(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 2 992 938 A1**

(12) **EUROPEAN PATENT APPLICATION**
published in accordance with Art. 153(4) EPC

(43) Date of publication:
09.03.2016 Bulletin 2016/10

(21) Application number: **14791271.1**

(22) Date of filing: **24.04.2014**

(51) Int Cl.:
A63F 9/02 *(2006.01)* ***F41J 3/02*** *(2006.01)*

(86) International application number:
PCT/KR2014/003592

(87) International publication number:
WO 2014/178573 (06.11.2014 Gazette 2014/45)

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME

(30) Priority: **03.05.2013 KR 20130049949**

(71) Applicant: **Hong International Corp.**
Seoul 152-848 (KR)

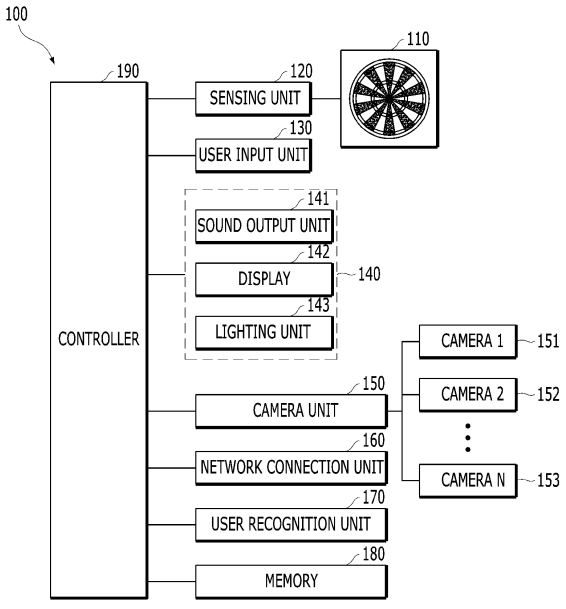
(72) Inventor: **HONG, Sang Uk**
Seoul 135-100 (KR)

(74) Representative: **Concone, Emanuele et al**
Società Italiana Brevetti S.p.A.
Via Carducci 8
20123 Milano (IT)

(54) DART GAME DEVICE, DART GAME METHOD, AND COMPUTER-READABLE MEDIUM

(57) A dart game apparatus providing a record challenge mode to a player according to an embodiment of the present invention, which is used for implementing the aforementioned objects, the apparatus includes: a user input unit receiving an input to select a challenge mode of a dart game mode selected by the player; and a controller loading a challenge record which becomes a target of the challenge mode and performing the challenge mode based on the loaded challenge record and the selected dart game mode - the challenge record includes one or more dart throw data constituting a game play according to the selected dart game mode and the dart throw data includes data indicating which part of a target of the dart game apparatus a dart throw hits -.

[FIG.1]



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Description

[Technical Field]

[0001] The present invention relates to a dart game apparatus, and particularly, to a dart game apparatus for providing a record challenge mode to a player of the dart game apparatus.

[Background Art]

[0002] In general, a dart refers to a 'small arrow' and is a game that makes marks by throwing an arrow-shaped dart pin to a centrifugal target marked with figures. The dart game has an advantage in that whoever can enjoy the dart game anytime anywhere if there are only an arrowheaded dart and the dart target.

[0003] In recent years, as the dart game has been developed as worldwide leisure due to development of various game methods and arrangement of a scoring method, all adults and children have conveniently enjoyed the dart game.

[0004] In general, participants of the dart game need to participate in the game at the same time and in the same space in order to enjoy the dart game. However, with the development of communication technology, each of the participants of the dart game may remotely participate in the dart game and remotely transmit a play result or a play process thereof through a communication network. As a result, the participants of the dart game may participate in the game over a temporal and spatial restriction.

[0005] Electronic dart game apparatuses have been developed so as to remotely participate in the dart game and transmit a play result or a play process thereof through a communication network. The electronic dart game apparatuses may electrically sense a hitting point of the dart target and automatically aggregate scores and provide the aggregated scores to a user.

[0006] As the electronic dart game apparatus accesses the network, game records of respective players can be stored in a server and rankings or scores of playerscan be calculated and stored.

[0007] When the rankings or scores of the players are stored on the network, a game mode for the player to improve his/her record needs to be provided.

[Technical Problem]

[0008] The present invention is contrived to correspond to the aforementioned background art and the present invention is to provide a challenge mode for a player to improve a record thereof.

[0009] Further, the present invention is to provide a motivation for improving a record of the player to the player by providing various output effects while providing the challenge mode.

[Technical Solution]

[0010] A method for providing a record challenge mode to a player of a dart game apparatus according to an embodiment of the present invention, which is used for implementing the aforementioned objects includes: receiving an input to select a challenge mode of a dart game mode selected by the player; loading a challenge record which becomes a target of the challenge mode - the challenge record includes one or more dart throw data constituting a game play according to the selected dart game mode and the dart throw data includes data indicating which part of a target of the dart game apparatus a dart throw hits - and performing the challenge mode based on the loaded challenge record and the selected dart game mode.

[0011] In another embodiment of the present invention, the performing of the challenge mode may further include outputting reward effects corresponding to one or more throw data included in the loaded challenge record, and the reward effects may include a lighting effect or a sound effect corresponding to the dart throw according to the selected dart game mode.

[0012] In yet another embodiment of the present invention, the loaded challenge record may include multimedia data including a play image associated with the challenge record, and the performing of the challenge mode may include outputting the multimedia data.

[0013] In still yet another embodiment of the present invention, the outputting of the multimedia data may include playing the game by accelerating the play image included in the multimedia data.

[0014] In still yet another embodiment of the present invention, the performing of the challenge mode may include outputting lighting effects to parts of a dart target corresponding to one or more dart throw data.

[0015] In still yet another embodiment of the present invention, the method may further include, after the receiving of the input to select the challenge mode, receiving an input to select a challenge record which becomes a target of the challenge mode.

[0016] In still yet another embodiment of the present invention, the method may further include, after the receiving of the input to select the challenge mode, searching game record information of the player, and the loaded challenge record may be selected based on the searched game record information of the player.

[0017] In still yet another embodiment of the present invention, the loaded challenge record may include game record information having a highest score in the searched game record information of the player.

[0018] In still yet another embodiment of the present invention, the loaded challenge record may include game record information of a player different from the player.

[0019] In still yet another embodiment of the present invention, the loaded challenge record may include virtual game record information generated by the dart game apparatus based on the searched game record information of the player.

[0020] In still yet another embodiment of the present invention, the performing of the challenge mode may include calculating the number of remaining dart throw times based on the selected dart game mode while performing the challenge mode, and reloading the challenge record which becomes the target of the challenge mode based on the calculated number of remaining dart throw times.

[0021] A dart game apparatus providing a record challenge mode to a player according to an embodiment of the present invention, which is used for implementing the aforementioned objects includes: a user input unit receiving an input to select a challenge mode of a dart game mode selected by the player; and a controller loading a challenge record which becomes a target of the challenge mode and performing the challenge mode based on the loaded challenge record and the selected dart game mode - the challenge record includes one or more dart throw data constituting a game play according to the selected dart game mode and the dart throw data includes data indicating which part of a target of the dart game apparatus a dart throw hits -.

[0022] In a computer readable medium according to an embodiment of the present inventionwhich is used for implementing the aforementioned objects, a program is recorded, which allows a computer to provide a record challenge mode to a player of a dart game apparatus recorded therein when the program is executed by the computer and the program includes a code allowing the computer to receive an input to select a challenge mode of a dart game mode selected by the player; a code allowing the computer to load a challenge record which becomes a target of the challenge mode - the challenge record includes one or more dart throw data constituting a game play according to the selected dart game mode and the dart throw data includes data indicating which part of a target of the dart game apparatus a dart throw hits - ; and a code allowing the computer to perform the challenge mode based on the loaded challenge record and the selected dart game mode.

[Advantageous Effects]

[0023] According to an embodiment of the present invention as described above, since a player can receive a challenge record which the player can challenge in order to improve a game record thereof, a motivation effect for improving a game record of a dart game can be anticipated.

[0024] Further, various types of acoustic and lighting effects are output according to a detailed game record of the challenge record, and as a result, the player can continuously take an interest in playing the challenge mode.

[Description of Drawings]

[0025]

FIG.1 is a block diagram of a dart game apparatus according to an embodiment of the present invention.

FIG.2 is a conceptual diagram of a game network including a dart game apparatus according to an embodiment of the present invention.

FIG.3 is a perspective view of a dart game apparatus according to an embodiment of the present invention.

FIG.4 is a diagram illustrating one example of rating and/or class which can be granted to a player according to PPD and/or MPR.

FIG.5 is a flowchart of a method for providing a record challenge mode according to an embodiment of the present invention.

FIG.6 is a flowchart of a method for providing a record challenge mode according to another embodiment of the present invention.

FIG.7 is a flowchart of a method for providing a record challenge mode according to yet another embodiment of the present invention.

FIG.8 is a flowchart of a method for providing a record challenge mode according to still yet another embodiment of the present invention.

[Best Mode]

[0026] Various embodiments will now be described with reference to the drawings and similar reference numerals are used to represent similar elements throughout the drawings. In the specification, various descriptions are presented to provide appreciation of the present invention. However, it is apparent that the embodiments can be executed without the specific description. In other examples, known structures and apparatuses are presented in a block diagram form in order to facilitate description of the embodiments.

[0027] "Component", "module", "system", and the like which are terms used in the specification designate a computer-related entity, hardware, firmware, software, and a combination of the software and the hardware, or execution of the software. For example, the component may be a processing process executed on a processor, the processor, an object, an execution thread, a program, and/or a computer, but is not limited thereto. For example, both an application executed in a computing device and the computing device may be the components. One or more components may reside in the processor and/or execution thread and one component may be localized in one computer or distributed among two or more computers. Further, the components may be executed by various computer-readable media having various data structures, which are stored therein. The components may perform communication through local and/or remote processing according to a signal (for example, data through other system and a network such as the Internet through data and/or a signal from one component that interacts with other components in a local system and a distribution system) having one or more data packets, for example.

[0028] The description of the presented embodiments is provided so that those skilled in the art of the present invention use or implement the present invention. It will be apparent to those skilled in the art that various modifications of the embodiments will be apparent to those skilled in the art and general principles defined herein can be applied to other embodiments without departing from the scope of the present invention. Therefore, the present invention is not limited to the embodiments presented herein, but should be analyzed within the widest range which is associated with the principles and new features presented herein.

[0029] FIG.1 is a block diagram of a dart game apparatus according to an embodiment of the present invention.

