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(54) **APPARATUS AND METHOD FOR PROVIDING BOARD GAME SERVICE IN MOBILE TERMINAL**

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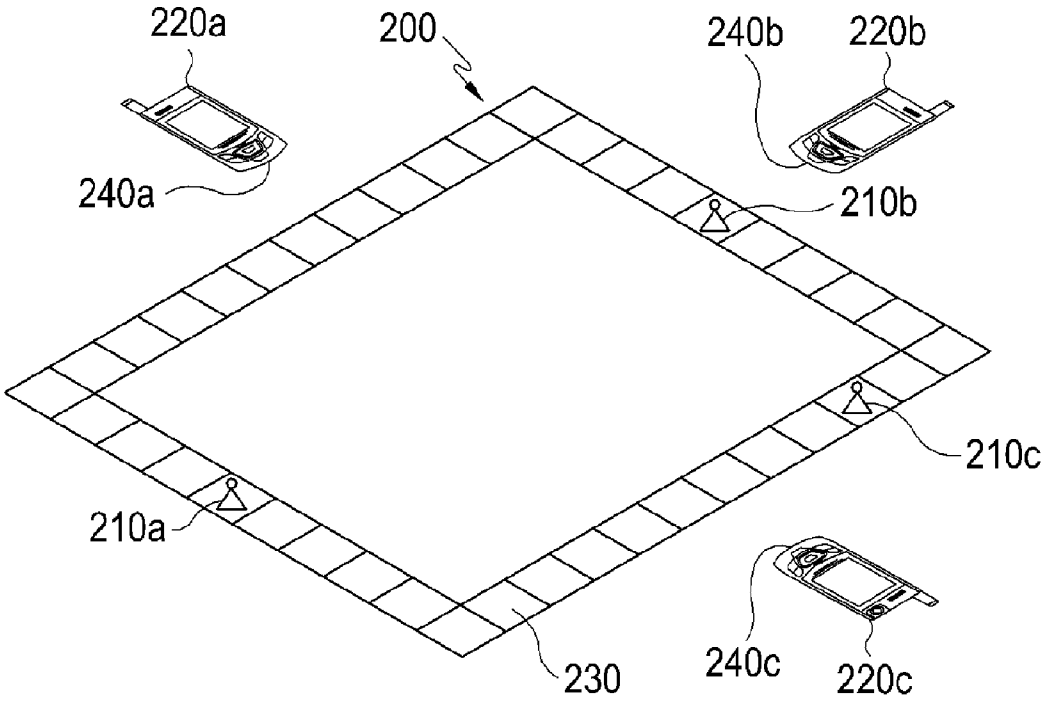
(57) **ABSTRACT**

Disclosed is an apparatus and a method for providing a board game in a mobile terminal of a mobile communication system. An apparatus for providing a board game service in a mobile terminal, said apparatus comprising: a display means for displaying a game progress status; a sensing means for sensing a piece, a game board on which said piece moves and a location of the piece movement on said game board; a memory storing a game program and algorithm for said board game service; and, a controller for controlling said sensing means to sense the location of the piece movement according to the game program stored in said memory, producing game progress information about the location of the piece movement, and controlling said display means to display game results having said game progress information applied.



