

Note: When any ambiguity of interpretation is found in this provisional translation, the Japanese text shall prevail.

Chapter 1 Computer Software-Related Inventions

This Chapter mainly explains matters which require special judgment or treatment in examining patent applications relating to computer software-related inventions (hereinafter referred to as "software-related inventions").

Refer to Part I or Part II for those matters not explained in this Chapter in relation to requirements for description and claims and determination of whether the claimed invention is "statutory" or involves "inventive step."

Definitions of Terms used in this Chapter:

Information processing:

arithmetic operation or manipulation of information in order to achieve a particular result depending on a use purpose

Software:

program for information processing on a computer

Program:

a set of numbered instructions given to a computer to make it perform a particular information processing (the following "program listings" are excluded)

Program listings:

presentation of program codes printed on paper, displayed on a screen, etc.

Computer-readable storage medium having a program recorded thereon:

computer-readable storage medium having a program recorded thereon to install, execute or distribute the said program

Procedure:

a sequence of processes or operations connected in time series to achieve an intended object

Data structure:

logical structure of data defined by interrelationship among data elements

Hardware resources:

physical devices or physical elements used for processing, operation or realization of functions (i.e. a computer as a physical system and constituent elements thereof, such as a CPU, memory, an input device, an output device, or other physical devices connected to the computer)

1. Requirements for Description and Claims

1.1 Claim(s)

This section deals with description requirements of claim(s), especially focusing on categories of inventions which require special judgment or treatment in examining patent applications relating to software-related inventions.

1.1.1 Categories of Software-Related Inventions

(1) Invention of a process

When a software-related invention is expressed in a sequence of processes or operations connected in time series, namely procedure, the invention can be defined as an invention of a process (including an invention of a process of manufacturing a product) by specifying such a procedure.

(2) Invention of a product

When a software-related invention is expressed as a combination of multiple functions performed by the invention, the invention can be defined as an invention of a product by specifying such functions.

A program or data can be defined in the following manners:

- (a) "A computer-readable storage medium having a program recorded thereon" can be defined as "an invention of a product." "A computer-readable storage medium having structured data recorded thereon" can also be defined as an invention of a product, where processing performed by a computer is specified by the data structure recorded thereon.

[Example 1] "A computer-readable storage medium having a program recorded thereon; where the program makes the computer execute procedure A, procedure B, procedure C, ..."

[Example 2] "A computer-readable storage medium having a program recorded thereon; where the program makes the computer operate as means A, means B, means C, ..."

[Example 3] "A computer-readable storage medium having a program recorded thereon; where the program makes the computer realize function A, function B, function C..."

[Example 4] "A computer-readable storage medium having data recorded thereon; where the data comprise data structure A, data structure B, data structure C, ..."

- (b) "A program" which specifies a multiple of functions performed by a computer can be defined as "an invention of a product."

[Example 5] “A program which makes a computer execute procedure A, procedure B, procedure C, ...”

[Example 6] “A program which makes a computer operate as means A, means B, means C, ...”

[Example 7] “A program which makes a computer realize function A, function B, function C, ...”

1.1.2 Notes

- (1) Even when an invention is claimed using a term other than ‘a program’, if it is obvious, by taking into consideration the common general knowledge as of the filing, that the invention for which a patent is sought is “a program” which specifies a multiple of functions performed by a computer, the invention shall be treated as “a program.”

However,

- (a) when a patent is sought for "program signal(s)" or "data signal(s)," since they cannot be classified into a statutory category, namely “an invention of a process” nor “an invention of a product,” it violates Article 36(6)(ii) of the Patent Act; and
 - (b) when an invention is claimed using the terms ‘a program product’ or ‘a program “seihin” (Japanese translation of “product”)’, since they use terms whose technical scope are not clear, and thereby causing the technical scope of the claimed invention not to be clear, it violates Article 36(6)(ii) of the Patent Act. However, this is not a case where the explicit definition is provided for such a term in the specification without surpassing the ordinary meaning thereof, and thus the scope of the claimed invention results in clear.
- (2) Inventions claimed as ‘shi-su-te-mu’ (Japanese pronunciation of "system") or ‘hoshiki’ (Japanese translation of "system") is deemed to be an invention of a product (see Part I: Chapter 1, 2.2.2.3(3)).

1.1.3 Examples of Unclear Claimed Inventions

Article 36(6)(ii) of the Patent Act prescribes "an invention for which a patent is sought must be clearly stated." Examples of unclear claimed inventions violating this Act are shown below.

- (1) The invention for which a patent is sought is unclear resulting from the statement of the claim itself being unclear (see Part I: Chapter 1, 2.2.2.3(1))

[Example 1]

(Claimed invention)

An order-receiving method using a computer, comprising the steps of: accepting a commodity order from a customer, checking the inventory of the ordered commodity, and

responding to the customer as to whether the commodity can be delivered or not depending on inventory status.

(Explanation)

The expression "using a computer, comprising the steps of" does not necessarily specify the subject for the operation in each step. Therefore, the claim can be interpreted in the following two manners:

- as an order-receiving method (by a human) using a computer as a mere calculation tool, comprising the steps of: accepting a commodity order from a customer (by human operation of a computer), checking the inventory of the ordered commodity (by human operation of a computer); and responding to the customer as to whether the commodity can be delivered or not depending on the inventory status (by human operation of a computer); or

- as an information processing method by computer software in the constructed order-receiving system, comprising the steps of: accepting a commodity order from a customer (by means A equipped with a computer), checking the inventory of the ordered commodity (by means B equipped with a computer), and responding to the customer as to whether the commodity can be delivered or not depending on the inventory status (by means C equipped with a computer).

Consequently, since the two different concepts of "order-receiving method (by a human) using a computer as a mere calculation tool" and "information processing method by software in the constructed order-receiving system" are both included in a single claim, the claimed invention identified on the basis of the statements in the claim cannot be clearly grasped.

Remark: In light of the purpose of the system of the claim, it is necessary that one invention can be identified based on the matters stated in one claim. (see Part I: Chapter 1, 2.2.2.1(2))

[Example 2]

(Claimed invention)

A program equipped with an order-receiving means to accept a commodity order from a customer, an inventory search means to check the availability of the ordered commodity, and a means to respond to the customer if the commodity can be delivered or not, depending on the inventory condition.

(Explanation)

A program makes a computer operate as a means, but the program itself does not operate as a means. Therefore the program itself is not equipped with an operational means, so that the claimed invention identified on the basis of the definition of the claim cannot be clearly grasped.

On one hand, if the invention is claimed as "a program to make the computer operate as an order-receiving means to accept a commodity order from a customer, an inventory search means to check the availability of the ordered commodity, and a means to respond to the customer if the commodity can be delivered or not depending on the inventory condition," the program is clear as an invention since it makes the computer operate as a functional means.

(2) The claimed invention is unclear because the meaning of a term used in the claim is incomprehensible even by taking into account the statements of the description and drawings, as well as the common general knowledge as of the filing (see Part I: Chapter 1, 2.2.2.3(1)②)

[Example 3]

(Claimed invention)

A computer to solve a puzzle using the right-brain inference rule. ('The right-brain inference rule' is not defined in the Detailed Explanation of the Invention.)

(Explanation)

Since 'the right-brain inference rule' is not defined in the Detailed Explanation of the Invention nor is the common general knowledge as of the filing, the meaning of the term is not clear.

(3) The invention for which a patent is sought is unclear resulting from matters defining the invention are not related technically (see Part I: Chapter 1, 2.2.2.3(2)④).

[Example 4]

(Claimed invention)

An information transmission medium transmitting a certain computer program.

(Explanation)

Since 'an information transmission medium' such as a communication network inherently has an information transmission function, the mere statement that 'a certain computer program is being transmitted to anywhere on the information transmission medium at any moment' cannot clearly define "an information transmission medium" as an invention of a product.

(4) The category of an invention for which a patent is sought is unclear, or something that falls in neither products nor processes is stated in a claim (see Part I: Chapter 1, 2.2.2.3(3))

[Example 5]

(Claimed invention)

A string of program signals to make a computer execute procedure A, procedure B, procedure C, ...

(Explanation)

It cannot be determined whether the claimed invention constitutes "a product invention" or "a invention of a process."

(5) The scope of the invention is unclear as a result of the ambiguous expression (see Part I: Chapter1, 2.2.2.3(5))

[Example 6]

(Claimed invention)

A compiler apparatus comprising a means to perform lexical analysis at high speed and a means to perform syntax analysis, in which the both means are enabled to run in parallel.

(Explanation)

Even taking into consideration the common general knowledge as of the filing, since comparison criterion or degree of "high speed" is obscure, the scope of the claimed invention is unclear.

If the invention is stated as ‘comprising a means to perform lexical analysis and a means to perform syntax analysis...’, the scope of the claimed invention is clear.

(6) It is evident, in light of the common general knowledge as of the filing, that the matter defined by a function or characteristics, etc. is not sufficiently specified from a technical perspective, and the invention cannot be clearly identified from the statement of the claim even by taking into account the statements of the description and drawings (see Part I: Chapter 1, 2.2.2.4(1)②(ii))

[Example 7]

(Claimed invention)

An aircraft control-computer to predict generation of “down-burst” phenomena in advance.

Note: “Down-burst” is such phenomena that an air stream explosively blows down from the bottom of a cloud, and destructively blows back up.

(Explanation)

It is common general knowledge as of the filing that it is difficult to understand the specific processing contents, etc. to realize such a function when a computer is defined by only its function of predicting generation of "down-burst" phenomena in advance. In light of such common general knowledge, it is evident that "an aircraft control-computer" defined only by said function, with no concrete processing contents, etc. required to have the function being defined, is not sufficiently specified from a technical perspective, and the invention cannot be clearly identified from the statement of the claim even by taking into account the statements of the description and drawings.

On one hand, the claimed invention is clear when defined by concrete means or procedure stated in the detailed description of the invention.

1.2 Detailed Description of the Invention

1.2.1 Enablement Requirement

"The statement of the detailed explanation of the invention ... shall comply with each of the following items:

(i) ... the statement shall be clear and sufficient as to enable any person ordinarily skilled in the art to which the invention pertains to work the invention" (Article 36(4)(i)).

The detailed description of the invention shall be stated in such a manner that a person who has ability to use ordinary technical means for research and development, and has ability to exercise ordinary creative activity in the field of software-related inventions can carry out the claimed invention on the basis of the description in the specification and drawings taking into consideration the common general knowledge as of the filing.

1.2.1.1 Examples of Violations of Enablement Requirement

(1) When not commonly used technical terms, abbreviations, symbols, etc. are used in the specification without definition, so that the invention cannot be carried out

(2) When the procedure or function corresponding to those stated in a claim is described merely in an abstract or functional manner in the detailed description of the invention, so that it is unclear how the procedure or function is implemented or realized by hardware or software

[Example 1]

When an information processing system to execute mathematical solutions, business methods or game rules is stated in a claim, there is no description in the detailed description of the invention on how to realize such methods or rules on a computer, so that the invention cannot be carried out.

[Example 2]

When procedures to operate a computer are explained based only on a computer display screen (e.g., input format using GUI (Graphical User Interface)), there is no description how to realize the said operational procedure on the computer, so that the invention cannot be carried out.

(3) When hardware or software which realizes the function of the invention is explained with functional block diagrams or general flow charts in the detailed description of the invention, since the explanation is not sufficient to understand how hardware or software is structured, the invention cannot to be carried out.

(4) When an invention is defined using functional terms whereas the embodiment of an invention is explained using a flow chart, the relationship between the said function defined in the claim and the said flow chart in the detailed description of the invention is unclear. As a result, the invention cannot to be carried out.

[Example 3]

When an invention of an information processing system for business support is defined in a claim by specifying a multiple of functional means whereas only the work-flow for the said business is described in the detailed description of the invention, since the relationship between the said functional means defined in the claim and the said work-flow in the detailed description of the invention is unclear, the invention cannot be carried out.

1.2.1.2 Notes

(1) When the detailed description of the invention is described by using functional or operational terms, particular attention must be given as to whether the detailed description of the invention is sufficiently clear and complete to the degree that the claimed invention can be carried out by a person skilled in the art on the basis of the common general knowledge as of the filing. If it is found that a person skilled in the art would not carry out the invention, the examiner should notify the reason for refusal under Patent Act Article 36(4)(i) (violation of enablement requirement) by indicating the said function or operation (See Part I: Chapter 1, 3.2.3(1)).

(2) When there is no concrete explanation about the matters described in the detailed description of the invention, particular attention must be given as to whether the detailed explanation of the invention is sufficiently clear and complete to the degree that the claimed invention can be carried out on the basis of the common general knowledge as of the filing. If it is found that a person skilled in the art would not carry out the invention, the examiner should notify the reason for refusal under Patent Act Article 36(4)(i) (violation of enablement requirement) (See Part I: Chapter 1, 3.2.3(1)).

1.2.2 Ministerial Ordinance Requirement

The statement of the detailed explanation of the invention which is to be in accordance with Ordinance of the Ministry of Economy, Trade and Industry under the Patent Act, Article 36(4)(i) shall be made by stating the problem to be solved by the invention and its solution, and other matters necessary for a person ordinarily skilled in the art to which the invention pertains to understand the technical significance of the invention.

(Regulations under the Patent Act Article 24bis).

(1) The problem to be solved by the invention and its solution

The applicant should state "technical field to which the invention pertains," "the problem to be solved by the invention" and "its solution" as matters necessary for a person having ordinary skill in the art to understand the technical significance of the invention (See Part I: Chapter 1, 3.3.3(1)).

In the section of "its solution," how procedure or means has been embodied should be explained using flow charts etc..

It is a violation of the Ministerial Ordinance Requirement, if a person having ordinary skill in the art cannot understand "the problem to be solved by the invention" and "its solution"

on the basis of the detailed description of the invention, drawings or the common general knowledge as of the filing.

(2) Prior Art

A description of prior art is not required under the Ministerial Ordinance Requirement. However, in cases where a detailed description of prior art can be substituted for the description of “the problem to be solved by the invention,” an applicant, as far as he or she knows, should describe the background prior art deemed to contribute to understanding the technical significance of the claimed invention and examining the patentability of the invention. (See Part I: Chapter 1, 3.3.3(3)①).

(3) Program Listings

In principle, program listings should not be included in the specification or drawings. However, if they are short excerpts written in a computer language generally known to a person skilled in the art and helpful for understanding the invention, such listings are allowed to be included. (“Program listings” can be submitted and filed as reference material. However, the specification cannot be amended on the basis of such reference material.)

2. Requirements for Patentability

This section explains requirements for patentability, statutory invention and inventive step which are particularly important in examining patent applications for software-related inventions.

However, it is not necessary to refer to this chapter when it can be judged based on "Part II: Chapter 1," whether the claimed invention qualifies as a statutory invention.

2.1 Inventions ruled by Patentability Requirements

(1) Patentability requirements are applied to "claimed inventions".

(2) The claimed invention is identified on the basis of the statement in a claim. In this case, the significance of matters (terms) to define the invention is interpreted taking into consideration the descriptions of the specification, drawings and the common general knowledge as of the filing.

2.2 Statutory Invention

To be qualified as a "statutory invention" prescribed in the Patent Act, the claimed invention shall be "a creation of technical ideas utilizing a law of nature." (See Part II: Chapter 1, 1)

2.2.1 Basic Concept

The basic concept to determine whether software-related invention constitutes "a creation of technical ideas utilizing a law of nature" is as follows.

(1) Where "information processing by software is concretely realized by using hardware resources," the said software is deemed to be "a creation of technical ideas utilizing a law of nature." (See 3. Examples 2-1 to 2-5 in this Chapter.)

[Explanation]

"Information processing by software is concretely realized by using hardware resources" means that, as a result of reading the software into the computer, the information processing equipment (machine) or operational method thereof particularly suitable for a use purpose is constructed by concrete means in which software and hardware resources are cooperatively working so as to realize arithmetic operation or manipulation of information depending on the said use purpose.

Since "the said information processing equipment (machine) or operational method thereof particularly suitable for the use purpose" can be said to be qualified as "a creation of technical ideas utilizing a law of nature," where "information processing by software is concretely realized by using hardware resources," the said software is deemed to be "a creation of technical ideas utilizing a law of nature."

Reference: To be qualified as "a creation of technical ideas utilizing a law of nature," a claimed invention must be concrete enough to accomplish a certain purpose. (A technology

must possess sufficient concrete means to accomplish a certain purpose and can be practically used, ... so that it is objective.) [Hei 9 (Gyo Ke) 206 (Judgement: May 26, 1999)]

(2) Furthermore, the information processing equipment (machine) and operational method thereof which cooperatively work with the said software satisfying the above condition (1), and the computer-readable storage medium having the said software recorded thereon are also deemed to be "creations of technical ideas utilizing a law of nature."

2.2.2 Actual Procedure for Judgment

The actual procedure to judge whether a software-related invention is "a creation of technical ideas utilizing a law of nature" (statutory invention) or not is as follows.

(1) Identify the claimed invention based on the definitions in a claim. When the identified invention does not require special judgment and treatment for software-related inventions in judging whether the claimed invention constitutes "a creation of technical ideas utilizing a law of nature," "Part II: Chapter 1. 'Industrially Applicable Inventions'" shall be referred to. (Note*)

(2) Where information processing by software is concretely realized by using hardware resources (e.g. an arithmetic unit such as a CPU, a storage means such as memory) in the claimed invention, in other words, when information processing equipment (machine) or its operational method particularly suitable for the use purpose is constructed by concrete means in which software and hardware resources are cooperatively working so as to include arithmetic operation or manipulation of information depending on the said use purpose, the claimed invention constitutes "a creation of technical ideas utilizing a law of nature."

(3) Where information processing by software is not concretely realized by using hardware resources, the claimed invention does not constitute "a creation of technical ideas utilizing a law of nature."

Examples where information processing by software is not concretely realized by using hardware resources

[Example 1]

(Claimed invention)

A computer comprising an input means to input document data, a processing means to process the inputted document data and an output means to output the processed document data; wherein the said computer prepares a summary of the inputted document by using the said processing means.

(Explanation)

It can be said that there exists a flow of information processing of document data on a computer in the order of input means, processing means and output means. However, since the said information processing to prepare a summary of the inputted document and the said processing means cannot be said to be cooperatively working, it cannot be said that the said information processing is concretely realized. Consequently, the claimed invention does not

constitute "a creation of technical ideas utilizing a law of nature," since the information processing by software is not concretely realized by using hardware resources.

[Example 2]

(Claimed invention)

A computer to calculate the minimum value of formula $y=F(x)$ in the range of $a \leq x \leq b$.

