

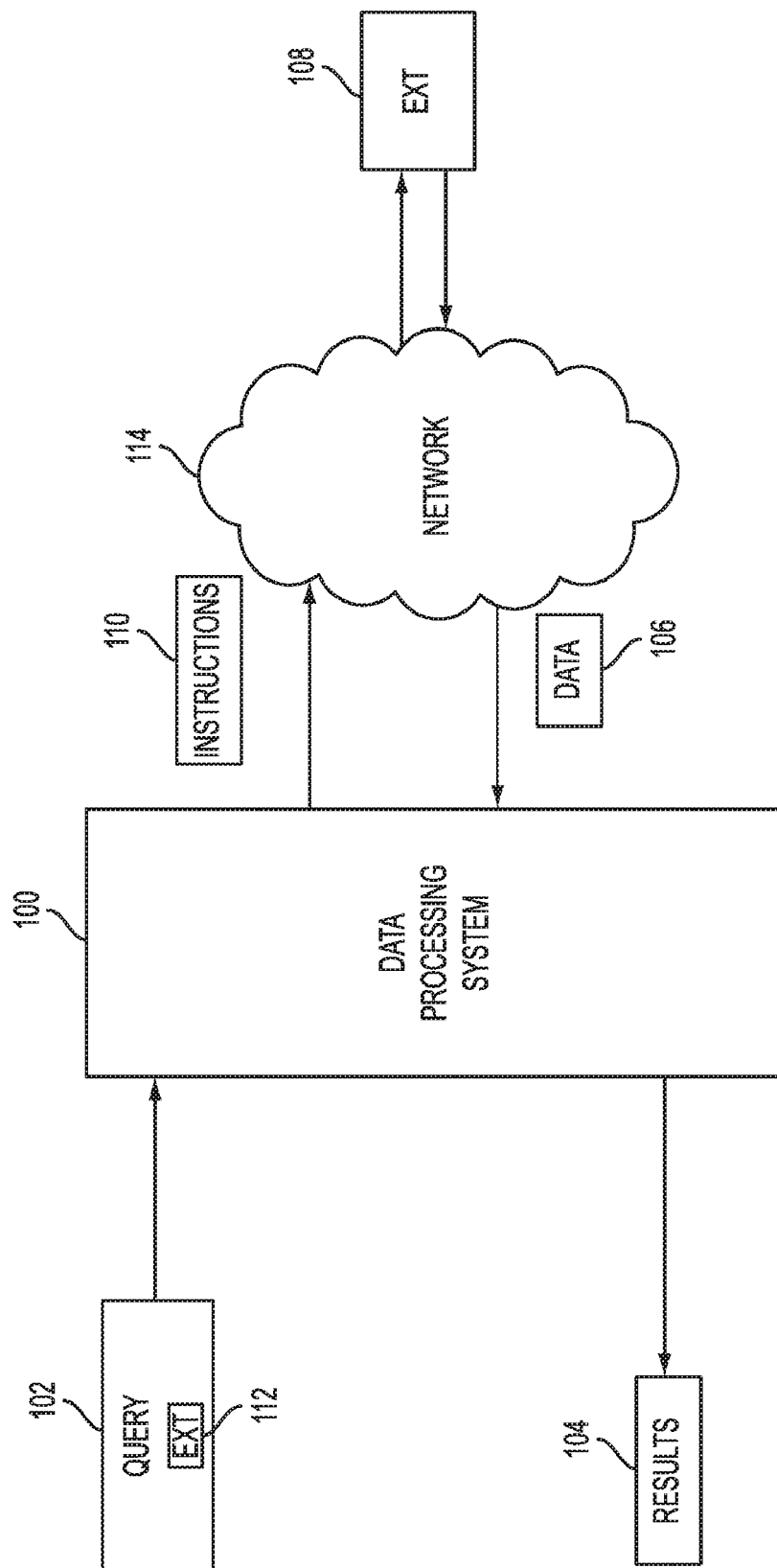


FIG. 1

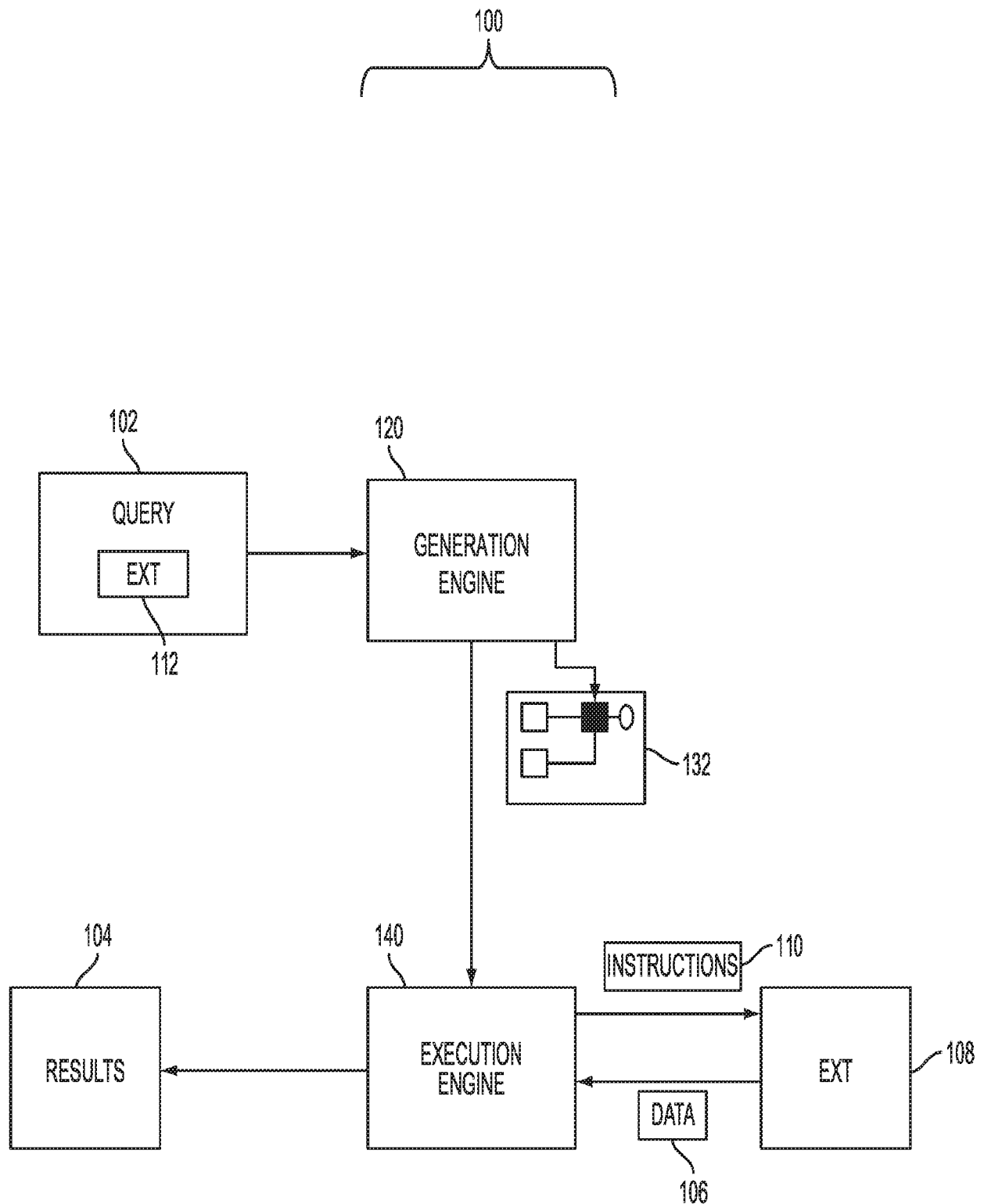


FIG. 2A

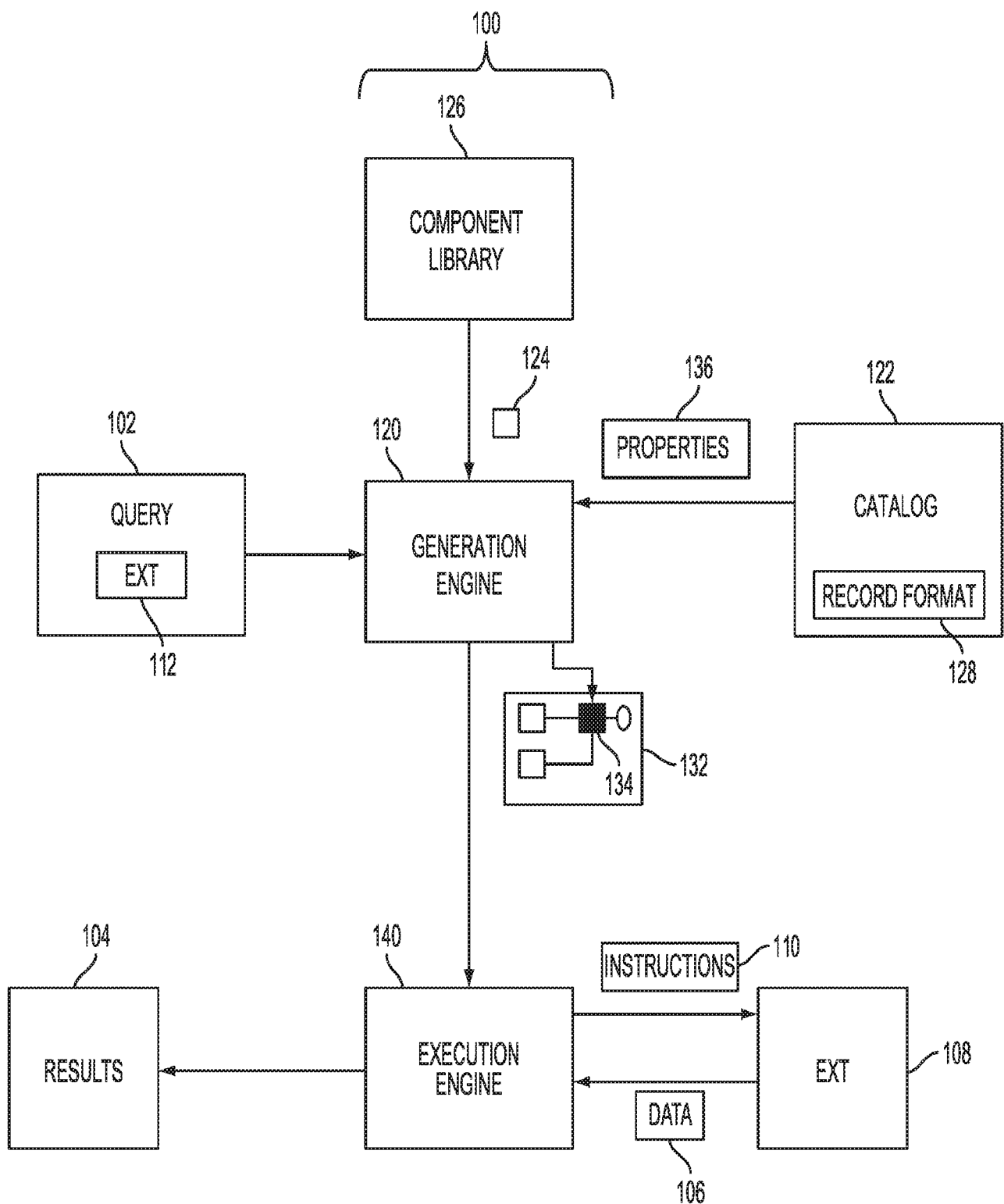


FIG. 2B

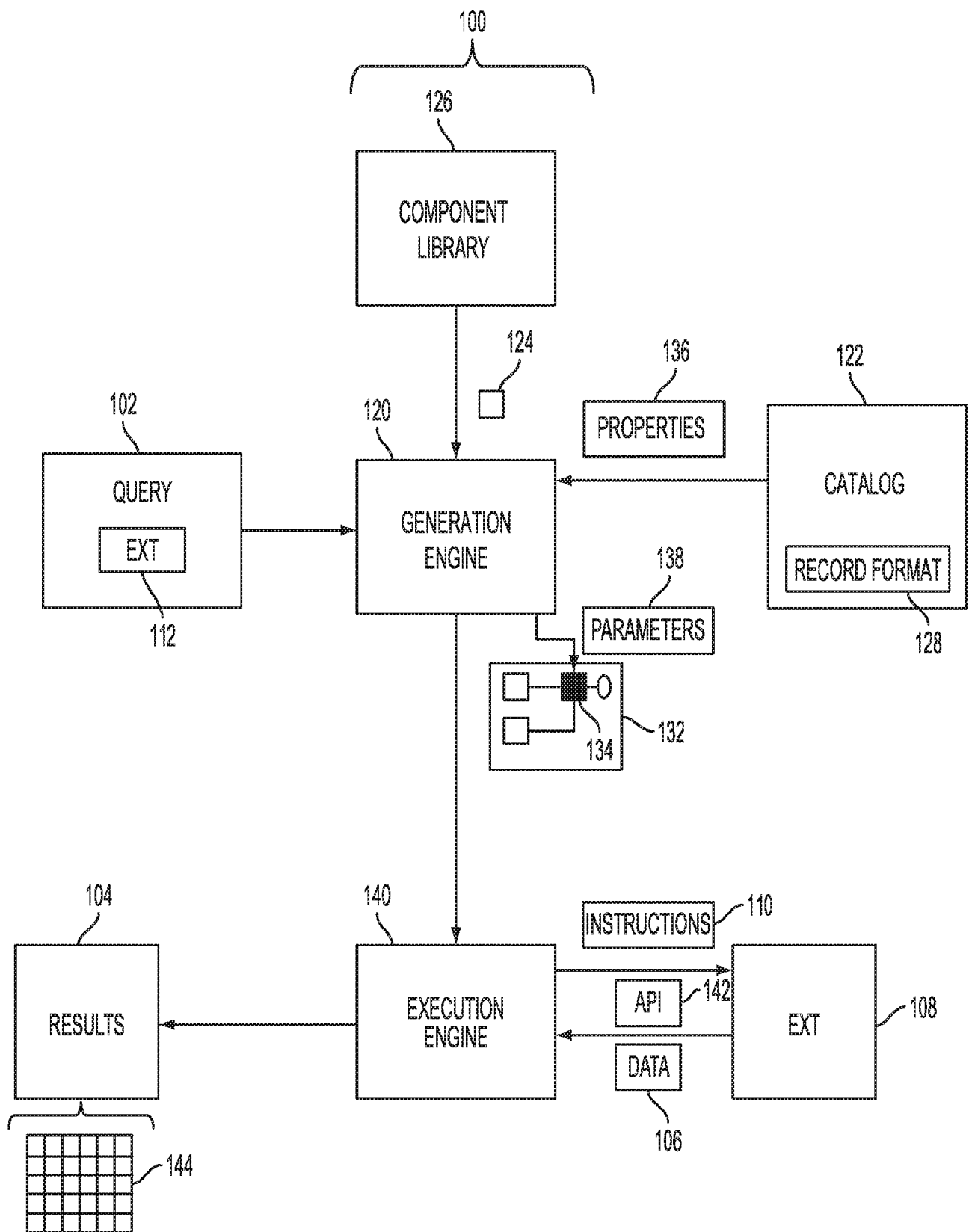


FIG. 2C

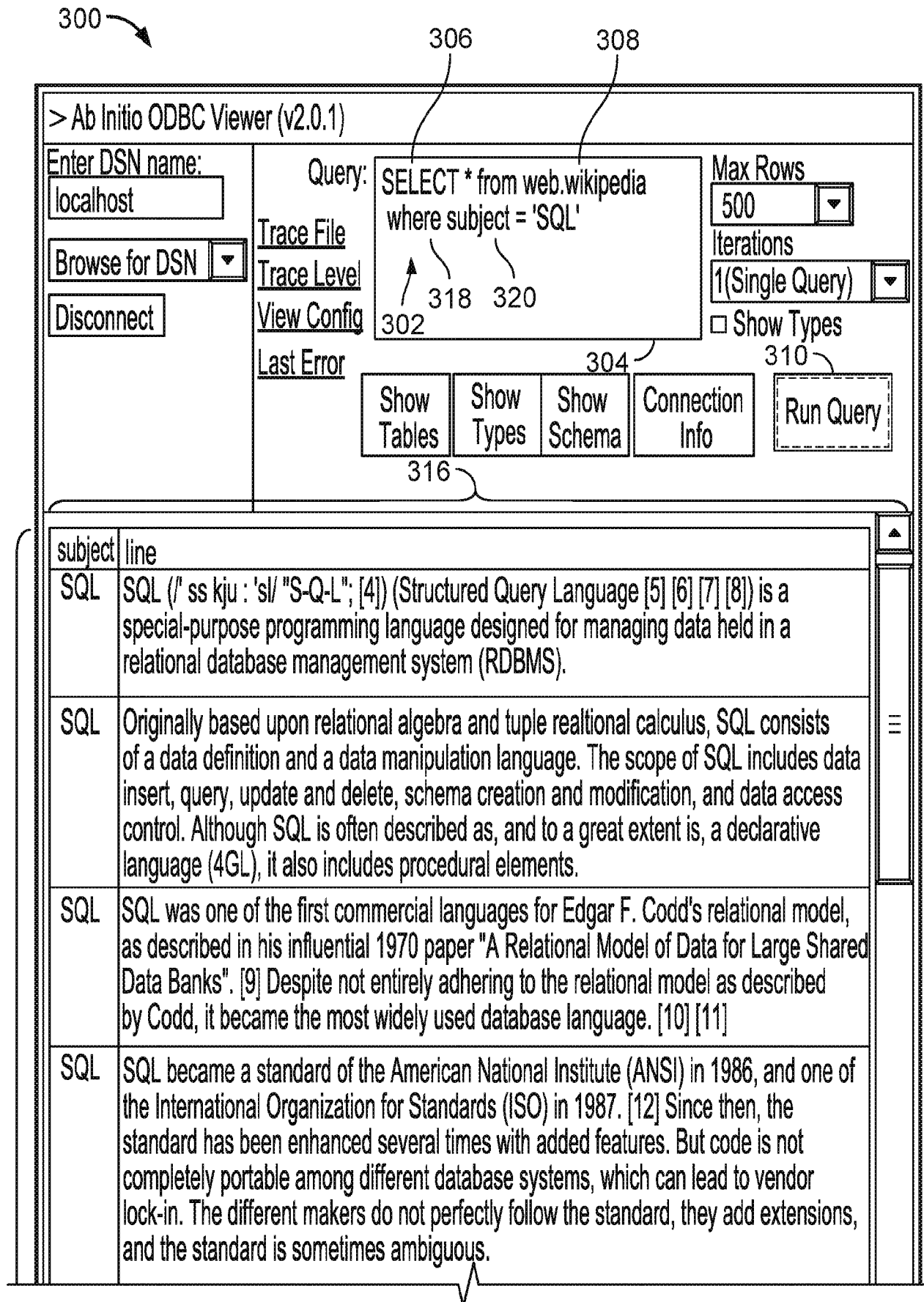


FIG. 3

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SQL	SQL was initially developed at IBM by Donald D. Chamberlin and Raymond F. Boyce in the early 1970s. This version, initially called SEQUEL (Structured English Query Language), was designed to manipulate and retrieve data stored in IBM's original quasi-relational database management system, System R, which a group at IBM San Jose Research Laboratory had developed