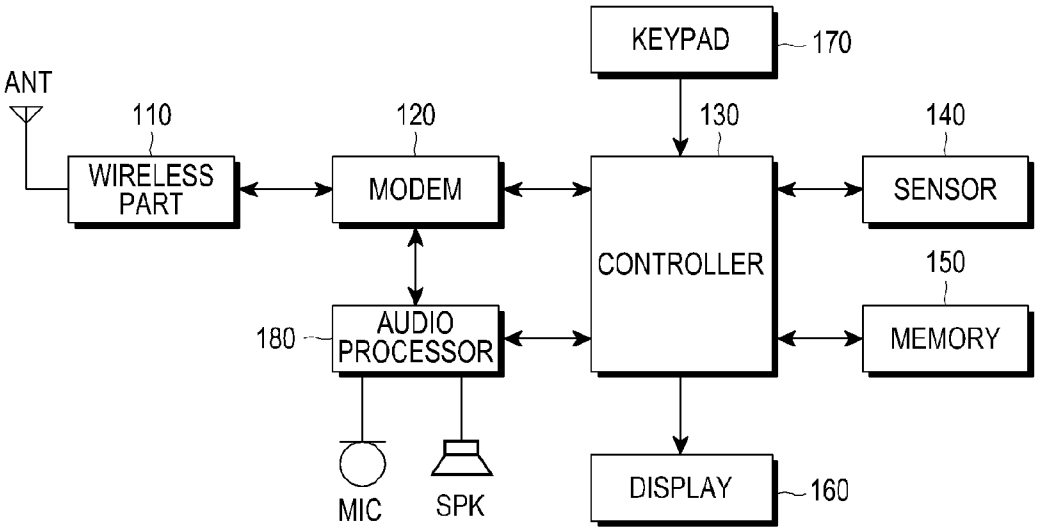

KEYPAD
170
ANT
110
120
130
140
WIRELESS PART
MODEM
CONTROLLER
SENSOR
150
180
AUDIO PROCESSOR
MEMORY
MIC
SPK
DISPLAY
160

FIG.1

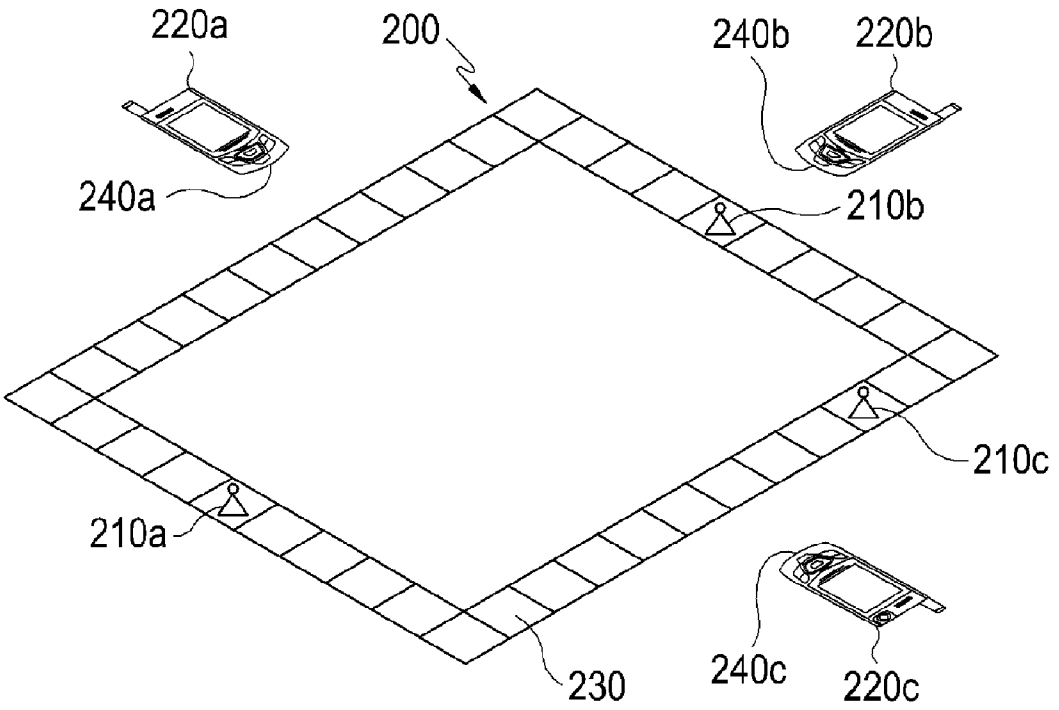


FIG.2

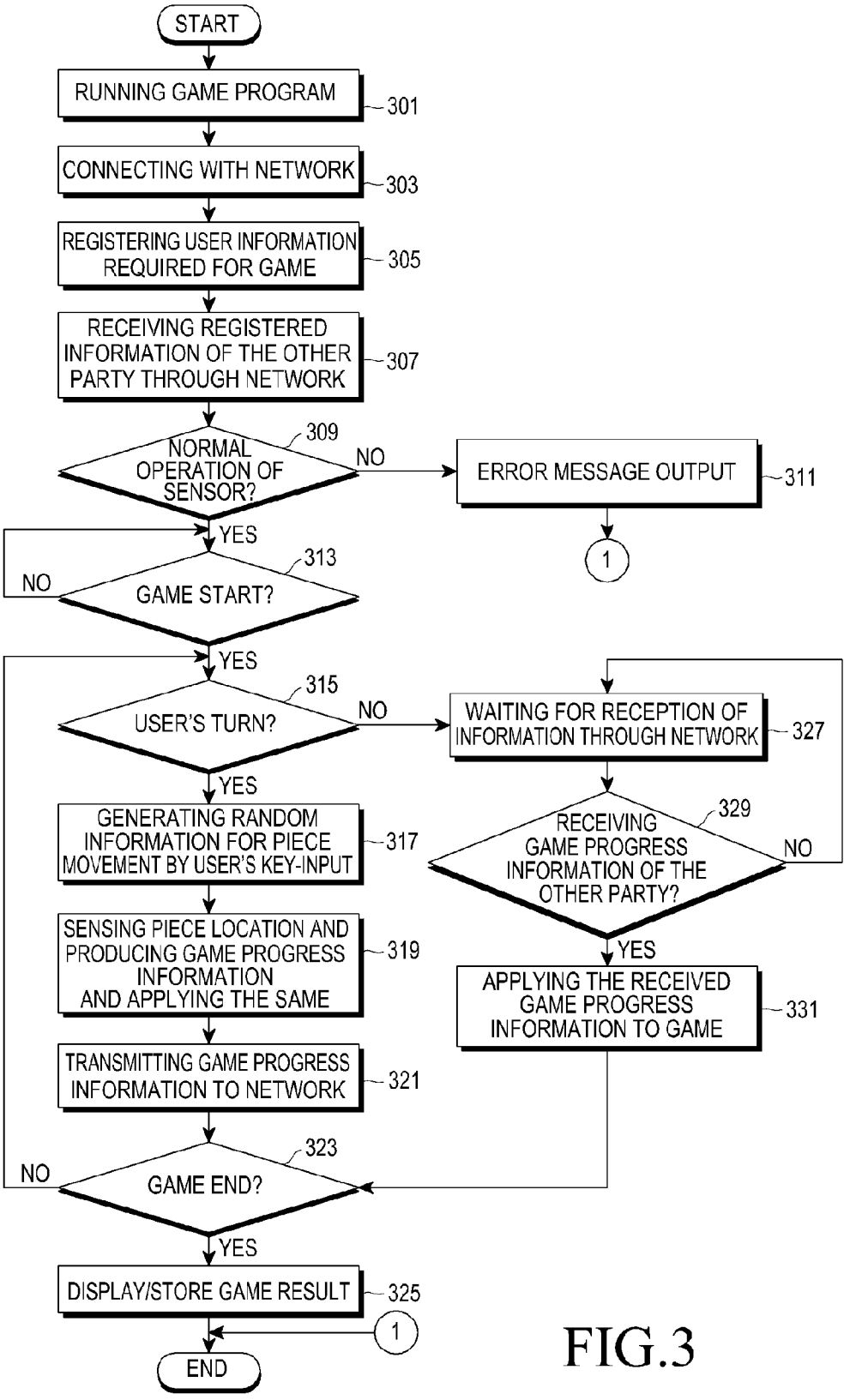

START
RUNNING GAME PROGRAM
301
CONNECTING WITH NETWORK
303
REGISTERING USER INFORMATION REQUIRED FOR GAME
305
RECEIVING REGISTERED INFORMATION OF THE OTHER PARTY THROUGH NETWORK
307
NORMAL OPERATION OF SENSOR?
309
NO
ERROR MESSAGE OUTPUT
311
1
YES
GAME START?
313
NO
YES
USER'S TURN?
315
NO
WAITING FOR RECEPTION OF INFORMATION THROUGH NETWORK
327
YES
GENERATING RANDOM INFORMATION FOR PIECE MOVEMENT BY USER'S KEY-INPUT
317
RECEIVING GAME PROGRESS INFORMATION OF THE OTHER PARTY?
329
NO
SENSING PIECE LOCATION AND PRODUCING GAME PROGRESS INFORMATION AND APPLYING THE SAME
319
YES
APPLYING THE RECEIVED GAME PROGRESS INFORMATION TO GAME
331
TRANSMITTING GAME PROGRESS INFORMATION TO NETWORK
321
GAME END?
323
NO
YES
DISPLAY/STORE GAME RESULT
325
1
END