(Explanation)

It cannot be said that the information processing to calculate the minimum value of formula $y=F(x)$ is concretely realized by the fact that the computer is used "to get the minimum value of formula $y=F(x)$ in the range of $a \leq x \leq b$." This is because information processing to calculate the minimum value of formula $y=F(x)$ and the computer cannot be said to be cooperatively working by only saying "a computer to calculate the minimum value..." Consequently, the claimed invention does not constitute "a creation of technical ideas utilizing a law of nature," which means that it does not constitute "a statutory invention," since the information processing by software is not concretely realized by using hardware resources.

(Note*) Examples where special judgment and treatment for software-related inventions described above are not required in judging whether the claimed invention is statutory so that judgement can be made by referring to "Part II: Chapter 1. 'Industrially Applicable Inventions'" are given below.

(1) Examples not constituting "a creation of technical ideas utilizing a law of nature"

When the claimed invention corresponds to any one of the "non-statutory inventions" listed in "Part II: Chapter 1, 1.1 Non-statutory Inventions," such as

- (a) economic laws, arbitrary arrangements, mathematical methods, mental activity; or
- (b) mere presentation of information such as image data taken with a digital camera, program for athlete meeting made by a word processor, computer program listings, etc.;

the claimed invention does not constitute "a creation of technical ideas utilizing a law of nature."

(2) Examples which constitute "a creation of technical ideas utilizing a law of nature"

When the claimed invention concretely performs:

- (a) control of an apparatus (rice cooker, washing machine, engine, hard disk drive, etc.), or processing with respect to the control; or
- (b) information processing based on the physical or technical properties of an object (rotation rate of engine, rolling temperature, etc.);

the claimed invention constitutes "a creation of technical ideas utilizing a law of nature."

2.2.3 Notes

(1) It should be noted that the invention to be judged is the claimed invention. Therefore, even if an invention wherein "information processing by software which is concretely realized by using hardware resources" is described in the detailed description of the invention or drawings, when the same effect is not stated in a claim, the claimed invention is deemed as "non-statutory."

(2) Even if the current claimed invention does not constitute "a creation of technical ideas utilizing a law of nature," when it can be turned into "a creation of technical ideas utilizing a law of nature" by amending the definition of the claim on the basis of the statements in the detailed description of the invention, it is recommendable that the examiner suggest how to amend the definition of the claim simultaneously when notifying the applicant of the reason for refusal.

(3) (3) It should be noted that the judgement whether the claimed invention is "a creation of technical ideas utilizing a law of nature", should be made interpreting the significance of the matters (terms) to define the invention noting that the category of the invention is irrelevant ("an invention of a process" or "an invention of a product").

(4) When a claimed invention is sought for "a program language" so that it is deemed to be an artificial arrangement, it is not "a creation of technical ideas utilizing a law of nature." (See Part II: Chapter 1, 1.1 (4))

(5) When a claimed invention is sought for "program listings" so that it is deemed to be a mere presentation of information, it is not "a creation of technical ideas utilizing a law of nature." (See Part II: Chapter 1, 1.1 (5)(b))

[Example]

"Computer program listings for multiplication of natural numbers, comprising:

```
var x, y, z, u : integer ;
begin  z := 0 ; u := x ;
      repeat
        z := z + y ; u := u - 1
      until u = 0
end."
```

2.2.4 "Structured Data" or "Data Structure"

"Structured data" (including "a computer-readable storage medium having structured data recorded thereon") or "data structure" should be judged based on "2.2.1 Basic Concept" in this Chapter.

2.3 Inventive Step (Nonobviousness)

2.3.1 Basic Concept

(1) Whether or not a claimed invention involves an inventive step is determined whether the reasoning that a person skilled in the art could have easily arrived at a claimed invention based on cited inventions can be made by constantly considering what a person skilled in the art would do after precisely comprehending the state of the art in the field to which the invention pertains as of the filing. (See Part II: Chapter 2, 2.4 (1))

(2) Concretely, after finding the claimed invention and one or more cited inventions (Note*), one cited invention most suitable for the reasoning is selected. And comparison of the claimed invention with the cited invention is made, and the identicalness and the difference in matters defining the inventions are clarified. Then, the reasoning for lacking an inventive step of the claimed invention is attempted on the basis of the contents of the selected invention, other cited inventions (including well-known or commonly used art) and the common general knowledge. The reasoning can be made from various and extensive aspects. For example, the examiner evaluates whether the claimed invention falls under a selection of an optimal material, a workshop modification of design, a mere juxtaposition of features on the basis of cited inventions, or whether the contents of cited inventions disclose a cause or a motivation for a person skilled in the art to arrive at the claimed invention.

(Note*) Since the invention should be viewed as a whole, it is inappropriate to identify the claimed invention separating the aspect of artificial arrangement and that of automation technique.

(3) If advantageous effects of the claimed invention over a cited invention can be clearly found in the description in the specification, etc., it is taken into consideration as facts to support to affirmatively infer the involvement of an inventive step. (See Part II: Chapter 2, 2.4(2))

(4) When the reasoning can be made as a result of the above method, the claimed invention should be denied its inventive step. When the reasoning cannot be made, the claimed invention should not be denied its inventive step. (See Part II: Chapter 2, 2.4(2))

(5) Attempts are usually made in the field of software technology to combine methods or means used in different fields or apply them to another field in order to achieve an intended object. Consequently, combining technologies used in different fields and applying them to another field is usually considered to be within the exercise of an ordinary creative activity of a person skilled in the art, so that when there is no technical difficulty (technical blocking factor) for such combination or application, the inventive step is not affirmatively inferred unless there exist special circumstances (such as remarkably advantageous effects).

2.3.2 Problems to be solved by the Invention

The problems in connection with "software-implementation" or "computerization" are often mere general problems common to such computer technologies. "In order to improve the level of decision by using AI (Artificial Intelligence) or Fuzzy Logic," or "in order to make input -operation easier by using GUI (Graphical User Interface)" are examples of such problems to be solved by the invention. The judgement of "inventive step" should be made taking into consideration these generally known problems as of the filing.

2.3.3 A Person having Ordinary Skill in the Art

A person skilled in the art of software-related inventions is expected:
to have common general knowledge both of the applied field of the said software-related inventions and computer technology (e.g., systematization technology);
to use ordinary technical means for research and development;
to exercise ordinary creative activity in changing design; and
to be able to comprehend all the state of the art in the field of technology to which the invention pertains (state of the art in the applied field of the said software and the computer technology) as of the filing.

In addition, a person skilled in the art is supposed to be able to comprehend as his/her own knowledge all technical matters in the field of technology relevant to a problem to be solved by an invention.

Further, there may be cases where it is more appropriate to think in terms of "a group of persons" than a single person. (See Part II: Chapter 2, 2.2 (2))

2.3.4 Examples of Exercising Ordinary Creative Activity expected of a Person having Ordinary Skill in the Art

(1) Application to other fields

There are a lot of cases in which procedure or means for realizing the function used in software-related inventions are often common in function or operation, regardless of the applied field to which the invention belongs. In such cases, it is within the ordinary creative activity expected of a person skilled in the art to apply such procedure or means of software-related inventions used in certain applied fields to other fields to realize the same function or operation.

[Example 1]

Where there exists the cited invention of "file retrieval system," to apply the concrete means for retrieving in said "file retrieval system" to "medical file retrieval system" as the means for retrieving is deemed to be within the ordinary creative activity expected of a person skilled in the art, since the function of the means for retrieving is common to both systems.

[Example 2]

Where there exists the cited invention of "medical information retrieval system," to apply the concrete means for retrieving in said "medical information retrieval system" to a "commodity information retrieval system" is deemed to be within the ordinary creative activity

expected of a person skilled in the art, since the function of the means for retrieving is common to both systems.

(2) Addition of a commonly known means or replacement by equivalent

It is within the ordinary creative activity expected of a person skilled in the art to add a commonly known means for systematization as a constituent element thereof, or to replace part of constituent elements of the system with a well known means equivalent thereof.

[Example]

In addition to a keyboard as an input means, to add a means for inputting numerical codes by selecting items displayed on the screen with a mouse or by bar code is deemed to be within the ordinary creative activity expected of a person skilled in the art.

(3) Implementation by software of functions which are otherwise performed by hardware

It is within the ordinary creative activity expected of a person skilled in the art to try to realize such function by means of software that has been so far performed by hardware, such as circuits.

[Example]

To realize function of code comparison performed by circuit so far by software.

(4) Systematization of human transactions

There is a case where the cited prior art describes human transactions but not describe how to systematize them.

Even in such situation, it is within the ordinary creative activity expected of a person skilled in the art to systematize existing human transactions in an applied field in order to realize on a computer, if the said systematization can be realized by a routine activity of usual system analysis method and system design methods.

[Explanation]

System development is usually performed through the processes of:
planning (preparation) → system analysis → system design.

In the stage of system analysis, for example, the existing work is analyzed and put into written form. Human transactions can also be analyzed for systematization.

In view of the actual processes of such system development, it is within the ordinary creative activity of a person skilled in the art to systematize existing human transactions, provided that the said systematization would have been made by a routine work by using usual system analysis and system design technologies.

[Example 1]

Merely to replace a telephone or a fax previously used in order to receive orders from customers with a home page on the Internet is within the ordinary creative activity of a person skilled in the art.

[Example 2]

Merely to change the way of managing a classified section in a magazine into a way of managing such information via the home page on the Internet is within the ordinary creative activity of a person skilled in the art.

(5) Reproduction of a known event in computerized virtual space

It is within the ordinary creative activity of a person skilled in the art to reproduce a known event in a computerized virtual space, provided that the said reproduction would have been made by a routine work by using usual system analysis and system design methods.

[Example 1]

In a tennis game machine, merely to set the speed of a tennis ball after bouncing on a hard court faster than the speed on a clay court is within the ordinary creative activity of a person skilled in the art.

[Example 2]

In a racing game machine, merely to change the probability of spinning depending on the condition of the surface on the road is within the ordinary creative activity of a person skilled in the art.

[Example 3]

Merely to regenerate graphically on the computer screen the known I/O interface conditions (forms of buttons and display, and their positional relationship) of a calculator or copying machine is within the ordinary creative activity of a person skilled in the art.

(6) Design modification on the basis of known facts or customs

When different features between the claimed invention and the cited invention are based on known facts or customs, and as a result of considering other publicly known cited inventions and the common general knowledge (including "evident facts"), the said different feature is of the nature to be decided at the discretion of a person skilled in the art, and there is no blocking factor for combination, the difference is no more than a design modification decided depending on the need of a person skilled in the art, therefore, it is within the ordinary creative activity expected of a person skilled in the art.

[Example 1]

It is common general knowledge to express one's feeling of gratitude when a contract for sale is concluded. It is mere addition of commonly known means to add a message-outputting means to an electronic transaction machine. Therefore, in an electronic transaction machine having a display means, to add a message-outputting means saying "Thank you!" after receiving purchase orders is within the ordinary creative activity expected of a person skilled in the art.

[Example 2]

It is commonly known that there is a "cooling off system" (the buyer can retract the purchase order in a certain period of time, even after placing the purchase order) in non-electronic business transactions. It is also commonly known that adding a "cooling off system" is preferred for electronic transactions as well as non-electronic transactions from the

view point of consumer protection. To add such a “cooling off system” to an electronic transaction machine is therefore within the ordinary creative activity expected of a person skilled in the art.

2.3.5 Effects of the Invention

Since alleged general effects such as "can be processed quickly", "can process a large amount of data", "can obtain uniform results" are often obtained as a result of computerization, the said results cannot usually be said to be unforeseeable from the knowledge of the state of the art.

2.3.6 Notes

(1) Reference to the fact of commercial success or the equivalent

The fact of commercial success or the equivalent can be referenced as the fact effective to affirmatively infer the existence of an inventive step. However, it is limited to cases where conviction is gained to believe that the fact is based on the feature of the claimed invention according to the assertion or the proof of the applicant, rather than other causes such as selling techniques or advertisement.

(2) Treatment of a case where a different feature merely exists in data contents

The novelty of the claimed invention cannot be affirmatively inferred when it is ascertained that a different feature between the claimed invention and the cited invention merely exists in data contents.

[Example 1]

Where there exists the cited invention of "record management apparatus for processing data structure A," since whose performance data is stored thereon, "student performance data" or "racehorse performance data," do not change such features as "a performance record management apparatus for processing 'data structure A'," novelty is to be denied in both cases.

[Example 2]

Where there exists "information processing apparatus including computer-readable storage medium having music C recorded thereon where the data structure is B," since changing "the said medium having music C" to "computer-readable storage medium having music D where the data structure is B" has nothing to do with the feature of "information processing apparatus including computer-readable storage medium having music recorded thereon where the data structure is B," novelty is to be denied.

(3) Recording a program or data on a computer-readable storage medium

Where the different feature between the original claimed invention and the cited invention is within the scope of the ordinary creative activity of a person skilled in the art, inventive step cannot be affirmatively inferred, even if a limitation of "recording a program or data on a computer-readable storage medium" is added to the claim.

(4) A medium which can transmit information

When the claimed invention is only specified by a feature inherent to the information transmission medium, for example, "a medium which transmits, or can transmit certain information," the claimed invention cannot be patented because of a lack of "novelty" or "inventive step."

Since the feature "a medium which can transmit certain information such as a program or data" is a feature inherent to an ordinary communication network, "a medium which can transmit certain information" is not effective to specify the "information transmission medium" as a product. There is thus no difference between the claimed invention and an ordinary communication network, causing the claimed invention to lack novelty.

[Example 1]

(Claimed invention)

An information transmission medium which transmits a program which make a computer execute procedure A, procedure B and procedure C...

(Detailed Description of the Invention (extract))

The executable program to realize the above procedure is stored on a computer-readable storage medium such as a hard disk drive on a host computer. The said host computer is connected to plural user terminals with 100 BASE-T Ethernet cable and constructed to operate based on the TCP/IP protocols.

The executable program is distributed to any user terminal from the host computer responding to such request command transmitted by the said user terminal, and stored on a computer-readable storage medium in the said user terminal. As a result, the above procedure can be realized from any user terminal by executing the distributed program.

(Explanation)

Since the definition "transmits a program" is not given in the detailed description of the invention, the limitation of the claim "(a transmission medium which) transmits a program" can be interpreted to mean "can transmit a program" which is an inherent function for a usual information transmission medium. Because the claimed invention has no different features as a product from the cited invention (any transmission medium which can transmit any computer-program) or has been easily arrived at based on the cited invention, it cannot be patented on the ground of Article 29(1)(i)~(iii) or Article 29(2) of the Patent Act.

[Example 2]

(Claimed invention)

An information transmission medium which can transmit certain digital information at the speed of more than 128 kbps.

(Explanation)

The limitation of "can transmit certain digital information" is not effective to specify the invention of "an information transmission medium which can transmit digital information at the speed of more than 128 kbps," since the performance for communication is not peculiar to "such certain information the transmission medium transmits." Because the claimed invention has no different features as a product from the cited invention (any information transmission medium which has the same performance as the claimed invention) or has been easily arrived at based on the cited invention, it cannot be patented on the ground of Article 29(1)(i)~(iii) or Article 29(2) of the Patent Act).

3. Examples

Examples shown below are prepared as supplemental means to assist understanding of the text of these Guidelines (hereinafter referred to "the text") for examination of software-related inventions. Since the examples should be referred only for the purpose of understanding the text, matters not described in the text should not be drawn out by interpreting the statements in the examples.

Furthermore, examples are only for the purpose of judgment on statutory invention and the inventive step and but are not for illustrating models for the specification.

(1) Examples of violating description requirements (related to “information transmission medium”)

Example	Title of the invention	Remarks
1-1	Program transmission medium	The statements of the claim and description in the detailed description of the Invention are not consistent
1-2	Information transmission medium	The definition of “information transmission medium” is unclear
1-3	Information recording transmission medium	There are two alternatives not of similar nature (“recording medium” and “transmission medium”) to define the claimed invention
1-4	Information provision medium	Same as above
1-5	Computer-readable storage medium containing a program thereon	Same as above

(2) Examples for determination of whether the claimed invention is “statutory” or not

(a) Examples where Information Processing by Software is concretely realized by using Hardware Resources

Example	Title of the invention	Remarks
2-1	Calculation method and calculation apparatus	Mathematical calculation process by software is concretely realized by using hardware resources (Mathematical field)
2-2	Storing method of articles distributed via network	Article storing process by software is concretely realized by using hardware resources (Business field)
2-3	Apparatus for predicting daily sales of commodities	Predicting process by software of daily sales of commodities is concretely realized by using hardware resources (Business field)

2-4	Points service method	Point servicing process by software is concretely realized by using hardware resources (Business field)
2-5	Game machine	“Hand scoring” process by software in a game machine is concretely realized by using hardware resources (Game field)

(b) Reference Examples

Example	Title of the invention	Remarks
2-6	Apparatus and method for controlling rate of fuel injection for an automobile engine	- Control for an apparatus or processing associated with the control is concretely realized, or - Information processing based on the physical or technical properties of an object is concretely realized
2-7	Image processing method by computer	Information processing based on the physical or technical properties of an object is concretely realized

(3) Examples for determination of whether the claimed invention involves “inventive step” or not

Example	Title of the invention	Remarks
3-1	Apparatus for retrieving chemical substances	Application to other specific fields is easy
3-2	Invoice approval system	Systematization of human transaction is easy
3-3	Points service method	Systematization of human transaction or design modification based the known fact or customs is easy

3.1 Examples of violating Description Requirements (Related to "Information Transmission Medium")

Example 1-1 Program transmission medium

(Example where the description of the claim and the detailed description of the invention are not consistent)

[Title of Invention]

Program transmission medium

[Claim]

[Claim 1]

A program transmission medium to transmit a program which make a computer realize function A, function B, function C...

[Detailed Description of the Invention (extract)]

A portable information storage medium, such as CD-ROM, is a computer-readable storage device and records a program which makes a computer realize functions as described in the preferred embodiment.

Such a medium is traded independently from the information processing apparatus and can be distributed in the market. It can, for example, be traded not only domestically but also overseas when orders are electronically received via the Internet.

[Explanation]

According to the statement of claim 1, the claimed invention is apparently clear as a "medium to transmit" a certain program. However, the detailed description of the invention says that a portable information recording medium "records" a program. The word "transmit" (statement of Claim 1) which indicate the relationship between the program and medium are not consistent with the word "records" (statement of the "detailed description of the invention"), thus causing the claimed invention to be unclear. Therefore, it violates Article 36(6)(ii) of the Patent Act.

