in detail above, it will not be repeated herein.

[212] The foregoing merely illustrates the implementations of the disclosure and is not intended to limit the disclosure. For those skilled in the art, various modifications and changes are allowed in the disclosure. Any modification, equivalent replacement, improvement, etc. made within the idea and principles of the disclosure shall fall within the scope of protection of the disclosure.

What is claimed is:

1. A method for reference diagram editing for a chart, the method being performed on a mobile terminal and comprising, during display of the chart:

detecting whether a chart operation object is selected;

switching the chart to an editable state in response to detecting that the chart operation object is selected;

detecting preset edit-touch events in a control region of an edit page corresponding to the chart after switching the chart to the editable state, wherein the edit page comprises the control region and the chart, and the control region coincides with a region where a main chart of the chart is located, wherein a plurality of drawing line types are preset in the edit page and are classified into multi-grade types, wherein the multi-grade types comprise a first grade type as a parent type and a second grade type as a child type of the first grade type, wherein the first grade type comprises a polygon type, and the second grade type comprises triangle, rectangle, parallelogram, circle, and ellipse; and

performing a reference diagram editing operation on the main chart of the chart according to the edit-touch events detected in the control region of the edit page to edit a reference diagram on the main chart;

the method further comprising, subsequent to said switching the chart to the editable state and prior to said detecting the edit-touch events in the control region of the edit page:

detecting in the edit page whether a preset drawing line type in the plurality of drawing line types is selected; and

determining, in response to detecting that a preset drawing line type in the plurality of drawing line types is selected, a total anchor number corresponding to the drawing line type selected, wherein said performing the reference diagram editing operation on the main chart of the chart according to the edit-touch events detected in the control region of the edit page comprises:

creating at least one anchor on the main chart of the chart according to the edit-touch events detected in the control region of the edit page; and

drawing on the main chart, based on the at least one anchor created, a shape for creating

the reference diagram, wherein creating of the reference diagram is completed when a number of anchors created reaches the total anchor number,

wherein a magnetic attraction function is used during anchor creating, and when a touch-up event is detected in the control region of the edit page, it is detected whether a distance between a position where the touch-up event occurs and a first preset point on the main chart is smaller than a first preset distance threshold; and when it is detected that the distance between the position where the touch-up event occurs and the first preset point is smaller than the first preset distance threshold, the anchor is created at the first preset point.

2. The method of claim 1, wherein the edit-touch events comprise a touch-down event and a touch-up event, and said creating the at least one anchor on the main chart of the chart according to the edit-touch events detected in the control region of the edit page comprises:

detecting the touch-up event in the control region of the edit page in response to detecting the touch-down event in the control region of the edit page; and

creating an anchor according to a position where the touch-up event occurs, in response to detecting the touch-up event in the control region of the edit page.

3. The method of claim 2, wherein the edit-touch events further comprise a touch-move event, and the method further comprises, during the creating of the at least one anchor on the main chart of the chart according to the edit-touch events detected in the control region of the edit page:

enlarging, by a first preset percentage, an image within a first preset range of a position where the touch-down event occurs and displaying the enlarged image, in response detecting the touch-down event in the control region of the edit page and when the touch-down event lasts for a first preset duration; and/or

enlarging, by a second preset percentage, an image within a second preset range of a position where the touch-move event occurs and displaying the enlarged image, in response to detecting the touch-move event in the control region of the edit page, and

wherein said creating the anchor according to the position where the touch-up event occurs comprises:

creating the anchor at the position where the touch-up event occurs; or

creating the anchor at a first preset point on the main chart in response to detecting that a

distance between the position where the touch-up event occurs and the first preset point is less than a first preset distance threshold.

4. The method of claim 1, further comprising, during the creating of the at least one anchor on the main chart of the chart according to the edit-touch events detected in the control region of the edit page:

displaying anchor-creation prompt information when the number of the anchors created is less than the total anchor number, wherein the anchor-creation prompt information comprises at least one of: the selected drawing line type, the total anchor number, or the number of the anchors created; and/or

displaying creation-completion prompt information when the number of the anchors created is equal to the total anchor number.