[0030] The dart game apparatus 100 may include a dart target 110, a sensing unit 120, a user input unit 130, an output unit 140, a camera unit 150, a network connection unit 160, a user recognition unit 170, a memory 180, a controller 190, and the like. The components illustrated in FIG.1 are not essential components. Therefore, a mobile terminal having more components than or less components than the components may be implemented.

[0031] Hereinafter, the components will be described in sequence.

[0032] The dart target 110 may include a score board in which a bullseye is positioned at the center and there are areas segmented by a concentric circle centering the bullseye and straight lines extended radially from the bullseye and granted with individual scores, respectively. Multiple holes into which a tip of a dart may be inserted may be deployed on the score board.

[0033] The dart target 110 includes a display 142 to be described below to variably change score deployment of the dart target 110 and shapes of areas granted with the scores. In this case, the dart target 110 includes an optical transmissive touch pad in the display 142 to be stacked to have a form of a touch screen.

[0034] The sensing unit 120 senses a play of a dart game player performed with respect to the dart target 110. The sensing unit 120 may actually evaluate the play of the game player. The sensing unit 120 may sense an area of the dart target 110 which the thrown dart hits, with respect to a play in which the game player throws the dart. The sensing unit 120 electrically converts a score corresponding to the area which the dart hits to transmit the converted score to the controller 190.

[0035] The user input unit 130 receives an input of a user for controlling the dart game apparatus 100. The user input unit 130 may include a keypad, a dome switch, a touch pad (resistive/capacitive), a jog wheel, a jog switch, and the like. The user input unit 130 may also include cameras 151 to 153, a microphone, or the like.

[0036] The user input unit 130 may also include a short range communication module (not illustrated). The user input unit 130 may be configured to include the short range communication module (not illustrated) of the network connection unit 160. When the user input unit 130 includes the short range communication module of the network connection unit 160, the user input unit 130 may be configured to receive a user's input which is input by an external console device. As short range communication technology, Bluetooth, radio frequency identification (RFID), infrared data association (IrDA), ultra wideband (UWB), ZigBee, or the like may be used.

[0037] For example, when the user input unit 130 performs the short range communication using infrared communication, the external console device may be an infrared remote controller. Alternatively, when the user input unit 130 performs the short range communication using a Bluetooth function, the external console device may be a mobile device including a Bluetooth module. The mobile device including the Bluetooth module may be, for example, a smart phone including a Bluetooth module.

[0038] The user may select a dart game mode, the number of dart game players, a dart game play mode, and the like through the user input unit 130. For example, the user may select the number of dart game players, the dart game play

mode (a zero one game, a cricket game, and the like), and the dart game mode (a single play, a network play, and the like) through the user input unit 130.

[0039] The user input unit 130 receives a signal by sensing a key operation or a touch input of the user or receives voice or a motion through the cameras 151 to 153 or the microphone of the user to convert the received signal, voice, or motion into an input signal. To this end, known speech recognition or motion recognition technologies may be used.

[0040] The output unit 140 which is used for generating an output related with sight, hearing, or touch may include a sound output unit 141, a display 142, a lighting unit 143, and the like.

[0041] The sound output module 141 may output audio data received from the network connection unit 160 or stored in the memory 180 in a sound effect of the game, a game motion guide, a game method description, and the like. The sound output module 141 may also output a sound signal related with a function (e.g., a game effect sound) performed by the dart game apparatus 100. The sound output module 141 may also output a voice from a game player or a third person using another dart game apparatus 200 (see FIG.2) received through the network connection unit 160. The sound output module 141 may include a receiver, a speaker, a buzzer, and the like.

[0042] The display 142 displays (outputs) information processed in the dart game apparatus 100. For example, when the dart game apparatus 100 is in a game play mode guidance mode, the display 142 may output a selectable game play mode. When the dart game apparatus 100 plays a game, the display 142 may display the score sensed through the sensing unit 120 or output an image acquired by photographing the game player or the third person using another dart game apparatus 200 (see FIG.2) received through the network connection unit 160.

[0043] The display 142 may include at least one of a liquid crystal display (LCD), a thin film transistor-liquid crystal display (TFT LCD), an organic light-emitting diode (OLED), a flexible display, and a 3D display.

[0044] Among the displays, some displays may be configured as a transparent or optical transmissive type to view the outside through some displays. This may be called a transparent display and a representative example of the transparent display includes a transparent OLED (TOLED), and the like.

[0045] Two or more displays 142 may be present according to an implementation form of the dart game apparatus 100. For example, in the dart game apparatus 100, multiple displays may be deployed on one surface to be separated or integrally and further, deployed on different surfaces, respectively. For example, the display 142 may include both a display 142 disposed at an upper end of the target 110 and a display disposed at a lower end of the target 110, or may include one display 142 thereof. However, a location where the aforementioned displays are disposed is an example, and the displays may be disposed at various positions for a demand due to a design or a visual effect.

[0046] A touch sensor may be configured to convert pressure applied to a specific portion of the display 142 or a change in capacitance generated at the specific portion of the display 142 into an electrical input signal. The touch sensor may be configured to detect pressure while touching as well as touched location and area.

[0047] When there is a touch input for the touch sensor, a signal(s) corresponding to the touch input is sent to a touch controller. The touch controller processes the signal(s) and thereafter, transmits data corresponding thereto to the controller 190. As a result, the controller 190 may know which area of the display 142 is touched.

[0048] The lighting unit 143 outputs a signal for notifying occurrence of an event of the dart game apparatus 100. Examples of the event which occurs from the dart game apparatus 100 include identification of the dart game player, direct hit of the dart, a change of the dart game player, game over, and the like. The lighting unit 143 may include a light emission diode (LED) and notify the occurrence of the event to the user through flickering of the LED.

[0049] The LEDs are disposed on the bottom of the dart target 110 to be flickered according to a flickering pattern which is pre-stored according to the occurrence of the event. For example, one or more LEDs may be allocated to respective parts of the dart target 110. The allocated LEDs are disposed on the bottom of the dart target 110 and may be disposed in a direction orienting the outside of the dart game apparatus 100. When the LEDs irradiate light, the light irradiated by the LEDs may pass through the dart target 110 made of a transparent or translucent material to transfer a visual output to the user. Alternatively, the light irradiated by the LEDs may transfer the visual output to the user through a gap existing in the dart target 110.

[0050] The output unit 140 may also output another form other than a video signal or an audio signal, for example, a signal for notifying the occurrence of the event by vibration.

[0051] The camera unit 150 includes multiple cameras 151 to 153, and as a result, an image frame processed by the cameras 151 to 1153 may be stored in the memory 180 or transmitted to the outside through the network connection unit 160. Two or more cameras 150 may be provided according to a use environment.

[0052] At least some cameras of the camera unit 150 may be disposed to photograph an image frame including the dart target 110 and other some cameras may be disposed to photograph an image frame directly related with a game rule in the dart game play. For example, the camera may be disposed to photograph a throw-line on which the dart is thrown in order to photograph the image frame directly related with the dart game rule. The multiple cameras 151 to 153 included in the camera unit 150 may be disposed to photograph at least some image frames to overlap with each other.

[0053] When the camera unit 150 includes one camera, the camera may be a panorama camera disposed to photograph both at least a part of the dart target 110 and the image frame (e.g., the throw-line in the dart game) directly related with

the game rule.

[0054] The network connection unit 160 may include one or more modules that enable wireless communication between the dart game apparatus 100 and a wired/wireless communication system or between the dart game apparatus 100 and a network on which the dart game apparatus 100 is positioned.

[0055] The network connection unit 160 may include a wired/wireless Internet module for accessing the network. As the wireless Internet technology, wireless LAN (WLAN) (Wi-Fi), wireless broadband (Wibro), world interoperability for microwave access (Wimax), high speed downlink packet access (HSDPA), or the like, may be used. As the wired Internet technology, digital subscriber line (XDSL), fibers to the home (FTTH), power line communication (PLC), or the like may be used.

[0056] Further, the network connection unit 160 includes a short-range communication module to transmit and receive data to and from an electronic apparatus positioned in a comparatively short range from the dart game apparatus 100 and including the short-range communication module. As short range communication technology, Bluetooth, radio frequency identification (RFID), infrared data association (IrDA), ultra wideband (UWB), ZigBee, or the like may be used.

[0057] The network connection unit 160 may sense a connection state of the network and a transceiving speed of the network.

[0058] Data received through the network connection unit 160 may be output through the output unit 140, stored through the memory 180, or transmitted to other electronic apparatuses positioned in a short range through the short-range communication module. The user recognition unit 170 recognizes unique information of a long-range user by using a radio wave through the radio frequency identification (RFID) technology which is a kind of short range communication technology. For example, the user may possess a card, a mobile terminal, or unique dart game equipment, for example, user's own personal dart equipment, which includes an RFID module. Information (e.g., a personal ID, an identification code, and the like of the user registered in the database server (DB) (see FIG.2) for identifying the user may be recorded in the RFID module possessed by the user. The dart game apparatus 100 may identify the RFID module possessed by the user to identify a dart game player which plays the game by using the dart game apparatus 100 and update a database for the identified dart game player or accumulate new data.

[0059] The user recognition unit 170 may include various technologies (e.g., the short-range communication technology such as the Bluetooth and the like) that may transmit and receive unique information of the user by a contact/non-contact method in addition to the RFID technology. Further, the user recognition unit 170 may include a biodata identification module that identifies biodata (voice, a fingerprint, and a face) of the user by interworking with the microphone of the user input unit 130, the touch pad, the camera unit 150, and the like.

[0060] The memory 180 may store a program for an operation of the controller 190 therein and temporarily store input/output data (e.g., a phone book, a message, a still image, a moving picture, or the like) therein. The memory 180 may store data regarding various pattern vibrations and sounds output in the touch input on the touch screen.

[0061] The memory 180 may include at least one storage medium of a flash memory type storage medium, a hard disk type storage medium, a multimedia card micro type storage medium, a card type memory (for example, an SD or XD memory, or the like), a random access memory (RAM), a static random access memory (SRMA), a read-only memory (ROM), an electrically erasable programmable read-only memory (EEPROM), a programmable read-only memory (PROM), a magnetic memory, a magnetic disk, and an optical disk. The dart game apparatus 100 may operate in connection with a web storage performing a storing function of the memory 180 on the Internet.

[0062] The controller 190 generally controls all motions of the dart game apparatus 100. For example, in the case of the dart game, the score sensed through the sensing unit 120 is collected for each game participant, the collected score is transmitted to and received from another dart game apparatus 200 connected through the network, and a game winning/losing record, the score, and the like according to the collected result are recorded.