The detailed explanation of the invention also mentions other words such as "traded," "distributed" and "dispatched." These terms, however, mean trading, distribution and dispatch of "a recording medium" such as CD-ROM on which information is recorded. It should be noted that those words are not to be taken into consideration for the purpose of interpreting the meaning of "transmit" in the claim.

Although this example indicates a case where the claim says "a medium to transmit" while the detailed explanation of the invention states "medium records a program," the same inconsistency occurs when the claim says "a medium to record" and the detailed description of the invention states "medium transmits a program."

Example 1-2 Information transmission medium

(Example where the definition of “information transmission medium” is unclear)

[Title of Invention]

Information transmission medium

[Claim]

[Claim 1]

An information transmission medium used for an information processing system, the said transmission medium transmitting a program which makes the said system operate as means A, means B, means C...

[Detailed Description of the Invention (extract)]

The said transmission medium also includes a transmission medium, such as “optical fiber” or “radio link” used in networks, “LAN,” “WAN” or “radio communication network,” which transmits a program in a carrier wave, in addition to a computer-readable storage medium, such as “semi-conductor memory,” “flexible disk,” “hard disk,” “CD-ROM” or “DVD.”

[Explanation]

Although the description of claim 1 itself is apparently clear by defining the medium for transmitting a certain program, the detailed description of the invention uniquely defines that “transmission” mentioned in claim 1 also includes “recording” in addition to “transmitting.” Since it is unclear whether the word “transmission” mentioned in claim 1 should be interpreted in a normal sense or in a sense uniquely defined in the detailed description of the invention, the claimed invention is unclear. This invention therefore does not comply with Article 36(6) (ii) of the Patent Act.

Example 1-3. Information recording transmission medium

(Example where there exist two alternatives not of similar nature ("recording medium" and "transmission medium") related to matters which define the invention for which a patent is sought.)

[Title of Invention]

Information recording transmission medium

[Claim]

[Claim 1]

An information recording transmission medium recording or transmitting a program which makes a computer execute procedure A, procedure B, procedure C...

[Detailed Description of the Invention (extract)]

When executing a program to realize the processes stated in preferred embodiment on a computer, the program stored on a storage apparatus, such as a hard disk inside the computer is loaded onto main memory and executed. The said program can also be traded through a portable recording medium, such as a CD-ROM. In addition, the program can be stored on storage apparatus in the computer and transmitted to another computer via a communication network .

[Explanation]

Since there are two alternatives of neither similar nature nor function ("records" and "transmits") related to matters which define the invention for which a patent is sought, one specific technical idea cannot be grasped on the basis of the definitions of a single claim. The invention therefore does not comply with Article 36(6)(ii) of the Patent Act.

It should be noted that the said storage apparatus does not correspond to "a medium (which) records or transmits a program" in claim1 but corresponds to "a medium (which) records a program," since the statement "the program...can be transmitted (from storage apparatus) to..." in the detailed description of the invention does not mean that the said apparatus itself has a program transmission function.

Example 1-4. Information provision medium

(Example where there exist two alternatives not of similar nature ("recording medium" and "transmission medium") related to matters which define the invention for which a patent is sought)

[Title of Invention]

Information provision medium

[Claim]

[Claim 1]

An information provision medium to provide a program which makes a computer execute step A, step B, step C...

[Detailed Description of the Invention (extract)]

"The information provision medium" to provide users with a program for executing the processes described in the preferred embodiment can be distributed as a computer-readable storage medium in a variety of forms, and the claimed invention can be applied regardless of specific types of medium used for actual distribution. Examples for such medium include storage type of medium such as a floppy disk, CD-ROM, and transmission type of medium such as digital and analog communication links.

[Explanation]

Since the definition "medium to provide a program" in claim 1 itself is not clear enough to specify the relationship between "information (program)" and "medium," it can be interpreted to include two alternatives, namely "medium to transmit a program" and "medium to record a program" by taking into consideration the statements of the detailed description of the invention with the common general knowledge of a person skilled in the art. Since there exist two alternatives of neither similar nature nor function ("to record" and "to transmit") related to matters which define the invention for which a patent is sought, one specific technical idea cannot be grasped on the basis of the definitions of a single claim. The invention therefore does not comply with Article 36(6)(ii) of the Patent Act.

Example 1-5. Computer-readable storage medium containing a program

(Example where there exist two alternatives not of similar nature ("recording medium" and "transmission medium") related to matters which define the invention for which a patent is sought)

[Title of Invention]

Computer-readable storage medium containing a program

[Claim]

[Claim 1]

A computer-readable storage medium containing a program to make a computer execute procedure A, procedure B, procedure C...

[Detailed Description of the Invention (extract)]

A computer program for realizing the processes in the preferred embodiment can be provided to a computer by means of medium which holds a program in a fixed manner, such as a hard disk or semiconductor memory, or by means of a medium which holds a program in a fluid manner, such as a communication network.

[Explanation]

Although it is clear that the ordinary meaning of the word "containing" in claim 1 is "recording," the description of the invention states that "medium contains a program in a fluid manner" and the meaning of the word "containing" in claim 1 is expanded to almost mean "transmit." Since there exist two alternatives of neither similar nature nor function ("records" and "transmits") related to matters which define the invention for which a patent is sought, one specific technical idea cannot be grasped on the basis of the definitions of a single claim. The invention does not therefore comply with Article 36(6)(ii) of the Patent Act.

3.2 Examples for determination of whether the claimed invention is “statutory” or not

3.2.1 Examples for determination of whether Information Processing by Software is concretely realized by using Hardware Resources

Example 2-1 Calculation method and calculation apparatus (mathematical area)

(Example where mathematical calculation process by software is concretely realized by using hardware resources)

[Title of Invention]

Calculation method and calculation apparatus

[Claims]

[Claim 1]

A calculation method to calculate multiplication 's' of natural numbers 'n' and 'm' (where, $1 \leq n \leq m < 256$) by the formula

$$s = \frac{(m + n)^2 - (m - n)^2}{4}$$

[Claim 2]

A calculation apparatus to calculate multiplication 's' of natural numbers 'n' and 'm' (where, $1 \leq n \leq m < 256$) by the formula

$$s = \frac{(m + n)^2 - (m - n)^2}{4}$$

[Claim 3]

A calculation apparatus to calculate formula

$$s = \frac{(m + n)^2 - (m - n)^2}{4}$$

comprising means for inputting natural numbers 'n' and 'm' (where, $1 \leq n \leq m < 256$), arithmetic means, and means for outputting the sum 's' by the said arithmetic means.

[Claim 4]

A calculation apparatus to calculate formula

$$s = \frac{(m + n)^2 - (m - n)^2}{4}$$

comprising, means for inputting natural numbers 'n' and 'm' (where, $1 \leq n \leq m < 256$), a square function table wherein 'k' square value k^2 (where, $0 \leq k < 511$) is stored, arithmetic means comprising of an adder-subtractor and bit shift arithmetic unit, and a means for outputting the sum of 's' by said arithmetic means, wherein the said arithmetic means refers to the said square function table in order to obtain square value, without using a multiplier-divider unit.

[Detailed Description of the Invention]

[Technical field to which the invention pertains]

This invention relates to a calculation apparatus to realize high-speed calculation of multiplication, where the said calculating apparatus has just an adder-subtractor and a bit shift arithmetic unit, such as an early 8-bit CPU with limited memory, without a multiplier-divider unit so as to make the said calculation procedure manageable directly by the said CPU.

[Prior art]

In order to enable a program to perform calculation process of multiplication by using a CPU with small memory space, and not using multiplier-divider unit, so that the said process can be directly managed by the said CPU, it is necessary to perform process of multiplication by software. To date, (i) the method to add the natural number 'm' n-times, or (ii) the method to refer to a multiplication table of 'm x n' have been known for realizing the said calculation process.

[Problems to be solved by the invention]

Although the method (i) does not occupy a great deal of memory due to the relatively small size of the calculation program, it takes more time to calculate depending on the value of the natural number n.

On the other hand, method (ii) requires less calculation time than method (i) because one only needs to refer to the table. However, memory becomes more limited as the table becomes larger. Especially when $1 \leq n \leq m < 256$, if results of multiplication are stored on multiplication table of 255 x 255 in two bytes, about 128 k is required for memory. This exceeds the 64k memory capacity of an early 8-bit CPU.

The problems to be solved by the invention is therefore to realize high-speed calculation process of multiplication by using the calculation apparatus, where the early date 8-bit CPU with limited memory has only an adder-subtractor and bit shift arithmetic unit but does have a multiplier-divider unit, so that the said calculation process can be directly managed.

[Means for solving the problem]

A calculating apparatus of the invention solves the said problem to adopt a program which makes a calculation apparatus perform calculation of the following formula

$$s = \frac{(m + n)^2 - (m - n)^2}{4}$$

by utilizing a square function table of 0~510, instead of using a multiplication table of 255 x 255.

[Mode for carrying out the invention]

The invention performs calculation of values $(m + n)^2$ and $(m - n)^2$ by referring to a square function table of 0~510, without using a multiplier device. It therefore requires shorter time for calculation than adding natural number m n-times, and guarantees to perform such calculation process within a certain time. In addition, since memory space required for the square function table is about 1 k bytes (511 x 2 bytes), this is much less than the 128 k bytes (256 x 256 x 2 bytes) required for a multiplication table of 255 x 255. This can therefore

be accommodated within a memory space of 64 k bytes which an early date 8-bit CPU can directly manage.

Furthermore, division by 4 can be realized by performing right bit shift arithmetic twice (i.e., for 2 bit columns). The procedure for right bit shift of the decimal number 12 (1100 in binary) is as follows.

12=	1	1	0	0	
6=	0	1	1	0	Right bit shift arithmetic (first)
3=	0	0	1	1	Right bit shift arithmetic (second)

As can be understood above, when right bit shift operation is carried out twice, 12 (decimal) becomes 3 (decimal) which means division by 4 is realized.

Therefore, calculation process of multiplication is realized by a calculation apparatus including an early date 8-bit CPU which has an adder-subtractor and bit shift arithmetic unit with limited memory within less calculation time, so that the said process can be directly managed by the said CPU and does not need a multiplier-divider unit.

[Brief description of drawings]

(Omitted)

[Drawings]

(Omitted)

[Conclusion]

[Claim 1] The invention of claim 1 does not constitute a "statutory invention."

[Claim 2] The invention of claim 2 does not constitute a "statutory invention."

[Claim 3] The invention of claim 3 does not constitute a "statutory invention."

[Claim 4] The invention of claim 4 constitutes a "statutory invention."

[Explanation]

[Claim 1]

The claimed invention identified on the basis of the definition of claim 1 is:

"A calculation method to calculate multiplication 's' of natural numbers 'n' and 'm' (where $1 \leq n \leq m < 256$) by the formula

$$s = \frac{(m + n)^2 - (m - n)^2}{4}$$

The claimed invention is "calculation of a numerical formula itself" and corresponds to what does not utilize the a law of nature. Therefore, the claimed invention does not constitute a "statutory invention."

[Claim 2]

The claimed invention identified on the basis of the definition of claim 2 is:

"A calculation apparatus to calculate multiplication 's' of natural numbers 'n' and 'm' (where $1 \leq n \leq m < 256$) by the formula

$$s = \frac{(m + n)^2 - (m - n)^2}{4}$$

Since only stating that "calculation process of the following multiplication formula

$$s = \frac{(m + n)^2 - (m - n)^2}{4}$$

is performed by a calculation apparatus" cannot be said that the said calculation process and hardware resources are working cooperatively, the claimed invention cannot be said that information processing by software is concretely realized by using hardware resources. Therefore, the claimed invention does not constitute a "statutory invention."

[Claim 3]

The claimed invention identified on the basis of the definition of claim 3 is:

"A calculation apparatus to calculate formula

$$s = \frac{(m + n)^2 - (m - n)^2}{4}$$

comprising, means for inputting natural numbers 'n' and 'm' (where $1 \leq n \leq m < 256$), arithmetic means, and means for outputting the sum of 's' by the said arithmetic means."

Although the claimed invention comprises means for inputting, arithmetic means and means for outputting, since those hardware resources are not cooperatively working with software in calculating multiplication, it cannot be said that information processing by software is concretely realized by using hardware resources. Therefore, the claimed invention does not constitute a "statutory invention."

[Claim 4]

The claimed invention identified on the basis of the definition of claim 4 is:

"A calculation apparatus to calculate

$$s = \frac{(m + n)^2 - (m - n)^2}{4}$$

comprising, means for inputting natural numbers 'n' and 'm' (where $1 \leq n \leq m < 256$), square function table wherein 'k' square value k^2 (where $0 \leq k < 511$) is stored, arithmetic means comprising of an adder-subtractor and bit shift arithmetic unit, and means for outputting calculation result 's' by said arithmetic means, the said arithmetic means refer to the said square function table in order to obtain square value, without using a multiplier-divider unit."

The claimed invention enables the said calculation process to be performed by a calculation apparatus, which has arithmetic means comprising an adder-subtractor and bit shift arithmetic unit but does not have multiplier-divider unit, wherein the arithmetic means, after introducing the square values of $a = (m + n)^2$ and $b = (m - n)^2$ using the said square function table, performs subtraction using the adder-subtractor unit according to the following formula

$$s = \frac{(m + n)^2 - (m - n)^2}{4} = (a-b) \gg 2 \quad (\gg 2 = \text{two right bit shifts})$$

and in turn carries out right bit shift operation using the shift arithmetic unit, so that the information processing system is concretely realized wherein software and hardware

resources are cooperatively working. Thus, it can be said that information processing by software is concretely realized by using hardware resources. Therefore, the claimed invention is considered to be constitute a "statutory invention."

(Note) Judgement was made as to whether the invention of claim 1 is statutory based on "Part II: Chapter 1. Industrially Applicable Inventions", since special judgement and treatment for "software-related inventions" were not required.

Example 2-2 Storing method of articles distributed via network (business area)

(Example where articles storing process by software is concretely realized by using hardware resources)

[Title of Invention]

Storing method of articles distributed via network

[Claims]

[Claim 1]

A storing method of articles distributed via network, comprising the steps of:
receiving articles distributed via communication network;
displaying the said received articles;
checking if intended keywords exist in texts of the said articles by users, and if exist,
giving "save" command to an article storing execution means; and
storing the said article given "save" command on the article storage means.

[Claim 2]

A storing method of articles distributed via network, comprising the steps of:
receiving articles distributed via communication network;
displaying the said received articles;
determining whether intended keywords exist in texts of the said articles by article
storing determination means, and if exist, giving "save" command from the said determination
means to an article storing execution means; and
storing the said article given "save" command on the article storage means.

[Detailed Description of the Invention]

[Technical field to which the invention pertains]

The invention relates to a storing method of articles distributed via communication networks such as the Internet.

[Prior art]

Methods to distribute articles via communication networks such as the Internet are already known, and technologies for storing these articles are also already known.

[Problems to be solved by the invention]

However, there are not so many articles necessary to be stored, and storing all the distributed articles is a waste of memory space.

The purpose of the invention is to save the memory space by selecting which distributed articles need to be stored.

[Means for solving the problem]

(Omitted)

[Mode for carrying out the invention]

The most preferred embodiment of the invention is a method wherein users determine if the distributed article needs to be stored based on the criteria if an intended keyword is included in the text of the article.

First, a receiving means such as a modem receives an article distributed via communication network such as the Internet. The received article is stored in a temporal storage means of a computer system.

Second, the received article is displayed on a display means.

Then, users determine if an intended keyword exists in the text of the said displayed article, and if exists, give "save the article" command to the article storing execution means. This process can be realized in such manner that users determine if a prescribed keyword exists in the text by reading the articles, identify the article which include the said keyword using a keyboard or mouse and give "save the article" command to the said identified articles.

Furthermore, an article storing execution means executes storing the said identified articles on an article storage means, when the "save the article" command is given from an article storing determination means.

The second preferred embodiment of the invention is a method wherein a computer determines if the distributed article needs to be stored based on the criteria if an intended keyword is included in the text of the article.

First, a receiving means such as a modem receives an article distributed via communication network such as the Internet. The received article is stored in a temporal storage means of a computer system.

Second, the received article is displayed on a display means.

Then, an article storing determination means determines if a prescribed keyword exists in the contents of displayed article, and if exists, "save the article" command is given to an article storing execution means. This process can be realized in such manner that, previously storing a prescribed keyword on temporal storage means such as memory, the article storing determination means conducts matching between the contents of the stored article on the temporal storage means and the said prescribed keyword, and determines if the keyword exists in the said article.

Furthermore, an article storing execution means executes storing the said identified articles on an article storage means, when the "save the article" command is given from an article storing determination means.

[Advantageous effect of the invention]

According to this invention, memory space for storing articles can be saved, since only those necessary to be stored among the articles distributed via communication network will be stored.

[Brief description of drawings]

(Omitted)

[Drawings]

(Omitted)

[Conclusion]

[Claim 1] The invention of claim 1 does not constitute a "statutory invention."

[Claim 2] The invention of claim 2 constitutes a "statutory invention."

[Explanation]

[Claim 1]

The claimed invention identified on the basis of the definition of claim 1 is:

" A storing method of articles distributed via network, comprising the steps of: receiving articles distributed via communication network; displaying the said received articles; checking if intended keywords exist in the texts of the said articles by users, and if exist, giving "save" command to an article storing execution means; and storing the said article given "save" command on the article storage means. "

The claimed invention includes a process wherein users check if intended keywords exist in the texts of the articles, and if exist, give "save" command to an article storing execution means. This process is performed based on the mental activity. Therefore, in spite of the fact that the claimed invention uses a "communication network," information processing cannot be said to be constructed by cooperative working of software and hardware resources. Namely, it cannot be said that information processing by software is concretely realized by using hardware resources.

Therefore, the invention of claim 1 does not constitute a "statutory invention."

[Claim 2]

The claimed invention identified on the basis of the definition of claim 2 is:

" A storing method of articles distributed via network, comprising the steps of: receiving articles distributed via communication network; displaying the said received articles; determining whether intended keywords exist in texts of the said articles by article storing determination means, and if exist, giving "save" command to an article storing execution means; and storing the said article given "save" command on the article storage means. "

In case of claim 2, the procedure wherein article storing determination means determine if a prescribed keyword exists in articles and, and if exists, store those articles, can be said being constructed by concrete means in which software and hardware resources are cooperatively working through the said determination means, execution means and article storage means. In another word, information processing by software is concretely realized by using hardware resources.

Therefore, the invention of claim 2 constitutes a "statutory invention."

