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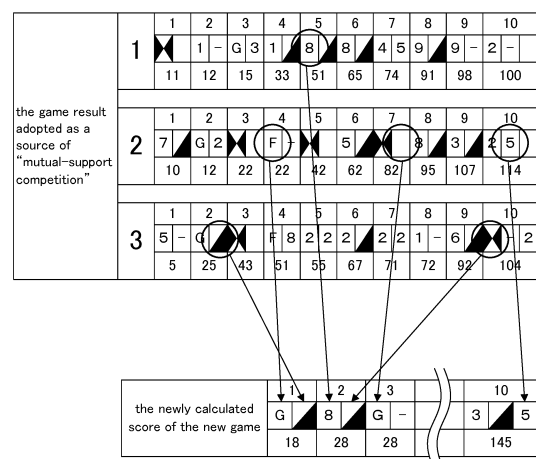
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(54) **BOWLING SCORE CALCULATION DEVICE, BOWLING SCORE CALCULATION METHOD, AND COMPUTER PROGRAM**

(57) A bowling score calculation device, a bowling score calculation method, and a computer program are provided in which a new game result is allowed to be obtained.

The bowling score calculation device, from the result of a game adopted as a calculation source, receives selection of which throw of which frame of which game is to be used for each throw of each frame of a new score, and then calculates a new score by treating as a throw result a knocked-down pin count at the selected throw number of the selected frame in the selected game. Since a result not according to the ability is obtained, children, young people, adult people, and elderly people are allowed to enjoy together. Further, drawing of lottery or the like is employed in the selection of a game, a frame, and a throw number so that a luck factor is incorporated. Thus, "five-generation mutually supported bowling" is allowed to be realized in which people over "five generations", including also an ancestor generation who brings luck, support each other.

FIG. 8



Description

Technical Field

[0001] The present invention relates to a device calculating a score of bowling and, in particular, to a bowling score calculation device, a bowling score calculation method, and a computer program in which a new game result is allowed to be obtained.

Background Art

[0002] In a bowling game, a result in which a knocked-down pin count obtained by one person performing one or a plurality of times of throws in each frame is calculated for ten frames is adopted as achievement of one game and then a plurality of persons compete on the achievement with each other. In the bowling game, basically, one person performs all throws during one game.

[0003] Methods of playing a bowling game are various. However, competition is performed about personal techniques and hence helping each other is not performed in particular. Further, in a case that excessive differences are present between game participants, even when the game is played among friends, motivation may be lost and uneasiness may be felt in some cases. Further, bowling games have a perspective as competition. Thus, a tendency arises that the individual participants concentrate attention on it and the game progresses indifferently. When the game is played as competition only by participants who like to enjoy the bowling game as competition, no problem occurs. However, when more participants are to enjoy the game together, improvement is to be made. Thus, for example, as disclosed in Patent Document 1, a method has been proposed in which a suitable handicap is calculated.

Citation List

Patent Literature

[0004] Patent Document 1: Japanese Patent No. 3889747

Summary of Invention

Technical Problem

[0005] In order that a game may be enjoyed equally by people over wider generations, improvements have been adopted like a handicap is set up as described above or, alternatively, teams whose abilities are equalized to each other are formed and then a team competition is held. However, when setting of a handicap is employed alone, after all, the game is played on a premise that a handicap is set up. Further, even in a case of team competition, after all, a situation that each person advances the game indifferently in order to improve the own

achievement arises in some cases. Thus, a status is not always expected that the participants feel a sense of togetherness.

[0006] The present invention has been devised in view of such situations. An object thereof is to provide a bowling score calculation device, a bowling score calculation method, and a computer program in which young and elderly people of both sexes are allowed to enjoy a bowling game together.

Technical Solution

[0007] The bowling score calculation device according to the present invention is characterized by a bowling score calculation device calculating a score in a new game on the basis of a game result of bowling, comprising: means of obtaining results of one or a plurality of games of bowling; selection means of receiving, plural times, selection of a game, a frame, and a throw from results of one or a plurality of games obtained by the above-mentioned means; and calculation means of, with adopting as a throw result of each frame in a new game the result in the selected throw of the selected frame in the game selected at each time by the selection means, calculating a score of the game.

[0008] The bowling score calculation device according to the present invention is characterized in that the selection means includes means of receiving lottery of three numbers respectively specifying a game, a frame, and a throw.

[0009] The bowling score calculation device according to the present invention is characterized in that the selection means includes means of, on the basis of a result of another game, determining three numbers respectively specifying a game, a frame, and a throw.

[0010] The bowling score calculation method according to the present invention is characterized by a bowling score calculation method employing a calculation device calculating a score in a new game on the basis of a game result of bowling, wherein the calculation device: obtains results of one or a plurality of games of bowling; receives selection of a game, a frame, and a throw from the obtained results of the one or a plurality of games; calculates a result in the selected throw of the selected frame in the selected game, as a result in one throw of one frame of the new game; repeats the selection of a throw, a game, and a frame for each throw of each frame of the new game; and calculates a score of the new game.

[0011] The computer program according to the present invention is characterized by a computer program causing a computer to calculate a new score from a game result of bowling, causing the computer to execute: a step of obtaining results of one or a plurality of games of bowling; a step of receiving, plural times, selection of a game, a frame, and a throw from the obtained results of the one or a plurality of games; and a step of calculating a result in the selected throw of the selected frame in the game selected at each time, as a throw result of each frame in

the new game.

[0012] In the present invention, a score of a game is calculated based on a result of a selected throw of a selected frame in an arbitrarily selected game from the obtained result of a bowling game. Depending on the way of selection of the game, the frame, and the throw, a new score not according to the ability is calculated.

[0013] In the present invention, the game, the frame, and the throw are selected by lottery. Thus, a luck factor is incorporated in addition to an according-to-the-ability result of the bowling game.

[0014] In the present invention, the game, the frame, and the throw are selected on the basis of the result of another game. Since the result of another game is incorporated, commercial success of the above described another game also is expected.

Advantageous Effects

[0015] According to the present invention, in addition to a game result corresponding to the ability of one participant in bowling, a new score not necessarily according to the ability is calculated. It is expected that various participants enjoy a bowling game together.

Brief Description of Drawings

[0016]

[FIG. 1] FIG. 1 is a configuration diagram illustrating a configuration of a bowling score calculation device in the present embodiment.

[FIG. 2] FIG. 2 is a flow chart illustrating an example of a processing procedure of a score calculation method performed by a bowling score calculation device in the present embodiment.