[0063] The controller may perform pattern recognition processing to recognize a motion input, a writing input, and the like performed in the touch screen or the camera as a letter or an image. Further, the controller may perform speech recognition by using a speech-to-text (STT) function to recognize the speech input through the microphone as the letter.

[0064] Various embodiments described herein may be implemented in a computer-readable recording medium or a recording medium readable by a device similar to the computer by using, for example, software, hardware, or a combination thereof.

[0065] According to hardware implementation, the embodiment described herein may be implemented by using at least one of ASICs (application specific integrated circuits), DSPs (digital signal processors), DSPDs (digital signal processing devices), PLDs (programmable logic devices), FPGAs (field programmable gate arrays, processors, controllers, micro-controllers, microprocessors, and electric units for performing other functions. In some cases, the embodiments described in the specification may be implemented by the controller 190 itself.

[0066] According to software implementation, embodiments such as a procedure and a function described in the specification may be implemented by separate software modules. Each of the software modules may perform one or more functions and operations described in the specification. A software code may be implemented by a software application written by an appropriate program language. The software code may be stored in the memory 180 and

executed by the controller 190.

[0067] Hereinafter, a state in which the dart game apparatus according to the embodiment of the present invention is connected with the network will be described in more detail with reference to the drawings.

[0068] FIG.2 is a conceptual diagram of a game network including a dart game apparatus according to an embodiment of the present invention.

[0069] As illustrated in FIG.2, the dart game apparatus 100 used by a first game player P1 may be connected with one or more servers (a media server MS, a relay server RS, and a dart game server GS) through the network.

[0070] Multiple dart game players may enjoy the dart game in the same space at the same time by using the same first dart game apparatus 100. However, when a second dart game player P2 positioned at a remote range from the first dart game player P1 intends to participate in the dart game, the second dart game player P2 is connected with one or more servers (the media server MS, the relay server RS, and the dart game server GS) through the network by using the second dart game apparatus 100 to transmit and receive information to and from the first dart game apparatus 100, thereby performing the dart game. The first dart game apparatus 100 and the second dart game apparatus may transmit and receive information via one or more servers (the media server MS, the relay server RS, and the dart game server GS) or the dart game apparatuses 100 and 200 directly transmit and receive the information therebetween.

[0071] The dart game may be performed by differentiating places at which both dart game players P1 and P2 play at the same time or performed by a method in which both dart game players P1 and P2 plays the dart game at different places at different times and winning/losing or a ranking is decided by storing play contents in the DB server DB. The media server MS may store dart game play moving pictures of the dart game players P1 and P2, which are stored by using the camera or the microphone stored in the dart game apparatuses 100 and 200. The media server MS may be included in the DB server DB.

[0072] The relay server RS connects communication between the multiple dart game apparatuses 100 and 200. The relay server RS forms a communication network between the multiple dart game apparatuses 100 and 200 positioned at the remote range to form a peer-to-peer (P2P) network.

[0073] The game server GS may exchange information (a score acquired by each game player and information for mutual communication among the respective game players) between the dart game apparatuses 100 and 200, transmit an advantage or a warning based on a game rule through the respective dart game apparatuses 100 and 200, or perform other transmission and reception of information required to perform the dart game and controlling the dart game apparatuses 100 and 200. The dart game server GS aggregates winning/losing of the dart game and scores of the respective dart game players 100 and 200 to transmit the aggregated winning/losing and scores to the DB server.

[0074] The DB server may store personal information of the respective dart game players 100 and 200, winning/losing and ranking information of the game, score information for each game, or a replay moving picture for each game. The DB server may store the information segmented for each user. The DB server may grant a unique code to each user and manage information for each user by using the unique code. The unique code may be stored in the RFID module (an RFID card or an RFID module stored in the mobile terminal) possessed by each user. As a result, the game apparatuses 100 and 200 may identify each game player through the included user recognition unit 170. The DB server may also grant the unique code for identification even to the respective dart game apparatuses 100 and 200 and manage the dart game data for each identification code granted to the dart game apparatuses 100 and 200.

[0075] The game player may access a web server WS by using a mobile device 300 (including electronic apparatuses such as a mobile terminal, a cellular phone, a PDA, a PDP, and the like, which have a mobile communication function) or a PC 400. The web server WS may be connected with the mobile devices 300 and 400 by the Internet or an Intranet. Further, the web server WS may be connected even with the dart game apparatuses 100 and 200. The web server WS is connected with the DB server DB to provide the dart game data stored in the DB server to the dart game player.

[0076] FIG.3 is a perspective view of a dart game apparatus according to an embodiment of the present invention.

[0077] As illustrated in FIG.2, the dart game apparatus 100 according to the embodiment of the present invention may be formed by mounting components illustrated in FIG.1 in a housing H. A dart target 110, a display 142, a lighting unit 143, a sound output unit 141, a camera unit 150, and a user recognition unit 160 may be disposed on the front surface of the dart game apparatus 100.

[0078] The dart target 110 may be disposed so that a dead centre is positioned at a position (for example, 5 feets 8 inches in a vertical direction from the ground) suitable for a rule of the dart game. The lighting units 143-1, 143-2, and 143-3 may be disposed at various parts of the dart game apparatus 100 to transfer a visual effect to the player of the dart game apparatus 100.

[0079] For example, the lighting unit 143-1 is disposed at the side of the dart target 110 and may serve to irradiate lighting to the dart target 110. The lighting unit 143-1 may output a predetermined lighting effect according to an event of the dart game. Further, the lighting unit 143-1 may output lighting effects having various colors.

[0080] The lighting unit 143-2 may be formed to be extended in a vertical direction along a forward projection of the housing H. Like the lighting unit 143-1, the lighting unit 143-2 may output a predetermined lighting effect according to an event of the dart game and output lighting effects having various colors.

[0081] The lighting unit 143-3 may be disposed at the side of the user recognition unit 170. The lighting unit 143-3 may output a predetermined lighting effect according to an event of the dart game and output lighting effects having various colors. Particularly, the lighting unit 143-3 may output a lighting effect for an event related with the user recognition unit 170.

[0082] Selectively, the dart game apparatus 100 may include a dart plate P which may be selectively connected with the dart game apparatus 100 and extended in a horizontal direction. The dart plate P may further include a lighting unit 143-4. The dart plate P may be integrally coupled with or selectively attached to or detached from the dart game apparatus 100.

[0083] When the dart plate P is integrally coupled with or selectively attached to the dart game apparatus 100, the dart plate P may be electrically connected with the dart game apparatus 100. The lighting unit 143-4 of the dart game apparatus 100 may be disposed along the outside of the dart plate P as illustrated in FIG.3. One end of the dart plate P may be extended from the dart target to a place where a throw-line is to be positioned based on a distance of the throw-line according to a rule of the game. The lighting unit 143-4 may be disposed at a position corresponding to the throw-line.

[0084] Although not illustrated in FIG.3, a lighting unit (not illustrated) is disposed at the bottom of the dart target 110 to irradiate a lighting effect in a user direction. The lighting unit (not illustrated) may include a combination of different lighting elements allocated according to each segment configuring the dart target.

[0085] The housing H of the dart game apparatus 100 may include a display 142 disposed in the user direction. The display 142 may display information required for the user according to the progress of the dart game (for example, a collected score, information on a player during playing, a score required for clearing the corresponding game, information of an opposite player which is not playing the game, and the like). The display 142 may display a visual effect according to an event depending on the progress of the dart game. For example, when the user continuously hits a bullseye at the dead centre of the dart target 100 at three dart throw chances, the display 142 may display a pre-stored motion picture corresponding to the corresponding event. The motion picture may be stored in the memory 180 of the dart game apparatus 100 or received from a server through the network connection unit 160.

[0086] The display 142 may provide to the user visual and audible effects according to occurrence of the event by interlocking with the lighting units 143-1, 143-2, 143-3, and 143-4 and the sound output unit 140. In other words, when a predetermined event occurs, the display 142, the lighting units 143-1, 143-2, 143-3, and 143-4, and the sound output unit 140 may output a lighting effect, a display effect, and a sound effect with respect to the corresponding event.

[0087] In FIG.3, it is illustrated that the display 142 is disposed at the lower end of the dart target 110, but the number and disposed positions of displays 142 may be variously modified.

[0088] The user input unit 130 may be configured in a key pad button form as illustrated in FIG.3. However, as described above, the user input unit 130 may be configured by various types including a touch screen. The user operates a key button of the user input unit 130 to select a mode of a game to be played by the user, and the like.

[0089] The sound output unit 141 is also disposed on the front surface of the housing H of the dart game apparatus 100 to output a sound. The number and disposed positions of sound output units 141 may also be variously modified.

[0090] The camera unit 150 may be mounted on the housing H of the dart game apparatus 100 as illustrated in FIG.3. The camera unit 150 may include one or more cameras 151 to 153 which may photograph the dart target 110 and the throw line. The image photographed through the camera unit 150 may be transferred to the memory 180. According to an embodiment, only some of the motion pictures photographed by the camera unit 150 may be finally stored in the memory 180 or transferred to a server (not illustrated) through the network communication unit 160.

[0091] The user recognition unit 170 may be disposed on the front surface of the housing H of the dart game apparatus 100 and include a short range communication module as illustrated in FIG.3. The user touches a card for recognizing the user near the user recognition unit 170 to complete user authentication.

[0092] The contents illustrated in FIG.3 and the aforementioned description of the exterior of the dart game apparatus 100 are just an example proposed for description, and the dart game apparatus 100 according to the present invention is not limited to the exterior illustrated in FIG.3.

[0093] Hereinafter, a representative rule of the dart game and stats of the player associated therewith will be described.

[0094] The dart game which may be executed by the dart game apparatus 100 according to the embodiment of the present invention may include a 01 game (zero-one game) a cricket game, a count-up game, a match-up mode, and the like.

[0095] The 01 game is performed by two teams (alternatively, two players)'s throwing the dart to the dart target alternately one by one round. One round includes three dart throwing operations. An object of the game is that the sum of scores in each round reaches a target score (a score of the unit of 100 or 1000 that generally ends with 01, such as 301, 501, 701, 901, 1101, 1501 points, and the like). The target score and a play round may be arbitrarily adjusted according to the number of players that participate in the round.

