What is claimed is:

1. A method for locating records in a data store storing a plurality of structured records, the method including:

accessing the plurality of structured records stored in the data store, at least some records of the plurality of structured records each including a plurality of segments of the respective record, each segment of the plurality of segments of the respective record having a position in a nested hierarchy of segments, and at least some segments of the plurality of segments of the respective record being associated with one or more corresponding values;

indexing the plurality of structured records, the indexing including:

forming an index data structure, the index data structure associating records of the plurality of structured records with a plurality of keys, each key including a value corresponding to a segment and a position of the segment in the nested hierarchy of segments, and each key being associated with a corresponding indicator that associates the key with associated records;

associating, in the index data structure, each record, of at least some of the plurality of structured records, with corresponding one or more keys, where associating a first record with a first key includes parsing the first record to identify a first value corresponding to a first segment of the first record and corresponding to a first position of the first segment in the nested hierarchy of segments, and updating a particular indicator in the index data structure associated with the first key that includes the first value and the first position to identify the first record;

processing a query to retrieve records of the plurality of structured records that match the query using the index data structure, the processing including:

processing the query including determining a set of one or more keys that includes at least a first key that represents a first query position and a first query value;

determining an indicator of the plurality of structured records that match the query, including retrieving a first indicator from the index data structure based on the first key and determining the indicator of the plurality of structured records based on the first indicator; and

retrieving the subset of the plurality of structured records from the data store according to the indicator.

2. The method of claim 1 wherein accessing the structured records includes receiving the structured records from the data store, and indexing the structured records is performed without maintaining copy of the data store after indexing.

3. The method of claim 1 wherein accessing the structured records includes receiving the structured records, and storing the structured records in a format of the received records or in a compressed format the data store, and the indexing of the structured records does not require forming a tabular representation of the data store.

4. The method of any of claims 1 through 3 wherein the nested hierarchy of segments is represented using a grammar of segments, and wherein parsing the first record includes using the grammar to identify the first position according to a nesting of segments within the first record.

5. The method of any of claims 1 through 4 wherein each distinct position of a segment in a nested hierarchy of segments is represented by a different number.

6. The method of any of the preceding claims wherein each indicator is associated with a corresponding key and includes a bit vector representation of one or more records of the plurality of records associated with the key.

7. The method of any of claims 1 through 6 wherein for each key of the plurality of keys, the position in the nested hierarchy is represented as a path in the nested hierarchy.

8. The method of any of claims 1 through 6 wherein for each key of the plurality of keys, the position in the nested hierarchy is represented as a numerical identifier.

9. The method of any of the preceding claims wherein the set of one or more keys includes a second key that includes a second query value and a second query position, and wherein determining the indicator of the plurality of structured records further includes retrieving a second indicator from the index data structure based on the second key, the determining the indicator of the subset of the plurality of records is further based on the second indicator.

10. The method of claim 9 wherein the query defines a Boolean combination of terms, including a first term associated with the first key and a second term associated with the second key, and wherein determining the indicator of the subset of the plurality of records is based on a Boolean combination of the first indicator and the second indicator.

11. The method of any of the preceding claims wherein at least some segments of records are associated with more than one corresponding value, each value having a different offset in the segment, and the query further includes an offset representing an offset within a plurality of values associated with a segment.

12. The method of claim 11 wherein the offset identifies a component of the segment.

13. The method of claim 12 wherein the offset further identifies a value within the segment.

14. The method of claim 13 wherein the offset identifies the component as a numerical reference to an enumeration of components of the segment, and the offset identifies the value within the segment as a numerical reference to an enumeration of values in the component.

15. Software stored in a non-transitory form on a computer-readable medium, the software including instructions for causing a computing system to perform all the steps of any one of claims 1 through 14.

16. A computing system for locating records of a plurality of structured records in a data store that match a query, the system being configured to perform all the steps of any one of claims 1 through 14.