[FIG. 3] FIG. 3 is an explanation diagram illustrating an example of a result of a bowling game.

[FIG. 4] FIG. 4 is an explanation diagram illustrating an example of a selection screen for a new-score calculation target.

[FIG. 5] FIG. 5 is an explanation diagram illustrating an example of a selection screen for a game, a frame, and a throw in each field of a new score.

[FIG. 6] FIG. 6 is an explanation diagram illustrating an example of contents of the generated table

[FIG. 7] FIG. 7 is an explanation diagram illustrating an example of a method of treating a knocked-down pin count at the time of calculating a new score.

[FIG. 8] FIG. 8 is an explanation diagram illustrating a newly calculated score.

[FIG. 9] FIG. 9 is an explanation diagram illustrating an example of contents of point setting for handicap for each result of "ability competition".

[FIG. 10] FIG. 10 is an explanation diagram illustrating an example of contents of setting for the number of times of lottery for each result of "ability competition".

[FIG. 11] FIG. 11 is an explanation diagram illustrating an example of setting of handicap points.

[FIG. 12] FIG. 12 is an explanation diagram illustrating an example of calculated overall results.

Description of Embodiments

[0017] The present invention is described below in detail with reference to the drawings illustrating embodiments thereof.

[0018] FIG. 1 is a configuration diagram illustrating the configuration of a bowling score calculation device 1 in the present embodiment. For example, the bowling score calculation device 1 is constructed from a personal computer. The bowling score calculation device 1 includes, a control section 10, a storage section 11, a temporary storage section 12, an input section 13, and a display section 14.

[0019] The control section 10 is constructed from a CPU (Central Processing Unit) and reads and executes a bowling score calculation program 1P stored in the storage section 11, so as to cause the personal computer to serve as the bowling score calculation device 1.

[0020] The storage section 11 is constructed from an HDD (Hard Disk Drive) or an SSD (Solid State Drive). In addition to the bowling score calculation program 1P, the storage section 11 stores various kinds of information referred to by the control section 10. For example, the storage section 11 stores: information of a game name, an event name, or the like used for specifying each game; the names of game participants; the names of teams; obtained scores; and newly calculated scores. The bowling score calculation program 1P may be information obtained through a communication medium (not illustrated) or, alternatively, may be a program obtained through a portable storage medium and then stored.

[0021] The temporary storage section 12 is constructed from a RAM such as an SRAM (Static Random Access Memory) and a DRAM (Dynamic Random Access Memory). The temporary storage section 12 stores information generated temporarily in association with the processing of the control section 10.

[0022] The input section 13 is a user interface such as a keyboard and a mouse. The input section 13 may be a touch panel. The control section 10 receives operation of an administrator through the input section 13. Further, the input section 13 may be an interface of USB (Universal Serial Bus) or the like and hence, as described later, the control section 10 may obtain a game result of bowling from an attachable and detachable storage medium through the input section 13.

[0023] The display section 14 is constructed from a display such as an LCD (Liquid Crystal Display) and an organic EL (Electro Luminescence). The control section 10 displays on the display section 14 an input screen used for receiving operation of the administrator and displays on the display section 14 a newly calculated score of bowling.

[0024] The bowling score calculation device 1 having the above-mentioned hardware configuration performs the following processing on the basis of the bowling score calculation program 1P in the storage section 11.

[0025] FIG. 2 is a flow chart illustrating an example of a processing procedure of a score calculation method performed by the bowling score calculation device 1 in the present embodiment.

[0026] The control section 10 obtains the result of a bowling game adopted as the source of calculation for a score (step S1). For example, through the input section 13, the control section 10 receives and obtains input of a game result from the administrator or, alternatively, receives and obtains input of the result of a bowling game recorded in a USB memory. Here, the game is played by one team in each lane in each game. Then, the result of the game is used to which a serial number for specifying each game outputted for each lane is imparted.

[0027] FIG. 3 is an explanation diagram illustrating an example of the result of a bowling game. The example illustrated in FIG. 3 illustrates the results of a first game to a third game by one team. FIG. 3 illustrates the result based on a calculation method for bowling score according to the conventional art in a game according to the ability of the team.

[0028] The control section 10 stores the obtained result of the bowling game into the storage section 11 (step S2). It is preferable that the control section 10 stores the result of the bowling game in a manner of being specified by the event name, the game name, or the like. Here, the result of the bowling game is premised to be data including at least a number specifying the game and the achievement of each game (the knocked-down pin count of each frame). Further, correspondence that each game has been played by which team is established. Further, the names of the members belonging to each team and the event name in which the game was performed may be stored in a manner of being related.

[0029] From among the stored results of the bowling games, the control section 10 receives selection which game is to be adopted as a new-score calculation target (step S3). At that time, the control section 10 receives selection of a plurality of games. Specifically, the control section 10 displays a list of numbers each specifying a game from among the stored results of the bowling games and then receives selection.

[0030] FIG. 4 is an explanation diagram illustrating an example of a selection screen for a new-score calculation target. As illustrated in FIG. 4, the display section 14 displays numbers each specifying a game among the stored bowling games so that selection is allowed. In the example of FIG. 4, as indicated by shading, "1" to "3", i.e., the first to the third games are selected.

[0031] On the basis of the number of selected games, for the purpose of new-score calculation, the control section 10 receives selection that the result of which throw of which frame of which game is to be used for each throw of the frame in the new score (step S4). For example,

selection is premised to be performed for all 21 fields corresponding to all throws of ten frames (all 21 fields from the first throw of the first frame to the third throw of the tenth frame). Then, selection for each field is received from the administrator. Further, the control section 10 may perform automatic selection by using random numbers.

[0032] FIG. 5 is an explanation diagram illustrating an example of a selection screen for a game, a frame, and a throw in each field of a new score. As illustrated in FIG. 5, the display section 14 displays objects 401 to 410 including selection buttons used for selecting that each field of the new score is to be based on which throw in which frame of which game. The object 401 in FIG. 5 includes buttons used for selecting which one among the games (1 to 3) selected in the selection screen of FIG. 4. In the example illustrated in FIG. 5, the "2"-nd game is selected for the first throw of the third frame of the new score (the fifth field). The object 402 in FIG. 5 includes buttons used for selecting which frame. In the example illustrated in FIG. 5, the "7"-th frame is selected. The object 403 in FIG. 5 includes buttons used for selecting the throw result of which throw in the selected frame (the seventh frame). In the example illustrated in FIG. 5, the "2"-nd throw is selected. The object 404 in FIG. 5 is a button used for returning to a selection screen for the preceding field in the new score (the second throw of the second frame, i.e., the fourth field). The object 405 is a button used for advancing to a selection screen for the next field in the new score (the second throw of the third frame, i.e., the sixth field). The object 406 is a button used for automatic selection concerning the game performed by using random numbers. The object 407 is a button used for automatic selection concerning the frame performed by using random numbers. Similarly, the object 408 is a button used for automatic selection of which throw. The object 409 is a button used by the administrator for selecting automatic selection in which a game, a frame, and which throw are automatically selected for each field of the new score by using random numbers. The object 410 is a button used by the administrator for selecting automatic selection of all 21 fields.