[0096] In the cricket game, the round is performed by throwing three darts in a first round similarly to the 01 game. The standard cricket game may be performed by using only a bull region at the center of the dart target, and 20, 19, 18,

17, 16, and 15 point regions. When the corresponding cricket figures are hit with 3 marks, this is marked as a position of the player and when the corresponding cricket figures are hit with 4 marks or more, scores corresponding to the figures are added up to compete the scores. Herein, double regions and triple regions of the dart target may be calculated with 2 marks and 3 marks, respectively. While the corresponding cricket figure is marked as the position of the player, when a counterpart of the player also marks the cricket figures with 3, the corresponding cricket figure is regarded to be closed and no score may be added up any longer. The object of the game may be set to acquire a high score until a regulation round ends or close all cricket figures and obtain a higher score than the counterpart.

[0097] The count-up game is a game which the player win the victory when acquiring a high score within a predetermined round.

[0098] In addition to the aforementioned games, various types of games may be played by the dart game apparatus 100 and the play mode of the dart game apparatus 100 is not limited to the aforementioned game modes.

[0099] The stats of the player may be defined according to the corresponding game rule independently from the winning or losing of the count-up game, the cricket game, and the 01 game.

[0100] For example, points per dart (PPD) may be calculated by dividing a total score which the player earns by the number of dart throw times in the 01 game.

[0101] Alternatively, marks per round (MPR) may be calculated by calculating the number of marking times by the player in one round. For example, in the cricket game, when the player performs three dart throwing operations in one round and the darts hit 15 triple, 19 single, and 20 double bulls in the three dart throwing operations, respectively, the MPR becomes (3 + 1 + 2)/1 = 6.00 (MPR).

[0102] In a subsequent round, when the player performs three dart throwing operations and the dart hit mark fail, 18 double, and 20 bull in the three dart throwing operations, the MPR becomes (3 + 1 + 2 + 0 + 2+ 1)/2 =4.5 (MPR).

[0103] The PPD and the MPR as the stats of the player may also be stored as personal data of the player. Alternatively, in the count-up game, an average score of the player per game, a highest score record of the player per game, and the like may be stored as the stats of the player.

[0104] The dart game apparatus 100 may play the dart game according to the corresponding mode and transmit a game record per player to a game server GS or a DB server DB. The game server GS or DB server DB may calculate the PPD and/or MPR for each player according to the corresponding game record and store the calculated PPD and/or MPR as accumulated PPD and/or MPR stats of the player. Further, the game server GS or the DB server DB may individually store the game record of the player. For example, in the 01 game, the count-up game, or the cricket game which the player played in the past, the player may record information on a segment part of a dart which hits each dart throw. The game server GS or DB server DB may store accumulated (average) PPD and/or MPR data and highest PPD and/or MPR data of the player.

[0105] The game server GS or the DB server DB may be two physically separated servers. Alternatively, the game server GS or the DB server DB may be one physically integrated server and be distinguished according to roles performed in the server. Further, as described above, one server may serve as both the game server GS and the DB server DB.

[0106] The game server GS or the DB server DB may store personal stats of the player and rating (alternatively, grade) may be granted to the player according to the corresponding stats. One example of rating and/or grade (class) which can be granted to a player according to PPD and/or MPR is illustrated in FIG.4.

[0107] As illustrated in FIG.4, the PPD and/or the MPR which are a personal stat of the player are/is managed and stored and the rating (alternatively, class) corresponding thereto is granted to efficiently classify levels of the players and provide a motivation for increasing the corresponding rating.

[0108] FIGS. 5 to 8 are flowcharts of a method for providing a record challenge mode according to an embodiment of the present invention.

[0109] However, the method for providing a record challenge mode according to the embodiment of the present invention is not limited to steps illustrated in FIGS. 5 to 8. That is, the method for providing a record challenge mode according to the embodiment of the present invention may be performed through steps which are more or less than the steps illustrated in FIGS. 5 to 8. That is, some steps of the steps illustrated in FIGS. 5 to 8 may be omitted in the method for providing a record challenge mode according to the embodiment of the present invention and steps not illustrated in FIGS. 5 to 8 are added to be added to the method for providing a record challenge mode. Further, orders of the steps illustrated in FIGS. 5 to 8 are not limited and the order of the steps executed may be different from the order of the steps illustrated in FIGS. 5 to 8 as necessary.

[0110] As illustrated in FIG.5, a dart game apparatus 100 may recognize a player which desires to play a dart game (S110). The player locates a card including an RFID chip around a user recognition unit 170 to allow a dart game apparatus 100 to identify the player. The dart game apparatus 100 may identify the player and load data associated with the identified player from a server based on the identified player through an RFID communication module.

[0111] The player may determine a dart game mode desired thereby and input an input to select the desired dart game mode in the dart game apparatus 100 through a user input unit 130 (S120). For example, the player may verify game modes (a cricket game, a 01 game, a count-up game, a match-up mode game, and the like) provided by the dart game

apparatus 100 through a user interface (alternatively, a user interface transferred by a voice through a sound output unit 140) provided through a display 142. Further, the player may input an input to select one game mode among them through the user input unit 130.

[0112] The player may also desire to play a challenge mode with respect to the selected game mode (one of the cricket game, the 01 game, the count-up game, the match-up mode game, and the like). When the player desires to play a challenge mode with respect to the selected game mode, the player may input the input to select the challenge mode by the user input unit 130, through the user interface provided through the display 142 (S130).

[0113] As described above, an execution order of a step of receiving the input to select the dart game mode (S120) and a step of receiving the input to select the challenge mode (S130) is not limited by the order illustrated in FIG.5. That is, as illustrated in FIG.5, the user may select the game mode and select the challenge mode for the selected game mode or select the challenge mode and select by which game mode to perform the challenge mode later.

[0114] When the player selects the challenge mode, the dart game apparatus 100 may search game record information of the player who selects the challenge mode (S140). The dart game apparatus 100 may load the record information of the player from the server. The server may be a game server GS and/or a DB server DB as described above.

[0115] The searching step (S140) may be performed by the dart game apparatus 100, but performed by the server as necessary. In other words, the dart game apparatus 100 may transmit an invoke signal to allow the server to just search the game record information of the player and the player who receives the invoke signal may search the game record information.

[0116] When the game mode selected by the player is the 01 game, the dart game apparatus 100 may load PPD data of the player from the server. Similarly, when the game mode selected by the player is the cricket game, the dart game apparatus 100 may load MPR data of the player from the server. Similarly, when the game mode selected by the player is the count-up game, the dart game apparatus 100 may load score data acquired per game from the server.

[0117] The dart game apparatus 100 may load average PPD (alternatively, MPR or the score data of the count-up game) of the player and maximum PPD game data (alternatively, maximum MPR or score data of the count-up game) in loading the game record of the player.

[0118] The dart game apparatus 100 may load from the servera challenge record to be challenged in the challenge mode based on the searched game record information of the player (S150). The challenge record includes one or more dart throw data constituting a game play according to the selected dart game mode and the dart throw data may include data indicating which part in a target of the dart game apparatus a dart throw hits. For example, when the selected game is the 01 game, the loaded challenge record as a game record acquired by clearing the 01 game may include score data of a dart target hit for each dart throw when clearing the 01 game. This may be similarly applied even to the challenge records of the cricket game and the count-up game.

[0119] One example of the loaded challenge record according to the embodiment of the present invention is shown in Table 1.

[Table 1]

Round	Round 1			Round 2			Round N-1	Round N		
Dart throw	38 (19 double)	19	20	15	10	9	...	20	20	20

[0120] In addition to data shown in Table 1, the challenge record may further include positional data indicating which location of the dart target the corresponding dart hits for each dart throw of each round.

[0121] The challenge record loaded by the dart game apparatus 100 may be selected based on the game record information of the player. That is, the dart game apparatus 100 may select a challenge record based on game record information of the player according to a predetermined algorithm in order to provide motivation at a predetermined level or more to the player.

[0122] For example, the dart game apparatus 100 may load a challenge record close to a highest record of the player. For example, it is assumed that the player plays the 01 game and the player intends to perform the challenge mode for the 01 game. The dart game apparatus 100 may search a PPD point of the player. As described above, the dart game apparatus 100 may just transmit the signal to select the challenge mode to the serverand the server may search the PPD point of the player.

[0123] The dart game apparatus 100 (alternatively, the server) may select a challenge record of the other person (alternatively, player) for challenging in the challenge mode according to the searched PPD point of the player. For example, when the 01 game having the highest PPD point record of the player is a 30.80 PPD game, the dart game apparatus 100 (alternatively, the server) may be close to the 30.80 PPD and select a challenge record having PPD higher than 30.80 PPD. For example, game information of the 01 game in which 32.80 PPD recorded by the other person is recorded may be selected as the challenge record. The dart game apparatus 100 may load the selected challenge

record.

[0124] An algorithm for loading the challenge record of the other person close to the highest PPD score of the player may be appropriately adjusted in order to provide the motivation of the player. For example, the game record of the 01 game having a PPD record different from the highest PPD game record of the player by 5 scores or less is randomly selected to be loaded as the challenge record. Alternatively, a game record of the 01 game having a PPD record better than the highest PPD game record of the player by 10% or less is randomly selected to be loaded as the challenge record. In the aforementioned algorithm, numerical values such as 5 scores and 10% which are used for description may be variably set by selection of the player or selection of a dart game network operator.

[0125] The aforementioned algorithm may also allow the challenge record to be selected based on the average PPD of the player. For example, a game record having an excellent PPD record within a predetermined score or a predetermined ratio in the average PPD of the player may be loaded as the challenge record. When the challenge record is selected based on the average PPD of the player, the game record of the player may be selected and loaded as the challenge record.

[0126] Similarly to the 01 game, even in the case of the cricket game and the count-up game, the challenge record may be selected and loaded based on MPR and all score records of respective players.

[0127] The challenge record may be randomly determined, a record of the other person which has played the game together with the corresponding player may be preferentially selected or determined, the record of the other person included in the same group (for example, the same dart society club or dart team) as the corresponding player may be preferentially selected and determined, the record of the other person which has a record that the other person has played the game in an area geographically close to the corresponding player may be preferentially selected and determined, or the record may be selected and determined among the game records played in the corresponding dart game apparatus 100.

[0128] Additionally, the change record may further include multimedia data including a play image associated with the challenge record. For example, when the loaded challenge record is played, the challenge record may further include a play moving picture of a counter part, which is photographed by a camera in the corresponding dart game apparatus (not illustrated).

[0129] When the dart game apparatus 100 loads the challenge record (S150), the dart game apparatus 100 may perform the challenge mode based on the loaded challenge record and the dart game mode (S160).

[0130] The step in which the dart game apparatus 100 performs the challenge mode (S160) will be described in detail with reference to FIG.6.

[0131] Steps (S120 to S250) of FIG.6 may mean steps similar to the steps of FIG.5 having similar reference numerals.