during the 1970s. [13] the acronym SEQUEL was later changed to SQL because "SEQUEL" was a trademark of the UK-based Hawker Siddeley aircraft company. [14]
SQL	In the late 1970s, Relational Software, Inc. (now Oracle Corporation) saw the potential of the concepts described by Codd, Chamberlin, and Boyce and developed their own SQL-based RQBMS with aspirations of selling it to the U.S. Navy, Central Intelligence Agency, and other U.S. government agencies. In June 1979, Relational Software, Inc. introduced the first commercially available implementation of SQL, Oracle V2 (Version2) for VAX computers.
SQL	After testing SQL at customer test sites to determine the usefulness and practicality of the system, IBM began developing commercial products based on their System R prototype including System/38, SQL/DS, and DB2, which were commercially available in 1979, 1981, and 1983, respectively. [15]
SQL	The SQL language is subdivided into several language elements, including:
SQL	SQL has a case/when/then/else/end expression, which was introduced in SQL-92. In its most general form, which is called a "searched case" in the SQL standard, it works like else if in other programming languages:
SQL	The WHEN conditions are tested in the order in which they appear in the source. If no ELSE expression is specified, it defaults to ELSE NULL. An abbreviated syntax exists mirroring switch statements; it is called "simple case" in the SQL standard:
SQL	This syntax uses implicit equality comparisons, with the usual caveats for comparing with NULL.
SQL	For the Oracle-SQL dialect, the latter can be shortened to an equivalent DECODE construct:
SQL	The last value is the default; if none is specified, it also defaults to NULL. However, unlike the standard's "simple case", Oracle's DECODE considers two NULLs to be equal with each

Status: [56 rows] - Query: 'SELECT * from web.wikipedia where subject = 'SQL'
 completed Query-time: 3.360 mSec Render-time: 5mSec

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FIG. 3 (Cont.)