[0033] Returning to the flow chart of FIG. 2, description is continued. The control section 10 generates a table used for calculating a new score from the numbers each specifying the game, the frame, and the throw selected in the selection screen as illustrated in FIG. 5 (step S5).

[0034] FIG. 6 is an explanation diagram illustrating an example of the contents of the generated table. As illustrated in FIG. 6, information (numbers in the present embodiment) specifying the game, the frame, and the throw number selected for each field in the selection screen illustrated in FIG. 5 is aggregated in the table. The example of FIG. 6 illustrates that the throw result (the knocked-down pin count) of the first throw of the fourth frame of the second game is employed for the first field (the first throw of the first frame) and the throw result of the second throw of the second frame of the third game

is employed for the second field (the second throw of the first frame).

[0035] Returning to the flow chart of FIG. 2, description is continued. By using the table generated at step S5, the control section 10 calculates the score of the new game on the basis of the result (the knocked-down pin count) in the selected throw of the selected frame in the game selected for each frame and on the basis of the score calculation rules of bowling (step S6).

[0036] Here, at step S6, the knocked-down pin count of each frame is used with clearly distinguishing the first throw and the second throw from each other (the third throw is present in the tenth frame). FIG. 7 is an explanation diagram illustrating an example of a method of treating the knocked-down pin count at the time of calculating the new score. As illustrated in FIG. 7, the knocked-down pin count of a strike and a spare is "10". Further, "0" is used for all of "-" indicating a throw mistake, "G" indicating a gutter, "F" indicating a foul, and "blank" indicating no throw. For the knocked-down pin counts of "1" to "9", the numeric characters are used intact. That is, the knocked-down pin count of the second throw of a frame in which strike has been taken, that is, of no throw ("blank"), is treated as "0". Then, for each frame, when the total of the first throw and the second throw is greater than or equal to "10", the second throw of the frame is treated as a spare. When the total is less than "10", the knocked-down pin count in the selected throw is adopted as the numeric character of the knocked-down pin count of the second throw.

[0037] Returning to the flow chart of FIG. 2, description is continued. The control section 10 displays the calculated score on the display section 10 (step S7), and then terminates the processing. FIG. 8 is an explanation diagram illustrating a newly calculated score. This is calculated on the basis of the game result adopted as a source illustrated in FIG. 3 and on the basis of the table illustrated in FIG. 6. For example, in the first throw of the first frame of the new game (the first field), "0" or a "G (gutter)" is adopted from a "F (foul)" which is the throw result of the first throw of the fourth frame of the second game. In the second throw of the first frame (the second field), on the basis of the table of FIG. 6, a "spare" is adopted which is the result of the second throw of the second frame of the third game. Similarly, in the first throw of the second frame (the third field) "8" is adopted which is the result of the first throw of the fifth frame of the first game. As a result, the score of the first frame is calculated as "18". In the second throw of the second frame of the new game (the fourth field), a "strike" is adopted which is the result of the first throw of the tenth frame of the third game. Thus, the total of this and the first throw exceeds "10" and hence a "spare" is concluded by calculation. In the first throw of the third frame (the fifth field), "0", that is, "G", is adopted from "no throw" which is the result of the second throw of the seventh frame of the second game. As such, the score newly calculated is different from the source score.

[0038] When the bowling score calculation device 1 having this configuration is employed, a new way of enjoying a bowling game is produced. First, an example of a new way of enjoying a game employing the bowling score calculation device 1 is described below. When a new score is to be calculated by using the bowling score calculation device 1, as described above, the knocked-down pin counts of the second throws of all frames of the source game serve also as targets. Thus, when the score of a team in which a strike has been taken in all frames is adopted as a source, the knocked-down pin count of the second throw of each frame is "blank" and hence is "0". Thus, the probability that "0" or a "gutter" is assigned to the first throw of each frame of the new score becomes close to a half. In contrast, in a case that the score of a team in which the first throw of each frame has been greater than or equal to "5" and smaller than or equal to "9" and hence a "spare" has been continued in the second throws is adopted as a source, in the new score, when the knocked-down pin counts of the first throw and the second throw of each frame are both "5", a "spare" is concluded always. At that time, the new score becomes at least 150 points. Here, the theoretically highest score in the new score is a score in which the knocked-down pin count of the first throw is "9" and a "spare" is taken at the second throw in all frames.

[0039] In the way of enjoying the above new bowling game, when a poor bowler performs the first throw with aiming at a knocked-down pin count of "5" and a good bowler performs the second throw with aiming at a spare, the highest score is expected. Thus, the following effects are obtained. First, at the first throw, the aimed value is lowered, even a poor bowler is allowed to challenge easily. Further, at the second throw, an issue of aiming at a spare in a diverse form is presented easily. Thus, an incentive is presented also to a good bowler. Accordingly, an effect is obtained that such people further help each other. Further, one person may perform not all throws completely in one game. Thus, even a person who has physical difficulty in completely performing the throws of all frames of one game is allowed to participate in a part of the throws at ease and hence allowed to participate without constraint. Further, a person who has come for cheering is allowed to participate only in one throw in a frame in the middle or the like without constraint. For example, in an interclass bowling event, teachers are allowed to participate to some extent as "reliefs" in each team at ease. Even when one game is not yet finish, a person is allowed to participate in a team in the middle of the game or, alternatively, allowed to depart from the team. Thus, the participants are allowed to feel a sense of togetherness more than cheering. Further, even when a professional who belongs to the bowling alley in each site or a famous person who is a guest invited to the event or the like suddenly participates in the game, a possibility of causing degradation in atmosphere is low. Further, adjustment of the start time of the game or adjustment of schedule progressing may be not performed. For ex-

ample, even in a case that one team has played five games and another team has played only three games, calculation of the scores is allowed. Thus, individual participants are allowed to enjoy the game at their own paces. Thus, in place of a situation that one bowling game is aimed at, a situation is expected that various people of various generations cooperate with each other and happily interact with each other through the occasion of bowling. In this sense, a game using the score calculation result described above obtained by the bowling score calculation device 1 is referred to as "mutual-support competition".