5. The method of claim 1, wherein the edit-touch events comprise a touch-down event, a touch-move event, and a touch-up event, and said performing the reference diagram editing operation on the main chart of the chart according to the edit-touch events detected in the control region of the edit page comprises:

in response to detecting in the control region of the edit page that the touch-down event occurs on the created reference diagram, switching the reference diagram to a selected state; and

subsequent to said switching the created reference diagram to the selected state, adjusting a position of the created reference diagram according to the touch-move event in response to detecting that the touch-move event occurs on the created reference diagram, and during the adjusting of the position of the created reference diagram according to the touch-move event, fixing the position of the created reference diagram according to the touch-up event in response to detecting that the touch-up event occurs on the created reference diagram; and/or

subsequent to said switching the reference diagram to the selected state, modifying an attribute of the created reference diagram according to a preset attribute modify option in response to detecting that the preset attribute modify option is selected; and/or

subsequent to said switching the reference diagram to the selected state, deleting the created reference diagram in response to detecting that a preset graphic delete option is selected.

6. The method of claim 1, wherein the edit-touch events comprise a touch-down event, a touch-move event, and a touch-up event, and said performing the reference diagram editing

operation on the main chart of the chart according to the edit-touch events detected in the control region of the edit page comprises:

- in response to detecting that the touch-down event occurs on an anchor of a created reference diagram, switching the anchor to a selected state;

- subsequent to said switching the anchor to the selected state, in response to detecting that the touch-move event occurs on the anchor, adjusting a position of the anchor according to the touch-move event and adjusting a shape of the created reference diagram where the anchor is located according to the adjusted position of the anchor; and

- in response to detecting the touch-up event on the anchor during the adjusting of the position of the anchor according to the touch-move event, fixing the adjusted position of the anchor according to the touch-up event and fixing the shape of the created reference diagram where the anchor is located according to the fixed position of the anchor of the created reference diagram, wherein said fixing the adjusted position of the anchor according to the touch-up event comprises:

 - fixing the anchor at a position where the touch-up event occurs; or

 - moving the anchor to a second preset point on the main chart and fixing the anchor at the second preset point in response to detecting that a distance between the position where the touch-up event occurs and the second preset point is less than a second preset distance threshold.

7. The method of claim 1, wherein the edit-touch events comprise a touch-down event and a touch-move event, and the method further comprises, during the performing of the reference diagram editing operation on the main chart of the chart:

- in response to detecting that the touch-down event occurs on a line or an anchor of a created reference diagram and lasts for a second preset duration, switching the created reference diagram or the anchor where the touch-down event occurs to a selected state, and enlarging, by a third preset percentage, an image within a third preset range of a position where the touch-down event occurs and displaying the enlarged image; and/or

- in response to detecting that the touch-move event occurs on a line of the created reference diagram or on an anchor of the created reference diagram, enlarging, by a fourth preset percentage, an image within a fourth preset range of a position where the touch-move event occurs and displaying the enlarged image; and/or

- in response to detecting that the touch-down event occurs on a line of the created reference diagram or on an anchor of the created reference diagram, switching the created

reference diagram or the anchor to the selected state, and subsequent to said switching the created reference diagram or the anchor to the selected state, displaying, in a preset display manner, the created reference diagram or the anchor in the selected state.

8. A device for reference diagram editing for a chart, the device comprising:
a memory;
a processor; and
a computer program stored on the memory and executable on the processor,
wherein the computer program, when executed by the processor, causes the processor to implement steps of the method for reference diagram editing for the chart according to any one of claims 1 to 7.

9. A computer-readable storage medium having a program for reference diagram editing for a chart stored thereon, wherein the program, when executed by a processor, implements steps of the method for reference diagram editing for the chart according to any one of claims 1 to 7.