

【DESCRIPTION】

【Invention Title】

HEALTH GRADE EVALUATION SYSTEM AND METHOD FOR PREDICTING
5 OCCURRENCE PROBABILITY OF HEALTH ACCIDENT

【Technical Field】

The present invention relates to a health rating system capable of evaluating an individual's health level using
10 medical information, and more particularly, to a health rating system capable of presenting an objective measurement index for an individual's health level as a paradigm for disease prevention and health promotion changes.

15 **【Background Art】**

In modern society, programs such as diagnosis, exercise, and management for each individual's health are periodically managed by their own will or by surrounding conditions such as health management programs at work or various social health
20 management programs.

Health information includes medical records such as consultation with doctors, surgical records, prescription records, accident injury records, physical classification by oriental medicine, physical training at sports centers for
25 physical improvement, maternity records, postpartum recovery, and life history.

However, information related to such medical care is not integrally managed by each individual. Therefore, information related to each individual's medical care, which is obtained
30 at a very high cost, is used only for short application and is not used as one's own medical information afterwards.

In addition, with the recent growing awareness of the

public's health, many Internet sites that provide medical information are being opened thanks to the rapid development of Internet technology, and medical and health-related Internet sites are still being opened.

5 These online sites provide health consulting and information provision services, and some sites are being promoted in connection with solutions for medical information systems, electronic prescription delivery projects linked to hospitals, pharmacies, and pharmaceutical companies.

10 However, in the case of the Internet site, it is difficult to obtain customized information suitable for you because general information is provided, and it is very difficult to predict the probability of future health accidents because it is used as an individual health indicator.

15 In addition, awareness of the health of each member is increasing within the company and organization, and the rapid increase of disease-related industrial accidents and health problems have an effect on productivity improvement, so the health problems of employees in the company have a clear
20 effect on corporate activities.

 In other words, the health level of workers directly and indirectly affects the present and future of not only individual workers but also the entire corporate organization. For example, it appears not only as a direct cost of
25 increasing health care costs due to a decrease in health levels, but also as an indirect cost such as an increase in the absenteeism rate and a decrease in productivity.

 Therefore, the need for an evaluation index for understanding the current health level and continuous
30 management is emerging, and the need to find each management plan is increasing as employees' health problems appear in various forms not only personally but also socially.

【Disclosure】

【Technical Problem】

Therefore, the first object of the present invention is
5 to provide a health grade evaluation system capable of
calculating a health rating for the probability of future
occurrence of a health accident based on medical information
generated in the past and obtained consent from an individual.

In addition, the second object of the present invention
10 is to provide a method of evaluating a health rating that may
act as an important variable in an individual's credit rating
by using personal medical information managed by a government
office after obtaining consent from an individual.

15 **【Technical Solution】**

In order to achieve the object of the present invention
disclosure, the first embodiment of the present invention
disclosure provides a health grade evaluation system
comprising: a user terminal for transmitting approval
20 information for agreeing use of personal medical information
of a user, and health grade application information for
requesting the user's health grade calculation, and personal
authentication information; an institution server having a
medical information database in which personal medical
25 information is stored; and an operation server which is
connected to the user terminal and the institution server
through a communication network, collects personal medical
information matched with the personal authentication
information by providing the personal authentication
30 information to the institution server when the approval
information, health grade application information, and the
personal authentication information are received through the

communication network, and calculates a health grade by analyzing a relative risk of the user with respect to occurrence of a health accident within a predetermined period of time, through a health rating program based on a health evaluation model by using the personal medical information.

In order to achieve the object of the present invention disclosure, the second embodiment of the present invention disclosure provides a health grade evaluation method comprising: an application receiving step of receiving approval information, health grade application information, and personal authentication information which agree to use of personal medical information from a user terminal connected through a communication network by an operation server; a personal medical information collecting step of providing the personal authentication information received from the user terminal to the institution server, and collecting personal medical information matched with the personal authentication information from the institution server; and a health grade selection step of calculating a health grade by analyzing a relative risk of the user with respect to occurrence of a health accident within a predetermined period of time, through a health rating program based on a health evaluation model by using the personal medical information.