FIG.3

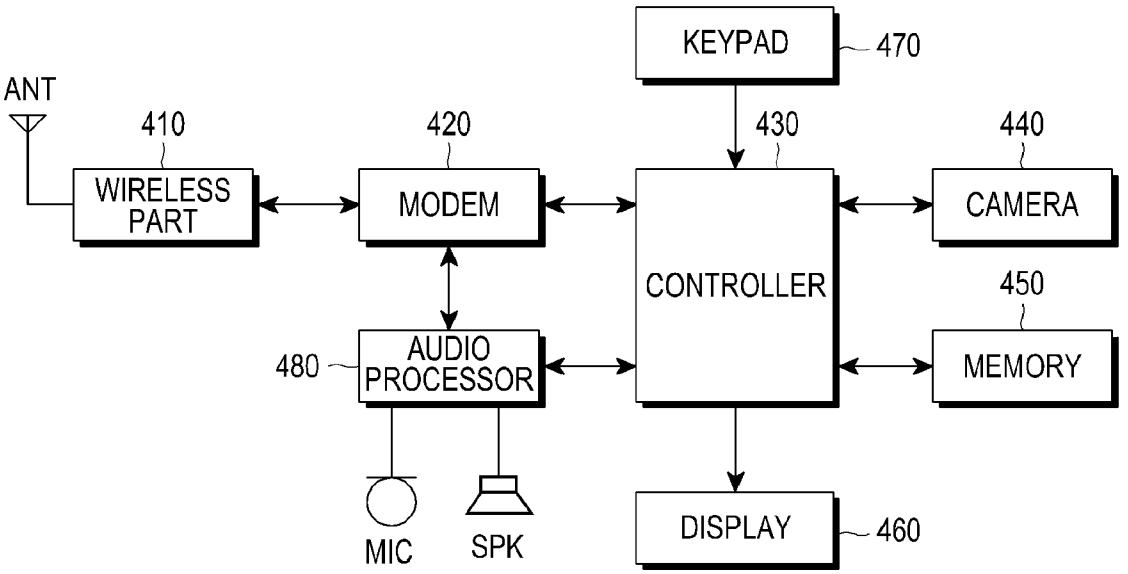

KEYPAD
470
ANT
410
420
430
440
WIRELESS PART
MODEM
CONTROLLER
CAMERA
450
480
AUDIO PROCESSOR
MEMORY
MIC
SPK
DISPLAY
460

FIG.4

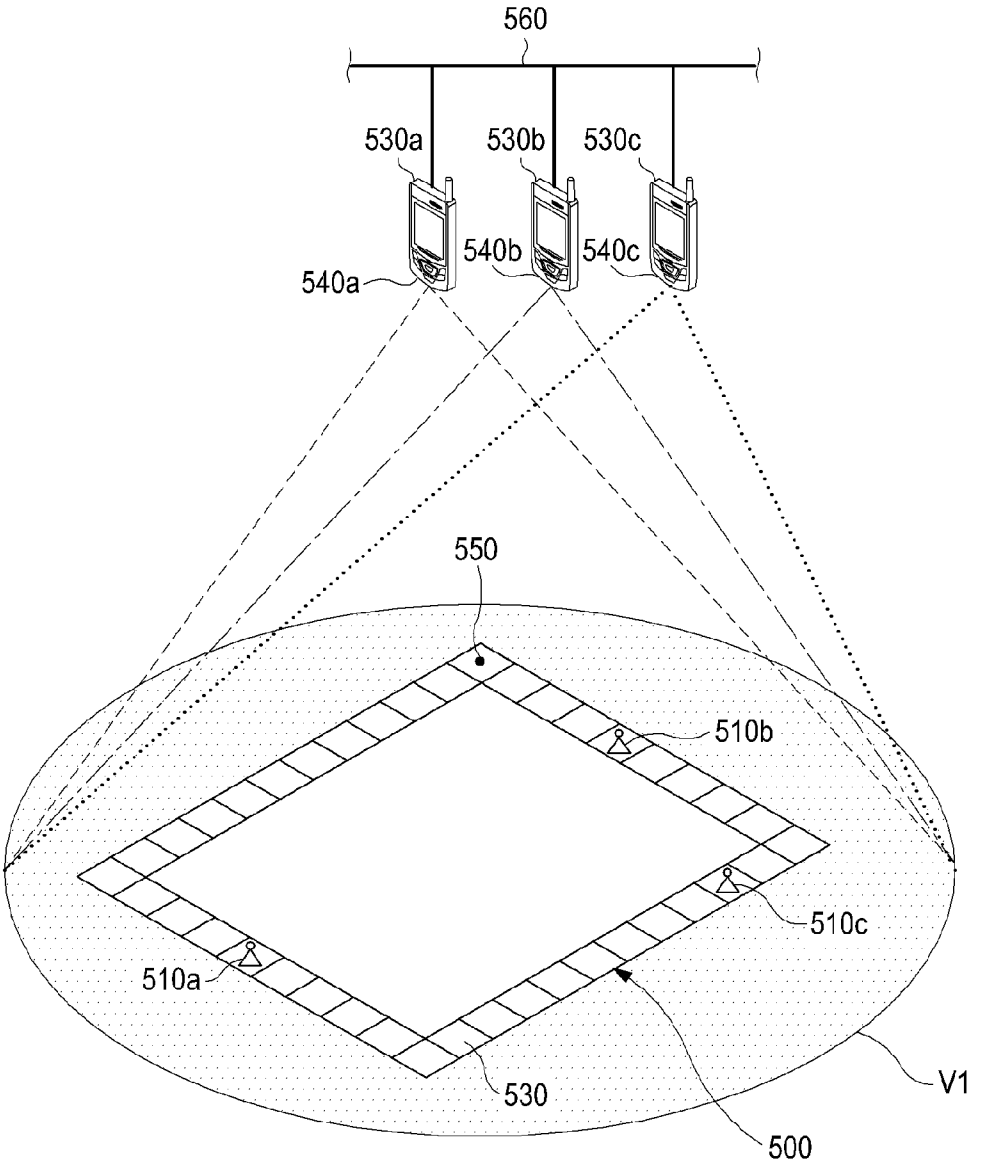

560
530a
530b
530c
540a
540b
540c
550
510b
510c
510a
530
500
V1

FIG.5

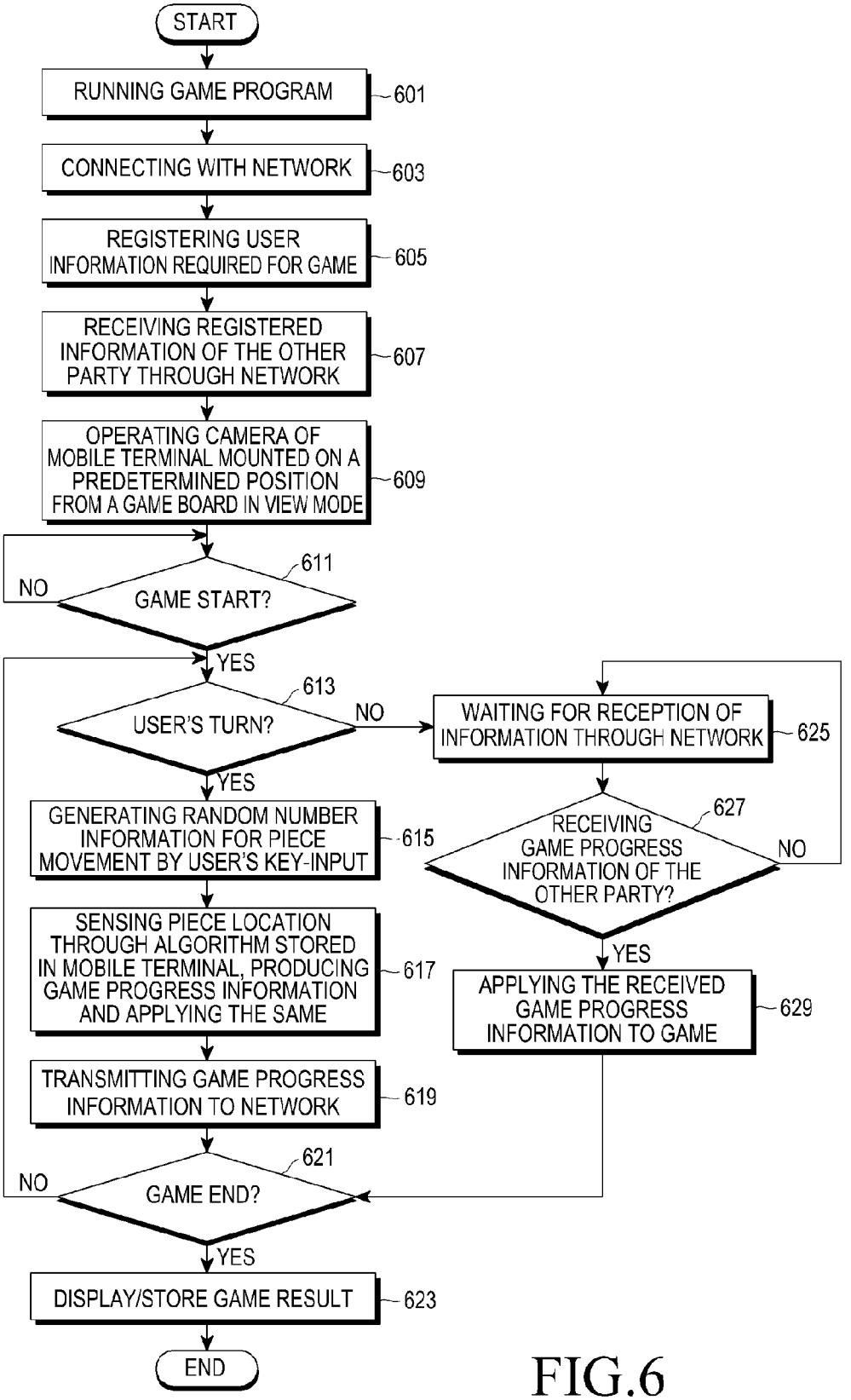

START
RUNNING GAME PROGRAM
601
CONNECTING WITH NETWORK
603
REGISTERING USER INFORMATION REQUIRED FOR GAME
605
RECEIVING REGISTERED INFORMATION OF THE OTHER PARTY THROUGH NETWORK
607
OPERATING CAMERA OF MOBILE TERMINAL MOUNTED ON A PREDETERMINED POSITION FROM A GAME BOARD IN VIEW MODE
609
611
GAME START?
NO
YES
613
USER'S TURN?
NO
YES
WAITING FOR RECEPTION OF INFORMATION THROUGH NETWORK
625
627
RECEIVING GAME PROGRESS INFORMATION OF THE OTHER PARTY?
NO
YES
GENERATING RANDOM NUMBER INFORMATION FOR PIECE MOVEMENT BY USER'S KEY-INPUT
615
APPLYING THE RECEIVED GAME PROGRESS INFORMATION TO GAME
629
SENSING PIECE LOCATION THROUGH ALGORITHM STORED IN MOBILE TERMINAL, PRODUCING GAME PROGRESS INFORMATION AND APPLYING THE SAME
617
TRANSMITTING GAME PROGRESS INFORMATION TO NETWORK
619
621
GAME END?
NO
YES
DISPLAY/STORE GAME RESULT
623
END