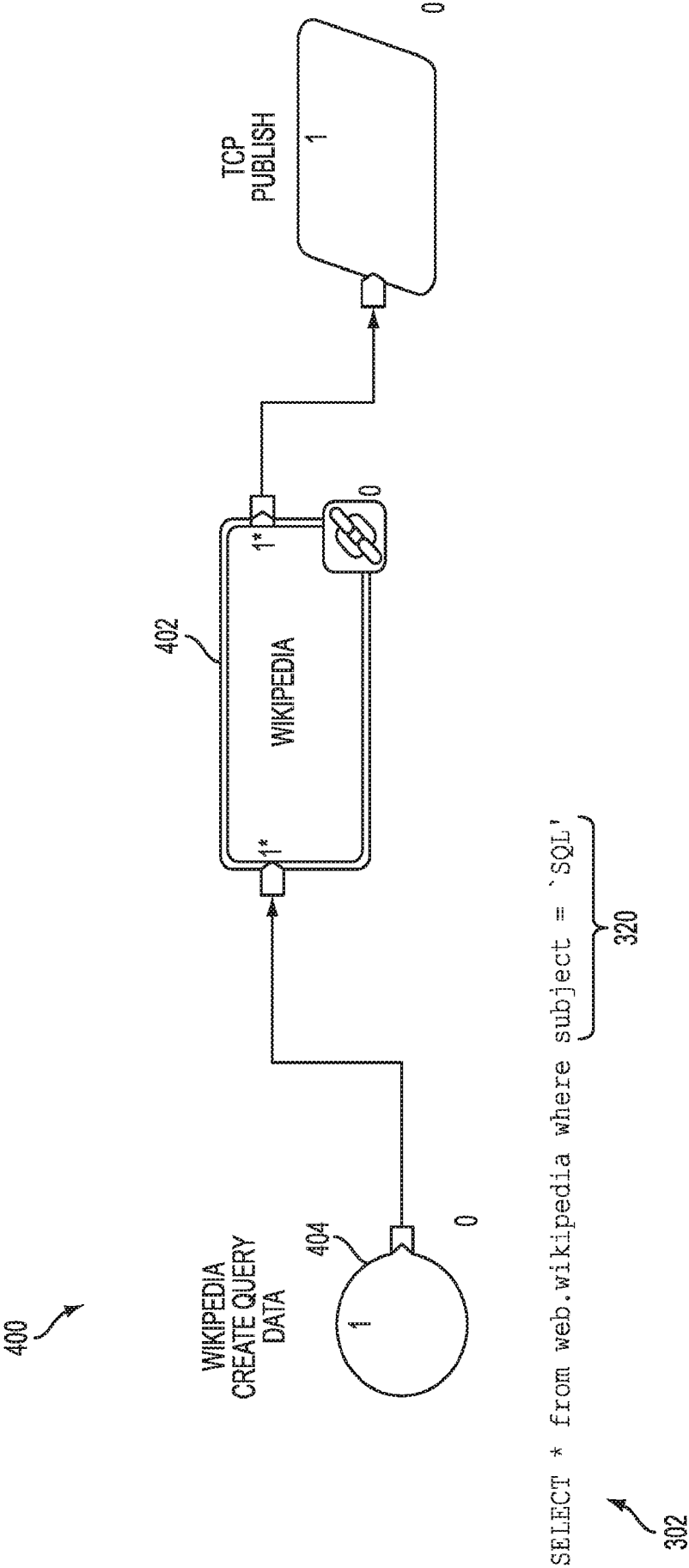


FIG. 4A

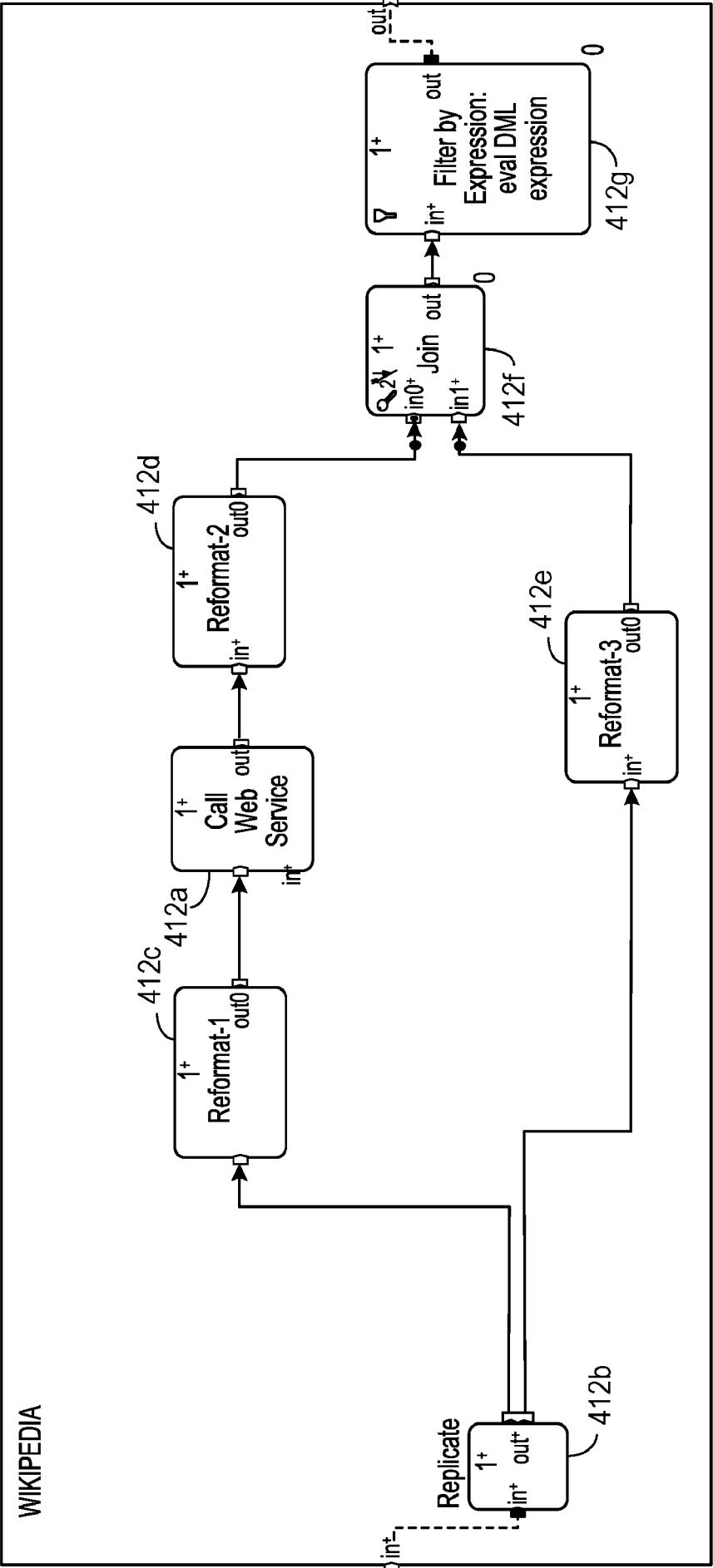


FIG. 4B

```

1  type request_type=record
2      ascii string ("\0" request_url;
3      record
4          utf8 string ("\0") name;
5          utf8 string ("\0") value;
6      end [big endian integer (4)] request_url params = NULL;
7      void (big endian integer (4)) request_body = NULL;
8      end; /*Metadata for records containing request information*/
9
10 type response_type=record
11 //      The response_type field definitions are shown below.
12 //      The definitions are shown here for informational purposes only.
13 //      You cannot change the definition of response_type.
14     big endian integer (4) response_code;
15     ascii string (big endian integer (4)) response_headers = NULL;