【Advantageous Effects】

According to the present invention, it is possible to analyze the relative risk of each individual's health accident by collecting personal medical information from government offices that manage personal medical information, such as the National Health Management Corporation, and analyzing the medical information.

In addition, the present invention presents objective and

intuitive measurement data on an individual's health level as the paradigm of health changes from disease treatment to disease prevention and health promotion, enabling incentives and social health promotion awareness.

5 In addition, the present invention can enhance the incentive effect for health improvement by differentiating the price (insurance premium, loan rate, etc.) according to the health grade in the health-related financial industry such as insurance and loans.

10 In addition, the present invention groups subjects with similar health risks into one class, predicts an individual's health accident occurrence rate through personal inspection items and medical use information, and calculates a health grade with high accuracy even if the number of variables used
15 to calculate the health grade is small.

【Description of Drawings】

FIG. 1 is a block diagram illustrating a health grade evaluation system according to a first embodiment of the
20 present invention.

FIG. 2 is a block diagram illustrating a health grade evaluation system according to a second embodiment of the present invention.

FIG. 3 is a block diagram illustrating a health grade
25 evaluation system according to a third embodiment of the present invention.

FIG. 4 is a flowchart illustrating a method of evaluating a health level according to the present invention.

FIG. 5 is a flowchart illustrating a flow of a step of
30 selecting a health level of the present invention.

【Mode for Invention】

Hereinafter, a health grade evaluation system (hereinafter, referred to as a 'health grade evaluation system') for predicting the probability of a health accident according to preferred embodiments of the present invention will be described in detail with reference to the accompanying drawings.

FIG. 1 is a block diagram illustrating a health grade evaluation system according to a first embodiment of the present invention.

Referring to FIG. 1, the health grade evaluation system according to the present invention includes a user terminal 100 that transmits approval information agreeing to use personal medical information, health rating application information, and personal authentication information. A financial company server that relays the personal authentication information between the operation servers 300 may be further included.

Hereinafter, each component will be described in more detail with reference to the drawings.

Referring to FIG. 1, the health grade evaluation system according to the present invention includes a user terminal 100.

The user terminal 100 receives individual identification number (ID) information from a user to predict a risk of a health accident within a predetermined period of time, inputs approval information consenting to use personal medical information, health grade application information, and

personal authentication information through a network server (300).

In this case, the ID information may include one or more of a user's birth date, a user's address, a user's phone number, an ID for login, and a password.

As a first embodiment, the user terminal 100 according to the present invention may be provided with a health grade management application 110. More specifically, the health grade management application 110 accesses the operation server 300 through a communication network at a user's request, transmits approval information and health level application information to the operation server 300, encrypts the personal authentication information, and provides the same to the operation server 300.

In addition, when the health level is transmitted from the operation server 300 through a communication network, the health grade management application 110 outputs the health level on the screen of the user terminal 100. If necessary, when personal medical information is transmitted from the operation server 300, the health grade management application 110 may output the personal medical information on the screen of the user terminal 100.

In addition, the health grade management application 110 may be downloaded through an Android market, an app store, or a web page and installed in the user terminal 100.

FIG. 2 is a block diagram illustrating a health grade evaluation system according to a second embodiment of the present invention. Referring to FIG. 2, the user terminal 100 according to the present invention may access a first website provided by the operation server 300 through a communication

network, transmit personal authentication information to the first website, and transmit approval information and health grade application information. The first website may perform the same role as the health grade management application 110.

5 If necessary, the user terminal 100 may select one of the health grade management application 110 and the first website to use the health level evaluation system.

FIG. 3 is a block diagram illustrating a health grade evaluation system according to a third embodiment of the present invention. Referring to FIG. 3, the user terminal 100 according to the present invention may access a second website provided by an affiliated financial company server 400 such as a bank or a securities company through a communication network, transmit personal authentication information to the second website, and transmit approval information and health grade application information.

In a fourth embodiment, the user terminal 100 according to the present invention may have a financial company app installed. More specifically, the financial company app encrypts personal authentication information provided by a user and transmits encrypted personal authentication information, approval information, and health grade application information to the financial company server 400 through a communication network.