[0040] In the course of score calculation illustrated in the flow chart given above, a configuration has been employed that selection of a game, a frame, and a throw to be adopted as a source of the score of each field is received. At that time, the administrator may select suitably. Alternatively lottery boxes respectively for the game, the frame, and the throw number may be prepared and then children of low age or the like, they are too young to enjoy a bowling game themselves, may draw lotteries so that from the results of the lotteries, the game number, the frame number, and the throw number may be specified and selected. As such, a "child generation", a "young generation", an "adult generation", and an "elderly generation" enjoy the bowling game in their own ways and then enjoy the game with respect to the score as a result of cooperation with each other. Further, drawing of lottery or the like is employed so that a luck factor is incorporated. By adding also an "ancestor generation" who brings luck, "five-generation mutually supported bowling" is allowed to be realized in which people over "five generations" support each other.

[0041] Further, in another game like a computer game, rules of specifying a game, a frame, and a throw number specify to be adopted as a source of score calculation described above may be set forth. Then, on the basis of the result of another game by a participant of each team who is a good player in the above described another game, the game, the frame, and the throw to be selected as described above may be specified. Further, on the basis of the result of another bowling game like a previous game, the game, the frame, and the throw to be selected may be specified. By virtue of this, by using the result of another game or the like simultaneously available in the bowling alley, persons who are good players in individual games are allowed to contribute to the team in various forms so as to enjoy the game.

[0042] In the course illustrated in the flow chart given above, a new score has been calculated by using the result of an already finished game. However, the present invention is not limited to this. That is, the processing at steps S3 to 5 may be performed in advance so that the table may be generated. Then, the throw result of each frame of the game advanced may be serially applied so that a new score may be calculated every time.

[0043] As described above, by using the bowling score calculation device 1 realizing "mutual-support competi-

tion", a bowling game is allowed to be enjoyed by a new method. However, obviously, it is also important to enjoy as a competition a bowling game according to the ability. Thus, in addition to the "mutual-support competition", it is preferable that the marks are added up comprehensively together with "ability competition" and "handicap competition". In conventional bowling games, in order that the participants may play the game happily, improvements have been made like a fair handicap is set up. However, determination of a handicap or the like for a person of first participation is difficult. One employable method is that "mutual-support competition" is performed suitably until participants gather and then, on the basis of the individual achievements, suitable handicaps are set up.

[0044] It is preferable the "ability competition" is performed after interaction between the participants has been achieved through "mutual-support competition" so that teamwork has been established to some extent. In the "ability competition", achievements according to a conventional score calculation method of a bowling game are adopted. As for the form according to which the "ability competition" is to be performed, rules or the like may be set forth in advance. Specifically, whether the competition is to be performed with respect to the average score of the results of plural times or with respect to the highest score is set forth together with other aspects. Further, in order that good players in bowling games may be satisfied, one person of ability may be elected from each team or, alternatively, a person may be scouted from another team such that their abilities are approximately equalized to each other. Alternatively, a plurality of persons may be elected so that one game may be played. Two or three persons may be elected and then a game may be played by the two or three persons in each team, that is, in each lane so that "ability competition" may be performed. A major object of the new-score calculation by the bowling score calculation device 1 in the present invention is that various people interact with each other through a bowling game. When persons of ability serve as reliefs so as to achieve high scores in "mutual-support competition", the persons are scouted from each team so that the persons of ability are distributed between the teams. Further, it is preferable that in result of "ability competition", the name of a team to which a person who has achieved the highest score belongs is recorded as a result of the game or, alternatively, a prize is granted in each team so that the merit of "ability competition" to each team is increased. By virtue of this, a sense of solidarity is also generated in each team and persons of ability are distributed to each team.

[0045] The "handicap competition" is performed in a method that on the basis of the result obtained in the above-mentioned "ability competition", a handicap is set up to result of "ability competition" and then the set-up handicap points is added to result of "ability competition". Here, calculation of the score in this case is performed by using the above-mentioned bowling score calculation

device 1. The bowling score calculation device 1 obtains the game result of a bowling game of "ability competition" similarly to the processing in the "mutual-support competition", then, on the basis of the game result, determines handicap points, and then calculates an overall mark. Here, the handicap is set forth as follows. As the handicap points, a plurality of values are provided. For example, eight values are provided like "150", "110", "70", "30", "-30", "-70", "-110", and "-150". Then, by lottery in each team, any handicap points are obtained. Specifically, by using a screen as illustrated in FIGS. 4 or 5, the bowling score calculation device 1 receives a lottery by using random numbers and then determines the handicap points. Here, a numeric character may be drawn in a method balls on each of which a numeric character is written are put in a lottery box. Then, the administrator may input the drawn numeric character through the input section 13 of the bowling score calculation device 1 and then the bowling score calculation device 1 may calculate the overall score.

[0046] It is preferable that the contents of numeric characters allowed to be drawn are made different depending on result of "ability competition". FIG. 9 is an explanation diagram illustrating an example of contents of point setting for handicap for each result of "ability competition". In the example illustrated in FIG. 9, the setup is such that when result of "ability competition" is less than "50" points, any value from "30" to "150" obtained by lottery is added. Similarly, when the result is greater than or equal to "50" points and less than "100" points, any value from "0" to "100" is added. When the result is greater than or equal to "100" points and less than "200" points, any value from "-50" to "50" is added. When the result is greater than or equal to "200" points and less than "250" points, any value from "0" to "100" is subtracted. When the result is greater than or equal to "250" points and less than "300" points, any value from "30" to "150" is subtracted.

[0047] Alternatively, when lottery for the handicap points corresponding to result of "ability competition" is performed, it is preferable that the number of times of lottery is made different. FIG. 10 is an explanation diagram illustrating an example of contents of setting for the number of times of lottery for each result of "ability competition". In the example illustrated in FIG. 10, when result of "ability competition" is less than "50" points, the "highest value in 3 times", that is, the highest value among "3 times" of drawing from the provided handicap points, is adopted as the handicap points. That is, a representative of a team of a mark less than "50" points performs 3 times of lottery from the above-mentioned eight values ("150" to "-150"). Then, when the results of the lottery are "150", "-30", and "70", "150" which is the highest value is adopted as the handicap points. Similarly, when result of "ability competition" is greater than or equal to "50" points and less than "100" points, the "highest value in 2 times", that is, the highest value among 3 times of drawing, is adopted as the handicap points. Further, when the result is greater

than or equal to "100" points and less than "200" points, "1 time alone" is applied. When the result is greater than or equal to "200" points and less than "250" points, the "lowest value in 2 times" is adopted. When the result is greater than or equal to "250" points and less than or equal to "300" points, the "lowest value in 3 times" is adopted.