FIG.6

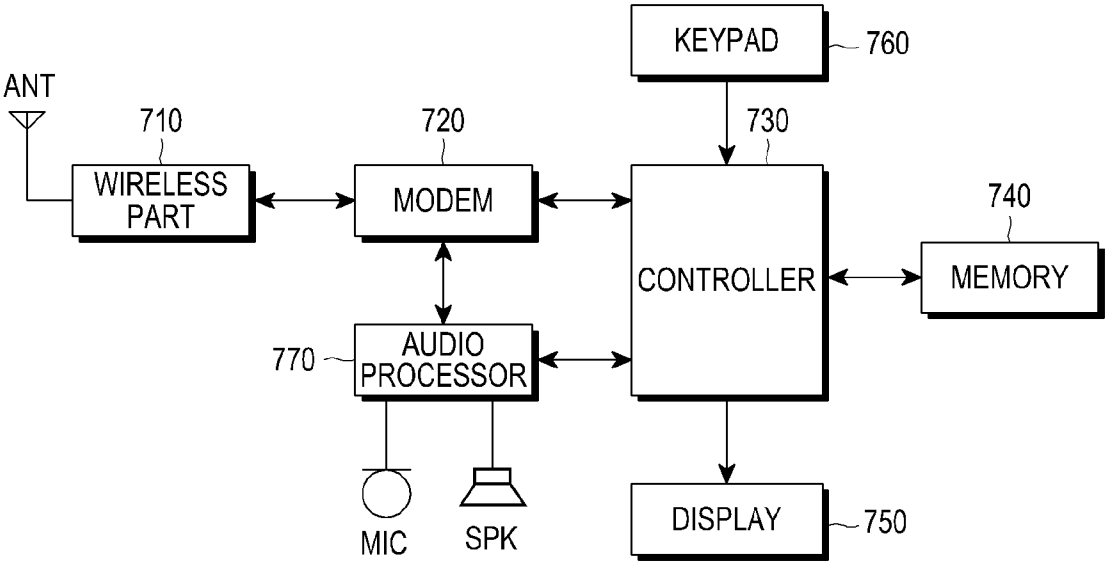

KEYPAD
760
ANT
710
720
730
WIRELESS PART
MODEM
740
CONTROLLER
MEMORY
770
AUDIO PROCESSOR
MIC
SPK
DISPLAY
750

FIG.7

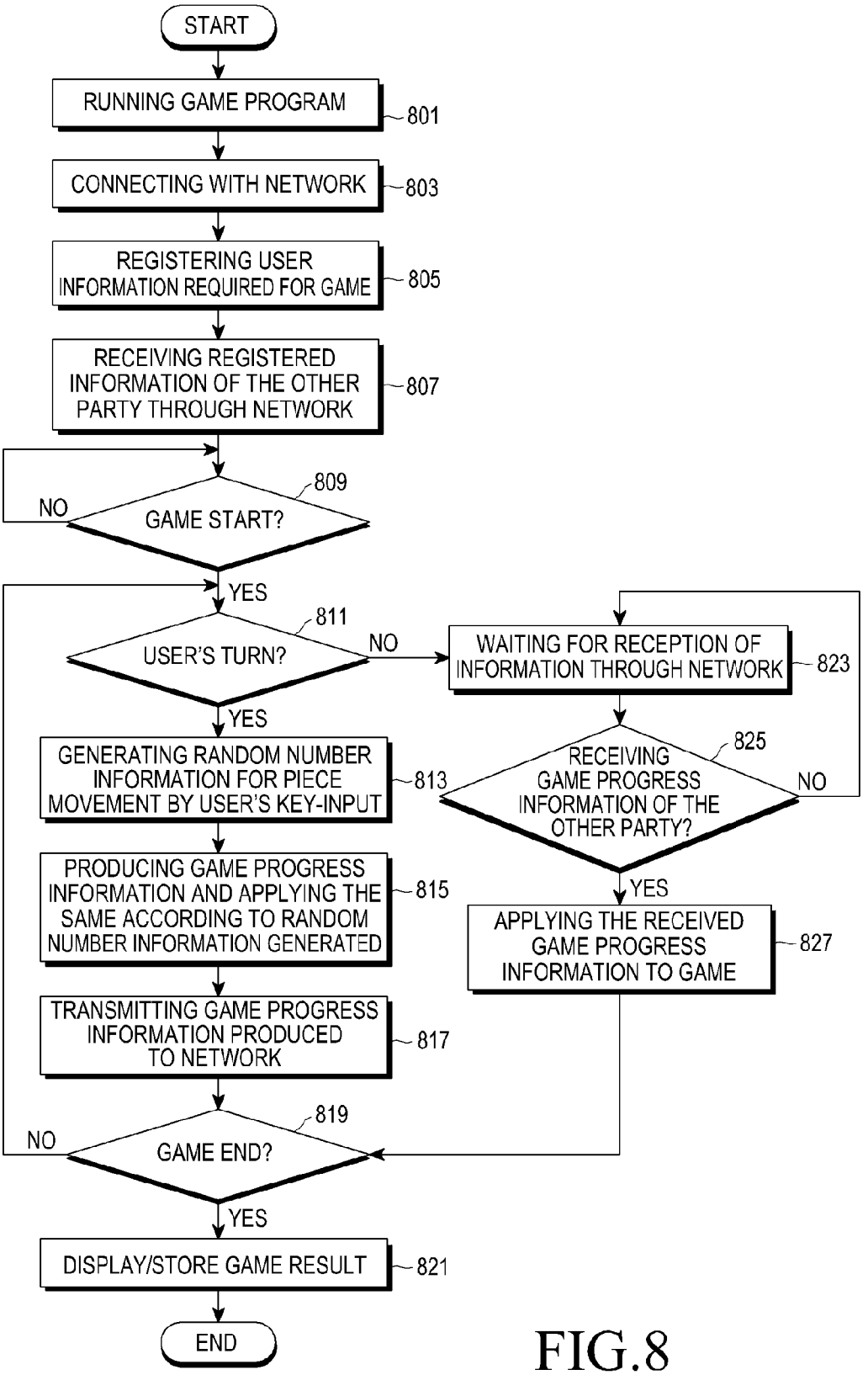

START
RUNNING GAME PROGRAM
801
CONNECTING WITH NETWORK
803
REGISTERING USER INFORMATION REQUIRED FOR GAME
805
RECEIVING REGISTERED INFORMATION OF THE OTHER PARTY THROUGH NETWORK
807
809
GAME START?
NO
YES
811
USER'S TURN?
NO
YES
WAITING FOR RECEPTION OF INFORMATION THROUGH NETWORK
823
GENERATING RANDOM NUMBER INFORMATION FOR PIECE MOVEMENT BY USER'S KEY-INPUT
813
825
RECEIVING GAME PROGRESS INFORMATION OF THE OTHER PARTY?
NO
YES
PRODUCING GAME PROGRESS INFORMATION AND APPLYING THE SAME ACCORDING TO RANDOM NUMBER INFORMATION GENERATED
815
APPLYING THE RECEIVED GAME PROGRESS INFORMATION TO GAME
827
TRANSMITTING GAME PROGRESS INFORMATION PRODUCED TO NETWORK
817
819
GAME END?
NO
YES
DISPLAY/STORE GAME RESULT
821
END

FIG.8

APPARATUS AND METHOD FOR PROVIDING BOARD GAME SERVICE IN MOBILE TERMINAL

TECHNICAL FIELD

[0001] The present invention relates to an apparatus and a method for providing a board game service in a mobile terminal of the mobile communication system, and more particularly to an apparatus and a method for providing a board game by sensing a location of a piece through a mobile terminal.

BACKGROUND ART

[0002] In general, the mobile terminal can be carried by an individual for transmission and reception of voice and data communication irrespective of time and place.

[0003] The mobile terminal comprises a cell phone, a WAP phone (a work analysis program phone), a PDA (a personal digital assistant), a web pad and etc. and has the mobility enlarged with the emphasis on a personal service, so that many people make use of it.

[0004] On the other hand, not only voice communication, but also an image data transmission/reception service is available using the mobile terminal. Besides a SMS (short message service) and a voice service basically provided through the mobile terminal, an additional service comprises: a voice information service, in which a mobile terminal provider provides voice information regarding news, sports, stocks, weather and etc.; a stock information service provided as a text message; a traffic information service regarding a traffic situation; a PC communication search service; an internet service; a fax service; an E-mail service and etc, as well as a service for successful communication and communication quality that is regarded as the most important in using the mobile terminal. In other words, the additional service comprises most of the communication services for providing the information.

[0005] Recently, except for the above-mentioned services, a broadcasting service and a service for providing game contents are rapidly and significantly enlarged according to the increasing request of the mobile terminal user. Specifically, it is possible to receive a broadcasting service like a DMB (a digital multimedia broadcasting), and to transmit/receive various kinds of video/images due to the improvement in the data transmission rate.

[0006] Further, because a processing rate of a processor in the mobile terminal has been significantly improved and because there has been increasing requests of the mobile terminal user for the game service, a mobile terminal manufacturer or a mobile communication provider provides various kinds of the game contents in order to meet the requests. Recently, a game phone, which enables the user to enjoy a game with a sense of reality by means of a 3-D image and sound, has been actively developed.

DISCLOSURE

Technical Problem

[0007] Accordingly, the present invention provides an apparatus and a method for providing a game service through a mobile terminal.

[0008] Further, the present invention provides an apparatus and a method for providing a board game service to a number of mobile terminals connected to a network.

[0009] Furthermore, the present invention provides an apparatus and a method for providing a board game service wherein a location of a piece on a game board is sensed by means of a mobile terminal.

Technical Solution

[0010] In accordance with an aspect of the present invention, there is provided an apparatus for providing a board game service in a mobile terminal, said apparatus comprising: a display means for displaying a game progress status; a sensing means for sensing a piece, a game board on which said piece is moved, and a location of the piece movement on said game board; a memory storing a game program and an algorithm for said board game service; and, a controller for controlling said sensing means to sense said location of the piece's movement according to the game program stored in said memory, producing game progress information about said location of the piece's movement, and controlling said display means to display game results having said game progress information applied.