16     void (big endian integer (4)) response_body = NULL;
17     end; /*Metadata for records containing response information*/
18
19 type response_vector-type=response_type [int]; /*Response vector*/
20
21 request :: prepare_request (in) =
22     begin
23         request.request_url :: "http://en.wikipedia.org/wiki/" + in.subject;
24     end;
25
26 out :: create_output (in, response) =
27     begin
28         out.* :: response.*;
29         out.subject :: in.subject;
30     end;

```

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FIG. 4C

504a

Data Source:  ws.wikipedia

504b

 X

504c

504d

504e

504f

504g

Info	Record Format	Indices	Keys	Parameters	Permissions	Statistics
Name		wikipedia				
Schema		ws				
Data space						
Kind		query_engine				
Data URL		.				
Subgraph path (sequential scan)		\${AI_COMPONENTS}/wikipedia_qe_subg.mp				
Insert subgraph path						
Allow sequential scan		☒				
Scan subgraph folds		☒				
Index subgraph folds		☒				
Subgraph interface version		1				

500

502

506

FIG. 5A

Data Source:

ws.wikipedia


x
504b

Info
Record Format
Indices
Keys
Parameters
Permissions
Statistics

☒ Embedded Record Format

record utf8 string (") subject; utf8 string (") line; end

508

Record Format File

x Clear
 View

Fields:
510

Name	Type	Size
 subject	String	NULL-delimited
 line	String	NULL-delimited

FIG. 5B

502

500

[illegible]

FIG. 5C

502

500

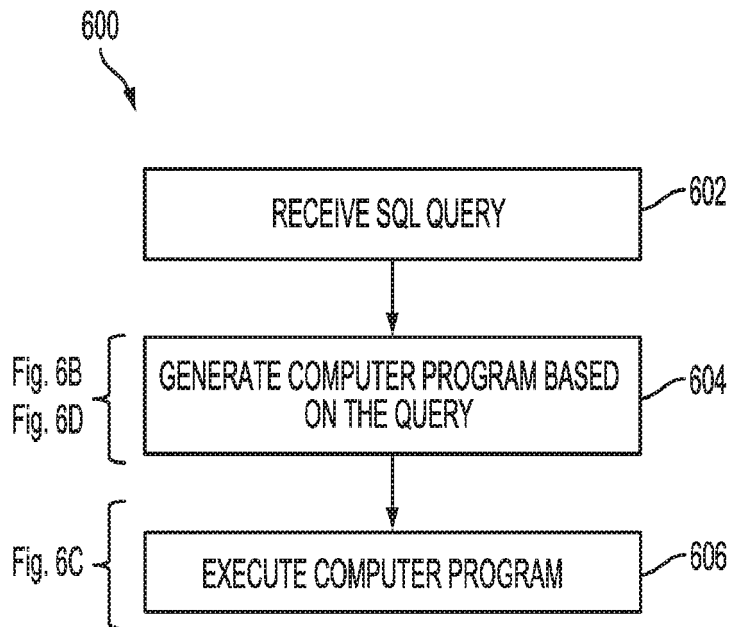
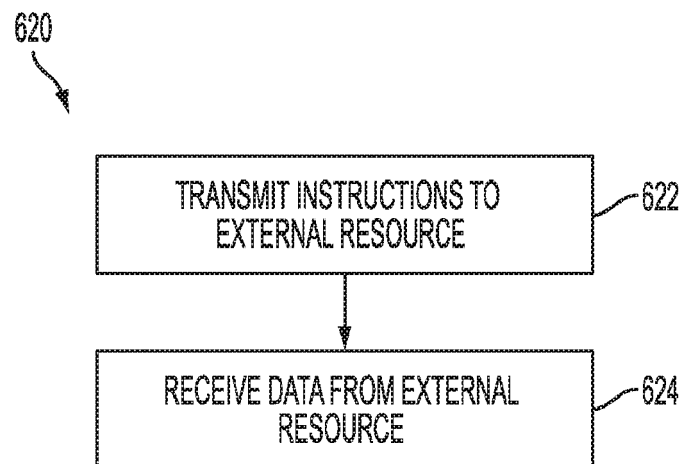
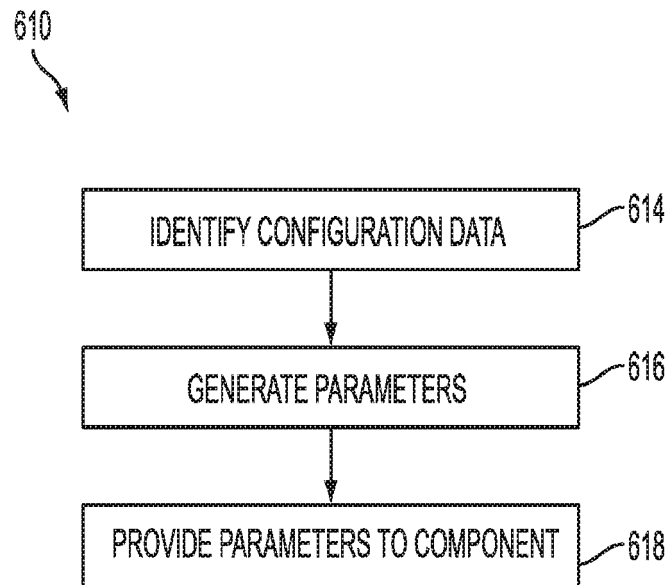


