

WHAT IS CLAIMED IS:

1. A method implemented by a data processing system for identifying one or more portions of executable logic of respective one or more sets of executable logic that are executed in processing one or more data items, wherein the one or more data items are each associated with a given value of a key, wherein the executable logic is represented as a specification that includes a chart, and the respective one or more sets of executable logic represent respective one or more implementations of executable logic, the method including:

for each of the respective values of the key, accessing one or more keyed data structures that maintain a state of the specification for the respective value of the key, wherein each keyed data structure is associated with a value of the key to maintain states of the specification for respective values of the key;

accessing the specification, wherein a state of the specification for a value of the key identifies a respective location along a path of the chart, with the respective location along the path representing one or more portions of the one or more sets of executable logic that are invokeable in that state and that are used to process one or more data records associated with the value of the key;

intermittently receiving, over an input device or port, data items of a stream of data, with one or more of the data items each being associated with the given value of the key; and

for each set of executable logic, generating a log record for the given value of the key, with the log record specifying one or more portions of executable logic that are identified from the one or more keyed data structures for the given value of the key and that are executed in processing the one or more of the data items that are each associated with the given value of the key, the generating including:

for each of the one or more of the data items associated with the given value of the key:

identifying, from the one or more keyed data structures for the given value of the key, a given state of the specification for the given value of the key associated with that data item;

processing, by the data processing system, that data item including executing, on that data item, one or more portions of executable logic that are specified in the given state identified from the one or more keyed data structures for the given value of the key; and

generating the log record specifying the execution of those one or more portions of the executable logic identified from the one or more keyed data structures for that given value of the key;

wherein one or more log records are one or more structured data records with one or more first fields for storing data representing a state of the specification for a particular value of the key and one or more second fields for storing data specifying portions of the executable logic represented by the specification that have been executed, based on a time at which execution of the executable logic is started to a given time, for that particular value of the key.

2. The method of claim 1, further comprising grouping log records together by key, wherein first log records associated with a first key are grouped into a first group and wherein second log records associated with a second key are grouped into a second group.

3. The method of claim 2, wherein the log records are grouped in memory.

4. The method of claim 2, wherein each log record includes one or more fields indicative of one or more attributes of processing a data item, wherein, for at least one log record, a field is a key field specifying a value of key associated with the data item.

5. The method of claim 4, wherein a subset of log records associated with a particular key do not include the key field.

6. The method of claim 4, wherein only one log record associated with a particular key includes the key field.

7. The method of claim 2, further comprising: writing log records in a particular group associated with a particular key to a file at an end of pre-defined time interval.

8. The method of claim 7, further comprising:
reformatting the file;
writing the reformatted file into an indexed compressed flat file (ICFF); and
indexing the ICFF in an index by key.

9. The method of claim 1, wherein the specification comprises a chart with a plurality of nodes, wherein each node represents one or more portions of the executable logic, wherein the chart is executable, wherein execution of the chart causes execution of portions of the executable logic, and wherein the method further comprises: based on the log records, tracing traversal through one or more nodes the chart in processing one or more data items.

10. The method of claim 9, further comprising: parsing the log records to identify which nodes of the chart are traversed and which nodes of the chart are not traversed.

11. The method of claim 10, wherein the log records specify which nodes of the chart are traversed and which nodes of the chart are not traversed.

12. The method of claim 9, further including:
receiving a user-initiated selection of one of the nodes;
in response to receiving the selection, causing a configuration area to be displayed on a graphical user interface that provides a configuration means for the user to configure the one or more portions of the executable logic represented by selected node, wherein the configuration means includes means to turn on and off auditing; and
receiving user-initiated turning on of the auditing via the configuration means causing the generating of the log record that is associated with the selected node.

13. The method of claim 9, further including: dynamically determining metrics indicative of which nodes of the chart are traversed and how many times the traversed nodes are traversed by the data items.