Example 2-3. Apparatus for predicting daily sales of commodities

(Example where predicting process by software of daily sales of commodities is concretely realized by using hardware resources)

[Title of Invention]

Apparatus for predicting daily sales of commodities

[Claims]

[Claim 1]

A computer program for predicting daily sales of commodities to make a computer for predicting daily sales of various commodities operate as:

means for inputting the date for which daily sales is predicted;

sales data storing means for storing data representing actual daily sales records;

variable condition rule storing means prepared for storing data representing variable conditions;

correction rule storing means prepared for storing correction data;

means for getting the first predicted value by reading data representing daily sales records of the past several weeks, each data being of the same day of the week as that of the day of which daily sales is predicted, and calculating the average of said data;

means for reading variable condition data from the variable condition data storing means, said variable condition data being related to the date for which daily sales of the commodities are predicted, and selecting correction rules to be applied based on said variable condition data, said correction rules being stored in the correction rule storing means;

means for determining the second predicted value by correcting the first predicted value based on said correction rule to be applied; and

means for outputting the second predicted value.

[Claim 2]

A computer-readable storage medium recording thereon a computer program for predicting daily sales of commodities to make a computer for predicting daily sales of various commodities operate as:

means for inputting the date of which daily sales is predicted;

sales data storage means prepared for storing data representing actual daily sales records;

variable condition rule storage means prepared for storing data representing variable conditions;

correction rule storage means prepared for storing correction data;

means for getting the first predicted value by reading data representing daily sales records of the past several weeks, each data being of the same day of the week as that of the day of which daily sales is predicted, and calculating the average of said data;

means for reading variable condition data from the variable condition data storage means, said variable condition data being related to the date for which daily sales of the commodities are predicted, and selecting correction rules to be applied based on said variable condition data, said correction rules being stored in the correction rule storage means;

means for determining the second predicted value by correcting the first predicted value based on said correction rule to be applied; and
means for outputting the second predicted value.

[Claim 3]

An apparatus for predicting daily sales of various commodities comprising:
means for inputting the date for which daily sales are predicted;
sales data storage means prepared for storing data representing actual daily sales records;
variable condition rule storage means prepared for storing data representing variable conditions;
correction rule storage means prepared for storing correction data;
means for getting the first predicted value by reading data representing daily sales records of the past several weeks, each data being of the same day of the week as that of the day of which daily sales is predicted, and calculating the average of said data;
means for reading variable condition data from the variable condition data storage means, said variable condition data being related to the date for which daily sales of the commodities are predicted, and selecting correction rules to be applied based on said variable condition data, said correction rules being stored in the correction rule storage means;
means for determining the second predicted value by correcting the first predicted value based on said correction rule to be applied; and
means for outputting the second predicted value.

[Detailed Description of the Invention]

[Technical field to which the invention pertains]

This invention relates to a computer system for predicting daily sales necessary for ordering commodities at a retail shop, and more particularly, to a computer system for predicting daily sales suitable for predicting daily sales of various commodities at a large scale retail shop such as a supermarket whose demand changes greatly.

[Prior art]

Daily sales of commodities at a large scale retail shop such as a supermarket changes greatly, depending on various factors such as the day of the week, the date, weather, the selling status of competing shops (bargain or going out of business sale), and events held in the community. Therefore amounts of commodities to be ordered are determined depending on daily sales predictions based on inventory control experience.

Thus, carrying out a prediction took too much time especially in cases of little inventory control experience.

Moreover, overlooking of some factors of change often arose and prediction was not so accurate.

[Problems to be solved by the invention]

The problem to be solved by the invention is to provide a system for predicting daily sales which does not rely on human inventory control experience and which brings a stable result of predictions in a short time.

[Means for solving the problem]
(Omitted)

[Mode for carrying out the invention]

Fig. 1 shows the system constitution of the apparatus for predicting daily sales, and Fig. 2 shows a flow chart executed by said system.

At first, a worker inputs a date of which daily sales are predicted via an input device such as a keyboard.

Actual daily sales records are stored in advance in the sales data file associated with the date and the day of the week.

The central processing unit (CPU), being instructed by the control program stored in the main memory, reads data of the past few weeks, each being the same day of the week as that of the day of which daily sales is predicted, and calculates the average of the said data. The average of the said data is utilized as the first predicted value.

It is empirically known that using actual daily sales records in three to four weeks is preferable.

Then the CPU, being instructed by the control program stored in the main memory, reads variable condition data, such as the probability of rain obtained from the weather forecast, from the variable condition data file, said variable condition data being associated with the date of which daily sales of commodities are predicted, reads correction rule being stored in the correction rule file in advance.

(Note: An example of the correction rule is "If it rains all day, a 30% decrease in the sales is expected." It is assumed that details of the correction rules are fully supported by the detailed explanation of the invention.)

Finally, the CPU, being instructed by the control program stored in the main memory, corrects the first predicted value based on said correction rule corresponding to the variable condition data, and determines the second predicted value.

The second predicted value is used as the final predicted data and is obtained from an output device such as a printer.

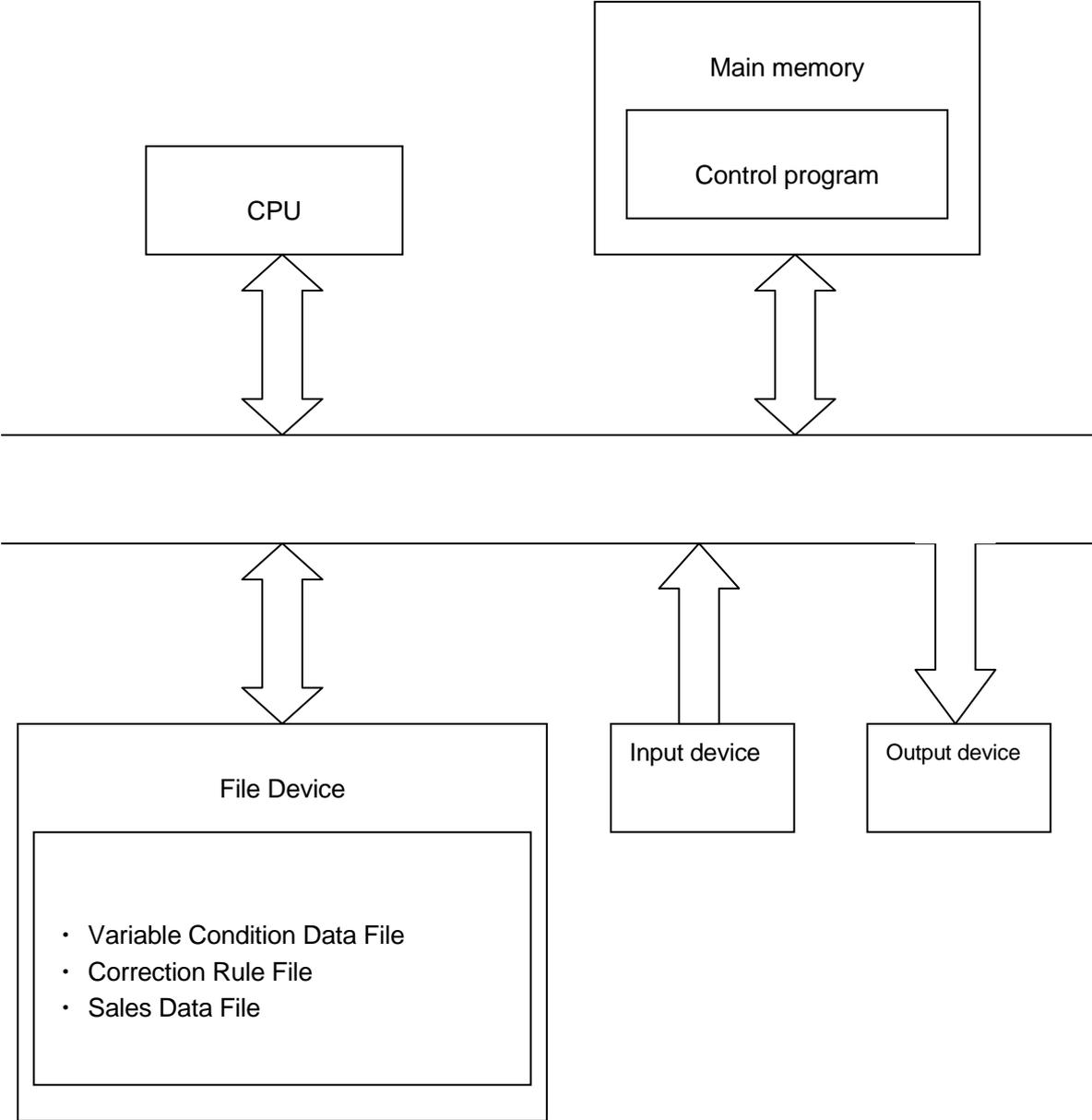
[Working example]

(Note: It is assumed that all components of the mode for carrying out the invention, how to fix correction rules, etc. are fully supported by the working example.)

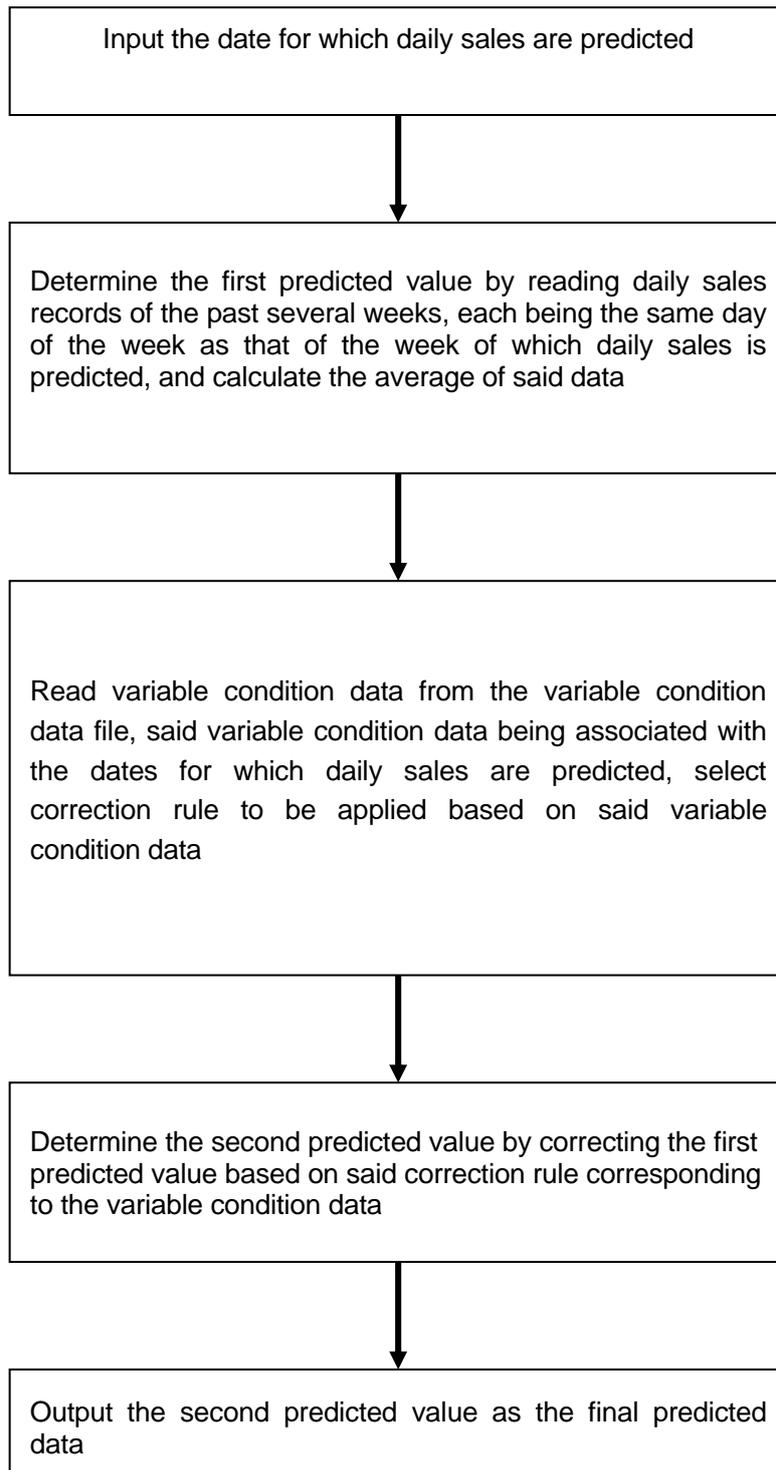
[Brief description of the drawings]
(Omitted)

[Drawings]

[Figure 1] System Constitution of the Apparatus for Predicting Daily Sales



[Figure 2] Flow Chart



[Conclusion]

[Claim 1] The invention of claim 1 constitutes a "statutory invention."

[Claim 2] The invention of claim 2 constitutes a "statutory invention."

[Claim 3] The invention of claim 3 constitutes a "statutory invention."

[Explanation]

[Claim 1]

The claimed invention identified on the basis of the definition of claim 1 is:

"A computer program for predicting daily sales of commodities to make a computer for predicting daily sales of various commodities operate as:

means for inputting the date for which daily sales are predicted;

sales data storage means prepared for storing data representing actual daily sales records;

variable condition rule storage means prepared for storing data representing variable conditions;

correction rule storage means prepared for storing correction data;

means for getting the first predicted value by reading data representing daily sales records of the past several weeks, each data being of the same day of the week as that of the day of which daily sales is predicted, and calculating the average of said data;

means for reading variable condition data from the variable condition data storage means, said variable condition data being related to the date for which daily sales of the commodities are predicted, and selecting correction rules to be applied based on said variable condition data, said correction rules being stored in the correction rule storage means;

means for determining the second predicted value by correcting the first predicted value based on said correction rule to be applied; and

means for outputting the second predicted value."

In the invention of claim 1, the process for predicting daily sales of commodities based on various variable conditions and correction rules is realized by a concrete means in which software and hardware resources are cooperatively working, the said concrete means comprising a multiple of storage means and control means to read and select data from the said storage means. In other words, information processing by software is concretely realized by using hardware resources.

Therefore, the invention of claim 1 constitutes a "statutory invention."

[Claim 2]

The claimed invention identified on the basis of the definition of claim 2 is:

"A computer-readable storage medium containing thereon a computer program for predicting daily sales of commodities to make a computer for predicting daily sales of various commodities operate as:

means for inputting the date for which daily sales are predicted;

sales data storage means prepared for storing data representing actual daily sales records;

variable condition rule storage means for storing data representing variable condition;

correction rule storage means for storing correction data;

means for getting the first predicted value by reading data representing daily sales records of the past several weeks, each data being of the same day of the week as that of the day of which daily sales is predicted, and calculating the average of the said data;

means for reading variable condition data from the variable condition data storage means, said variable condition data being related to the date for which daily sales of the

commodities are predicted, and selecting correction rules to be applied based on said variable condition data, said correction rules being stored in the correction rule storage means;

means for determining the second predicted value by correcting the first predicted value based on said correction rule to be applied; and

means for outputting the second predicted value."

The claimed invention identified on the basis of the definition of claim 2 is a computer-readable storage means containing thereon a computer program for predicting daily sales (the invention of claim 1), therefore, the invention of claim 2 is considered to constitute a "statutory invention" as in the case of claim 1.

[Claim 3]

The claimed invention identified on the basis of the definition of claim 3 is:

"An apparatus for predicting daily sales of various commodities comprising:

means for inputting the date for which daily sales are predicted;

sales data storage means prepared for storing data representing actual daily sales records;

variable condition rule storage means for storing data representing variable conditions;

correction rule storage means for storing correction data;

means for getting the first predicted value by reading data representing daily sales records of the past several weeks, each data being of the same day of the week as that of the day of which daily sales is predicted, and calculating the average of said data;

means for reading variable condition data from the variable condition data storage means, said variable condition data being related to the date for which daily sales of the commodities are predicted, and selecting correction rules to be applied based on said variable condition data, said correction rules being stored in the correction rule storage means;

means for determining the second predicted value by correcting the first predicted value based on said correction rule to be applied; and

means for outputting the second predicted value."

The claimed invention identified on the basis of the definition of claim 3 is an information processing apparatus (a machine) which is cooperatively working with a computer program for predicting daily sales (the invention of claim 1), therefore, the invention of claim 3 is considered to constitute a "statutory invention" as in the case of claim 1.

Example 2-4. Points service method (business area)

(Example where points servicing process by software is concretely realized by using hardware resources)

[Title of Invention]

Points service method

[Claims]

[Claim 1]

A service method for offering service points depending on an amount of commodity purchased in telephone shopping, comprising the steps of:

notifying via telephone of an amount of service points offered and a name of a person to whom the said service points are offered;

acquiring the telephone number of the said person from a customer list storage means based on the name of the said person;

adding the said service points to the accumulated points of the said person stored in the said customer list storage means; and

notifying to the said person that the said service points have been given via telephone using the said telephone number of the said person.

[Claim 2]

A service method for offering service points depending on an amount of commodity purchased at a shop on the Internet, comprising the steps of:

notifying an amount of service points offered and a name of a person to whom the said service points are offered via the Internet;

acquiring the e-mail address of the said person from a customer list storage means based on the name of the said person;

adding the said service points to the accumulated points of the said person stored in the said customer list storage means; and

notifying to the said person that the said service points have been given via e-mail using the e-mail address of the said person.

[Claim 3]

A service method for offering service points depending on an amount of commodity purchased at a shop on the Internet, comprising the steps of:

notifying a server of an amount of service points offered and a name of the person to whom the said service points are offered via the Internet;

acquiring by the said server, the e-mail address of the said person from a customer list storage means based on the name of the said person;

adding by the said server, the said service points to the accumulated points of the said person stored in the said customer list storage means; and

notifying by the said server, to the said person that the said service points have been given, by e-mail using the said e-mail address of the said person.

[Detailed Description of the Invention]

[Technical field to which the invention pertains]

The present invention relates to a points service method used in mail-order business.

[Prior art]

There have been in the past services to give service points depending on an amount of commodity purchased at a shop by a customer and to exchange the total service points with goods, gift coupon or cash.

[Problems to be solved by the invention]

In the past, points service methods could not be realized in mail-order business because of the customer management problem etc. In addition, because of the same reason, only the customer herself or himself could use such service points and even the family members could not be assigned with such service points.

[Means for solving the problem]

In order to realize the points service method in the mail-order business, this invention is configured to manage the service points of each customer by providing a customer list (including, at least, customer names, total service points and customer addresses) at the shop side, and adding service points when a customer purchases goods by mail-order.