[0048] FIG. 11 is an explanation diagram illustrating an example of setting of the handicap points. In the example illustrated in FIG. 11, in accordance with result of "ability competition" of each team, the handicap points is set up with changing the number of times of drawing by the method illustrated in FIG. 10. As a specific example, in a team "1st year grade, 1st classroom, Tokugawa Family", the highest mark in the results of "ability competition" was "138" points, which was greater than or equal to "100" points and less than "200" points. Thus, drawing of handicap points was performed "1 time alone". The result "-30" points was drawn and specified as the "determined handicap". In another example, in a team "2nd year grade, 2nd classroom, Good Players", the result of "ability competition" was "300" points, which was greater than or equal to "250" points and lower than or equal to "300" points. Thus, the "lowest value in 3 times" was adopted. As a result, values "150", "-30", and "-150" were drawn and then "-150" points which was the "lowest value in 3 times" was specified as the "determined handicap". Similarly, in a team "2nd year grade, 2nd classroom, Poor Players", the result of "ability competition" was "72" points, which was greater than or equal to "50" points and lower than "100" points. Thus, the "highest value in 2 times" was adopted. As a result, values "-70" and "70" were drawn and then "70" points which was the "highest value in 2 times" was specified as the "determined handicap".

[0049] As such, in the handicap points, when values allowed to be drawn are changed or alternatively the number of times of drawing is changed ex post facto depending on the result of "ability competition", almost equalized results are achieved. As a result, persons of true ability are allowed to demonstrate the own ability without restriction and the other persons are allowed to enjoy the bowling game.

[0050] Further, for the setting of handicap points, another method may be employed. For example, a lucky zone is provided for the result of "ability competition" and then the "highest value in 5 times" is adopted as handicap points to a team of a mark within the limits of the lucky zone. Specifically, when the result of "ability competition" falls within a narrow range greater than or equal to "100" points and less than "104" points, the "highest value in 5 times" is added. On the contrary, an unlucky zone is provided for the result of "ability competition" and then the "lowest value in 5 times" is adopted as handicap points to a team of a mark within the limits of the unlucky zone. When such handicaps are provided, even a participant of less ability than a person of ability is allowed to aim at a high score by a method that throw is performed with

aiming at the lucky zone. Thus, regardless of a difference in the ability, everyone is allowed to enjoy the game.

[0051] As the result of the bowling game, the bowling score calculation device 1 adds up the result of "mutual-support competition", the result of "ability competition", and the set-up handicap points so as to calculate a mark as the overall result. FIG. 12 is an explanation diagram illustrating an example of the calculated overall results. As illustrated in FIG. 12, by virtue of the effect of "mutual-support competition" and "handicap competition" where the above-mentioned luck property works, only a small difference occurs in the total marks even between teams of a great ability difference. Thus, all participants are allowed to enjoy the bowling game regardless of the ability. Here, the "turn-around" in FIG. 12 indicates points to be added as a turn-around factor different from the handicap. For example, according to the turn-around factor, a particular range of the total mark is adopted as a target of turn-around and then, when the total mark falls within the range, points are added further. Alternatively, a particular range of the mark result of "ability competition" is adopted as a target of turn-around and then, when the mark result of "ability competition" falls within the range, points are added or subtracted further. Such addition by a turn-around factor may be performed also on a personal result of "ability competition".

[0052] Calculation of the overall score by using the bowling score calculation device 1 may be performed simultaneously to the progress of a game adopted as a source of "mutual-support competition" and a game of "ability competition". Instead, lottery (lottery drawing) for determining the source of each field of "mutual-support competition" and lottery for setting up the handicap of "handicap competition" may be performed ex post facto. In this case, a game to be adopted as a source of "mutual-support competition" and a game of "ability competition" are played in a bowling alley. Then, the place of event is moved to another site where food and drink are served and then, ex post facto, lottery for selecting a game, a frame, and a throw and lottery for determining the handicap are performed by lottery, another game, or the like. By virtue of this, in the middle of each game, the participants are not allowed to recognize the result and hence are allowed to acquire a feeling of tension and upsurge of sentiment. As another game, points may be imparted to targets of a shooting game, points may be imparted to targets of a game like whack-a-mole, or alternatively a lottery factor may be added to a game in which the "children generation" is allowed to enjoy. By virtue of this, the game is allowed to be enjoyed by all generations. Obviously, the results of these games may simply be added to the overall result. Further, at that site, interaction is allowed with a person who has come for cheering each team such as a famous person invited as a guest to the event. Thus, the occasion becomes useful.

[0053] Further, at the time of calculation of the result of "mutual-support competition" by using the bowling score calculation device 1, in the above-mentioned meth-

od, a method has been proposed that the result in the game, the frame, and the throw selected by lottery is used. Alternatively, at the time of calculation of the result performed ex post facto after the place is moved as described above, the participants may determine victory or defeat by team competition in a game other than a bowling game. Then, the winner may select a game, a frame, and a throw to be adopted as a source of "mutual-support competition" of the other teams, by operating the screen illustrated in FIGS. 4 and 5 such that the own team becomes advantageous. That is, such intentional selection may be employed. Further, in place of calculating a new score with selecting a game, a frame, and a throw on the basis of the table (FIG. 6) common to all teams, the bowling score calculation device 1 may generate a different table (FIG. 6) for each team and then calculate a new score.

[0054] As such, by using the bowling score calculation device 1, a bowling game is allowed to be enjoyed by various generations in a new method.

[0055] Here, the embodiments disclosed above are to be recognized as illustrative and not restrictive at all points. The scope of the present invention is defined by the scope of the claims not by the description given above. All changes having equivalent spirit and scope of the claims are to be incorporated.