[0011] According to an embodiment of the present invention, there is a method for providing a board game service in a mobile terminal, said method comprises steps of: generating random number information for moving a piece while performing the board game; sensing a location of a piece's movement on a game board according to said generated random number information by way of a predetermined sensing means; and, producing first game progress information about said piece location and applying the first game progress information to said board game.

Advantageous Effects

[0012] The present invention has the advantage in that a location of the piece on a game board is sensed by means of a mobile terminal, and thus it is possible to play a board game with ease through a game program stored in the mobile terminal.

[0013] Further, the present invention provides a board game service wherein a number of the mobile terminals form a network, receive/transmit the game progress information according to progress of the board game, and reflect the game information in real time.

[0014] Further, the present invention provides a board game service in a stand-alone manner, wherein each of mobile terminals distinguishably sense the piece movement of another party as well as the piece movement of the user's own, and then reflects such sensing onto game progress information as a whole.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] The foregoing and other objects, features and advantages of the present invention will become more apparent from the following detailed description when taken in conjunction with the accompanying drawings in which:

[0016] FIG. **1** is a block diagram illustrating an inside of a mobile terminal according to a first embodiment of the present invention.

[0017] FIG. **2** is a schematic view illustrating a sensing operation of a piece location on a game board through the mobile terminal according to the first embodiment of the present invention.

[0018] FIG. **3** is a flow chart illustrating the game process using the game board and the mobile terminal according to the first embodiment of the present invention.

[0019] FIG. **4** is a block diagram illustrating an inside of a mobile terminal according to a second embodiment of the present invention.

[0020] FIG. **5** is a schematic view illustrating a sensing operation of a piece location on a game board through the mobile terminal according to the second embodiment of the present invention.

[0021] FIG. **6** is a flow chart illustrating the game process using the game board and the mobile terminal according to the second embodiment of the present invention.

[0022] FIG. **7** is a block diagram illustrating an inside of a mobile terminal according to a third embodiment of the present invention.

[0023] FIG. **8** is a flow chart illustrating a game process using the mobile terminal according to the third embodiment of the present invention.

BEST MODE

Mode for Invention

[0024] Hereinafter, exemplary embodiments of the present invention will be described with reference to the accompanying drawings.

[0025] The present invention proposes the provision of a board game, which has been widely spread in an existing off-line market, through a mobile terminal. In the present invention, the mobile terminals belonging to a number of the users are connected to each other through a communication network. Each of the mobile terminals transmits/receives game-related data to/from the other mobile terminal according to a determined way of a game, and comprises a game program for visibly and/or aurally displaying the status of the game progress. Further, each of the mobile terminals comprises sensing means, such as a sensor, or a digital camera operating in a view-mode to thereby sense the movement of a piece used in the game.

[0026] According to another aspect of the present invention, a stand-alone type board game is supported, in which a number of the mobile terminals join in the board game, but the connection of the mobile terminal with the network is not required. When performing the board game operating in the stand-alone manner, each of the mobile terminals can sense the piece movement of the other party as well as the piece movement of the user's own to thereby visibly/aurally display the status of the game progress.

[0027] In the present invention, the board game implies a game for determining a winner and a loser, wherein a value of the piece movement is sought using a random number generator, such as virtual dice installed in the mobile terminal; the piece is moved on a virtual game board or an off-line game board according to the sought value and the determined game rule; and resulting values are accumulated for determining the winner/loser. If the off-line game board is used, the mobile terminal may comprise a separate sensor for sensing the piece location and applying such sensing to the game program.