The user terminal 100 refers to a wireless communication network including a plurality of base stations, a base station controller, a mobile communication exchange, a WAP gateway, and the like, and a means capable of applying for a health grade evaluation to an operation server 300 such as the Internet.

In this case, a smartphone, a tablet PC, a laptop computer, or the like may be used as the wireless terminal, and a desktop computer, a smart TV, a wired phone, or the like having an Internet connection means may be used as the wired
5 terminal.

Referring to FIGS. 1 to 3, the health grade evaluation system according to the present invention includes an institution server 200.

10 The institution server 200 includes a medical information database 210 in which personal medical information is stored, and the personal medical information includes individual biomarkers by health examination result and medical use information of a medical institution.

15 The biomarker includes information on height, weight, waist circumference, body mass index, vision, hearing, blood pressure (contractors/relaxers), urinary protein, blood test information, and blood test information includes hemoglobin, fasting blood cholesterol (HDL/LDL), triglyceride, serum
20 creatin, renal failure (PTG).

The medical use information may include information on the name and location of a medical institution, the start date of treatment, the type of treatment (hospitalization, general outpatient/ dental surgery, prescription days, medication days,
25 salary medical expenses, and public corporation charges.

The institution server 200 is a server operated by a government-designated organization to collect and manage medical information generated by hospitals and clinics, such as the National Health Insurance Corporation, and registers
30 and manages medical use information and health check-up information of medical institutions transmitted from hospitals

and clinics DB.

More specifically, the institution server 200 stores general health examination information including examination results of examinees performed by the National Health Insurance Corporation, and medical use information including health examination questionnaire data, specification, and medical record data. For example, the institution server 200 may store information of subscribers subscribed to the National Health Insurance Corporation in the form of a general examination database, a questionnaire database, a statement database, and a medical record database.

When the operation server 300 requests personal medical information while providing the changed personal authentication information based on the personal authentication information, the institution server 200 provides the personal medical information in the form of a web page.

Referring to FIGS. 2 and 3, the health grade evaluation system according to the present invention may further include a financial company server 400.

The financial company server 400 is connected to the operation server 300 through a communication network or is connected between the user terminal 100 and the operation server 300, and may use health grade information for financial transactions of customers. For example, the financial company server 400 may adjust the user's loan interest rate according to the health rating information.

According to an embodiment, the financial company server 400 according to the present invention is connected to the operation server 300 as shown in FIG. 2 and stores health

rating information provided from the operation server 300.

According to another embodiment, the financial company server 400 according to the present invention is connected between the user terminal 100 and the operation server 300 as shown in FIG. 3, and transmits the personal authentication information to the operator server 300 and stores the health level information. If necessary, when the health level information to which the identification symbol is added is received from the operation server 300, the financial company server 400 may search for a user matched with the identification symbol and transmit the health level information to the matched user.

Referring to FIGS. 1 to 3, the health grade evaluation system according to the present invention includes an operation server 300.

The operation server 300 provides a health grade evaluation service of a user who applies for health grade evaluation based on personal medical information, and is connected to the user terminal 100 and the institution server 200 through a communication network. If necessary, the operation server 300 may be connected to the financial company server 400 through a communication network.

When approval information, health level application information, and personal authentication information are received through a communication network, the operation server 300 decodes (decrypts) the personal authentication information. In this case, since the personal authentication information provided from the user terminal 100 or the financial company server 400 is encrypted to prevent hacking, the operation server 300 performs decryption.

If necessary, when approval information, health grade application information, and personal authentication information are received through a communication network, the operation server 300 may analyze the approval information and health grade application information to determine whether a customer who applied for health grade is a class calculation target.

The operation server 300 processes the decrypted personal authentication information in a form requested by the institution server 200, provides the processed personal authentication information to the institution server 200, and collects the matched personal medical information from the institution server. For example, the operation server 300 generates encrypted personal authentication information required by the institution server 200 based on the official authentication information, and transmits the encrypted personal authentication information to the institution server 200.

When the institution server 200 provides personal medical information matched to personal authentication information or personal authentication information as a web page, the operation server 300 collects and stores personal medical information disclosed through scraping.