And, in order to give service points from a customer to another, when the name of the person to whom service points are offered are notified, the total service points of the designated person registered in a customer list are calculated by adding the said service points, and the fact that the said service points have been given is notified to the said person by using the registered address of the said person.

By the present invention, when making communication via telephone between a customer and the shop, it is recommendable that telephone numbers of customers are registered as the contact point in the customer list.

On one hand, when making communication between a customer and the shop via the Internet, it is better to register e-mail addresses of customers as the contact point in the customer list.

Furthermore, in the present invention, by providing a shop with a server, the following procedure can be realized on a computer.

A system is configured in such a way to manage service points of each customer by providing a database of customer lists (including at least, customer names, total service points and e-mail addresses of customers) on a shop server on the Internet, and to add service points when a customer purchases goods via the Internet.

And, when a customer wants to give service points to another, by notifying the server of the said service points and the name of the person by e-mail, the server retrieves the e-mail address of the said person from the database of customer lists by the name of the said person, adds up the said service points and automatically notifies the customer that the said service points were given.

[Mode for carrying out the invention]

(Omitted)

[Working example]

(Omitted)

[Advantageous effect of the invention]

The present invention enables the points service method to easily be realized even in the mail-order business. In addition, since service points can be assigned to another customer, the utility of the points service method is increased.

[Brief description of the drawings]

(Omitted)

[Drawings]

(Omitted)

[Conclusion]

[Claim 1] The invention of claim 1 does not constitute a "statutory invention."

[Claim 2] The invention of claim 2 does not constitute a "statutory invention."

[Claim 3] The invention of claim 3 constitutes a "statutory invention."

[Explanation]

[Claim 1]

The claimed invention identified on the basis of the definition of claim 1 is:

"A service method for offering service points depending on an amount of commodity purchased in telephone shopping, comprising the steps of:

notifying via telephone of an amount of service points offered and a name of a person to whom the said service points are offered;

acquiring the telephone number of the said person from a customer list storage means based on the name of the said person;

adding the said service points to the accumulated points of the said person stored in the said customer list storage means; and

notifying the said person that the said service points have been given, via telephone using the said telephone number of the said person."

The invention of claim 1 is a method which uses means such as "a telephone" and "a customer list storage means," but considered as a whole, it is an artificial arrangement per se using those means as a tool, so that it does not constitute "a creation of technical ideas utilizing a law of nature."

Therefore it follows that the invention of claim 1 is considered as not constituting a "statutory invention."

[Claim 2]

The claimed invention identified on the basis of the definition of claim 2 is:

"A service method for offering service points depending on an amount of commodity purchased at a shop on the Internet, comprising the steps of:

notifying an amount of service points offered and a name of a person to whom the said service points are offered;

acquiring the e-mail address of the said person from a customer list storage means based on the name of the said person;

adding the said service points to the accumulated points of the said person stored in the said customer list storage means; and

notifying to the said person that the said service points have been given via e-mail using the e-mail address of the said person."

The invention of claim 2 is a method which uses means such as "the Internet," "a customer list storage means" and "e-mail," but considered as a whole, it is a artificial arrangement per se using those means as a tool, so that it does not constitute "a creation of technical ideas utilizing a law of nature."

Therefore it follows that the invention of claim 2 is considered as not constituting a "statutory invention."

[Claim 3]

The claimed invention identified on the basis of the definition of claim 3 is:

"A service method for offering service points depending on an amount of commodity purchased at a shop on the Internet, comprising the steps of:

notifying a server of an amount of service points offered and a name of the person to whom the said service points are offered via the Internet;

acquiring by the said server, the e-mail address of the said person from a customer list storage means based on the name of the said person;

adding by the said server, the said service points to the accumulated points of the said person stored in the said customer list storage means; and

notifying by the said server, to the said person that the said service points have been given by e-mail using the said e-mail address of the said person."

Since the invention of claim 3 is the procedure executed by a server, so that it can be said to execute information processing by software.

Furthermore, the invention of claim 3 can be said to be an operation method of the information processing system in which information processing by software is concretely realized by using hardware resources, wherein the said server acquiring the e-mail address of the person to whom service points are offered from a customer list storage means, adding the said service points to the accumulated service points of the said person stored in the said customer list storage means, and notifying the said person of the fact that the said service points have been given.

Therefore it follows that the invention of claim 3 is considered as constituting a "statutory invention."

(Note) Judgement on whether the invention of claim 1 or claim 2 is statutory was made based on "Part II: Chapter 1. Industrially Applicable Inventions," since special judgement and treatment for "software-related inventions" was not required.

Example 2-5. Game machine

(Example where "hand-scoring" process by software in a game machine is concretely realized by using hardware resources)

[Title of Invention]

Game machine

[Claims]

[Claim 1]

A computerized card game machine, comprising:
means for assigning specific points of a score to a set of cards dealt, according to the complexity of the hand involved.

[Claim 2]

A computerized card game machine, comprising:
means for memorizing a scoring hand data table (i.e. a hand of cards dealt that scores points) in which a given set of cards is matched to specific scoring hand data, and a score data table in which the scoring hand data are matched to the score data;
means for assigning corresponding scoring hand data by retrieving said scoring hand data table based on a set of cards selected, assigning corresponding score data by retrieving the score data table on the basis of the applicable scoring hand data, and outputting all of the scoring hand data and total points scored.

[Description of the invention]

[Technical field to which the invention pertains]

This invention relates to computerized card game machines.

[Prior art]

A conventional computerized card game machine extracts a hand of cards dealt, score the points from among a given set of five cards dealt by the computer, determines the scores based simply on the number of scoring hands, and displays the results obtained.

[Problems to be solved by the invention]

In fact, the degree of difficulty varies according to the type of "scoring hand." In this respect, the conventional practice of scoring the same points for any type of hands reduces the attractiveness of the game as well as players' enthusiasm for the game. Accordingly, the object of this invention is to create a card game machine that makes the game more exciting and arouses players' enthusiasm by assigning different points of scores to a set of cards depending on the complexity of the hand involved.

[Means for solving the problem]

The card game machine invented here separately stores the scoring hand data table, which keys a set of cards to specific scoring hand data, and the score data table, which keys scoring hand data to score data. The invention solves the problem described by using the scoring hand data table and the score data table in turn, and by presenting to players all the types of scoring hands and total scores in a set of cards dealt.

[Mode for carrying out the invention]

Figure 1 shows the configuration of the card game machine. Display unit 1 and input facilities 2 such as a keyboard or mouse are connected to a bus 9. The central processing unit (CPU) 3 specifies the image data to be displayed during execution of the game machine, and retrieves the scoring hand data and the corresponding score data based on a set of cards dealt.

RAM 4 temporarily stores the image data to be displayed, and the image processing unit 5 generates the image data required according to the instructions from CPU 3, and displays the image on the display unit 1.

The card game machine stores three types of files in its memory.

The first file 6 stores game program 61, card image data 62, random number table 63, etc. The second file 7 stores the scoring hand data table, which keys the scoring hand data to card sets. In addition, the third file 8 stores the score data table, which keys the scoring hand data to the score data. The second file 7 and third file 8 can be separately updated.

Figure 2 shows an example of a display screen. The screen illustrates five cards. At the top, it also displays the scoring hand data [A and B] retrieved from the scoring hand data table, and the score "6 points" that is output after retrieval of the score data table based on the scoring hand data.

The flowchart in Figure 3 explains the way in which the invented game program runs. When a prompt for "game start" is entered, the system selects (S1) five cards using the random number table, in accordance with the game program. The system retrieves (S2) a hand of cards that scores points by selecting an existing stored set of cards, and reads out the applicable scoring hand data detected.

In order to fetch the score data corresponding to the scoring hand data, the system retrieves (S3) the score data table, fetches the corresponding score data, and adds up the total scores earned. On the screen of display unit 1, the system displays (S4) the five cards selected, the retrieved scoring hand data, and the total scores earned, as shown in Figure 2.

The system checks (S5) whether the card change frequency has reached the maximum limit, and either aborts if the limit has been reached, or else proceeds to (S6). The system inquires (S6) from a player if he/she prefers to specify cards to be changed, and either aborts if no cards are specified or else proceeds to (S7) if cards are specified. The system selects (S7) new cards using the random number table and replaces specified cards with selected cards, with system control returning to (S2).

The second file 7 and third file 8 can be separately updated as appropriate.

Consequently, if scoring hand data and score data are changed to meet the specific needs of the countries or regions in which the card game machines are installed or marketed, the table can be rewritten to allow common use of the data in the first file 6 and a reduction in the number of processes in proportion to a reduction in the size of the rewritten table.

[Advantageous effect of the invention]

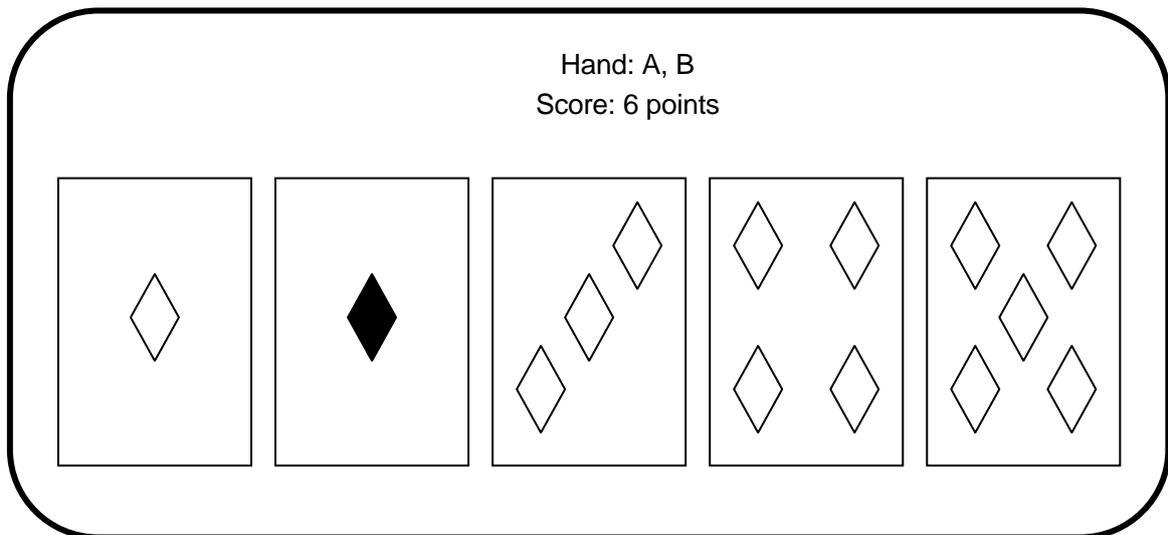
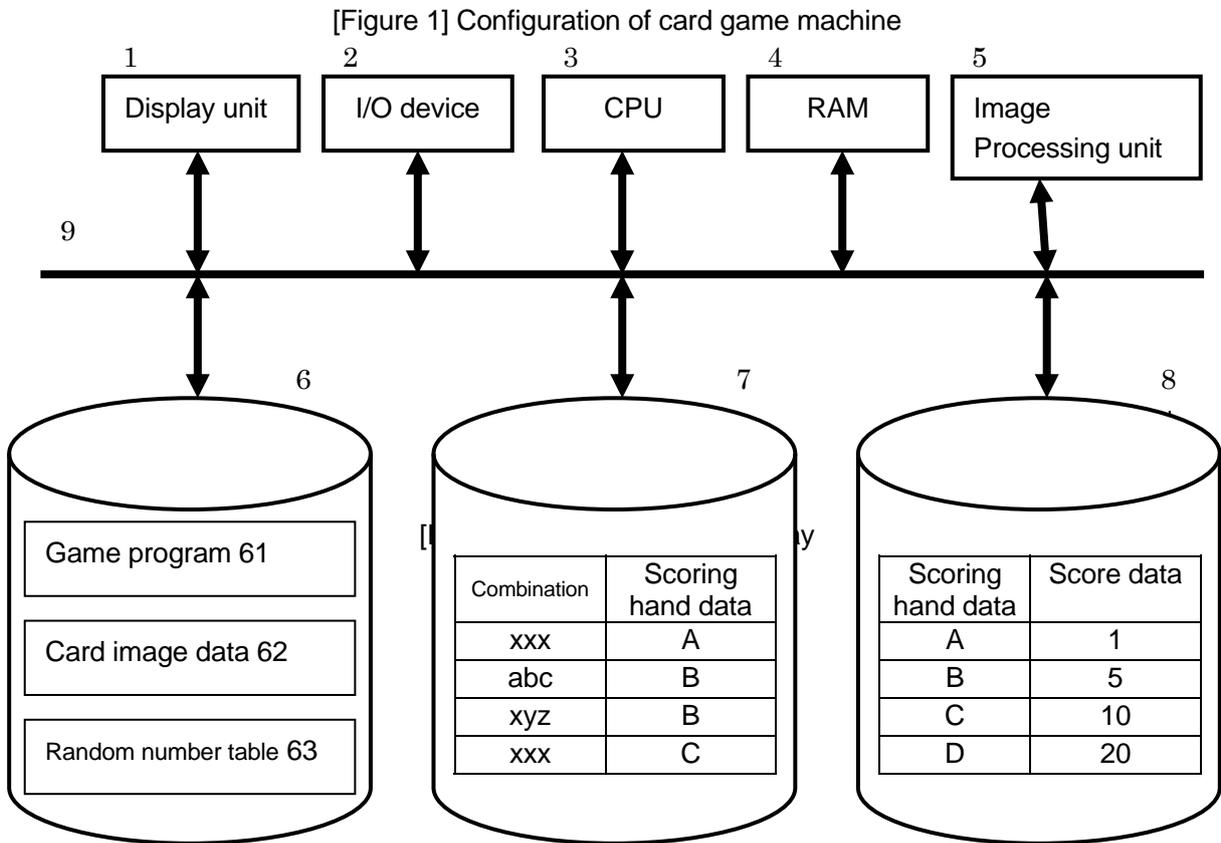
Since the invented card game machine extracts all scoring hands, and computes and displays the total points scored for the respective hands, the total scores vary with the type and number of scoring hands involved. The invention thus provides players with exciting games. Also, as a changeable scoring hand data table and score data table are separately provided, card game machines operating according to different rules can be installed and

marketed flexibly in different situations of countries and regions by modifying the scoring hand table or the score data table.

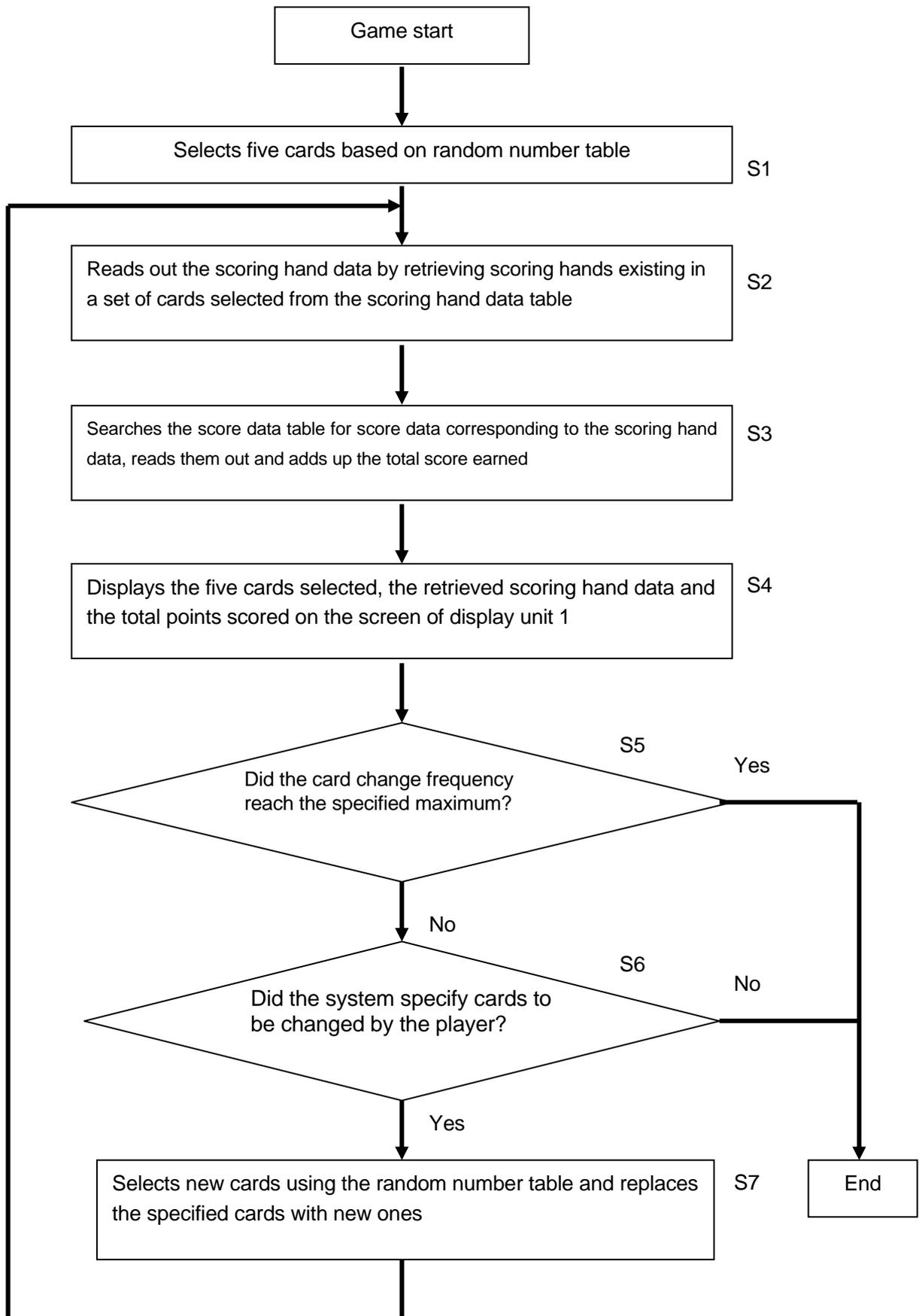
[Brief description of drawings]

(Omitted)

[Drawings]



[Figure 3] Processing flowchart



[Conclusion]

[Claim 1] The invention of claim 1 does not constitute a "statutory invention."

[Claim 2] The invention of claim 2 constitutes a "statutory invention."

[Explanation]

[Claim 1]

The claimed invention identified on the basis of the definition of the claim 1 is:

"A computerized card game machine, comprising:

means for assigning specific points of a score to a set of cards dealt, according to the complexity of the hand involved."