[0028] In the present invention detailed herein below, three embodiments are proposed for providing the board game service. In a first embodiment, a mobile terminal comprises a sensor for sensing the piece location on the game board according to the piece movement, and transmits/receives the game progress information to/from the other network-connected mobile terminals of the other parties, to thereby perform the game. In a second embodiment, a mobile terminal comprises a digital camera operating in a view mode so as to sense piece location on a game board according to the piece movement, and transmits/receives the game progress information to/from the other network-connected mobile terminals of the other parties, to thereby perform the game. As described, the first and the second embodiments propose a way of performing the board game while the mobile terminals are connected with the network. However, in case that the first and the second embodiments support the stand-alone type game, each of the mobile terminals senses the piece movement of the other parties as well as the piece movement of the user's own and reflects the sensing results onto the game progress information, and thus the connection of the mobile terminals with the network and the transmission/reception of the game progress information are not required.

[0029] In a third embodiment, a mobile terminal displays a virtual game board and a movement of a virtual piece through a display means and transmits/receives the game progress information to/from the other network-connected mobile terminals of the other parties to thereby perform the game.

[0030] The above-described first through third embodiments are detailed herein below with reference to the drawings.

First Embodiment

[0031] FIG. **1** is the block diagram illustrating the inside of the mobile terminal according to the first embodiment.

[0032] Referring to FIG. **1**, a wireless part **110** transmits/receives data through an antenna ANT. A modem **120** performs encoding and modulating or demodulating and decoding of the data transmitted/received through the wireless part **110**. A memory **150** may store: the game programs enabling the board game of the present invention; the various game rules applied to each of the game programs; and the graphic image and sound information therein.

[0033] A sensor **140** comprises the sensor capable of sensing a game board, and shapes, patterns and colors of a game piece to thereby sense the current location of the piece. The game board comprises a number of areas, which allow the piece to move according to the determined game rule and which are distinguished from each other. In order to let the sensor **140** distinguishably sense the areas of the game board, each of the areas may have sensing material/pigments printed or attached thereon. Also, at a predetermined position corresponding to each of the areas on the game board, any item that can be sensed by the sensor **140** may be included. In operation of the sensor **140**, the manner of sensing the piece may be the same as the manner of sensing each of the areas on the game board. Also, it is possible to adopt a well-known RF-ID to sense the piece and each of the areas on the game board.

[0034] A display **160** visually displays graphic images generated from the game progress and the game result. An audio processor **170** comprises a speaker SPK outputting sound effects and a microphone MIC. Also, the mobile terminal comprises a keypad **180** for allowing the user's key-input requested for the game progress.

[0035] The memory **150** stores: the game program for performing the board game by sensing the pieces and the areas of

the game board; the game progress information about the game progress performed by different users; and various kinds of video and/audio information to output when performing the game. Also, the memory **150** stores a random number generation program referred as "a random number generator", such as virtual dice, which is needed for performing the board game.

[0036] A controller **130** controls the wireless part **110** and the modem **120** in order to allow the mobile terminals of the users to communicate with each other through the network, for example, Ad-hoc network, Bluetooth, a wireless LAN, or an Infra-red communication. The controller **130** drives the random number generator according to the game program stored in the memory **150**, and controls the display **160** to display the value of the piece movement, which is generated through the random number generator according to the user's key input. The controller **130** controls the sensor **140** to sense the location of the piece, which is moved by the different users on the game board according to said value of the piece movement. The controller **130** produces the game progress information, which is generated according to the sensed location of the piece, and applies the game progress information for displaying the game result. The controller **130** controls the speaker SPK and the display **160** to thereby output the sound effect and the graphic image, respectively, which are generated in the game progress.

[0037] The way of performing the board game according to the first embodiment will be detailed herein below with reference to FIGS. **2** and **3**, wherein the piece location on the board is sensed through the mobile terminal.

[0038] FIG. **2** is the schematic view which illustrates the sensing operation of the piece location on the game board through the mobile terminal of FIG. **1**. FIG. **3** is the flow chart illustrating the board game process performed in the mobile terminal according to the first embodiment of the present invention.

[0039] In Step **301**, the controller **130** runs the game program stored in the memory **150** of the mobile terminals **220***a*-**220***c* according to the user's key operation. In Step **303**, the mobile terminals of the users with the intention of joining in the board game, each of which has the configuration illustrated in FIG. **1**, are separately connected with the network. Here, the network may be one of the wireless LAN, the Infra-red communication, the Bluetooth and Ad-hoc network, but is not limited thereto. The network connection of the mobile terminals **220***a*-**220***c* for the board game is applied to the second and the third embodiments described below as well as the first embodiment.

[0040] In Step **305** following Step **303**, the controller **130** requests the game user to input their information through the keypad **170** and resisters the user information according to a routine of the game program. In Step **307**, the controller **130** receives the registered information of the other parties joining in the game from the mobile terminals **220***b* and **220***c* of the other parties through the network to thereby store the information in the memory **150**. When completing the registration of the information for the user and the other parties, the controller **130** checks whether or not the sensor **140** for sensing the piece and the game board runs normally in Step **309**. If it is determined that the sensor **140** runs abnormally, Step **311** is executed in that the controller **130** outputs an error message notifying the malfunction of the sensor **140** through the display **160** and ends the game progress.

[0041] On the other hand, if it is determined that the sensor **140** runs normally, Step **313** is executed in that the controller **130** determines whether or not the game starts, for example, depending on whether or not there is the user's key-input for starting the game. If the user's key-input is not sensed, Step **313** is repeated. If the user's key-input is sensed, the controller **130** starts the game according to the game routines and determines whether it is the user's own turn or the other party's turn. Although not illustrated in FIG. **3**, the game order of the users and other parties joining in the game may be arbitrary decided through the mutual communication between the mobile terminals **220***a*-**220***c* connected with the network according to the game program, or using the random number generator, such as the virtual dice.

[0042] As a result of checking Step **315**, if the controller **130** determines that it is the user's own turn, the controller **317** runs the random number generator (not shown), such as the virtual dice included in the game program, and generates a movement value for moving the piece (referred to as "random number information" herein below), which is the output from the random number generator driven according to the user's key-input. In Step **319**, the controller **130** controls the sensor **140** to sense the location of the piece, which is moved on the game board **200** according to said generated random number information, and then produces the game progress information about the corresponding location of the piece to thereby apply the same information to the game. Here, the manner of sensing the piece location may be such that the sensors **240***a*-**240***c* of the mobile terminals **220***a*-**220***c* sense a recognition code, sensing material or sensing item, all of which are installed in, printed on or attached to the pieces **210***a*-**210***c* and each of the areas on the game board **200**. In order to sense each area **230** on the game board **200** to be distinguished from the other areas and to sense the pieces **210***a*-**210***c* of the user to be distinguished from the pieces of the other parties, the recognition codes, the sensing materials or the sensing items for the areas the pieces are differently provided.

[0043] On the other hand, that the controller **130** applies the game progress information implies that the preset game rule is applied to the current location of the piece. In Step **321**, if it is the mobile terminal's **220***a* turn in the ongoing game, the controller **130** of the mobile terminal **220***a* controls its operation to transmit the generated game progress information to the mobile terminals **220***b*, **220***c* of the other parties through the network.