The operation server 300 analyzes the relative risk of a user's health accident within a predetermined period through a health rating program based on a health evaluation model for personal medical information of a person to be calculated in the government server 200, and generates health rating information including the health rating.

Here, the predetermined period may be set to within 1 to 15 years. In addition, the collection of personal medical

information through the institution server 200 may target personal medical information within the last two to four years.

However, the predetermined period may be changed according to the basic principles of the national health examination.

The operation server 300 transmits health grade information to the user terminal 100 that provides the personal authentication information, or transmits health grade information and personal medical information.

In addition, health accidents include cardiovascular disease, diabetes, chronic hopper disease, heart disease, cancer, death from disease, and hospitalization of more than a general hospital under medical law, designated by the World Health Organization (WHO) or its associated organizations as major chronic diseases. Here, the main chronic disease designated by the WHO may be changed over time, and thus is not particularly limited. If necessary, for example, the Korean Standard Classification of Diseases (KCD) may apply mutatis mutandis to health accidents.

Here, the application of KCD is applied to specifically define the major chronic diseases described above, for example, defined as (C00-C97) for cancer and (I60-I69) for cerebrovascular diseases.

As a first embodiment, when approval information, health grade application information, and personal authentication information transmitted from the user terminal 100 through the communication network are received, the operation server 300 according to the present invention provides the personal authentication information to the government server 200. In addition, when a web page related to the personal authentication information is received from the institution

server 200, the operation server 300 converts the personal medical information described in the web page into a database through scrolling.

5 In addition, the operation server 300 analyzes personal medical information collected from the government server 200 through a health rating program based on a health evaluation model, analyzes the relative risk of a user's health accident within a predetermined period, and generates health rating information. In this case, the operation server 300 transmits
10 the health level information to the health grade management application 110 of the user terminal 100 providing the personal authentication information.

As a second embodiment, when the operation server 300 receives personal authentication information, approval
15 information, and health grade application information transmitted from the user terminal 100 through the communication network, collects personal medical information through the personal authentication information, and analyzes the health grade within a specified period. In this case, the
20 operation server 300 transmits the health level information to the user terminal 100 through a web server associated with the operation server 300. In this case, the web server provides an access path of a website through which the user terminal 100 provides personal authentication information, approval
25 information, and health grade application information through a communication network.

As a third embodiment, when the authentication information is received from the financial company server 400 through the communication network, the operation server 300
30 according to the present invention accesses the government server 200 to collect personal medical information through the

authentication information, and analyzes the relative risk of a user's health accident within a predetermined period. And the operation server 300 transmits the health grade information to which the identification symbol is added to the financial company server 400.

Specifically, the health rating program based on the health evaluation model selects a user's participation group based on age and gender, and calculates a user's personal score based on individual inspection items and medical use information that are statistically related to the occurrence of health accidents matched to the participation group. Subsequently, the individual score is compared with the health grade score table of the participating group of the user to select the user's health grade. In this case, the individual inspection items may be selected from about 4 to 10 pieces of information identified through personal biomarkers and medical use information, but are not limited thereto.

These participating groups section individual inspection items and medical use information with high statistical relevance to the dependent variable, health accident occurrence, and then select and section explanatory variables based on the discrimination and reliability between health accident variables such as IV (Information Value) and K-S (Kolmogorov-S) statistics.

More specifically, the statistical method of segmenting explanatory variables is to classify them in a certain section (separate nodes to satisfy a certain level of information gain) using a classification tree in a decision tree model, and some of the same factors occur through EOD.

In addition, the classification tree of the decision tree model is selected to have the greatest homogeneity within the

node (group) in the sub-node branching from the parent node, and the size of the model is adjusted by reasonable criteria so that it is not overfitting (or underfitting).

As a particular aspect, the participation group set up in the health rating program may be selected as one of the first groups under 35 years of age for men, the second group between 35 and 49 years of age for men, the third group between 50 and 59 years of age for men, the fifth group between 30 and 44 years of women, and the ninth group for women.

For example, the health rating program analyzes personal medical information and if the analysis target is read as a 45-year-old woman, the participation group of the analysis target is classified into the seventh group. In addition, the health rating program analyzes personal medical information and classifies the participation group of the analysis target into the second group when the analysis target is read as a 45-year-old man.