FIG. 6A



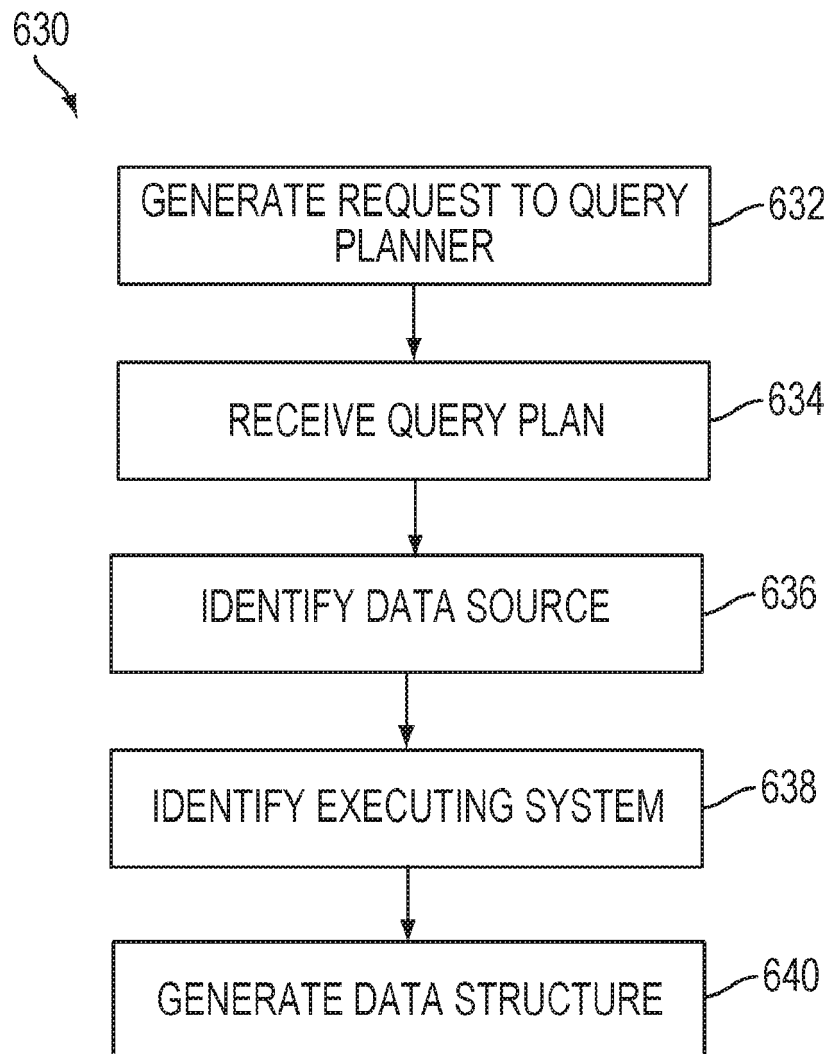


FIG. 6D