The claimed invention identified on the basis of the definition of claim 1 is processing for computing scores by using hardware resources assigning different scores to a set of cards dealt according to the complexity of the hand involved, but it cannot be said that a card game machine in which the score computing processing software and hardware resources are cooperatively working is constructed, and information processing for score computing is not concretely realized, so that it cannot be said that information processing by software is concretely realized by using hardware resources.

It follows, therefore, the invention of claim 1 is not considered to be "a creation of technical ideas utilizing a law of nature" and does not constitute a "statutory invention."

[Claim 2]

The claimed invention identified on the basis of the definition of claim 2 is;

"A computerized card game machine, comprising:

means for memorizing a scoring hand data table (i.e. a hand of cards dealt that scores points) in which a given set of cards is matched to specific scoring hand data, and a score data table in which the scoring hand data are matched to the score data;

means for assigning corresponding scoring hand data by retrieving said scoring hand data table based on a set of cards selected, assigning corresponding score data by retrieving the score data table on the basis of the applicable scoring hand data, and outputting all of the scoring hand data and total points scored."

The claimed invention identified on the basis of the definition of claim 2 is to provide a card game machine with a concrete means, in which software and hardware resources are cooperatively working, to perform information processing for assigning corresponding scoring hand data by retrieving the scoring hand data table based on a set of cards selected, assigning corresponding score data by retrieving the score data table on the basis of the applicable scoring hand data, and outputting all of the scoring hand data and total points scored, so that it can be said that information processing by software is concretely realized by using hardware resources.

It follows, therefore, the invention of claim 2 is considered to be "a creation of technical ideas utilizing a law of nature" and constitutes a "statutory invention."

3.2.2 Reference Examples

Examples 2-6 to 2-7 are those not requiring special judgment and treatment for software-related inventions in determining whether the claimed inventions are statutory.

Example 2-6. Apparatus and method for controlling the rate of fuel injection for an automobile engine

[Title of Invention]

Apparatus and method for controlling rate of fuel injection for an automobile engine

[Claims]

[Claim 1]

An apparatus for controlling rate of fuel injection for an automobile engine by a programmed computer, comprising:

first detector means for detecting the rate of engine revolutions;

second detector means for detecting transition of the rate of engine revolution; and

fuel injection rate decision means for determining the rate of fuel injection by said control program in accordance with the values detected in the first and second detector means.

[Claim 2]

A method for controlling the rate of fuel injection for an automobile engine by a programmed computer, comprising the steps of:

detecting the rate of engine revolutions;

detecting transition of the rate of engine revolutions; and

determining the rate of fuel injection by said control program in accordance with the rate of engine revolutions and transitions of the rate of engine revolutions.

[Detailed Description of the Invention]

[Technical field to which the invention pertains]

This invention is related to a fuel injection rate controller for an automobile engine operated by a programmed computer.

[Prior art]

The existing models of electronic controller for controlling the rate of fuel injection for an automobile engine determine the rate of fuel injection on the basis of the detected rate of engine revolutions. This type of fuel injection controller is prone to supply a leaner fuel/air mixture than the theoretical ratio of optimum mixture at the transition stage during sudden increase in the rate of revolutions as in cases of hard acceleration since the intake of air cannot be increased as fast due to friction against the inner walls of intake manifolds. Conversely, richer fuel/air mixture often prevails at the transient stage during a sudden increase in the rate of revolutions as in the case of hard deceleration since the intake of air cannot be decreased as fast because of the inertia of airflow. This kind of behavior during sudden increase or decrease of the rate of engine revolutions deteriorates the combustion efficiency of the engine and leads to lower engine output than expected.

[Problems to be solved by the invention]

This invention will improve the combustion efficiency and output power of the engine during the transition stages of hard acceleration or deceleration.

[Means for solving the problem]

In view of the above, this invention intends to achieve the optimum fuel/air mixture ratio by controlling the fuel injection rate in accordance with changing conditions so as to improve the combustion efficiency and the power output of the engine.

Specifically, in addition to a first detection means for detecting the rate of engine revolutions, the second detector means for detecting transition of the rate of revolutions, or the differential value of the rate of engine revolutions, has been established to enable detecting sudden increase or decrease of the rate of engine revolutions. Furthermore, the rate of fuel injection is to be determined by a control program electronically stored on the memory (e.g., ROM) of the fuel injection rate controller, in accordance with the detected values from the first and second detector means.

The actual procedure for determining the rate of fuel injection is as follows:

A two dimensional map is prepared in advance with the rate of engine revolutions on the X-axis and transition of the rate of engine revolutions on the Y-axis to plot corresponding values of experimentally obtained optimum rates of fuel injection on the respective intersections. The two dimensional map is then electronically stored on the memory (e.g., ROM) of the said fuel injection rate controller. The control program calculates the rate of engine revolutions and transition of the rate of engine revolutions from the values detected by the first and second detector means and then it determines the optimum rate of fuel injection by referring to the above-mentioned two dimensional map using the respective calculated values of the rate of engine revolutions and transition of the rate of engine revolutions.

[Mode for carrying out the invention]

(Omitted)

[Working example]

(Omitted)

[Advantageous effect of the invention]

Combustion efficiency has been improved since the optimum fuel/air mixture can be maintained even during hard acceleration or deceleration of engine revolutions.

[Brief description of the drawings]

(Omitted)

[Drawings]

(Omitted)

[Conclusion]

[Claim 1] The invention of claim 1 constitutes a "statutory invention."

[Claim 2] The invention of claim 2 constitutes a "statutory invention."

[Explanation]

[Claim 1]

The claimed invention identified on the basis of the definition of claim 1 is:

"An apparatus for controlling rate of fuel for an automobile engine by a programmed computer, comprising:

first detector means for detecting the rate of engine revolutions;

second detector means for detecting transition of the rate of engine revolution; and

fuel injection rate decision means for determining the rate of fuel injection by said control program in accordance with the values detected in the first and second detector means."

The claimed invention identified on the basis of the definition of claim 1 is an apparatus for concretely performing processing associated with the control of an engine as a device, so that it can be said as "a creation of technical ideas utilizing a law of nature." Also, since the claimed invention is an apparatus for concretely performing processing based on the physical and technical properties of an engine as the object, and it can be said as a "creation of technical concept utilizing the laws of nature."

It follows, therefore, the invention of claim 1 is considered to be "a creation of technical ideas utilizing a law of nature" and is considered as constituting a "statutory invention."

[Claim 2]

The claimed invention identified on the basis of the definition of claim 2 is:

"A method for controlling rate of fuel for an automobile engine by a programmed computer, comprising the steps of:

detecting the rate of engine revolutions;

detecting transition of the rate of engine revolutions; and

determining the rate of fuel injection by said control program in accordance with the rate of engine revolutions and transitions of the rate of engine revolutions.

The claimed invention identified on the basis of the definition of claim 2 is a method for concretely performing processing associated with the control of an engine as a device, so that it can be said as "a creation of technical ideas utilizing a law of nature." Also, since the claimed invention is a method for concretely performing processing based on the physical and technical properties of an engine as the object, and it can be said as a "creation of technical concept utilizing the laws of nature."

It follows, therefore, the invention of claim 2 is considered to be "a creation of technical ideas utilizing a law of nature" and is considered as constituting a "statutory invention."

(Note) Judgement on whether the invention of claim 1 or claim 2 is statutory was made based on "Part II: Chapter 1. Industrially Applicable Inventions," since special judgement and treatment for "software-related inventions" was not required.

Example 2-7. Image processing method by computer

(Example where information processing is concretely realized based on the physical or technical properties of an object)

[Title of Invention]

Image processing method by computer

[Claim]

[Claim 1]

An image processing method by computer for compensating the blurring of optically read image data comprising the steps of:

inputting a pixel matrix A of 3 rows and 3 columns obtained from image data picked up by an optical reading means;

computing a pixel matrix $C = A * B$;

using a matrix B, shown below, which formed by stored filter parameters of 3 rows and 3 columns, and

outputting the pixel matrix C.

$$B = \begin{pmatrix} 0 & -0.5 & 0 \\ -0.5 & 3 & -0.5 \\ 0 & -0.5 & 0 \end{pmatrix} \text{ or } B = \begin{pmatrix} 0 & -0.5 & 0 \\ -0.5 & 2.75 & -0.5 \\ 0 & -0.5 & 0 \end{pmatrix}$$

[Detailed Description of the Invention]

[Technical field to which the invention pertains]

This invention relates to a picture quality improvement method in image processing by a computer.

[Prior art]

Generally, a blur depending on the characteristics of the reading means is produced in the image data which was picked up with an optical reading means.

Conventionally, each picked up pixel was multiplied by a digital filter (a kind of high-pass filter which passes high frequency ingredient) with parameters such as:

$$\begin{pmatrix} 0 & -1 & 0 \\ -1 & 4 & -1 \\ 0 & -1 & 0 \end{pmatrix} \quad \begin{pmatrix} 0 & -1 & 0 \\ -1 & 5 & -1 \\ 0 & -1 & 0 \end{pmatrix}$$

in accordance with the 3 * 3 filtering method, for instance. But the compensation became strong in the case of an image having an extensive area of half tone density, so that an improvement in the picture quality could not be achieved.

[Problems to be solved by the invention]

An object of this invention is to provide an image processing method which can achieve a required compensation sufficiently and easily.

[Means for solving the problem]

When executing digital computation of the filter and detected image using a computer, experiments were conducted by setting various parameters under the condition that the total energy of the image should not differ substantially before and after the arithmetic processing and that the values other than the center parameter should not be smaller than the center parameter, so that the image after the processing should not appear unnatural.

[Mode for carrying out the invention]

As a result of these experiments, a picture quality was improved when a filter having the following parameters was used.

$$\begin{pmatrix} 0 & -0.5 & 0 \\ -0.5 & 3 & -0.5 \\ 0 & -0.5 & 0 \end{pmatrix} \begin{pmatrix} 0 & -0.5 & 0 \\ -0.5 & 2.75 & -0.5 \\ 0 & -0.5 & 0 \end{pmatrix}$$

Digital computation of such a filter is realized by an image processing program and said program is provided by recording on a recording medium.

[Advantageous effect of the invention]

According to the present invention, it is possible to provide a high quality image picture image with a simple arrangement.

[Brief description of drawings]

(Omitted)

[Drawings]

(Omitted)

[Conclusion]

[Claim 1] The invention of claim 1 constitutes a "statutory invention."

[Explanation]

The claimed invention identified on the basis of the definition of the claim 1 is;

"An image processing method by computer for compensating the blurring of optically read image data comprising the steps of:

inputting a pixel matrix A of 3 rows and 3 columns obtained from image data picked up by an optical reading means;

computing a pixel matrix $C = A * B$;

using a matrix B, shown below, which formed by stored filter parameters of 3 rows and 3 columns, and

outputting the pixel matrix C.

$$B = \begin{pmatrix} 0 & -0.5 & 0 \\ -0.5 & 3 & -0.5 \\ 0 & -0.5 & 0 \end{pmatrix} \text{ or } B = \begin{pmatrix} 0 & -0.5 & 0 \\ -0.5 & 2.75 & -0.5 \\ 0 & -0.5 & 0 \end{pmatrix}$$

In relation to matrix B which is a filter parameter, it is clear that absolute values of parameters other than the central parameter are smaller than the absolute value of the central parameter, and by comprehensively grasping from the detailed description of the invention, parameters of such a matrix B have been set based on the physical characteristics of the reversed spatial frequency characteristics when blurring of image occurred and total energy of image before and after arithmetic operation.

In other words, considering the characteristics of said matrix B, the claimed invention identified on the basis of the definition of claim 1 is considered to be processing that utilizes the physical characteristics to output image data C from image data A obtained as data from an optical reading means by compensating blurring of image using matrix B as a filter parameter.

Then, since the claimed invention identified on the basis of the definition of claim 1 is a method to concretely performing processing utilizing the physical characteristics related to an image obtained as data by an optical reading means, it can be a creation of technical concept utilizing the laws of nature.

Therefore, the claimed invention identified on the basis of the definition of claim 1 as a whole is "a creation of technical ideas utilizing natural laws," and it is appropriate as an "invention."

(Note) Judgement on whether the invention of claim 1 is statutory or not could be made based on "Part II: Chapter 1. Industrially Applicable Inventions," since special judgement and treatment for "software-related inventions" was not required.

3.3 Examples for determination of whether the Claimed Invention involves “Inventive Step” or not

Example 3-1. Apparatus for retrieving chemical substances

(Example where an application to another field is easy)

[Title of Invention]

Apparatus for retrieving chemical substances

[Claims]

[Claim 1]

An apparatus for retrieving chemical substances, comprising:
chemical substance characteristics data storage means for storing names, uses and structure formulae of a multiple of chemical substances in their correspondence;
chemical substance trading data storage means for storing names, prices per gram, and vendor names of a multiple of chemical substances in their correspondence;
input means for inputting a use of chemical substance or a structure formula as a retrieval key;
chemical substance characteristics data retrieval means for extracting the name, the use and the structure formula of the chemical substance corresponding to the retrieval key inputted from said chemical substance characteristics data storage means based on the retrieval key inputted by said input means;
chemical substance trading data retrieval means for extracting the price per gram and the vendor name of the corresponding chemical substance from said chemical substance trading data storage means based on the name of chemical substance extracted from said chemical substance characteristics data retrieval means; and
display means for displaying the name, the use and the structure formula of the chemical substance extracted by said chemical substance characteristics data retrieval means, and the price per gram and the vendor name of the chemical substance extracted from said chemical substance trading data retrieval means in their correspondence on a display screen.

[Claim 2]

An apparatus for retrieving chemical substance of claim 1, in which "detergent for circuit boards" as the use of chemical substance B represented by chemical structure formula A is stored in said chemical substance characteristics data storage means.

[Detailed Description of the Invention]

[Technical field to which the invention pertains]

This invention relates to a system for retrieving and ordering chemical substances to be used for specific purposes in the chemical industry, pharmacies, and others.

[Prior art]

The information retrieval technology in general is applied for various purposes, and also in the field of retrieving chemical substances, the technology is known to store names of

chemical substances, chemical structure formulae, purposes, etc. in correspondence to stored items, to retrieve them by one item as a retrieval key and to extract other related information.

However, in the conventional chemical substance retrieval system, since trading information such as prices and vendors which have no direct relationship with the chemical substance characteristics have not been stored, so that these information had to be acquired using other systems.

[Problems to be solved by the invention]

The purpose of this invention is to provide a chemical substance retrieval system, which is useful for ordering required chemical substances, enabled to extract trading information such as prices and vendors, by retrieving chemical substances based on required use purpose of chemical substance and chemical structure formula.

Further, by including a new use purpose "detergent for circuit boards" for a chemical substance B which had been found by the applicant in the retrieval object data, convenience of ordering, etc. can be increased.

[Means for solving the problem]

A chemical substance retrieval system of this invention is structured in such a manner that a storage means to store names of chemical substances, use purposes of chemical substances and chemical structure formulae in their correspondence and a storage means to store names of chemical substances, prices and vendors in their correspondence are separately provided, and after retrieving a name of chemical substance based on a use purpose of chemical substance or chemical structure formula as the retrieval, a price and vendor are retrieved by the retrieved name of chemical substance. This configuration is decided taking into consideration easiness of data transfer from a conventional type of chemical substance retrieval system and easiness of data maintenance.

[Mode for carrying out the invention]

This invention realizes a chemical substance retrieval system using a computer system constituted of a CPU, memory means, an input device such as a keyboard and a display means such as a display unit. A conceptual drawing is shown in Fig. 1.

A flow of the chemical substance retrieval system is as described below.

First, a storage means of the computer system is stored with chemical substance characteristics data including names of chemical substances, use purposes of said chemical substances, and chemical structure formulae in their correspondence, and another storage means is stored with chemical substance trading data including names of chemical substances, prices of said chemical substances per gram and vendor names in their correspondence. These storage means can use memory means such as a RAM and ROM or recording medium such as a magnetic disk and/or CD-ROM.

Then, when a chemical structure formula or a component of chemical substance is inputted from an input means, the CPU of the computer system retrieves the chemical substance characteristics data stored in one storage means of the computer system by the inputted retrieval key and extracts the data which includes the retrieval key.

Further, the CPU of the computer system, using the name of chemical substance existing in the extracted chemical substance characteristics data as the retrieval key,

retrieves the chemical substance trading data stored in another storage means of the computer system, extracts the data which includes the retrieval key, and displays the name of chemical substance, use purpose of chemical substance, chemical structure formula, price per gram and dealing vendor name on the display means.

[Advantageous effect of the invention]

According to this invention, by retrieving a use purpose of chemical substance or chemical structure formula for a certain chemical substance, and enabling to extract trading information such as prices, dealing vendors, it is possible to provide a chemical substance retrieval system which offers convenience for ordering or other trading activities of required chemical substance.

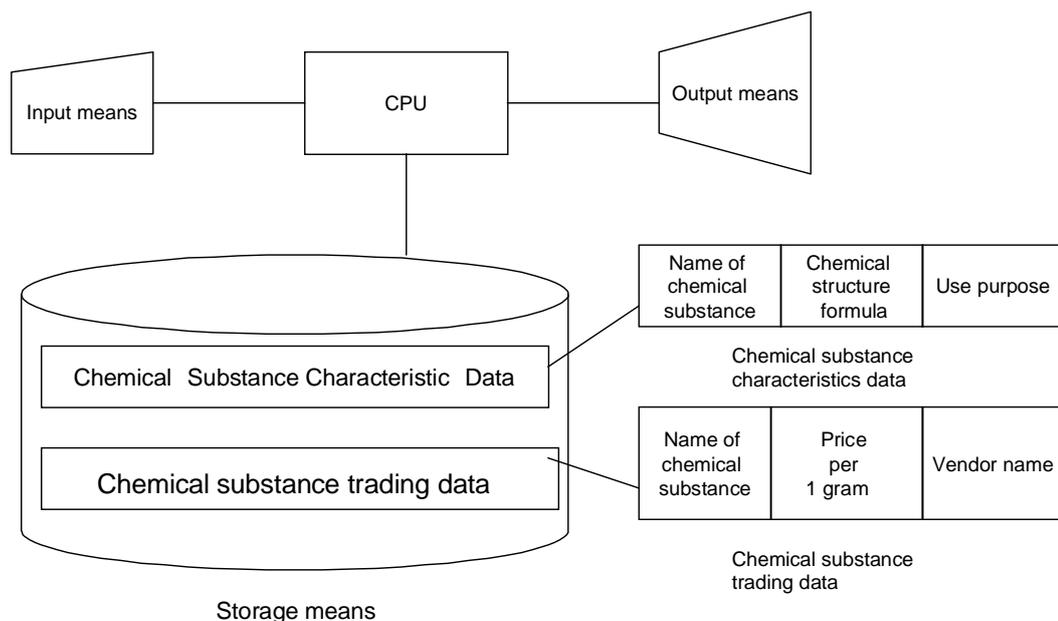
Furthermore, since a chemical substance retrieval system of this application is stored with a use purpose "detergent for circuit boards" newly found for a chemical substance B as chemical substance characteristics data, it is expected to increase the sales of chemical substance B by trading the chemical substance B as detergent for circuit boards.