[0044] In Step **323**, after transmitting the game progress information to the mobile terminals of the other parties, the controller determines whether or not the game continues on the basis of the user's key-input. Also, the end of the game may be determined according to a resulting value, such as the user's score obtained during the game progress. If there is the key-input for ending the game in Step **323**, the controller **130** controls the display **160** to display the information about the game result obtained by that time or to store it in Step **325**. If it is determined to continue the game, Step **315** is executed and then each of the steps is repeated. The controller **130** controls the speaker SPK to output the predetermined sound effects and controls the display to output the predetermined graphic images depending on the game progress situation.

[0045] As a result of checking Step **315**, if it is the other party's turn, Step **327** is executed in that the controller **130** waits for the reception of the game progress information from the mobile terminals of the other parties through the network. In Step **329**, the controller **130** determines whether or not the

game progress information is received from the mobile terminals of the other parties. If it is determined that the game progress information is received from the other party, Step **331** is executed to thereby apply the game progress information received to the game and then Step **323** is executed to determine whether or not the game ends. If the game progress information of the other party is not received in Step **329**, Step **327** is executed to wait for the reception of the game progress information.

[0046] In the first embodiment as described herein above, the operations in Steps **303-307**, **321** and **327-331**, wherein the mobile terminals transmit/receive the information of the users joining in the game and the game progress information by way of the network, may be omitted if the game program stored in the mobile terminal supports the stand-alone type game. When supporting the stand-alone type game, each of the mobile terminals receives the user's information required for the game progress by way of the user's key-input to thereby store the information, and then distinguishably senses the piece movements of the user and the other parties. Also, the mobile terminal produces the game progress information of the user and the other parties, which are generated during the game, applies the same information to the game, and displays the game results.

Second Embodiment

[0047] FIG. **4** is the block diagram illustrating the inside of the mobile terminal according to the second embodiment of the present invention.

[0048] Referring to FIG. **4**, an antenna ANT, a wireless part **410**, a modem **420**, a memory **450**, a display **460**, a keypad **470**, an audio processor **480**, a microphone MIC and a speaker SPK correspond to the antenna ANT, the wireless part **110**, the modem **120**, the memory **150**, the display **160**, the keypad **170**, the audio processor **180**, the microphone MIC and the speaker SPK, respectively, illustrated in FIG. **1**.

[0049] A camera **440** installed in the mobile terminal operates in a view mode to thereby sense the location of the piece on the game board within a view range. The above-sensed piece location is recognized by way of a preset algorithm like a coordinate system, which is stored in the memory **450**.

[0050] A controller **430** performs the same function as the controller **130** illustrated in FIG. **1**, but it uses a digital camera operating in the view mode for sensing the piece location.

[0051] The way of performing the board game according to the second embodiment will be detailed herein below with reference to FIGS. **5** and **6**, wherein the piece location on the game board is sensed through the mobile terminal.

[0052] FIG. **5** is the schematic view illustrating the operation sensing the piece location on the game board through the mobile terminal, and FIG. **6** is the flow chart illustrating the board game process performed in the mobile terminal according to the second embodiment of the present invention.

[0053] In Step **601**, the controller **430** runs the game program stored in the memory **450** of the mobile terminal **530***a* according to the user's key manipulation. In Step **603**, the mobile terminals **530***a*-**530***c* of the users with the intention of joining in the board game, each of which has the configuration illustrated in FIG. **4**, are separately connected with the network supporting the game program.

[0054] In Step **605** following Step **603**, the controller **430** requests the game user to input their information through the keypad **470** and resisters the information according to a defined routine of the game program. In Step **607**, the controller **430** receives the registered information of the other parties joining in the game from the mobile terminals **530***b* and **530***c* of the other parties through the network to thereby store the user information in the memory **450**. When completing the registration of the information for the user and the other parities joining in the game, the controller **430** controls the cameras **540***a*-**540***c* of the mobile terminals, each of which is mounted to a stand **560** at a predetermined position from the game board **500**, to operate in the view mode. The stand **560** may be variously modified in its form, if only the cameras **540***a*-**540***c* of the mobile terminals is able to view the whole region of the game board **500**.

[0055] In Step **611** after finishing Step **609**, whether or not the game starts is determined depending on whether or not there is the user's key-input. If there is no user's key-input, the operation in Step **611** is repeated. If there is the user's key input, the controller **430** starts the game according to the routine of the game program and determines whether it is the user's turn or the other party's turn in Step **613**. Though not illustrated in FIG. **6**, the game order of the users and the other parties joining in the game may be arbitrarily decided through the communication between the mobile terminals **530***a*-**530***c* connected with the network according to the game program, or may be decided using the random number generator such as the virtual dice.

[0056] As a result of checking Step **613**, if it is the user's turn, the controller **430** runs the random number generator (not shown), such as the virtual dice provided in the game program, and generates the random number information for the movement of the piece, which is the output from the random number generator driven by the user's key-input in Step **615**. In Step **617**, the controller **430** controls the camera **540***a*-**540***c* to sense the location of the pieces **510***a*-**510***c* on the game board, which is moved according to the generated random number information, and produces the game progress information about the movement location to thereby apply the same information to the game. Here, the manner of sensing the piece location may be such that each of the areas on the game board **500**, which is within the view range of the camera included in the mobile terminal, is distinguished using a coordinate system on the basis of a preset reference point **550**, and the shapes, the patterns or the colors of the pieces are recognized to thereby determine on what area on the game board each of the user's pieces is located.

[0057] On the other hand, that the controller **430** applies the game progress information to the game implies that the preset game rule is applied to the current location of the piece. In Step **619**, if it is the mobile terminal's **530***a* turn in the ongoing game, the controller **430** of the mobile terminal **530***a* controls its operation to transmit the generated game progress information to the mobile terminals **530***b*, **530***c* of the other parties through the network.

[0058] In Step **621**, after transmitting the game progress information to the mobile terminals of the other parties, the controller determines whether or not the game continues on the basis of the user's key-input.

[0059] Also, the end of the game may be determined according to a resulting value, such as the user's score obtained during the game progress. If there is the key-input for ending the game in Step **621**, the controller **430** controls the display **460** to display the information about the game result obtained by that time or to store it in Step **623**. If it is determined to continue the game, Step **613** is executed and then each of the steps is repeated. The controller **430** controls

the speaker SPK to output the predetermined sound effects and controls the display to output the predetermined graphic images depending on the game progress situation.

[0060] As a result of checking Step **613**, if it is the other party's turn, Step **625** is executed in that the controller **430** waits for the reception of the game progress information from the mobile terminal of the other party through the network. In Step **627**, the controller **430** determines whether or not the game progress information is received from the mobile terminals of the other parties. If it is determined that the game progress information is received from the other party, Step **629** is executed in that the game progress information received is applied to the game and then Step **621** is followed in that whether or not the game ends is determined. If the game progress information of the other party is not received in Step **627**, Step **625** is executed to wait for the reception of the game progress information.

[0061] In the second embodiment as described herein above, the operations in Steps **603-607**, **619** and **625-629**, wherein the mobile terminals transmit/receive the information of the users joining in the game and the game progress information by way of the network, may be omitted, if the game program stored in the mobile terminal supports the stand-alone type game. When supporting the stand-alone type game, each of the mobile terminals receives the user's information required for the game progress by way of the user's key-input to thereby store the information, and then distinguishably senses the piece movements of the user and the other parties by way of the cameras of the mobile terminals operating in the view mode. Also, the mobile terminal produces the game progress information of the user and the other parties, which is generated during the game, applies the same information to the game, and displays the game result.