More specifically, the health rating program based on the health evaluation model extracts values of inspection items and medical use information matched to the user's participation group from the user's personal medical information collected through the government server 200, classifies the figures according to each number.

For example, if the inspection items matched to the second group are body mass index, blood pressure (contractors/relaxers), hemoglobin, fasting blood glucose, cholesterol (HDL/LDL), triglycerides, serum creatinine, and prescription days in the last year, the health rating program extracts nine inspection items from personal information.

In addition, the health rating program calculates an individual score by summing the scores previously assigned to

each of the nine inspection items matched with each value and each grade of medical use information. For example, the body mass index is rated 2 (18 points), the blood pressure (contractors/relaxers) is rated 3 (16 points), the blood pigment is rated 4 (14 points), the fasting blood sugar is rated 5 (12 points), the cholesterol (HDL/LDL) is rated 6 points for the last 8 years, and the medication is rated 1 point for 7 days.

If necessary, the health rating program may calculate an individual score by adding a basic score to the combined score from a plurality of inspection items matched to the user's participation group. In this case, the basic score is not limited because it may be changed according to the number of inspection items and the score for each grade.

In addition, the health rating program based on the health evaluation model can be weighted for each inspection item and medical use information matched to the user's participation group, and individual scores can be calculated by applying the weighted value of the inspection item and medical use information to the score matched to each value. This is to distinguish it from other inspection items and medical use information by applying weighted values to inspection items and medical use information with high importance.

In addition, when some of the inspection items matched to the user's participation group and the medical use information are omitted from the personal medical information, the operation server 300 may request the user terminal 100 to correct the value of the medical use information. In this case, since the health grade may be lowered by the missing inspection item and medical use information, the user who

applied for the evaluation of the test grade may receive the missing inspection item and medical use information through the medical institution and provide the data to the operation server 300.

5 In addition, the operation server 300 sets explanatory power for each inspection item and medical use information matched with the user's participation group, and if some inspection items and medical use information values are omitted from the personal medical information.

10 In addition, in the operation server 300, explanatory power (coefficient of determination) is set for each inspection item matched to each participating group and medical use information. If some inspection items and medical use information values matched to the user's participation
15 group are omitted from the personal medical information, and if the explanatory power of the test item and medical use information is less than a certain level (for example, less than 30 percent), the personal score may be calculated.

20 FIG. 4 is a flowchart illustrating a method of evaluating a health level according to the present invention.

 Referring to FIG. 4, the method of evaluating a health grade according to the present invention includes an application receiving step S100 for receiving approval
25 information consenting to use personal medical information from a user, and an individual medical information collecting step S200. Furthermore, a step (S300) of selecting a health level of a user whose health accident occurs within a predetermined period by analyzing the relative risk level of
30 the user's personal medical information through a health rating program based on a health evaluation model is included.

Specifically, in the application receiving step S100, the operation server 300 receives approval information agreeing to use personal medical information, health grade application information, and personal authentication information from the user terminal 100 accessed through a communication network.

In an embodiment, in the application receiving step S100 according to the present invention, when the user terminal 100 accesses the operation server 200 through the self-installed health grade management application 110 to provide approval information, health level application information, and temporarily stores it in a storage means.

In another embodiment, in the application receiving step S100 according to the present invention, the financial company server 400 may receive approval information agreeing to use personal medical information from the user terminal 100 connected to the financial company server through the communication network, and second authentication.

In the step S200 of collecting personal medical information, the operation server 300 requests the government server 200 to provide personal medical information matched with the personal authentication information based on the personal authentication information stored in the temporary memory, and stores the same in a storage means. And, in the personal medical information collection step S200, when the collection of personal medical information is completed, the operation server 300 deletes the personal authentication information stored in the temporary memory.

More specifically, in the step S200 of collecting personal medical information, when the government server 200 provides personal medical information matched with the personal authentication information as a web page, the

operation server 300 collects and stores the personal medical information disclosed through scraping.