[0132] As illustrated in FIG.6, a step of performing the challenge mode (S260) based on the loaded challenge record and the selected dart game mode may include one or more sub-steps S261 to S264.

[0133] The dart game apparatus 100 may enter the challenge mode and thereafter, perform the game according to the corresponding game mode (one of the 01 game, the cricket game, and the count-up game). For example, in the case of the 01 game, the dart game apparatus 100 may request the player to execute three dart throws at an initial first round. The dart game apparatus 100 may sense a portion of the target hit by the dart thrown by the player and output a combination of sound, moving picture, and lighting effects corresponding to the target part through a combination of the sound output unit 141, the display 142, and the lighting unit 143. For example, a score recorded by the player may be output through the display 142 and a score which remains to clear the 01 game may be displayed. When the player hits a triple, a double, or a bullseye, a combination of sound, moving picture, and lighting effects corresponding to the relevant event may be output (S261).

[0134] When the player throws the dart, the dart game apparatus 100 may determine whether the player finishes one round (S261). When the round of the player is finished, the dart game apparatus 100 may perform the round of the challenge record (S263) and if not, the dart game apparatus 100 may continuously perform the player round (S261). For example, in the case of the 01 game, the dart is thrown three times to determine that the player round is finished.

[0135] When the player round is finished, the dart game apparatus 100 may output a reward effect depending on the dart throw data of the round included in the challenge record (S263). For example, when as the loaded challenge record, 38 point, 19 point, and 20 point are hit in the first round, the reward effect depending on acquisition of the corresponding score may be output.

[0136] For example, the dart game apparatus 100 may output the combination of the sound, moving picture, and lighting effects such as hitting 38 point (a double of 19 point is hit) at a first time of the first round through the combination of the sound output unit 141, the display 142, and the lighting unit 143. That is, the player corresponding to the challenge record is not actually shown to play the game in the same space time, but the dart game apparatus 100 outputs an effect as if the corresponding player plays the game together, and as a result, the player who plays the challenge mode may receive motivation for record breaking without losing an interest.

[0137] For example, when as the loaded challenge record, 20 point, 20 point, and 20 point are hit in the first round, the lighting effect, the sound effect, and the moving picture effect for congratulating the corresponding event may be

output through the output unit 140 of the dart game apparatus 100.

[0138] Further, the dart game apparatus 100 may display a play moving picture of the player recorded through the camera when the challenge record is played through the display 142. The play moving picture may be displayed by using a user interface similar to a remote match-up mode of the dart game apparatus 100. Accordingly, the player who performs the challenge mode may experience an effect as if the player remotely performs the real-time match-up mode.

[0139] The dart game apparatus 100 may play the game by accelerating the play moving picture (for example, 2X, 3X, or 4X) in outputting the corresponding multimedia data. An execution time of the challenge mode may be reduced by playing the game by accelerating the play moving picture.

[0140] When the dart target 110 of the dart game apparatus 100 includes the additional lighting unit 143 on the bottom, the dart game apparatus 100 may turn on lighting corresponding to a location which the corresponding dart hits according to the dart throw data per round of the challenge record.

[0141] After the dart game apparatus 100 outputs all reward effects for the corresponding round (S264), the dart game apparatus 100 may determine whether the corresponding game is finished (S265). When the game is finished, the process proceeds to the next step (S270) and if not, the player round may be performed (S261).

[0142] Additionally, the dart game apparatus 100 may determine whether the corresponding player updates the loaded challenge record in the challenge mode after the game is finished (S270). When the corresponding player updates the loaded challenge record in the challenge mode may mean that the corresponding player records PPD (in the case of the 01 game, MPR in the case of the cricket game, and final acquired score data in the case of the count-up game) better than the loaded challenge record.

[0143] When the challenge record is updated, the dart game apparatus 100 may transfer a notification message for notifying that the corresponding challenge record is updated to the player who has recorded the loaded challenge record (S280). For example, the dart game apparatus 100 may transmit a message for notifying that the challenge record is updated to the server and allow the server to transmit the notification message to the player who has recorded the challenge record. When the player who has acquired the challenge record uses the dart game apparatus, the server may allow the server to display the corresponding message. The server may also transmit the corresponding notification message to a mobile device possessed by the player who has recorded the challenge record.

[0144] FIG.7 is a flowchart of a method for providing a challenge mode according to yet another embodiment of the present invention.

[0145] As illustrated in FIG.7, the dart game apparatus 100 may display a target record which the player may challenge based on the searched game record information of the player (S340-1). For example, the dart game apparatus 100 may allow the server to search the game record of the player who intends to play the challenge mode and search a challenge target record which the player may challenge based on the corresponding game record. The dart game apparatus 100 may receive the challenge target record searched from the server and display the received challenge target record through the display 142.

[0146] As the displayed challenge target record, the record of the other person who has played the game together with the corresponding player may be randomly selected and determined, the record of the other person included in the same group (for example, the same dart society club or dart team) as the corresponding player may be preferentially selected and determined, the record of the other person which has the record that the other person has played the game in the area geographically close to the corresponding player may be preferentially selected and determined, or the record may be selected among the game records played in the corresponding dart game apparatus 100.

[0147] The dart game apparatus 100 may receive an input to select one of the displayed challenge target records from the user through the user input unit 130 (S340-2). For example, the player may select a target record which the corresponding player desires to challenge among the displayed challenge target records and input an input to select the selected target record through the user input unit 130.

[0148] The dart game apparatus 100 may determine the target record selected by the player as the challenge record. In addition, the dart game apparatus 100 may load the selected challenge record from the server (S350).

[0149] FIG.8 is a flowchart of a method for providing a challenge mode according to still yet another embodiment of the present invention.

[0150] As illustrated in FIG.8, the dart game apparatus 100 (alternatively, the server) may search the game record information of the player and generate virtual game record information based on the searched game record information (S450'). In other words, the dart game apparatus 100 may not load one of game records which the other person has played as the challenge record, but use the virtually generated game record as the challenge record. The dart game apparatus 100 may virtually generate a record close to a highest score (alternatively, an average score) of the corresponding game record based on the searched game record of the player. Alternatively, the virtually generated record may be generated by the server and the dart game apparatus 100 may receive the generated record and use the received record in the challenge mode.

[0151] The dart game apparatus 100 may also calculate the number of remaining dart throws based on the selected dart game mode while performing the challenge mode and reload the challenge record which becomes a target of the

challenge mode based on the calculated number of dart throws.

[0152] For example, the dart game apparatus 100 may change the challenge record which becomes the target of the challenge mode while performing the challenge mode according to the initially loaded challenge record. For example, the dart game apparatus may additionally load another challenge record which the player may challenge based on the number of remaining throws while the corresponding dart game is in progress.

[0153] The dart game apparatus providing a record challenge mode to the player according to the embodiment of the present invention may be configured to include a user input unit 130 receiving an input to select a challenge mode of a dart game mode selected by the player, a controller 190 loading a challenge record which becomes a target of the challenge mode and performing the challenge mode based on the loaded challenge record and the selected dart game mode - the challenge record includes one or more dart throw data constituting a game play according to the selected dart game mode and the dart throw data includes data indicating which part of a target of the dart game apparatus a dart throw hits - , and an output unit 140 outputting a reward effect as the challenge mode is performed.

[0154] Meanwhile, various embodiments presented herein may be implemented as manufactured articles using a method, an apparatus, or a standard programming and/or engineering technique. The term "manufactured article" includes a computer program, a carrier, or a medium which is accessible by a predetermined computer-readable device. For example, a computer-readable medium includes a magnetic storage device (for example, a hard disk, a floppy disk, a magnetic strip, or the like), an optical disk (for example, a CD, a DVD, or the like), a smart card, and a flash memory device (for example, an EEPROM, a card, a stick, a key drive, or the like), but is not limited thereto. Further, various storage media presented herein include one or more devices and/or other machine-readable media for storing information. The term "machine-readable media" include a wireless channel and various other media that can store, posses, and/or transfer command(s) and/or data, but are not limited thereto.

[0155] The description of the presented embodiments is provided so that those skilled in the art of the present invention use or implement the present invention. Various modifications of the embodiments will be apparent to those skilled in the art and general principles defined herein can be applied to other embodiments without departing from the scope of the present invention. Therefore, the present invention is not limited to the embodiments presented herein, but should be analyzed within the widest range which is consistent with the principles and new features presented herein.

[Mode for Invention]

[0156] Contents associated with a best mode for carrying out the present invention have been described.

[Industrial Applicability]

[0157] The present invention can be used in a digital device, a dart device, a dart game device, an entertainment device, and the like.

Claims

1. A dart game apparatus providing a record challenge mode to a player, the apparatus comprising:

a user input unit receiving an input to select a challenge mode of a dart game mode selected by the player;
a controller loading a challenge record which becomes a target of the challenge mode and performing the challenge mode based on the loaded challenge record and the selected dart game mode - the challenge record includes one or more dart throw data constituting a game play according to the selected dart game mode and the dart throw data includes data indicating which part of a target of the dart game apparatus a dart throw hits - ; and
an output unit outputting a reward effect as the challenge mode is performed.

2. A method for providing a record challenge mode to a player of a dart game apparatus, the method comprising:

receiving an input to select a challenge mode of a dart game mode selected by the player;
loading a challenge record which becomes a target of the challenge mode - the challenge record includes one or more dart throw data constituting a game play according to the selected dart game mode and the dart throw data includes data indicating which part of a target of the dart game apparatus a dart throw hits - ; and
performing the challenge mode based on the loaded challenge record and the selected dart game mode.

3. The method for providing a record challenge mode to a player of a dart game apparatus of claim 2, wherein the

performing of the challenge mode further includes outputting reward effects corresponding to one or more throw data included in the loaded challenge record, and
the reward effects include a lighting effect or a sound effect corresponding to the dart throw according to the selected dart game mode.

4. The method for providing a record challenge mode to a player of a dart game apparatus of claim 2, wherein the loaded challenge record includes multimedia data including a play image associated with the challenge record, and the performing of the challenge mode includes outputting the multimedia data.

5. The method for providing a record challenge mode to a player of a dart game apparatus of claim 4, wherein the outputting of the multimedia data includes playing the game by accelerating the play image included in the multimedia data.

6. The method for providing a record challenge mode to a player of a dart game apparatus of claim 2, wherein the performing of the challenge mode includes outputting lighting effects to parts of a dart target corresponding to one or more dart throw data.

7. The method for providing a record challenge mode to a player of a dart game apparatus of claim 2, further comprising:

after the receiving of the input to select the challenge mode,
receiving an input to select a challenge record which becomes a target of the challenge mode.