14. The method of claim 13, further including: dynamically outputting the determined metrics via a user interface, wherein the outputted metrics are updated in response to a change to the determined metrics.

15. The method of claim 1, wherein the generating of the log record specifying the execution of those one or more portions of the executable logic for that given value of the key includes: specifying in the generated log record an outcome of the execution of those one or more portions of the executable logic, specifying variables that are read or set upon the execution of those one or more portions of the executable logic, or identifying those one or more portions of the executable logic that are executed.

16. The method of claim 1, further including: in response to executing the one or more portions of the executable logic, initiating an action to be executed by a computing system.

17. The method of claim 16, wherein the action includes requesting additional computational resources for the execution of the one or more portions of executable logic based on an execution characteristic of the execution of the one or more portions of executable logic.

18. The method of claim 1, further including: maintaining the states by storing, in a data repository or in an in-memory data grid, state data indicative of which portion of the executable logic is currently being executed for each state.

19. The method of claim 18, further including: in response to completing the processing of the one or more of the data items that are each associated with the given value of the key, updating the state data to specify a current state for that value of the key.

20. The method of claim 1, further including:
generating a stream of log records documenting paths taken through the chart;
transforming the generated log records; and
storing the transformed log records in a relational database or in an index compressed flat file including batching log records together at a specified granularity.

21. The method of claim 1, further including: receiving a user selection of a first one of the data items of the stream; and causing display of an indication of the one or more portions of the executable logic currently being executed on the selected first one of the data items.

22. The method of claim 21, further including:
comparing the selected first one of the data items of the stream currently being processed with a predetermined reference data item;

determining if a deviation exists between the first one of the data items of the stream currently being processed and the predetermined reference data item or if such a deviation does not exist; and

outputting an indication whether the first one of the data items of the stream currently being processed is in agreement with the predetermined reference data item based on the determining if a deviation exists between the first one of the data items of the stream currently being processed and the predetermined reference data item or if such a deviation does not exist.

23. The method of claim 21, further including:
comparing the one or more portions of the executable logic currently being executed on the first one of the data items with a predetermined reference executable logic;

determining if a deviation exists between the one or more portions of the executable logic currently being executed on the first one of the data items and the predetermined reference executable logic or if such a deviation does not exist; and

outputting an indication whether the or more portions of the executable logic currently being executed on the first one of the data items is in agreement with the predetermined reference executable logic based on the determining if a deviation exists between the one or more portions of the executable logic currently being executed on the first one of the data items and the predetermined reference executable logic or if such a deviation does not exist.

24. The method of claim 1, wherein a log record is a structured data record with a field for storing data specifying which portion of the executable logic represented by the specification has been executed at a current time for a particular value of the key.

25. The method of claim 1, wherein the specification is a chart, and wherein one or more log records specify a path through the chart that represents which portions of the executable logic are executed in processing one or more data records associated with a particular value of the key.

26. The method of claim 1, further including: generating one or more output records based on processing of one or data items; wherein each of the one or more output records includes data not included in the log record.

27. A data processing system for identifying one or more portions of executable logic of respective one or more sets of executable logic that are executed in processing one or more data items, wherein the one or more data items are each associated with a given value of a key, wherein the executable logic is represented as a specification that includes a chart, and the respective one or more sets of executable logic represent respective one or more implementations of executable logic, the data processing system including: one or more processors; and one or more non-transitory machine-readable hardware storage devices storing instructions that are executable by the one or more processing devices to perform the method of any one of claims 1 to 26.

28. One or more non-transitory machine-readable hardware storage devices for identifying one or more portions of executable logic of respective one or more sets of executable logic that are executed in processing one or more data items, wherein the one or more data items are each associated with a given value of a key, wherein the executable logic is represented as a specification that includes a chart, and the respective one or more sets of executable logic represent respective one or more implementations of executable logic, the one or more non-transitory machine-readable hardware storage devices storing instructions that are executable by one or more processing devices to perform the method of any one of claims 1 to 26.