What is claimed is:

1. A method for locating records in a data store for a plurality of structured records, the method including:

accessing the plurality of structured records stored in the data store, the structured records conforming to a specification defining a set of allowable records and a predefined nested hierarchy of segments, the specification including respective identifiers of distinct nested contexts in the predefined nested hierarchy of segments;

wherein at least some records of the plurality of structured records each include a plurality of segments of the respective record, each segment of the plurality of segments of the respective record having a context in the predefined nested hierarchy of segments, and at least some segments of the plurality of segments of the respective record being associated with one or more corresponding values;

indexing the plurality of structured records, the indexing including:

forming an index data structure, the index data structure associating records of the plurality of structured records with a plurality of keys, each key including a value corresponding to a segment and an identifier of a context of the segment in the nested hierarchy of segments, and each key being linked via the index data structure with a corresponding indicator that associates the key with associated records;

associating, in the index data structure, each record, of at least some of the plurality of structured records, with corresponding one or more keys, where associating a first record with a first key includes parsing the first record to identify a first value corresponding to a first segment of the first record and corresponding to a first context of the first segment in the nested hierarchy of segments, and updating a particular indicator in the index data structure linked via the index data structure with the first key that includes the first value and the identifier of the first context to identify the first record;

processing a query to retrieve records of the plurality of structured records that match the query using the index data structure, the processing including:

processing the query including determining a set of one or more keys that includes at least a first key that identifies a first query context specifying a query segment and a nesting

of the query segment within other segments of the predefined nested hierarchy of segments and includes a first query value;

determining an indicator of the plurality of structured records that match the query, including retrieving a first indicator from the index data structure based on the first key and determining the indicator of the plurality of structured records based on the first indicator; and

retrieving a subset of the plurality of structured records from the data store according to the indicator.

2. The method of claim 1 wherein accessing the structured records includes receiving the structured records from the data store, and indexing the structured records is performed without maintaining a copy of the data store after indexing.

3. The method of claim 1 wherein accessing the structured records includes receiving the structured records, and storing the structured records in a format of the received records or in a compressed format the data store, and the indexing of the structured records does not require forming a tabular representation of the data store.

4. The method of claim 1 wherein the nested hierarchy of segments is represented using a grammar of segments, and wherein parsing the first record includes using the grammar to identify the first context according to a nesting of segments within the first record.

5. The method of claim 1 wherein each distinct context of a segment in a nested hierarchy of segments is represented by a different number.

6. The method of claim 1 wherein each indicator is associated with a corresponding key and includes a bit vector representation of one or more records of the plurality of records associated with the key.

7. The method of claim 1 wherein for each key of the plurality of keys, the context in the nested hierarchy is represented as a path in the nested hierarchy.

8. The method of claim 1 wherein for each key of the plurality of keys, the context in the nested hierarchy is represented as a numerical identifier.

9. The method of claim 1 wherein the set of one or more keys includes a second key that includes a second query value and a second query context, and wherein determining the indicator of the plurality of structured records further includes retrieving a second indicator from the index data structure based on the second key, the determining the indicator of the subset of the plurality of records is further based on the second indicator.

10. The method of claim 9 wherein the query defines a Boolean combination of terms, including a first term associated with the first key and a second term associated with the second key, and wherein determining the indicator of the subset of the plurality of records is based on a Boolean combination of the first indicator and the second indicator.

11. The method of claim 1 wherein at least some segments of records are associated with more than one corresponding value, each value having a different offset in the segment, and the query further includes an offset representing an offset within a plurality of values associated with a segment.

12. The method of claim 11 wherein the offset identifies a component of the segment.

13. The method of claim 12 wherein the offset further identifies a value within the segment.

14. The method of claim 13 wherein the offset identifies the component as a numerical reference to an enumeration of components of the segment, and the offset identifies the value within the segment as a numerical reference to an enumeration of values in the component.

15. The method of claim 4 wherein each distinct context of a segment in a nested hierarchy of segments is represented by a different number.

16. The method of claim 15 wherein each indicator is associated with a corresponding key and includes a bit vector representation of one or more records of the plurality of records associated with the key.