8. The method for providing a record challenge mode to a player of a dart game apparatus of claim 2, further comprising:

after the receiving of the input to select the challenge mode,
searching game record information of the player, and
wherein the loaded challenge record is selected based on the searched game record information of the player.

9. The method for providing a record challenge mode to a player of a dart game apparatus of claim 8, wherein the loaded challenge record includes game record information having a highest score in the searched game record information of the player.

10. The method for providing a record challenge mode to a player of a dart game apparatus of claim 8, wherein the loaded challenge record includes game record information of a player different from the player.

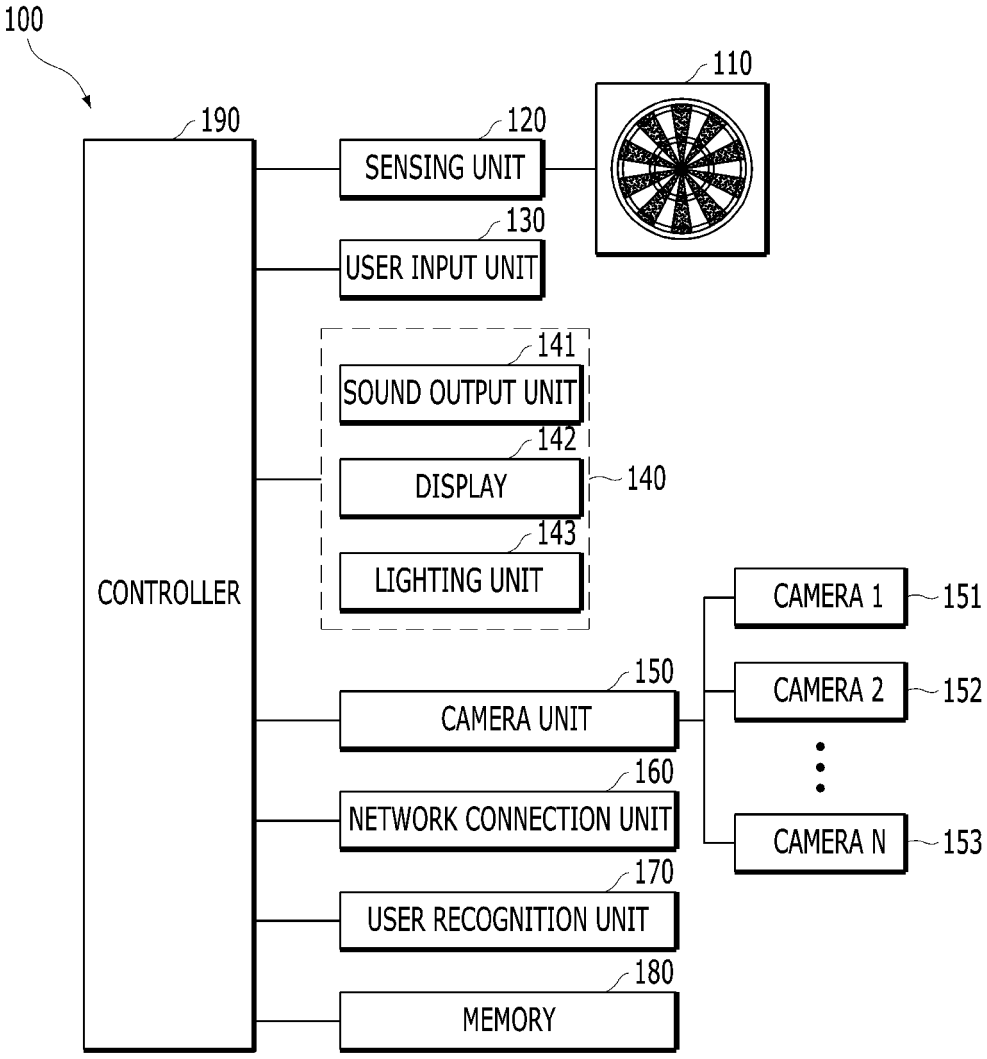
11. The method for providing a record challenge mode to a player of a dart game apparatus of claim 8, wherein the loaded challenge record includes virtual game record information generated by the dart game apparatus based on the searched game record information of the player.

12. The method for providing a record challenge mode to a player of a dart game apparatus of claim 2, wherein the performing of the challenge mode includes
calculating the number of remaining dart throw times based on the selected dart game mode while performing the challenge mode, and
reloading the challenge record which becomes the target of the challenge mode based on the calculated number of dart throw times.

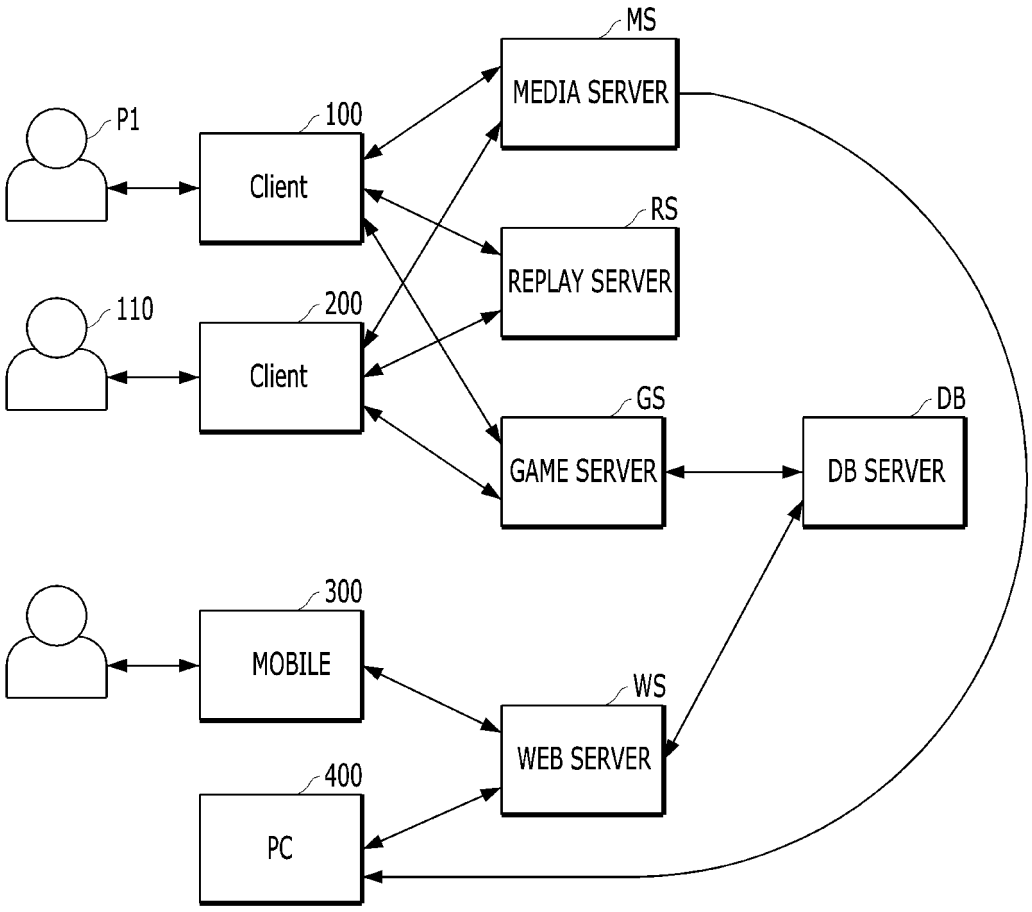
13. A computer readable medium having a program which allows a computer to provide a record challenge mode to a player of a dart game apparatus recorded therein when the program is executed by the computer, wherein the program includes:

a code allowing the computer to receive an input to select a challenge mode of a dart game mode selected by the player;
a code allowing the computer to load a challenge record which becomes a target of the challenge mode - the challenge record includes one or more dart throw data constituting a game play according to the selected dart game mode and the dart throw data includes data indicating which part of a target of the dart game apparatus a dart throw hits - ; and
a code allowing the computer to perform the challenge mode based on the loaded challenge record and the selected dart game mode.

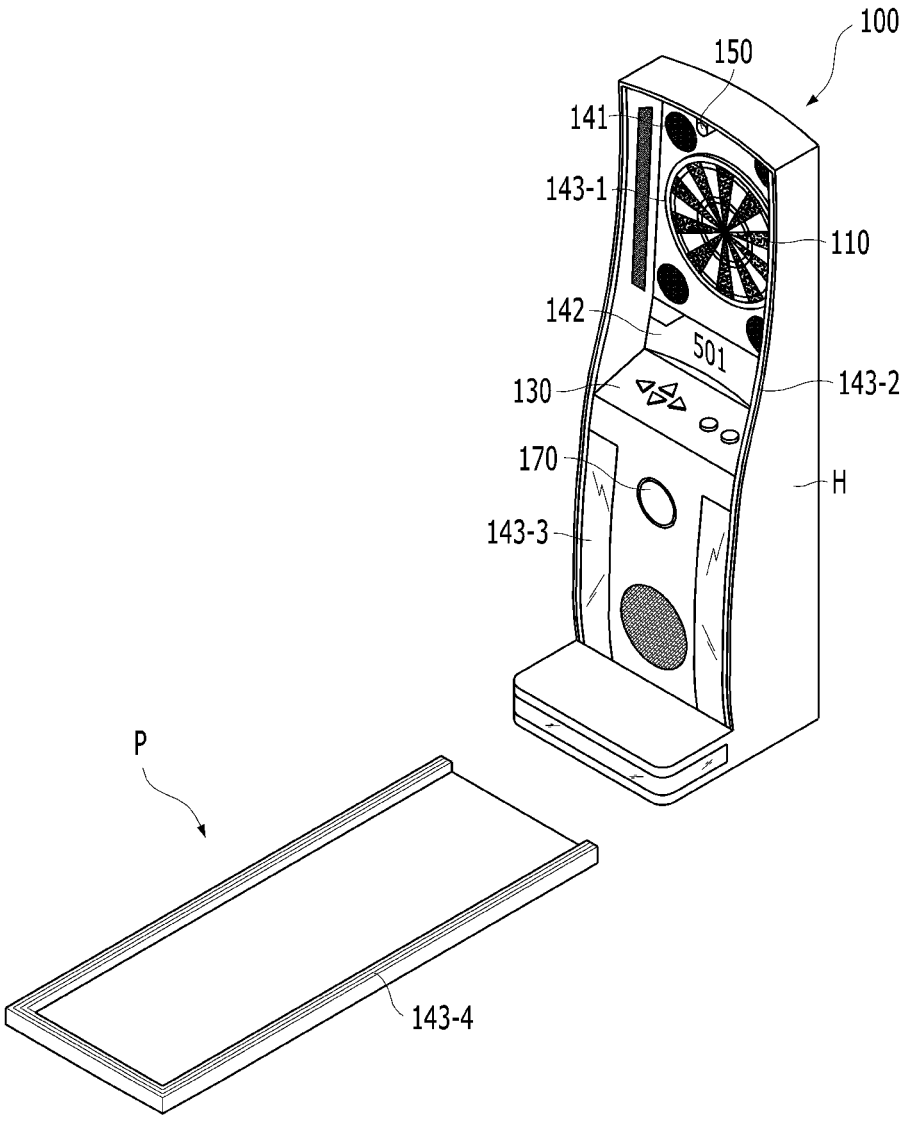
[FIG.1]