Reference Signs List

[0056]

- | | |
|----|-----------------------------------|
| 1 | Bowling score calculation device |
| 10 | Control section |
| 11 | Storage section |
| 1P | Bowling score calculation program |

Claims

1. A bowling score calculation device calculating a score in a new game on the basis of a game result of bowling, comprising:

means of obtaining results of one or a plurality of games of bowling;
 selection means of receiving, plural times, selection of a game, a frame, and a throw from results of one or a plurality of games obtained by the above-mentioned means; and
 calculation means of, with adopting as a throw result of each frame in a new game the result in the selected throw of the selected frame in the game selected at each time by the selection means, calculating a score of the game.

2. The bowling score calculation device according to claim 1, wherein the selection means includes means of receiving lot-

tery of three numbers respectively specifying a game, a frame, and a throw.

3. The bowling score calculation device according to claim 1, wherein
 - the selection means includes means of, on the basis of a result of another game, determining three numbers respectively specifying a game, a frame, and a throw.
 - 5
 - 10
4. A bowling score calculation method employing a calculation device calculating a score in a new game on the basis of a game result of bowling, wherein the calculation device:
 - obtains results of one or a plurality of games of bowling;
 - 15
 - receives selection of a game, a frame, and a throw from the obtained results of the one or a plurality of games;
 - 20
 - calculates a result in the selected throw of the selected frame in the selected game, as a result in one throw of one frame of the new game;
 - 25
 - repeats the selection of a throw, a game, and a frame for each throw of each frame of the new game; and
 - 30
 - calculates a score of the new game.
 - 35
 - 40
 - 45
 - 50
 - 55
5. A computer program causing a computer to calculate a score from a new game result of bowling, causing the computer to execute:
 - a step of obtaining results of one or a plurality of games of bowling;
 - 30
 - a step of receiving, plural times, selection of a game, a frame, and a throw from the obtained results of the one or a plurality of games; and
 - 35
 - a step of calculating a result in the selected throw of the selected frame in the game selected at each time, as a throw result of each frame in the new game.
 - 40
 - 45
 - 50
 - 55