[Brief description of drawings]

(Omitted)

[Drawing]

[Fig. 1]



<Examination of inventive step>

(1) Premise for determination of inventive step

(i) Problems to be solved by this invention

- to provide an apparatus for retrieving information of chemical substances by retrieving from the database based on the use purpose or chemical structure formula, and extracting trading information such as price, vendor name, etc. to offer convenience for ordering required chemical substances
- to include a newly found use purpose "detergent for circuit boards" in the database and to offer increased convenience for trading activities

(ii) Person skilled in the art

A person skilled in the art of the invention in this example has knowledge in chemical substance retrieval technology and computer technology.

(2) State of the art (cited invention, well known art, etc.)

(I) Cited inventions

The cited inventions listed below have been publicly known before the application.

Cited invention 1:

An apparatus for retrieving chemical substances, comprising:

retrieval means to retrieve a chemical substance storage means for storing names of chemical substances, structure formulae of chemical substances and use purposes of chemical substances in their correspondence by a structure formula of chemical substance or use purpose of chemical substance as the retrieval key; and
means to display the retrieval result.

Cited invention 2:

An apparatus for retrieving books, comprising:

book information storage means to store names of books, genres of said books and keywords in their correspondence;

book marketing data storage means to store names of books, prices and publisher names in their correspondence;

input means to input a genre of book or keyword as the retrieval key;

book information retrieval means to extract a name of a book, a genre of a book and a keyword matching to the retrieval key from said book information storage means based on the retrieval key inputted by said input means;

book marketing data retrieval means to extract the price of the corresponding book and the publisher name from said book marketing data storage means based on the name of book extracted by said book information retrieval means; and

display means to display the name of the book, the genre of said book and the keyword extracted by said book information retrieval means and to display the price of book and the publisher name extracted by said book marketing data retrieval means in their correspondence on the display screen.

(II) Well known art, etc.

- A chemical substance B represented by chemical structure formula A was publicly known as of the filing.
- The fact that said chemical substance B is useful for the purpose of "detergent for circuit boards" was not publicly known nor of public use as of the filing, thus it would have not been easily perceived by a person skilled in the art.

(3) Specific Determination

(i) Invention of Claim 1

By comparing the claimed invention with cited invention 1, the other features other than the following different features are common between them.

Point of difference 1: The claimed invention is comprising "a chemical substance trading data retrieval means for extracting the price per gram and the vendor name of the corresponding chemical substance from said chemical substance trading data storage means based on the name of chemical substance extracted from said chemical substance characteristics data retrieval means," while cited invention 1 is not comprising a means for retrieving information based on the name of chemical substance extracted by another retrieval means.

Point of difference 2: The claimed invention is comprising "a display means for displaying the name, the purpose and the structure formula of the chemical substance extracted by said chemical substance characteristics data retrieval means, and the price per gram and the vendor name of the chemical substance extracted from said chemical substance trading data retrieval means in their correspondence on a display screen," and displays the price per gram of the chemical substance and the vendor name as trading information, while cited invention 1 does not display such trading information.

Point of difference 1: Examination on inventive step constructing a "retrieval means of chemical substance marketing data"

Viewing from the standpoint of computer technology, cited invention 2 is identified as a technology to retrieve the second storage means further by the name of retrieval object (book name) as the retrieval key extracted from the first storage means, and to extract the trading information (price of book and publisher name) corresponding to said extracted information.

Here, the point in common both in cited inventions 1 and 2 is that they are retrieval systems, and there is no special technical difficulty to apply the constructing technology of retrieval system of cited invention 2 to the chemical substance retrieval system of cited invention 1.

Furthermore, what and how the extracted trading information would be is a matter to be decided accordingly by a person skilled in the art depending on the category of retrieval object, when the retrieval system of cited invention 2 is applied to the chemical substance retrieval system, thus the selection of "price of chemical substance per gram" and "vendor name" as trading information in the field of chemical substances is nothing more than an normal creative ability of a person skilled in the art.

Therefore, to apply the constructing technology of retrieval system of cited invention 2 to the chemical substance retrieval system of cited invention 1, and to provide a means for

extracting "price of chemical substance per gram" and "vendor name" as trading information from said chemical substance trading data storage means based on the name of chemical substance as one of retrieval objects are matters that a person skilled in the art would have easily perceived.

Point of difference 2: Examination on easiness of constructing "a display means to display price of chemical substance per gram and vendor name" as trading information

Taking into consideration the technical properties of "retrieval" operation performed to get information, displaying the obtained information as the result of retrieval is a matter that a person skilled in the art would have naturally perceived, and there is no special technical difficulty to display said trading information, therefore, constructing a system to display trading information obtained as the result of retrieval is a matter that a person skilled in the art would have easily perceived.

(Reference of advantageous effect)

Advantageous effect "can extract trading information" of the invention of claim 1 would have been easily perceived by a person skilled in the art from cited inventions 1 and 2.

(Conclusion)

Therefore, the claimed invention identified on the basis of the definition of claim 1 is an invention that a person skilled in the art would have easily arrived from cited inventions 1 and 2.

(ii) Invention of Claim 2:

In addition to the said points of difference 1 and 2, the other different feature, namely the claimed invention is storing the use purpose "detergent for circuit board" for chemical substance B represented by chemical structure formula A on the said chemical substance characteristics data storage means, while cited invention 1 does not describe such information, is identified

Since the fact that the said data storage means stores the use purpose "detergent for circuit boards" for chemical substance B represented by chemical structure formula A" is only mentioning about the contents of data, the novelty and inventive step of the claimed invention cannot be affirmatively inferred based on this fact.

(Conclusion)

The claimed invention identified on the basis of the definition of claim 2 is an invention that a person skilled in the art would have easily arrived at by a person skilled in the art from cited inventions 1 and 2.

Example 3-2. Invoice approval system

(Example where systematization of human transaction is easy)

[Title of Invention]

Invoice approval system

[Claims]

[Claim 1]

Invoice approval system comprising an invoice input preparation device which has the first input module for inputting the invoice data, the first output module which displays and prints out the invoice based on the data input to said first input module, the first communication control module, and the first control module which controls the entire device, and an invoice approval device which has a second output module which displays the invoice, the second input module for the approval data, the second communication control module, and the second control module which controls the entire device, characterized in that:

said first control module obtains the data for each item on the invoice from said first input module, checks each item on the invoice data obtained, transmits the invoice data requiring approval from said first communication control module to said invoice approval device, receives the approved invoice data transmitted from said invoice approval device via said first communication control module, and outputs from said first output module; and

said second control module receives via said second communication control module the invoice data requiring approval transmitted from said invoice input preparation device, inputs the approval data to be approved or disapproved from said second input module, and transmits the invoice data including said approval data from said second communication control module to said invoice input preparation device.

[Claim 2]

Invoice approval system of claim 1, characterized in that said second output device has a display screen and means for automatically indicating information that an incoming invoice has been received in a part of said display screen when an invoice requiring approval is received.

[Claim 3]

Invoice approval system of claim 1 or claim 2, characterized in that said first input module has an ID card reader.

[Detailed Description of the Invention]

[Technical field to which the invention pertains]

This invention is related to the clerical work of invoices preparation at the counter of a bank, etc.

[Prior art]

In invoice preparation at the counter of a bank, etc., the invoice was conventionally prepared for obtaining approval from a superior for transaction of a large sum, etc. according to their regulations.

[Problems to be solved by the invention]

To obtain approval from a superior, the operation was inefficient, in that it included leaving the counter and delivering the invoice all the way to the superior, this hampered concentration on the paper work, and it took much time, in particular, when the superior was unavailable.

An object of the present invention is to provide a system using a computer which enables obtaining an approval without going to the superior.

A notice of receiving an invoice requiring approval is indicated on the display screen, so that it dispenses with the manual operation of checking the notice.

Furthermore, approval data is inputted using an ID card (individual identification), so that only the person with the approving authority can input the approval data.

[Means for solving the problem]

(Omitted)

[Working example]

(Omitted)

[Advantageous effect of the invention]

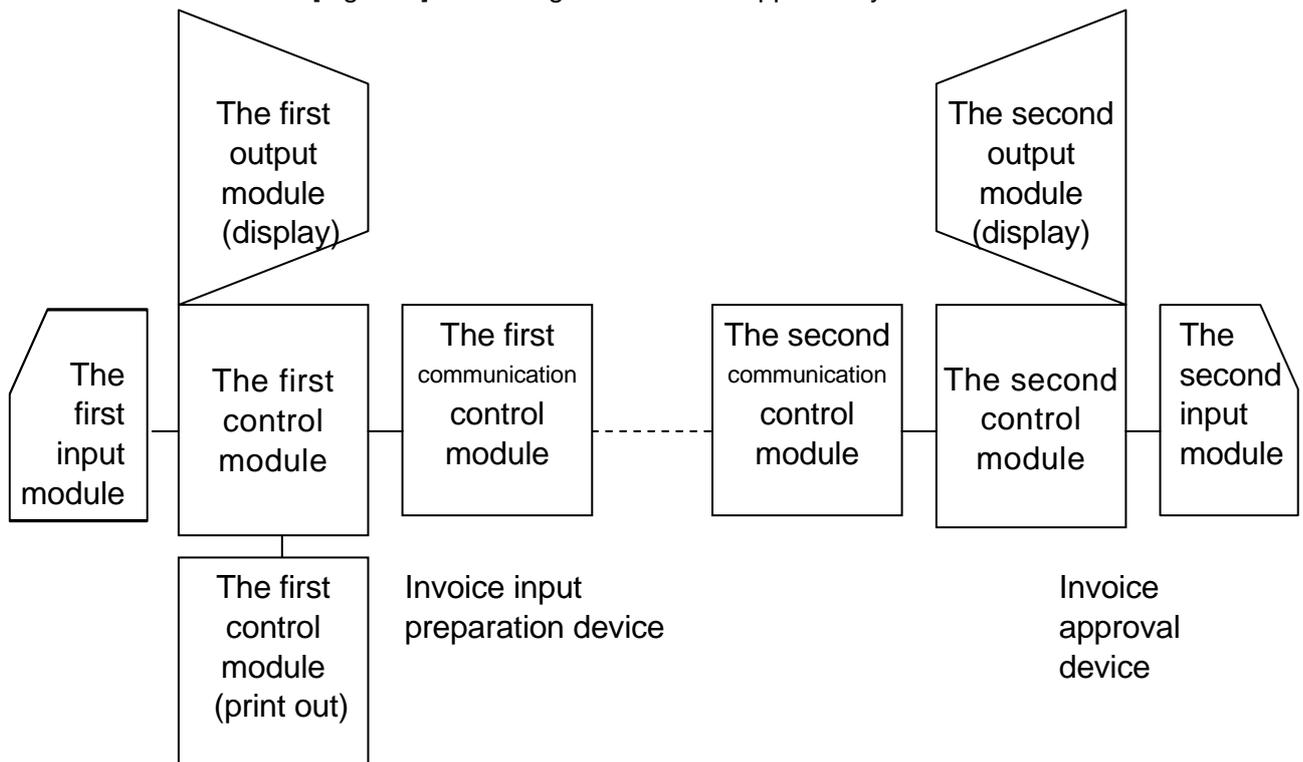
The system of the present invention derives remarkable results, when compared to the conventional operation, such as efficient invoice processing to obtain approval without interrupting work.

[Brief description of the drawings]

(Omitted)

[Drawings]

[Figure 1] Block diagram of invoice approval system



< Examination of inventive step >

(1) Premise for determination of inventive step

(i) Problems to be solved by this invention

To systematize the clerical work process with computer technology is a common general problem publicly known. Invoice approval processing is also clerical work process, so that the attempt to systematize it is a general problem.

(ii) Person skilled in the art

A person skilled in the art of the invention in this example has knowledge in clerical work processing of invoices and computer technology, and an ordinary creative ability.

(iii) Systematization of human transactions (operation of invoice processing)

The inventive step of systematization of human transactions with software is determined, taking into considering the process of developing a system, namely, system analysis → system design.

To systematize human transactions by common system development technology using publicly known computer engineering is considered as an exercise of ordinary creative activity expected of a person skilled in the art.

In the case of this example, the determination of inventive step is made from the viewpoint of the process from the system analysis on invoice processing to the system design based on the analysis.

(2) State of the art (a cited reference, well known art, etc.)

(I) Common business data processing

(i) A preparer's work

- to prepare an invoice by writing the invoice data on the invoice form,
- to hand over the invoice requiring approval to the approver, and
- to complete the invoice preparation by receiving the invoice from the approver.

(ii) An approver's work

- to receive the invoice from the invoice preparer,
- to check the invoice received from the invoice preparer and affix approval, and
- to hand over the approved invoice to the preparer.

(II) Computer technology

(i) Common general knowledge in the field of computers

- (a) to install a computer with I/O modules for each person, connect it with a communication line via the communication control module, and transmit/receive the necessary data
- (b) to edit the data in the computer and display or print out in the format required for the document
- (c) to indicate a notice on the display screen if there is data received, and

- (d) to input one's ID code with the ID card (individual identification) and execute processing.
- (ii) Technology disclosed in a publication distributed prior to the application
 - (e) The input data is checked and transmitted only if necessary.

(3) Specific determination

Examination is made from the viewpoint whether or not it would be easy for a person skilled in the art to systematize invoice approval processing using the computer software engineering base on the functions required for invoice preparation and approval in invoice approval processing and clerical work which were extracted from system analysis.

(i) Invention of Claim 1

(A) It is clear from the analysis of said processing of invoice preparation that data I/O modules are necessary to prepare invoices, and a communication means is necessary for transmitting the invoice data requiring approval to the superior.

The same is necessary when approving the invoices.

Accordingly, from said computer technology (a), it would be easily conceived by a person skilled in the art using ordinary system design technology to select hardware resources for the system configuration, i.e., "invoice approval system comprising an invoice input preparation device which has the first input module for inputting the invoice data, the first output module which displays and prints out the invoice based on the data input to said first input module, the first communication control module, and the first control module which controls the entire device."

(B) Functions executed in each control modules which "obtains the data of each item on the invoice from the first input module, checks each item on the invoice data obtained, transmits the invoice data requiring approval from the first communication control module to the invoice approval device, receives the approved invoice data transmitted from the invoice approval device via the first communication control module, and outputs from the first output module" and "receives via the second communication control module the invoice data requiring approval transmitted from the invoice input preparation device, inputs the approval data to be approved or disapproved from the second input module, and transmits the invoice data including the approval data from the second communication control module to the invoice preparation device" are realized by software, but can be directly derivable by a person skilled in the art by applying said computer technologies (a), (b) and (e) to invoice processing procedure.

In view of consideration to (A) and (B) above, to systematize invoice approval process as an invention of claim 1 would be easily conceived by a person skilled in the art by applying said computer technologies (a), (b) and (e) to the results of the system analysis.

(ii) Inventions of Claim 2 and Claim 3

To indicate data reception information on the display screen as receiving data, and to execute processing by inputting one's own ID code with the ID card are commonly used means as indicated in (c) and (d) of said common general knowledge in the field of computers, so that it would be arbitrarily conceived by a person skilled in the art to provide means for indicating information that there is an incoming invoice requiring approval, or to add an ID card reader to the input module.

Besides, the applicant asserts in the to the effect that this invention manifests a remarkable effect, but the effect asserted is found as nothing more than the natural results improvement in the efficiency) accompanying the use of computers, and thus there is no other fact to support to affirmatively infer an inventive step.

Therefore, as stated above, the inventions of claim 1, claim 2 and claim 3 would have been conceived by a person skilled in the art based on the publicly known above items (I) and (II).

Example 3-3. Points service method

(Example where “systematization of human transaction” or “design modification based on known facts or customs is easily perceived)

[Title of Invention]

Points service method

[Claims]

[Claim 1]

A service method for offering service points depending on an amount of commodity purchased at a shop on the Internet, comprising the steps of:

notifying a server of an amount of service points offered and a name of the person to whom the said service points are offered via the Internet;

acquiring by the said server, the e-mail address of the said person from a customer list storage means based on the name of the said person;

adding by the said server, the said service points to the accumulated points of the said person stored in the said customer list storage means; and

notifying by the said server, to the said person that the said service points have been given by e-mail using the said e-mail address of the said person.

[Claim 2]

A service method of claim 1, characterized in that said amount of commodity purchased includes the price of goods, the handling fee and consumption tax.

[Claim 3]

A service method of claim 1, characterized in that 10-times more service points than usual are offered once every 20 purchase opportunities.

[Claim 4]

A service method of claim 1, characterized in that the server prepares a list of commodity purchasable by the total service points which is made after adding the said service points to the accumulated service points stored in a commodity list storage means, wherein the said commodities are retrieved from a commodity list storage means which stores the names of commodity and exchange points thereof correspondingly, and sends the file of said list of purchasable commodity as attached file for the e-mail.

[Detailed Description of the Invention]

[Technical field to which the invention pertains]

The present invention relates to a points service method used in the transaction at shops on the Internet.

[Prior art]

There have been services providing service points depending on an amount of commodity purchased at a shop by a customer and to exchange the service points with goods, gift coupon or cash.

[Problems to be solved by the invention]

In the past, points service methods could not be realized in the transaction on the Internet because of the customer management problem etc. In addition, because of the same reason, only the customer herself or himself could use such service points and even the family members could not use such service points.

[Means for solving the problem]

In order to realize the points service method in the transaction on the Internet, the present invention is configured, by providing a shop with a server, in such a way to manage service points of each customer by providing database of customer lists (including, at least, customer names, total service points, and e-mail addresses of customers) with the said server possessed by the said shop on the Internet, and to add service points when a customer purchases commodities in the transaction on the Internet.

And, when a customer wants to give service points to another, by notifying to the server with the said service points and the name of the person by e-mail, the server retrieves the e-mail address of the said person from the database of customer lists by the name of the said person, adds up the said service points, and automatically notifies that the said service points have been given.