If necessary, the method for evaluating a health level according to the present invention may further include a
5 target selection step of determining whether a person to be graded is applicable by analyzing approval information and health level application information. In this case, the target selection step is provided between the application reception step S100 and the personal medical information collection step
10 S200, or between the personal medical information collection step S200 and the health grade selection step S300.

In the target selection step, the operation server 300 may analyze approval information and health grade application information to determine whether a customer who is a user who
15 has applied for the calculation of a health grade corresponds to a grade calculation target. For example, in the target selection step, the operation server 300 agrees to use personal information through approval information and designates a customer who is a user subject to health
20 insurance or medical benefits as a target for rating.

In the health level selection step S300, the operation server 300 analyzes the relative risk of a user's health accident within a predetermined period through a health rating program based on a health evaluation model for personal
25 medical information collection step 200.

FIG. 5 is a flowchart illustrating a flow of a step of selecting a health level of the present invention.

In more detail, as illustrated in FIG. 5, the health
30 grade selecting step S300 includes a participation group selecting step S310 of a user based on a gender and an age of

a user included in the personal medical information, and a numerical extraction step S320 of extracting inspection items and medical use information matched to the user's participation group. In addition, a numerical grading process
5 (S330) for classifying the extracted values according to the grades of each object and determining the grades of each object, and a scoring process (S340) for calculating an individual score by summing the scores of the grades matched with the values. Furthermore, a score grading process (S350)
10 for selecting a user's health grade by comparing the individual score with a health grade score table of a participating group of the user is included.

Although the preferred embodiment of the present
15 invention has been described above, it will be understood by those skilled in the art that the present invention may be variously modified and changed within a range not deviating from the spirit and area of the present invention described in the following claims.

20

【CLAIMS】

【Claim 1】

A health grade evaluation system comprising:

a user terminal for transmitting approval information for
5 agreeing use of personal medical information of a user, and
health grade application information for requesting the user's
health grade calculation, and personal authentication
information;

an institution server having a medical information
10 database in which personal medical information is stored; and

an operation server which is connected to the user
terminal and the institution server through a communication
network, collects personal medical information matched with
the personal authentication information by providing the
15 personal authentication information to the institution server
when the approval information, health grade application
information, and the personal authentication information are
received through the communication network, and calculates a
health grade by analyzing a relative risk of the user with
20 respect to occurrence of a health accident within a
predetermined period of time, through a health rating program
based on a health evaluation model by using the personal
medical information.

【Claim 2】

The health grade evaluation system according to claim 1, wherein the operation server decodes the personal authentication information when the encrypted personal authentication information is received from the user terminal, processes the personal authentication information in a form required by the institution server, and provides the processed personal authentication information to the institution server to collect the matched personal medical information.

10

【Claim 3】

The health grade evaluation system according to claim 1 or 2, wherein when the institution server provides the personal medical information matched with the personal authentication information to a web page, the operation server collects and stores personal medical information published through the web page through scraping.

15

【Claim 4】

The health grade evaluation system according to claim 1, wherein the user terminal in which a health grade management application is connected to the operation server through a communication network and encrypts the personal authentication

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information provided by the user, and transmits the encrypted personal authentication information, the approval information, and the health grade application information to the operation server.

5

【Claim 5】

The health grade evaluation system according to claim 1, wherein the personal medical information is an individual biomarker and medical use information of the medical
10 institution.

【Claim 6】

The health grade evaluation system according to claim 1, wherein the predetermined period of time is within 1 to 15
15 years.

【Claim 7】

The health grade evaluation system according to claim 1, wherein the health accident includes at least one selected
20 from groups consisting of cardiovascular diseases, diabetes, chronic respiratory diseases, heart diseases, cancers, death caused by diseases, and hospitalization in a general hospital or a higher hospital according to the Medical Services Act.

【Claim 8】

The health grade evaluation system according to claim 1,
wherein the health rating program based on the health
5 evaluation model selects a user participation group based on
age and gender, calculates a personal score of each user based
on inspection items matched to the participation group and the
medical use information, and selects a health grade of the
user by comparing the personal score with a health grade score
10 table of the user participation group.