FIG. 1

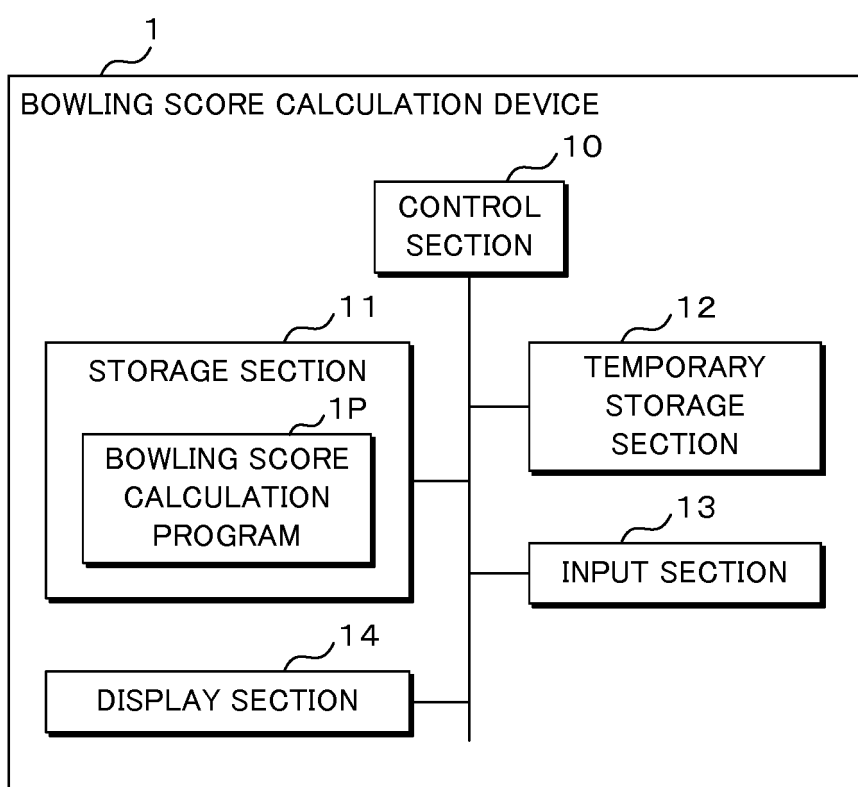


FIG. 2

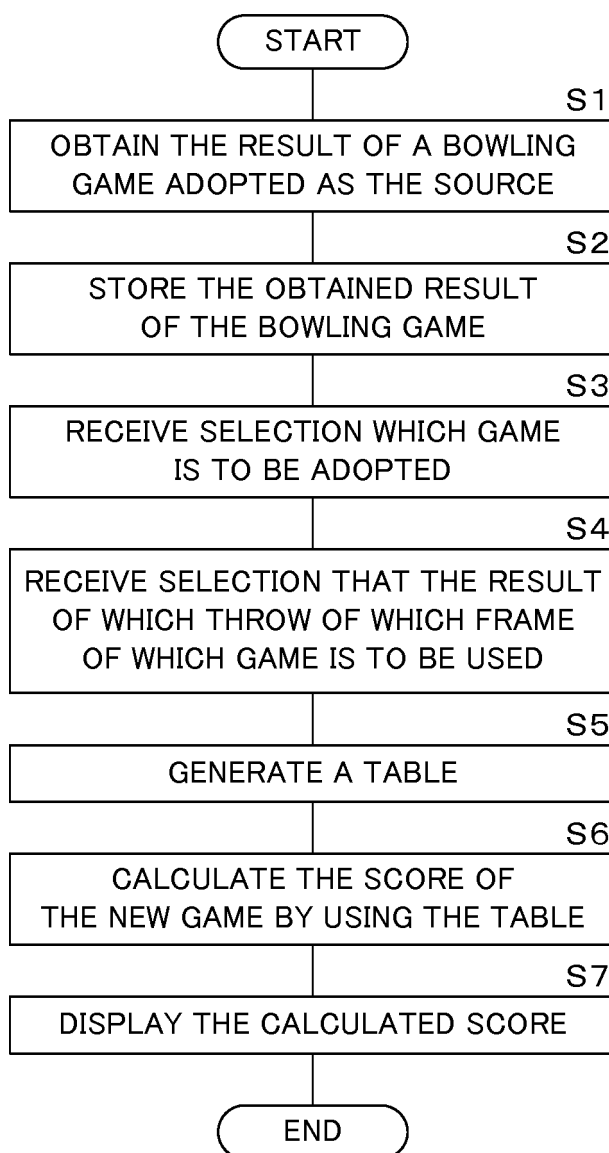


FIG. 3

1	1	2	3	4	5	6	7	8	9	10
		1 -	G 3	1	8	8	4 5	9	7 -	2 -
	11	12	15	33	51	65	74	91	98	100

2	1	2	3	4	5	6	7	8	9	10
	7	G 2		F -		5		8	3	2 5
	10	12	22	22	42	62	82	95	107	114

3	1	2	3	4	5	6	7	8	9	10
	5 -	G		F 8	2 2	2	2 2	1 -	6	- 2
	5	25	43	51	55	67	71	72	92	104

FIG. 4

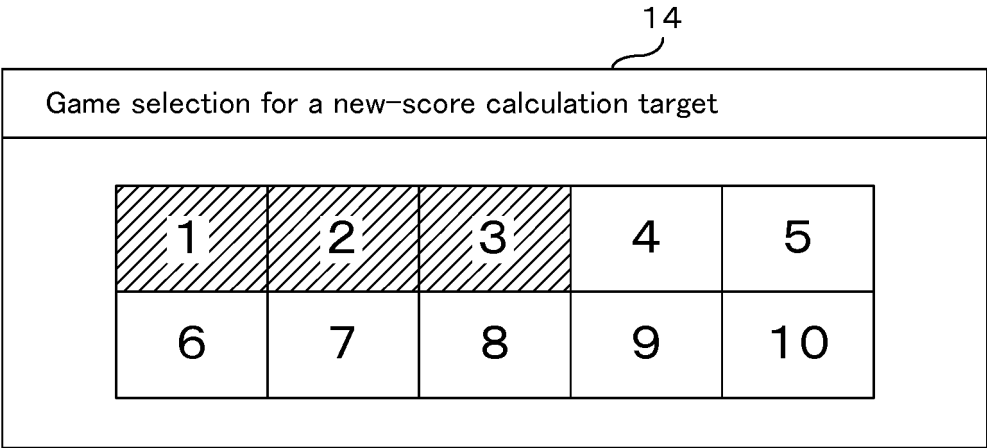


FIG. 5

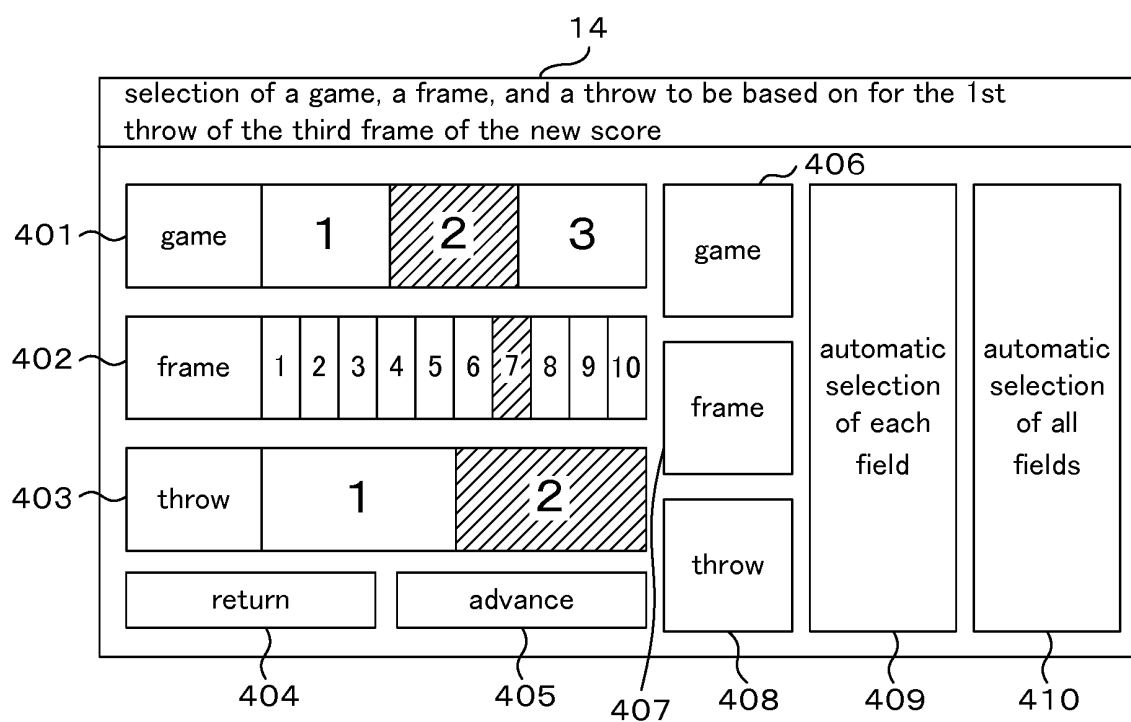


FIG. 6

field number	1	2	3	4	5			21
game number	2	3	1	3	2			1
frame number	4	2	5	10	7			3
throw number	1	2	1	1	2			1

FIG. 7

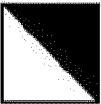
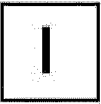
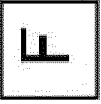
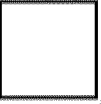
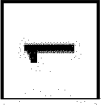
Score										
a knocked-down pin count corresponding to a score	10	10	0	0	0	0	1	2		9