100
190
CONTROLLER
120
SENSING UNIT
110
130
USER INPUT UNIT
141
SOUND OUTPUT UNIT
142
DISPLAY
140
143
LIGHTING UNIT
150
CAMERA UNIT
160
NETWORK CONNECTION UNIT
170
USER RECOGNITION UNIT
180
MEMORY
CAMERA 1
151
CAMERA 2
152
CAMERA N
153

[FIG.2]


MS
MEDIA SERVER
P1
100
Client
RS
REPLAY SERVER
110
200
Client
GS
DB
GAME SERVER
DB SERVER
300
MOBILE
WS
WEB SERVER
400
PC

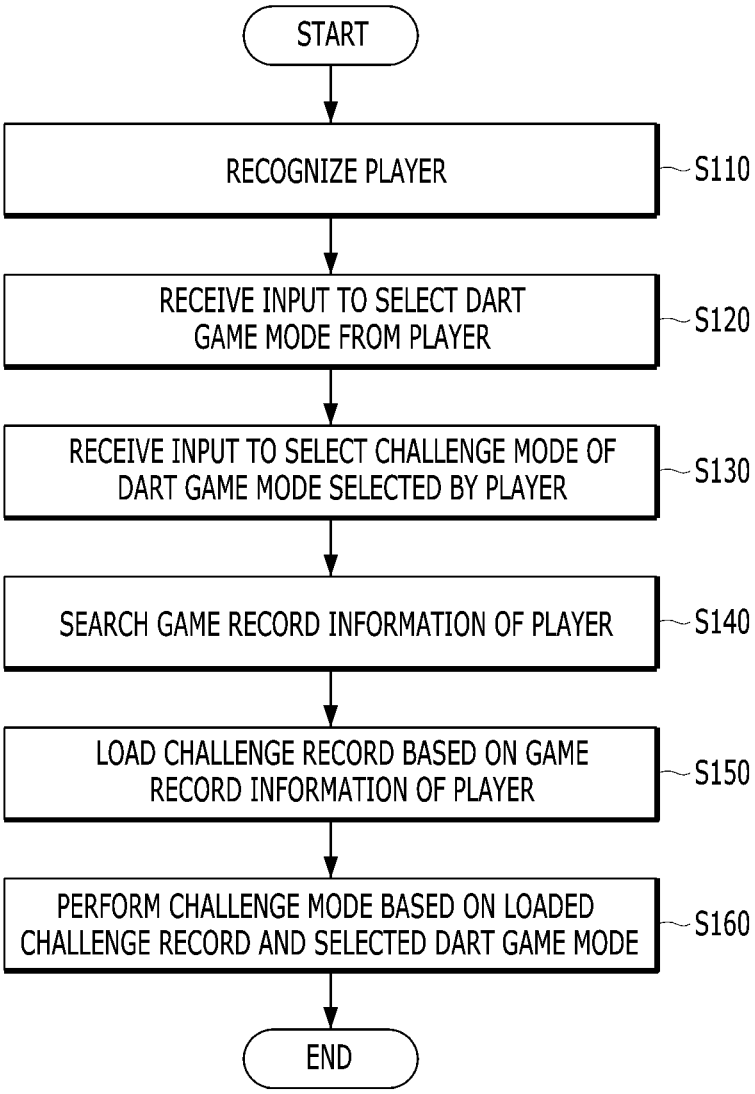
[FIG.3]



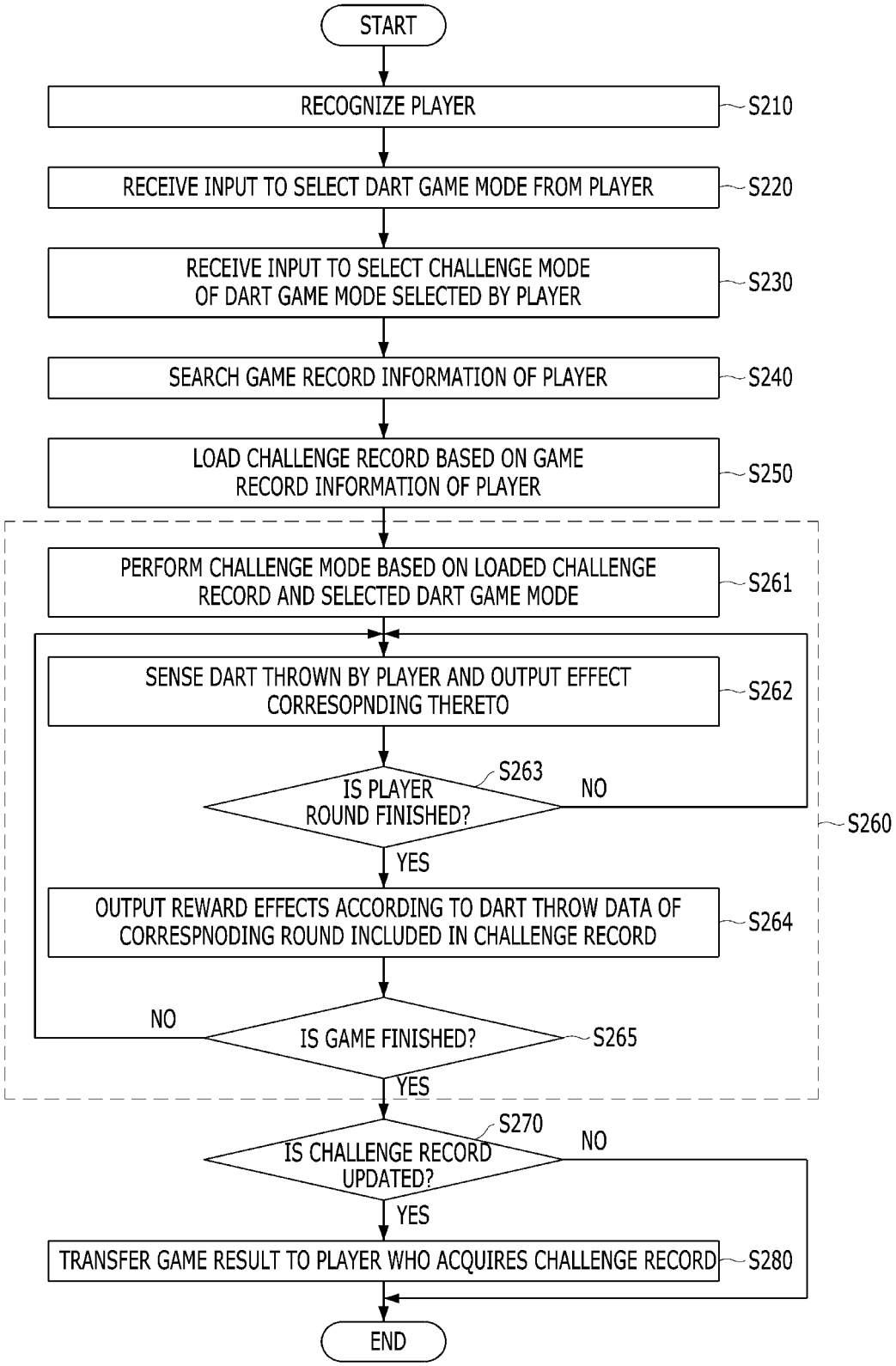
[FIG.4]

CLASS	RATING	01GAME	S.CRIKET
		PPD	MPR
GRAND MASTER30	30	48.00 - Above	6.00 - Above
GRAND MASTER29	29	46.60 - 47.99	5.74 - 5.99
GRAND MASTER28	28	45.20 - 46.59	5.48 - 5.73
GRAND MASTER27	27	43.80 - 45.19	5.22 - 5.47
MASTER26	26	42.40 - 43.79	4.96 - 5.21
MASTER25	25	41.00 - 42.39	4.70 - 4.95
AAA24	24	39.60 - 40.99	4.49 - 4.69
AAA23	23	38.20 - 39.59	4.28 - 4.48
AAA22	22	36.80 - 38.19	4.07 - 4.27
AAA21	21	35.40 - 36.79	3.86 - 4.06
AA20	20	34.05 - 35.39	3.71 - 3.85
AA19	19	32.70 - 34.04	3.56 - 3.70
AA18	18	31.35 - 32.69	3.41 - 3.55
AA17	17	30.00 - 31.34	3.26 - 3.40
A16	16	28.65 - 29.99	3.11 - 3.25
A15	15	27.30 - 28.64	2.96 - 3.10
A14	14	25.95 - 27.29	2.81 - 2.95
BBB13	13	24.65 - 25.94	2.66 - 2.80
BBB12	12	23.35 - 24.64	2.51 - 2.65
BB11	11	22.05 - 23.34	2.36 - 2.50
BB10	10	20.75 - 22.04	2.21 - 2.35
B9	9	19.45 - 20.74	2.06 - 2.20
B8	8	18.15 - 19.44	1.91 - 2.05
CCC7	7	16.90 - 18.14	1.76 - 1.90
CCC6	6	15.65 - 16.89	1.61 - 1.75
CC5	5	14.40 - 15.64	1.46 - 1.60
CC4	4	13.15 - 14.39	1.31 - 1.45
C3	3	11.90 - 13.14	1.20 - 1.30
C2	2	10.65 - 11.89	1.10 - 1.19
N1	1	0.00 - 10.64	0.00 - 1.09

