

WHAT IS CLAIMED IS

1. A process operated on a computer, comprising:

receiving time-series data which cannot be searched using regular expressions, from a probe that transmits said time-series data that includes performance information of a computer;

specifying a part indicating performance information of a computer among said time-series data, encoding said part into codes which can be searched using regular expressions, and storing said encoded time-series data; and

performing searching, when searching said encoded time-series data, by matching with patterns of different pieces of data columns to a plurality of sequence data by using a predefined syntax rule to data columns of said time-series data;

as said predefined syntax rule:

a division notation for dividing a syntax for specifying a search condition into partial syntaxes; and

an evaluation order used when partial syntaxes obtained by said dividing are evaluated in order,

wherein the respective said partial syntaxes are evaluated in accordance with the evaluation order, to thereby narrow down a range of time that satisfies the search condition.

2. The process operated on a computer, comprising:

receiving time-series data which cannot be searched using regular expressions, from a probe that transmits time-series data that includes performance information of a computer;

specifying a part indicating performance information of a computer among the time-series data, encoding said part into codes which can be searched using regular expressions, and storing said encoded time-series data; and

performing searching, when searching said encoded time-series data, by matching with patterns of different pieces of data columns to a plurality of sequence data by using a predefined syntax rule to data columns of said time-series data;

as the predefined syntax rule:

a division notation for dividing a syntax for specifying a search condition into a plurality of partial syntaxes; and

an evaluation order used when partial syntaxes obtained by the dividing are evaluated in order,

wherein the respective partial syntaxes are evaluated in accordance with the evaluation order, to thereby narrow down a range of time that satisfies the search condition.

3. The process of claim 1, comprising, as said predefined syntax rule, a block definition notation for defining a tree-structure relationship among said partial syntaxes,

and wherein said partial syntaxes are evaluated in order from a root to a leaf of said tree structure relationship, to thereby simultaneously perform searches based on a plurality of ways of narrowing down.

4. The process of claim 1 comprising, as said predefined syntax rule, a notation for defining and deleting a relationship among a plurality of pieces of time-series data,

wherein the narrowing down is performed in a manner that skipping is performed among the plurality of pieces of time-series data among which the relationship is defined.

5. The process of claim 1 comprising, as said predefined syntax rule:

a notation for binding an evaluation result based on a partial syntax to a variable; and

a notation for using the evaluation result bound to said variable within another partial syntax,

wherein the evaluation result of said partial syntax is reused.

6. The process of claim 1 wherein said predefined syntax rule is a notation for describing a condition that matches a plurality of encoded values,

wherein a range search for a value is performable.

7. The process of claim 1 wherein said predefined syntax rule is a notation for describing a plurality of conditions within a partial syntax and describing a logical relationship among the plurality of conditions,

and wherein different criteria and different pieces of time-series data are usable at a time of the narrowing down.

8. The process of claim 1, wherein, as a mapping method between values of time-series data and codes at a time of encoding, the code having a small data size is mapped to the value of data having a high occurrence frequency.

9. The process of claim 8, wherein mapping between the values of said time-series data and said codes is determined based on values of sampling index of the sequence data.

10. The process of claim 8, wherein said mapping between values of said sequence data and said codes is determined based on a kind of sequence data.

11. The process of claim 8, wherein a range of quantization of the values of time-series data at a time of the mapping between the values of the time-series data and the codes is determined based on necessary resolution.

12. A data storage apparatus, which is programmed to:

receive time-series data, which cannot be searched using regular expressions, from a probe, said probe structured or programmed to monitor resources on a monitored computer and transmit various attribute values obtained as a result of said monitoring as said time-series data; and

store, by specifying said various attribute values pertaining to resources on said computer among said time-series data and by encoding the specified various attribute values into codes which can be searched using regular expressions, the various attribute values thus specified and encoded as a time-slice of data with a date said time-series data was collected and an index of each of the resources to which said attribute values in said time-series data pertain.

13. The data storage apparatus of claim 12, wherein said data storage apparatus is also programmed to store said time-series data using a storage method which creates a hierarchical data structure which classifies said time-series data by the

date on which it was collected on one axis and classifying said time-series data by resource on another axis.

14. The data storage apparatus of claim 13, wherein said data storage apparatus is programmed to create said hierarchical data structure by mapping each said time-slice of time-series data to a single directory in a file system of said data storage apparatus.

15. The data storage apparatus of claim 12, wherein said data storage apparatus is programmed to create, in said storing of the time-series data, a key based on a date upon which said time-series data is collected by said probe and an identifier of the resource from which said time-series data was collected, said data storage apparatus further programmed to store said key and said time-series data in association with each other.

16. The data storage apparatus of claim 12, wherein said data storage apparatus is further programmed to combine, in the storing of said time-series data, the time-series data for each attribute.

17. The data storage apparatus of claim 14, wherein said data storage apparatus is programmed to create, in the storing of said time-series data, a file for one of each attribute and each attribute set whose number is sufficiently smaller than a total number of attributes.

18. The data storage apparatus of claim 16, wherein said data storage apparatus is programmed to create, in the storing of said time-series data, a file for one of each

attribute and each attribute set whose number is sufficiently smaller than a total number of attributes.

19. The data storage apparatus of claim 12, wherein said data storage apparatus is further programmed to perform, in the storing of said time-series data, a pattern matching search based on a previously-specified pattern, create a reference to a storage location of time-series data which matched said pattern, and simultaneously store said time-series data and said reference.

20. The data storage apparatus of claim 12, wherein said data storage apparatus is further programmed to compress, in the storing of said time-series data, a previously-specified pattern of said time-series data in a searchable manner.

21. The data storage apparatus of claim 19, wherein said data storage apparatus is further programmed to use as said query data pattern that is often used for a search.

22. The data storage apparatus of claim 20, wherein said data storage apparatus is further programmed to use as said query data pattern that is often used for a search.

23. The data storage apparatus of claim 12, wherein the time-series data storage device obtains, in the storing of the time-series data, statistical information with respect to a predefined set of values of the time-series data, and simultaneously stores the time-series data and the statistical information.