FIG. 8

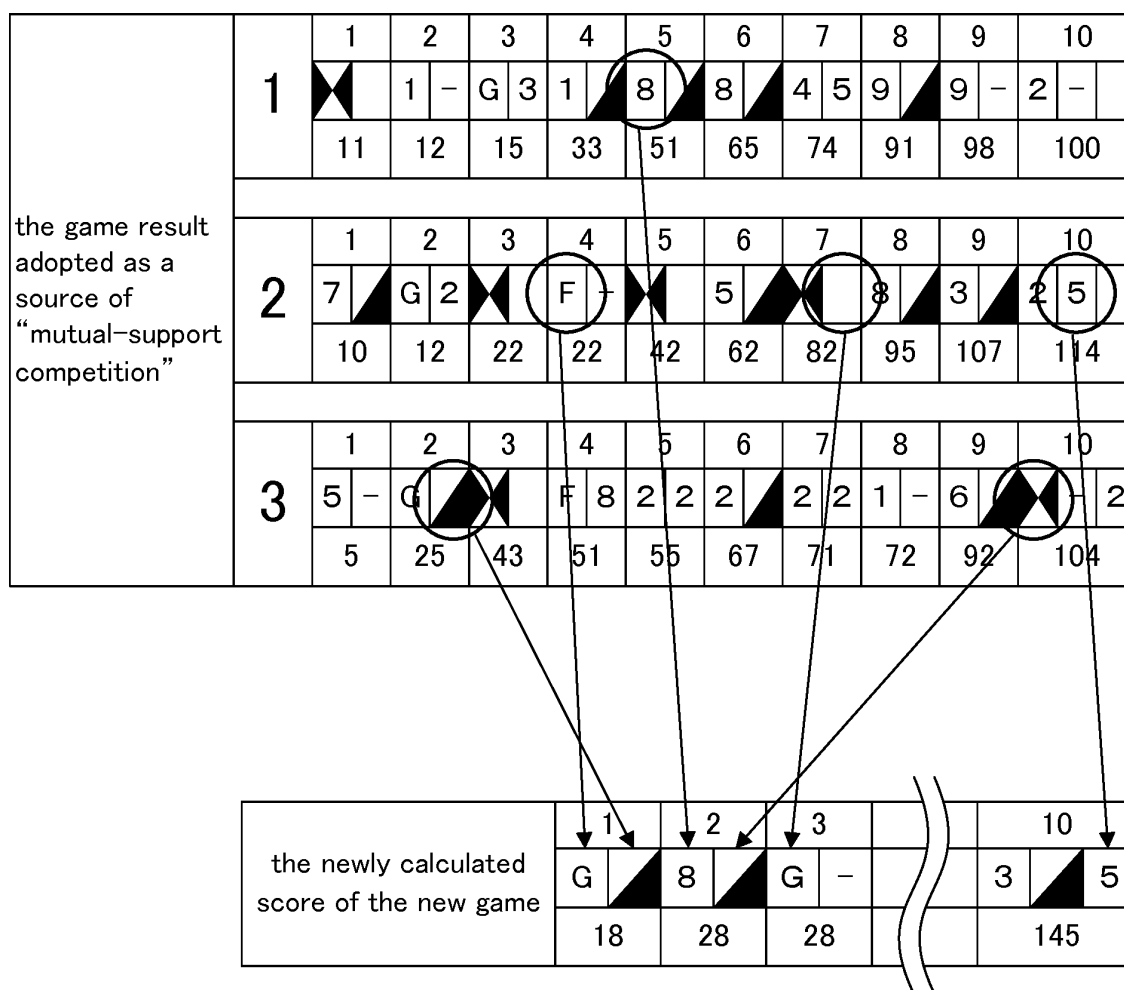


FIG. 9

0 points	50 points	100 points	200 points	250 points	300 points
150 points	100 points	50 points	0 points	-30 points	
120 points	70 points	20 points	-10 points	-60 points	
90 points	40 points	0 points	-40 points	-90 points	
60 points	10 points	-20 points	-70 points	-120 points	
30 points	0 points	-50 points	-100 points	-150 points	

FIG. 10

0 points	50 points	100 points	150 points	200 points	250 points	300 points
highest value in 3 times	highest value in 2 times	1 time alone		lowest value in 2 times	lowest value in 3 times	

FIG. 11

table for setting of handicap points									
names of organizations	names of groups	determined points of the ability	all result of "ability competition"	determined handicap	drawn handicap			automatically/ manually	
1st year grade, 1st classroom,	Oda family	130	130	93	-150			automatic	
1st year grade, 1st classroom,	Tokugawa family	138	138	114	-30			automatic	
1st year grade, 1st classroom,	Toyotomi family	107	92	107	150			automatic	
2nd year grade, 2nd classroom,	good players	300	300	300	150	-30	-150	automatic	
2nd year grade, 2nd classroom,	poor players	72	72	65	-70		70	automatic	
2nd year grade, 2nd classroom,	average players	137	131	137	-70			automatic	
2nd year grade, 2nd classroom,	more than 5 pins	150	150	150	150			automatic	
2nd year grade, 2nd classroom,	more than 9 pins	190	190	190	-70			automatic	

FIG. 12

result sheet of groups									
order	names of organizations	names of groups	“mutual-support competition”	“ability competition”	handicap point	subtotal	turn-around	total	
	1st year grade, 1st classroom,	Oda family	113	130	-150	93	0		
	1st year grade, 1st classroom,	Tokugawa family	160	138	-30	268	0		
	1st year grade, 1st classroom,	Toyotomi family	133	107	150	390	0		
	2nd year grade, 2nd classroom,	good players	110	300	-150	260	0		
	2nd year grade, 2nd classroom,	poor players	99	72	70	241	0		
	2nd year grade, 2nd classroom,	average players	148	137	-70	215	0		
	2nd year grade, 2nd classroom,	more than 5 pins	215	150	150	515	0		
	2nd year grade, 2nd classroom,	more than 9 pins	235	190	-70	355	0		

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2013/061818

A. CLASSIFICATION OF SUBJECT MATTER

A63D5/04 (2006.01) i, A63D1/00 (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)

A63D5/04, A63D1/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Jitsuyo Shinan Koho 1922-1996 Jitsuyo Shinan Toroku Koho 1996-2013

Kokai Jitsuyo Shinan Koho 1971-2013 Toroku Jitsuyo Shinan Koho 1994-2013

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 10-5389 A (Nippon Oribetti Kabushiki Kaisha), 13 January 1998 (13.01.1998), paragraphs [0016] to [0041]; fig. 1 to 8 (Family: none)	1-5
A	JP 2003-199861 A (Hideya FUJITA), 15 July 2003 (15.07.2003), paragraphs [0014] to [0077]; fig. 1 to 22 (Family: none)	1-5
A	JP 11-9758 A (Namco Ltd.), 19 January 1999 (19.01.1999), paragraphs [0012] to [0017], [0023] to [0032]; fig. 1 to 6 (Family: none)	1-5

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

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Date of the actual completion of the international search
09 May, 2013 (09.05.13)

Date of mailing of the international search report
21 May, 2013 (21.05.13)

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2013/061818

C (Continuation).	DOCUMENTS CONSIDERED TO BE RELEVANT	
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 9-140853 A (Telesystems Co., Ltd.), 03 June 1997 (03.06.1997), paragraphs [0011] to [0023]; fig. 1 to 12 & US 6048272 A	1-5
A	JP 2000-312736 A (Telesystems Co., Ltd.), 14 November 2000 (14.11.2000), paragraphs [0008] to [0011]; fig. 1 to 9 & US 6325725 B1	1-5
A	JP 3889747 B2 (Kabushiki Kaisha Affect), 07 March 2007 (07.03.2007), paragraphs [0012] to [0037]; fig. 1 to 10 (Family: none)	1-5

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REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- JP 3889747 B [0004]