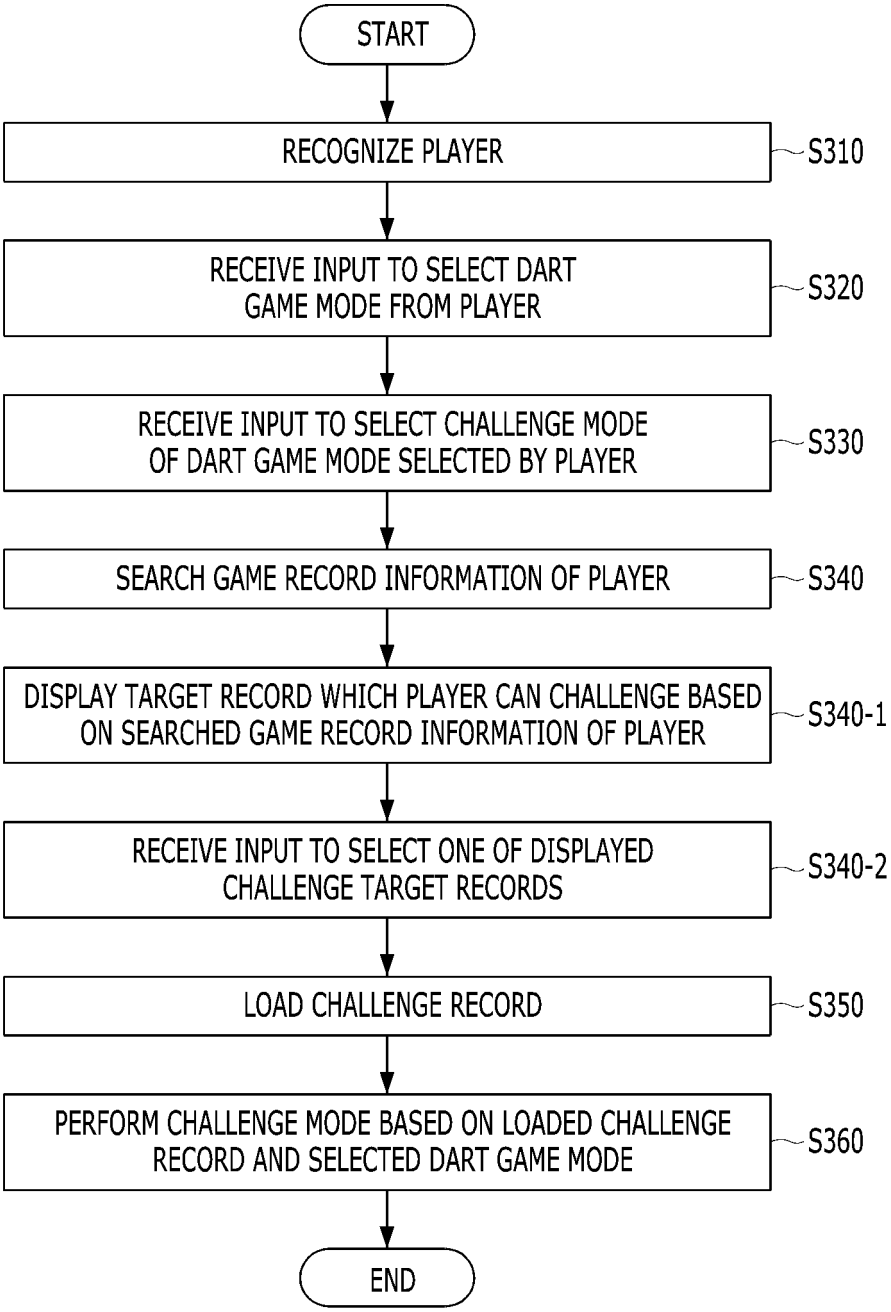
[FIG.5]


START
RECOGNIZE PLAYER
S110
RECEIVE INPUT TO SELECT DART GAME MODE FROM PLAYER
S120
RECEIVE INPUT TO SELECT CHALLENGE MODE OF DART GAME MODE SELECTED BY PLAYER
S130
SEARCH GAME RECORD INFORMATION OF PLAYER
S140
LOAD CHALLENGE RECORD BASED ON GAME RECORD INFORMATION OF PLAYER
S150
PERFORM CHALLENGE MODE BASED ON LOADED CHALLENGE RECORD AND SELECTED DART GAME MODE
S160
END

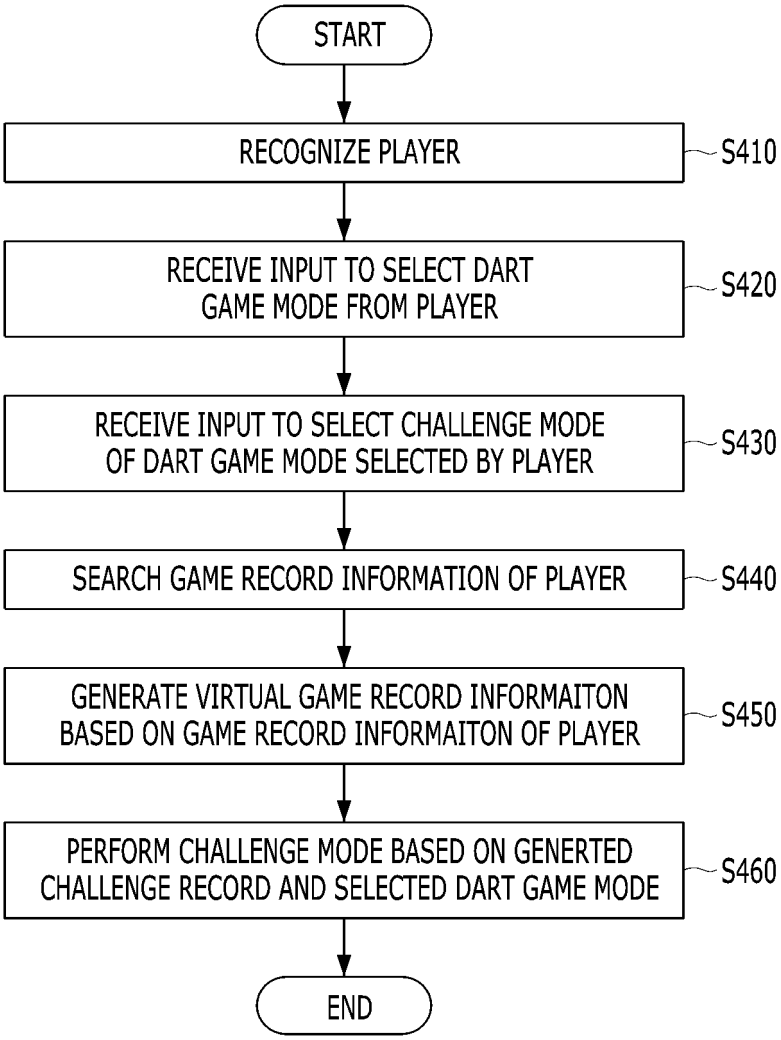
[FIG.6]


START
RECOGNIZE PLAYER
S210
RECEIVE INPUT TO SELECT DART GAME MODE FROM PLAYER
S220
RECEIVE INPUT TO SELECT CHALLENGE MODE OF DART GAME MODE SELECTED BY PLAYER
S230
SEARCH GAME RECORD INFORMATION OF PLAYER
S240
LOAD CHALLENGE RECORD BASED ON GAME RECORD INFORMATION OF PLAYER
S250
PERFORM CHALLENGE MODE BASED ON LOADED CHALLENGE RECORD AND SELECTED DART GAME MODE
S261
SENSE DART THROWN BY PLAYER AND OUTPUT EFFECT CORRESOPNDING THERETO
S262
IS PLAYER ROUND FINISHED?
S263
NO
YES
OUTPUT REWARD EFFECTS ACCORDING TO DART THROW DATA OF CORRESPNODING ROUND INCLUDED IN CHALLENGE RECORD
S264
NO
IS GAME FINISHED?
S265
YES
S260
IS CHALLENGE RECORD UPDATED?
S270
NO
YES
TRANSFER GAME RESULT TO PLAYER WHO ACQUIRES CHALLENGE RECORD
S280
END

[FIG.7]


START
RECOGNIZE PLAYER
S310
RECEIVE INPUT TO SELECT DART GAME MODE FROM PLAYER
S320
RECEIVE INPUT TO SELECT CHALLENGE MODE OF DART GAME MODE SELECTED BY PLAYER
S330
SEARCH GAME RECORD INFORMATION OF PLAYER
S340
DISPLAY TARGET RECORD WHICH PLAYER CAN CHALLENGE BASED ON SEARCHED GAME RECORD INFORMATION OF PLAYER
S340-1
RECEIVE INPUT TO SELECT ONE OF DISPLAYED CHALLENGE TARGET RECORDS
S340-2
LOAD CHALLENGE RECORD
S350
PERFORM CHALLENGE MODE BASED ON LOADED CHALLENGE RECORD AND SELECTED DART GAME MODE
S360
END

[FIG.8]


START
RECOGNIZE PLAYER
S410
RECEIVE INPUT TO SELECT DART GAME MODE FROM PLAYER
S420
RECEIVE INPUT TO SELECT CHALLENGE MODE OF DART GAME MODE SELECTED BY PLAYER
S430
SEARCH GAME RECORD INFORMATION OF PLAYER
S440
GENERATE VIRTUAL GAME RECORD INFORMAITON BASED ON GAME RECORD INFORMAITON OF PLAYER
S450
PERFORM CHALLENGE MODE BASED ON GENERTED CHALLENGE RECORD AND SELECTED DART GAME MODE
S460
END

INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR2014/003592

A. CLASSIFICATION OF SUBJECT MATTER

A63F 9/02(2006.01)i, F41J 3/02(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A63F 9/02; F41J 5/10; F41J 5/04; F41J 3/02; F41J 3/00; F41G 3/26

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Korean Utility models and applications for Utility models: IPC as above
Japanese Utility models and applications for Utility models: IPC as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS (KIPO internal) & Keywords: dart, challenge, heat, reward

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	KR 10-1997-0705734 A (VELLEY RECREATION PRODUCTS INC.) 09 October 1997 See abstract, figures 1-3, claims 1-3	1
A		2-13
Y	JP 3893541 B2 (BABCOCK HITACHI KK) 14 March 2007 See abstract, figure 1, claims 1-5	1
A		2-13
A	JP 07-234096A (BABCOCK HITACHI KK) 05 September 1995 See abstract, figure 8, paragraphs [0049]-[0052], claim 3	1-13
A	KR 10-2007-0089835 A (SEGA CORPORATION) 03 September 2007 See abstract, figures 1-5, paragraphs [0053]-[0068], claims 3-5	1-13

☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

* Special categories of cited documents:
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"E" earlier application or patent but published on or after the international filing date
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"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
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"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
10 JULY 2014 (10.07.2014)	**10 JULY 2014 (10.07.2014)**
Name and mailing address of the ISA/KR Korean Intellectual Property Office Government Complex-Daejeon, 189 Seonsa-ro, Daejeon 302-701, Republic of Korea Facsimile No. 82-42-472-7140	Authorized officer Telephone No.

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/KR2014/003592

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