Third Embodiment

[0062] FIG. **7** is the block diagram illustrating the inside of the mobile terminal according to the third embodiment of the present invention.

[0063] Referring to FIG. **7**, an antenna ANT, a wireless part **710**, a modem **720**, a memory **750**, a display **750**, a keypad **7670**, an audio processor **780**, a microphone MIC and a speaker SPK correspond to the antenna ANT, the wireless part **110**, the modem **120**, the memory **150**, the display **160**, the keypad **170**, the audio processor **180**, the microphone MIC and the speaker SPK, respectively, illustrated in FIG. **1**.

[0064] The controller **730** performs the same function as the controller **130** illustrated in FIG. **1**, but it lacks the function of sensing the piece location on the board through the sensor of the controller **130** illustrated in FIG. **1**.

[0065] The way of performing the board game through the mobile terminal according to the third embodiment will be detailed herein below with reference to FIGS. **5** and **6**.

[0066] FIG. **8** is the flow chart illustrating the board game performed in the mobile terminal according to the third embodiment of the present invention.

[0067] Referring to FIG. **8**, the controller **730** runs the game program stored in the memory **740** according to the user's key manipulation in Step **801**. In Step **803**, the mobile terminals of the users with the intention of joining in the board game, each of which has the configuration illustrated in FIG. **7**, are separately connected with the network.

[0068] In Step **805** following Step **803**, the controller **730** requests the game user to input their information through the keypad **760** and resisters the information according to a defined routine of the game program. In Step **807**, the controller **760** receives the registered information of the other parties joining in the game from the mobile terminals **530***b* and **530***c* of the other parties through the network to thereby store the information in the memory **740**. When completing the registration of the information for the user and the other parties joining in the game, whether or not the game starts is determined depending on whether there is the user's key-input in Step **809**. If there is not the user's key-input, the operation in Step **809** is repeated. If there is the user's key input, the controller **730** starts the game according to the routine of the game program and determines whether it is the user's turn or the other party's turn in Step **811**. Though not illustrated in FIG. **8**, the game order of the users and the other parties joining in the game may be arbitrarily decided through the communication between the mobile terminals connected with the network according to the game program, or may be decided using the random number generator such as the virtual dice.

[0069] As a result of checking Step **811**, if it is the user's turn, the controller **730** runs the random number generator (not shown), such as the virtual dice provided in the game program, and generates the random number information for the movement of a virtual piece, which is the output from the random number generator driven by the user's key-input. In Step **815**, the controller **730** produces the game progress information about the location of the virtual piece moved on a virtual game board according to the generated random number information and applies the game progress information to the game. Here, the controller **730** controls the display **750** to display the virtual game board and the movement of the virtual piece in real time to thereby let the user monitor the game progress situation.

[0070] On the other hand, that the controller **730** applies the game progress information to the game implies that the preset game rule is applied to the current location of the piece. In Step **817**, if it is the mobile terminal's turn in the ongoing game, the controller of the mobile terminal controls its operation to transmit the generated game progress information to the mobile terminals of the other parties through the network.

[0071] In Step **819**, after transmitting the game progress information to the mobile terminals of the other parties, the controller determines whether or not the game continues on the basis of the user's key-input. Also, the end of the game may be determined according to a resulting value, such as the user's score obtained during the game progress. If there is the key-input for ending the game in Step **819**, the controller **730** controls the display **750** to display the information about the game result obtained by that time or to store it in Step **821**. If it is determined to continue the game, Step **811** is executed and then each of the steps described above is repeated. The controller **730** controls the speaker SPK to output the predetermined sound effects and controls the display **750** to output the predetermined graphic images depending on the game progress situation.

[0072] As result of checking Step **811**, if it is the other party's turn, Step **823** is executed in that the controller **730** waits for the reception of the game progress information from the mobile terminals of the other parties through the network. In Step **825**, the controller **730** determines whether or not the game progress information is received from the mobile terminal of the other party. If it is determined that the game progress information is received from the other party, Step **827** is executed to thereby apply the game progress informa-

tion received to the game and then Step **819** is executed to determine whether or not the game ends. If the game progress information of the other party is not received in Step **825**, Step **823** is executed to wait for the reception of the game progress information.

[0073] As described herein above, the present invention makes it possible to sense the location of the piece movement in the board game by means of the sensor or the camera included in the mobile terminal, to transmit/receive the game progress information about the sensed location of the piece to/from the mobile terminals of the other parties connected with the network in real time, and to display the game progress situation through the mobile terminal, so that the user may readily play the conventional off-line board game through the mobile terminal. Although the above-described embodiments assume that a number of mobile terminals are connected with the network and perform the board game, it is possible to perform the stand-alone type board game, wherein each mobile terminal can sense the piece movement of the other parties, while a number of mobile terminals join in the board game, or it is possible to perform the board game allowing only one user to play the game, in the same way as described above by only excluding the function of the network connection.

[0074] Although several exemplary embodiments of the present invention have been described for illustrative purposes, those skilled in the art will appreciate that various modifications, additions and substitutions are possible, without departing from the scope and spirit of the invention as disclosed in the accompanying claims.

1. An apparatus for providing a board game service in a mobile terminal, the apparatus comprising:

a display means for displaying a game progress status;

a sensing means for sensing a piece, a game board on which said piece is moved, and a location corresponding to movement of the piece on the game board;

a memory storing a game program and an algorithm for the board game service; and,

a controller for controlling the sensing means to sense the movement according to the game program stored in the memory, producing game progress information corresponding to the location of the movement, and controlling the display means to display a game result in which the game progress information is applied.

2. The apparatus as claimed in claim **1**, further comprising a network connecting means for communicating with an other mobile terminal,

wherein said controller transmits/receives said game progress information to/from the other mobile terminal and further applies the game progress information to the game result.

3. A method for providing a board game service in a mobile terminal, the method comprising the steps of:

generating random number information for moving a piece while the board game is performed;

sensing a location of movement of the piece on a game board according to the generated random number information according to a predetermined sensing means; and,

producing first game progress information about the piece location and applying the first game progress information to the board game.

4. The method as claimed in claim **3**, further comprising, if a number of users join the board game, connecting to other mobile terminals corresponding to the users through a network;

transmitting the first game progress information to the other mobile terminals; and

applying second game progress information to the board game upon receiving the second game progress information from the other mobile terminals.

5. The apparatus as claimed in claim **1**, wherein the sensing means senses a recognition code in at least one of the game piece and the game board.

6. The apparatus as claimed in claim **1**, wherein the sensing means senses a recognition item in at least one of the game piece and the game board.

7. The apparatus as claimed in claim **1**, wherein the sensing means senses a sensing material in at least one of the game piece and the game board.

8. The apparatus as claimed in claim **1**, wherein the sensing means is a digital camera.

9. The apparatus as claimed in claim **1**, wherein the piece is a virtual game piece.

10. The apparatus as claimed in claim **1**, wherein the game board is a virtual game board.

11. The method as claimed in claim **3**, wherein sensing the location of the movement includes sensing a recognition code in at least one of the game piece and the game board.

12. The method as claimed in claim **3**, wherein sensing the location of the movement includes sensing a recognition item in at least one of the game piece and the game board.

13. The method as claimed in claim **3**, wherein sensing the location of the movement includes sensing a sensing material in at least one of the game piece and the game board.

14. The method as claimed in claim **3**, wherein the location of the movement is sensed by a digital camera.

15. The method as claimed in claim **3**, wherein the piece is a virtual game piece.

16. The apparatus as claimed in claim **3**, wherein the game board is a virtual game board.

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