17. The method of claim 16 wherein at least some segments of records are associated with more than one corresponding value, each value having a different offset in the segment, and the query further includes an offset representing an offset within a plurality of values associated with a segment.

18. The method of claim 4 wherein for each key of the plurality of keys, the context in the nested hierarchy is represented as a path in the nested hierarchy.

19. A non-transitory computer-readable medium comprising software stored thereon, the software including instructions for causing a computing system to perform operations including:

accessing a plurality of structured records stored in a data store,

the structured records conforming to a specification defining a set of allowable records and a predefined nested hierarchy of segments, the specification including respective identifiers of distinct nested contexts in the predefined nested hierarchy of segments;

wherein at least some records of the plurality of structured records each include a plurality of segments of the respective record, each segment of the plurality of segments of the respective record having a context in the predefined nested hierarchy of segments, and at least some segments of the plurality of segments of the respective record being associated with one or more corresponding values;

indexing the plurality of structured records, the indexing including:

forming an index data structure, the index data structure associating records of the plurality of structured records with a plurality of keys, each key including a value corresponding to a segment and an identifier of a context of the segment in the nested hierarchy of segments, and each key being linked via the index data structure with a corresponding indicator that associates the key with associated records;

associating, in the index data structure, each record, of at least some of the plurality of structured records, with corresponding one or more keys, where associating a first record with a

first key includes parsing the first record to identify a first value corresponding to a first segment of the first record and corresponding to a first context of the first segment in the nested hierarchy of segments, and updating a particular indicator in the index data structure linked via the index data structure with the first key that includes the first value and the identifier of the first context to identify the first record;

processing a query to retrieve records of the plurality of structured records that match the query using the index data structure, the processing including:

processing the query including determining a set of one or more keys that includes at least a first key that identifies a first query context specifying a query segment and a nesting of the query segment within other segments of the predefined nested hierarchy of segments and includes a first query value;

determining an indicator of the plurality of structured records that match the query, including retrieving a first indicator from the index data structure based on the first key and determining the indicator of the plurality of structured records based on the first indicator; and

retrieving a subset of the plurality of structured records from the data store according to the indicator.

20. A computing system for locating records of a plurality of structured records in a data store that match a query, the system comprising:

means for accessing a plurality of structured records stored in a data store, the structured records conforming to a specification defining a set of allowable records and a predefined nested hierarchy of segments, the specification including respective identifiers of distinct nested contexts in the predefined nested hierarchy of segments,

wherein at least some records of the plurality of structured records each include a plurality of segments of the respective record, each segment of the plurality of segments of the respective record having a context in the predefined nested hierarchy of segments, and at least some segments of the plurality of segments of the respective record being associated with one or more corresponding values;

means for indexing the plurality of structured records, the indexing including:

forming an index data structure, the index data structure associating records of the plurality of structured records with a plurality of keys, each key including a value corresponding to a

segment and an identifier of a context of the segment in the nested hierarchy of segments, and each key being linked via the index data structure with a corresponding indicator that associates the key with associated records;

associating, in the index data structure, each record, of at least some of the plurality of structured records, with corresponding one or more keys, where associating a first record with a first key includes parsing the first record to identify a first value corresponding to a first segment of the first record and corresponding to a first context of the first segment in the nested hierarchy of segments, and updating a particular indicator in the index data structure linked via the index data structure with the first key that includes the first value and the identifier of the first context to identify the first record;

means for processing a query to retrieve records of the plurality of structured records that match the query using the index data structure, the processing including:

processing the query including determining a set of one or more keys that includes at least a first key that represents a first query context specifying a query segment and a nesting of the query segment within other segments of the predefined nested hierarchy of segments and includes a first query value;

determining an indicator of the plurality of structured records that match the query, including retrieving a first indicator from the index data structure based on the first key and determining the indicator of the plurality of structured records based on the first indicator; and

retrieving a subset of the plurality of structured records from the data store according to the indicator.