This invention can be modified as follows.

Firstly, as stated in claim 2, the amount of commodity purchased may include price of goods, handling fee and consumption tax.

Secondly, as stated in claim 3, the invention may offer service points 10-times more service points more than usual at certain frequency (for instance, once every 20 times) in order to increase repetitive customers. For instance, it may be useful to provide a field to store the number of purchases in the customer list storage means for that purpose.

Thirdly, as stated in claim 4, by providing the server with a commodity list storage means which stores the names of commodity and exchange points thereof correspondingly, when the total service points is increased by purchasing commodity, the server can prepare a list of commodity purchasable by the exchange points which is made after adding the said points to the accumulated service points stored in a commodity list storage means, wherein the said commodities are retrieved from a commodity list storage means which stores the names of commodity and exchange points thereof correspondingly, and sends the file of said list of commodity purchasable as attached file for e-mail, so that the service can be enhanced. As represented by Fig. 4, said commodity list storage means is prepared to store the names of commodity and exchange points thereof correspondingly. When the total service points is increased, the server prepares an appropriately-formatted file of the list of commodity purchasable by the current total service points, wherein the said commodity are retrieved from a commodity list storage means. The said file may be sent as attached file for e-mail. Since the total service points of other customers are also so increased by such functions, the said file of a commodity list is sent to other persons.

[Mode for carrying out the invention]

(Omitted)

[Working example]

(Omitted)

[Advantageous effect of the invention]

This invention enables the points service method to be easily realized in transactions on the Internet. Furthermore, since it enables the service points to be given to other customers, the utility of the service points are greatly increased. In addition, offering 10-times more service points than usual once every 20 times purchase opportunities, for instance, stimulates customer's incentive for purchasing, and gives a lot of fun to customers.

[Brief description of the drawings]

(Omitted)

[Drawings]

Fig. 1 System configuration (First embodiment)

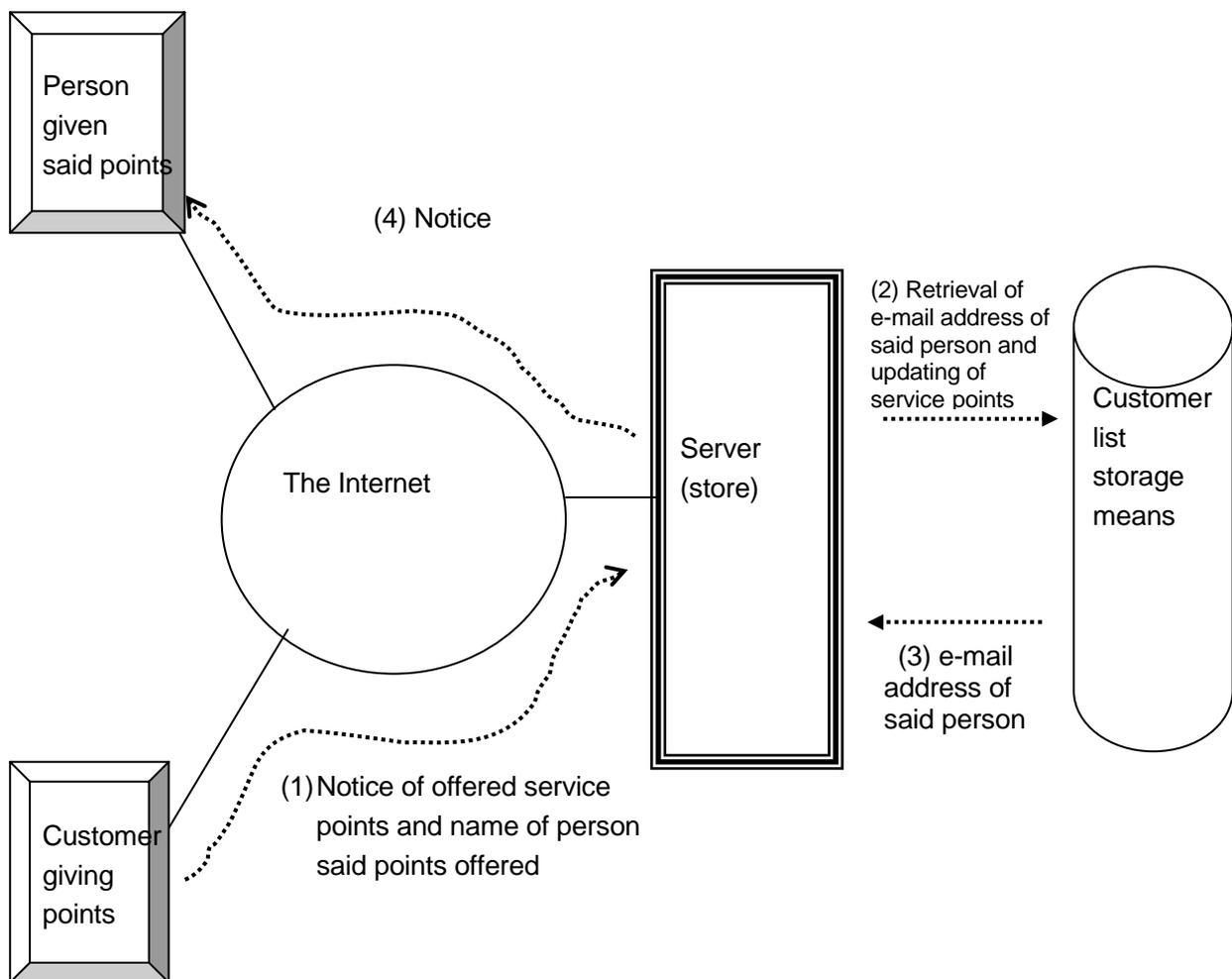


Fig. 2 Structure of customer list storage means

Customer name	Authentication information	E-mail address	Points	Number of purchases
A	xx△	<u>A@efg.com</u>	100	5
B	xx□	<u>B@hij.com</u>	200	10
C	xx○	<u>C@klm.com</u>	500	15

Fig. 3 System configuration (Second embodiment)

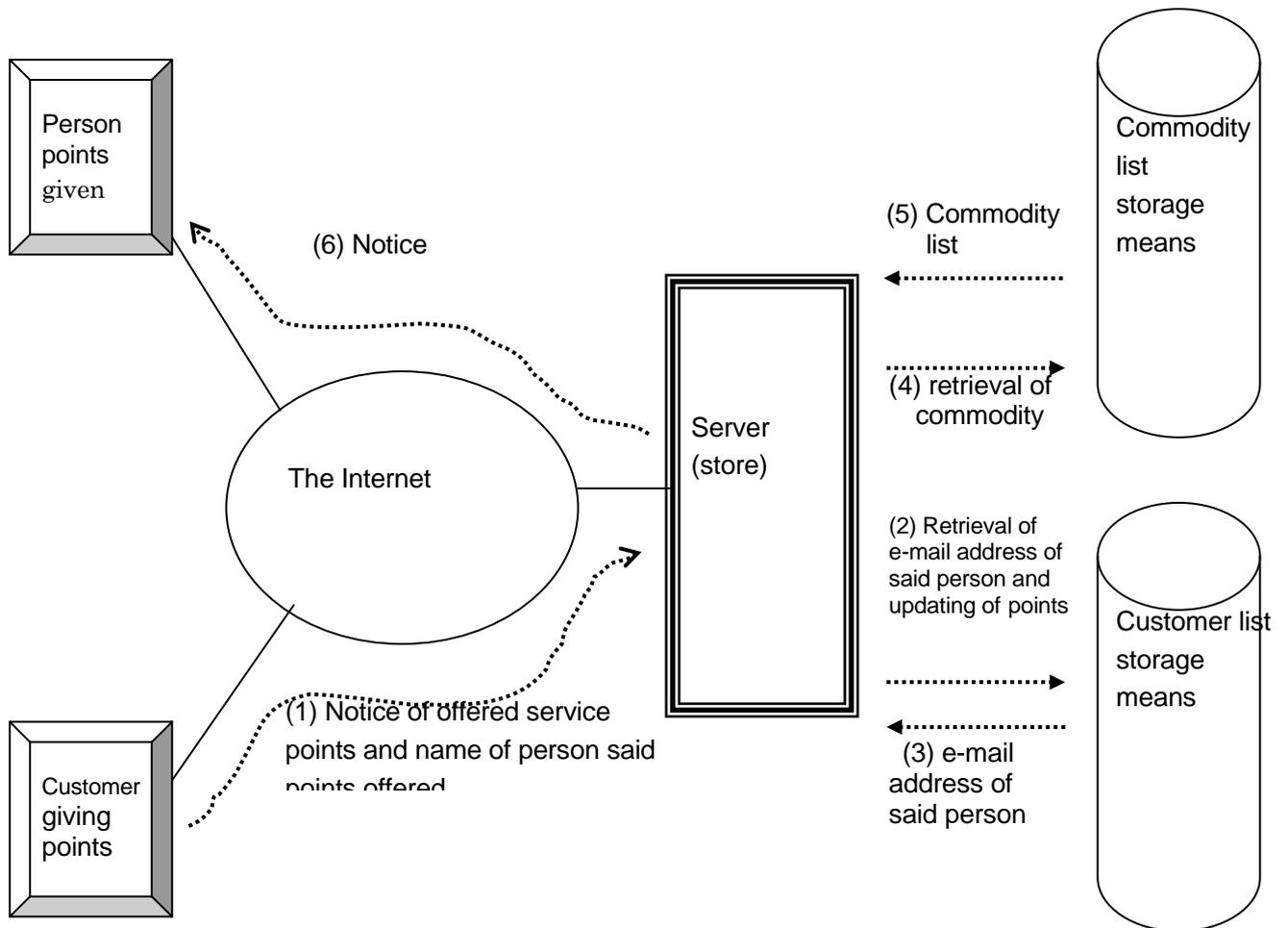


Fig. 4 Structure of commodity list storage means

Commodity name	Exchange points
Commodity 1	30
Commodity 2	120
Commodity 3	210
Commodity 4	300

< Examination of inventive step >

(1) Premise for determination of inventive step

(i) Problems to be solved by this invention

Systematizing human transactions with computer technology (especially Internet technology) is a common general problem. Points service is also a human transaction, so that the attempt to systematize it is a general problem.

(ii) Person skilled in the art

A person skilled in the art of invention in this example has knowledge of human transactions (especially points services) and computer technology.

(iii) Systematization of human transactions (points services)

The inventive step of systematization of human transactions is determined, taking into consideration the process of system development, namely, system design based on the results of system analysis.

(2) State of the art (cited inventions, well known art, etc.)

(I) Cited inventions

The following cited inventions were publicly known as of the filing.

Cited invention 1:

A service method for offering service points depending on the amount of commodity purchased at a shop, where the said service points and the name of the person to receive are specified, comprising the steps of:

acquiring the address of the said person stored in the customer list based on the name of the said person;

adding said service points to the balance of points of the said person stored in the customer list; and

mailing a post card to the address of the said person for notifying the fact that the said service points have been given.

Cited invention 2:

A points service method where service points are calculated based on an amount of commodity purchased including tax and handling fee.

However, the matter that 10 times more service points than usual are offered once every 20 purchase opportunities is not explicitly stated.

(II) Common practices exercised in business transactions

It is common practice to offer special services to special customers, such as giving free gifts or discounts.

(III) Computer technology

(i) Common general knowledge in the field of computer

- (a) to manage information collectively by using database, and retrieve and extract necessary information therefrom
- (ii) Common technical knowledge on the Internet
 - (b) to communicate with a terminal (including a server) via the network
 - (c) to exchange necessary information by e-mail or attachment files thereof

(3) Specific determination

(i) Invention of Claim 1

By comparing the claimed invention with cited invention 1, points in common and points of difference between them are identified as follows.

(Points in common)

A service method for offering service points depending on the amount of commodity purchased at a shop, when the said service points and the name of the person to receive are specified, comprising the steps of:

acquiring the address of the said person stored in the customer list based on the name of the said person;

adding said service points to the balance of points of the said person stored in the customer list; and

notifying to the said person of the fact that the said service points have been given.

(Points of difference)

In the claimed invention, a shop is on the Internet, and the said common points service method is systematized using means such as “server,” “e-mail” and “customer list storage means.”

(Examination of points of difference)

When systematizing the points service method of cited invention 1 on the Internet, the following is considered as an exercise of ordinary creative activity expected of a person skilled in the art:

by applying state of the art (a) concerning the computer technology to use a customer list storage means as a means to store/manage the customer list;

by applying state of the art (b) concerning the Internet technology to communicate between a customer and the shop via the Internet and automatically perform transaction by using a terminal (i.e. a server); and

by applying state of the art (c) concerning the Internet, to notify the fact that service points have been given by e-mail instead of a post card.

(Conclusion)

The invention of claim 1 would have been easily perceived by a person skilled in the art, since it is nothing more than mere systematization of human transactions of cited invention 1 by ordinary system development methods using well known computer technology.

(ii) Invention of Claim 2

By comparing the claimed invention with cited invention 1, points in common and points of difference between them are identified as follows.

(Points in common)

A service method for offering service points depending on the amount of commodity purchased at a shop, when the said service points and the name of the person to receive are specified, comprising the steps of:

acquiring the address of the said person stored in the customer list based on the name of the said person;

adding said service points on the balance of points of the said person stored in the customer list; and

notifying the said person of the fact that the said service points have been given.

(Points of difference)

1. In the claimed invention, a shop is on the Internet, and the said common points service method is systematized using means such as "server," "e-mail" and "customer list storage means."

2. In the claimed invention, the service points are calculated based on an amount of commodity purchased including taxes and handling fee.

(Examination of points of difference)

a. Point of difference 1:

(Same as claim 1) When systematizing the points service method of cited invention 1 on the Internet, the following is considered as an exercise of ordinary creative activity expected of a person skilled in the art:

by applying state of the art (a) concerning the computer technology to use a customer list storage means as a means to store/manage the customer list;

by applying state of the art (b) concerning the Internet technology to communicate between a customer and the shop via the Internet and automatically perform transaction by using a terminal (i.e., a server); and

by applying state of the art (c) concerning the Internet, to notify the fact that service points have been given by e-mail instead of a post card.

b. Point of difference 2:

Since the fact that service points are calculated based on an amount of commodity purchased including taxes and handling fee is publicly known by cited invention 2, and there is no special difficulty in limiting the calculation method of cited invention 1 to the method of cited invention 2.

(Conclusion)

The invention of claim 2 would have been easily perceived by a person skilled in the art by systematizing human transactions of cited invention 1 by ordinary system development method using well known computer technology, and by limiting the calculation method of cited invention 1 to the method of cited invention 2.

(iii) Invention of Claim 3

By comparing the claimed invention with cited invention 1, points in common and points of difference between them are identified as follows.

(Points in common)

A service method for offering service points depending on the amount of commodity purchased at a shop, when the said service points and the name of the person to receive are specified, comprising the steps of:

acquiring the address of the said person stored in the customer list based on the name of the said person;

adding said service points to the balance of points of the said person stored in the customer list; and

notifying to the said person of the fact that the said service points have been given.

(Points of difference)

1. In the claimed invention, a shop is on the Internet, and the said common points service method is systematized using means such as “server,” “e-mail” and “customer list storage means.”

2. In the claimed invention, 10 times more service points than usual are offered once every 20 purchase opportunities.

(Examination of points of difference)

a. Point of difference 1:

(Same as claim 1) When systematizing the points service method of cited invention 1 on the Internet, the following is considered as an exercise of ordinary creative activity expected of a person skilled in the art:

by applying state of the art (a) concerning the computer technology to use a customer list storage means as a means to store/manage the customer list;

by applying state of the art (b) concerning the Internet technology to communicate between a customer and the shop via the Internet and automatically perform transaction by using a terminal (i.e. a server); and

by applying state of the art (c) concerning the Internet, to notify the fact that service points have been given by e-mail instead of a post card.

b. Point of difference 2:

Since offering services to special customers is common practices (see the state of the art (II)), offering special points to certain customers in points service method can be easily perceived by a person skilled in the art. In this case, how frequently or in what rate such special service should be applied are matters of the nature to be decided at the discretion of a person skilled in the art. Therefore, in the points service method of cited invention 1, offering 10 times more service points than usual once every 20 purchase opportunities is nothing more than a matter of a degree that a person skilled in the art would have easily perceived.

(Conclusion)

The claimed invention identified on the basis of the definition of claim 3 is a systematization of a business performed by a person related to publicly known method 1 by a normal system development method using technology level of computer technology, and an addition of a special service to offer 10 times more service points than usual once every 20 times of purchases as to points offered depending upon the commodity purchase amount, considering business practices on a service points method of publicly known method 1, therefore, it is an invention that a person skilled in the art could easily invent.

(iv) Invention of Claim 4

It is not a matter to be drawn from any publicly known methods nor state of the art that the server prepares a list of commodity purchasable by the total service points which is made after adding the said service points to the accumulated service points stored in a commodity list storage means, wherein the said commodities are retrieved from a commodity list storage means which stores the names of commodity and exchange points thereof correspondingly, and sends the file of said list of purchasable commodity as attached file for e-mail. Therefore, the invention of claim 4 would not have been easily perceived by a person skilled in the art.

[Reference]
Application of these Guidelines

Guidelines applied to applications filed on January 10, 2001 or later (Note1)

- Portions concerning “program” claim in “1. Description Requirements”
 - 1.1.1(2)(b)
 - 1.1.2(1)
 - 1.1.3 Example 2
- Cases concerning “program” in “3. Examples”

(Note 1) “Applications filed on January 10, 2001 or later” include divisional applications in accordance with Article 44 of the Patent Act whose original applications are filed on January 10, 2001 or later, converted applications in accordance with Article 46 of the Patent Act whose original applications are filed on January 10, 2001 or later, and applications claiming priority (under the Paris Convention, priority declared as governed by the Paris Convention and priority based on patent application, etc.) filed on January 10, 2001 or later.

Guidelines applied to applications filed on April 1, 1997 or later (Note 2)

- Portions concerning “computer-readable storage medium” claim in “1. Description Requirements”
 - 1.1.1(2)(a)
- Cases concerning “computer-readable storage medium” in “3. Examples”

(Note 2) “Applications filed on April 1, 1997 or later” include divisional applications in accordance with Article 44 of the Patent Act whose original applications are filed on April 1, 1997 or later, converted applications in accordance with Article 46 of the Patent Act whose original applications are filed on April 1, 1997 or later, and applications claiming priority (under the Paris Convention, priority declared as governed by the Paris Convention and priority based on patent application, etc.) filed on April 1, 1997 or later.