【Claim 9】

The health grade evaluation system according to claim 8,
wherein the participation group is any one selected from
15 groups of a first group of less than 35 years of men, a second
group of 35 to 49 years of men, a third group of 50 to 59
years of men, a fourth group of 60 years or more of men, a
fifth group of 30 years or more of women, a sixth group of 30
to 44 years of women, a seventh group of 45 to 54 years of
20 women, an eighth group of a sixth group of 55 to 64 years of
women, and a ninth group of 65 years or more of women.

【Claim 10】

The health grade evaluation system according to claim 8,
wherein the health rating program based on the health
evaluation model extracts a numerical value of the medical use
information and inspection items matched to the user
5 participation group from the personal medical information,
determines the grade of each inspection item and the medical
use information by classifying the numerical value according
to numerical grades of each inspection item and the medical
use information, calculates a personal score by adding a
10 predetermined score to the grade matched with each numerical
value, and selects the user's health grade by comparing the
personal score with the health grade score table of the user
participation group.

15 **【Claim 11】**

The health grade evaluation system according to claim 10,
wherein the health rating program based on the health
evaluation model provides a weighted value according to the
inspection items matched with the user participation group and
20 the medical use information, applies the weighted values of
the inspection items and the medical use information to the
score of the grade matched with each numerical value, and
calculates a personal score by summing the score to which the
weighted value is applied.

【Claim 12】

The health grade evaluation system according to claim 10, wherein the operation server requests numerical correction of the inspection items and the medical use information, which are omitted, to the user terminal, when some of the inspection items and the medical use information matched to the user participation group are omitted from the personal medical information.

【Claim 13】

The health grade evaluation system according to claim 8, wherein the operation server sets explanatory power for the inspection items and the medical use information matched to each participation group, and if numerical values of some of the inspection items matched with the user participation group and the medical use information are missing from the personal medical information, calculates a personal score in a state in which the score of the object that the numerical values are missing is omitted when explanatory power of the object is less than 30%.

【Claim 14】

The health grade evaluation system according to claim 1, wherein the operation server transmits the health grade calculated through the health rating program to an affiliated financial company server.

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【Claim 15】

The health grade evaluation system according to claim 1, wherein the user terminal encrypts the personal authentication information provided by the user, and a financial company application for transmitting the encrypted personal authentication information, the approval information, and the health grade application information is installed, and

wherein the health grade evaluation system further comprises a financial company server which is connected to the user terminal and the operation server through the communication network, provides the personal authentication information to the operation server when the approval information, the health grade application information, and the personal authentication information are received through the communication network, and receives a health grade for the personal authentication information from the operation server.

【Claim 16】

A health grade evaluation method comprising:

an application receiving step of receiving approval information, health grade application information, and personal authentication information which agree to use of personal medical information from a user terminal connected
5 through a communication network by an operation server;

a personal medical information collecting step of providing the personal authentication information received from the user terminal to the institution server, and collecting personal medical information matched with the
10 personal authentication information from the institution server; and

a health grade selection step of calculating a health grade by analyzing a relative risk of the user with respect to occurrence of a health accident within a predetermined period
15 of time, through a health rating program based on a health evaluation model by using the personal medical information.

【Claim 17】

The health grade evaluation method according to claim 16,
20 wherein the step of collecting the personal medical information comprises:

a decoding process of decoding encrypted personal authentication information when the user terminal provides the

encrypted personal authentication information through a health grade management application;

5 a processing step of processing the decrypted personal authentication information in a form required by the institution server;

a scraping step of collecting personal medical information from a web page through scraping when the personal medical information matched with the personal authentication information is provided to the web page.

10

【Claim 18】

The health grade evaluation method according to claim 16, wherein health grade selection step comprises:

15 a participation group selection step of selecting a participation group of a user based on gender and age included in the personal medical information;

20 a numerical analysis step of extracting numerical values of the medical use information and inspection items matched to the user participation group from the personal medical information;

a numerical grading process of classifying the extracted numerical values according to grades of the inspection items and the medical use information to determine the grade of each inspection item and the medical use information;

a scoring process of calculating a personal score by summing a score of the grade matched with the numerical value; and

5 a score grading process of selecting a health level of the user by comparing the personal score with the health grade score table of the user participation group.