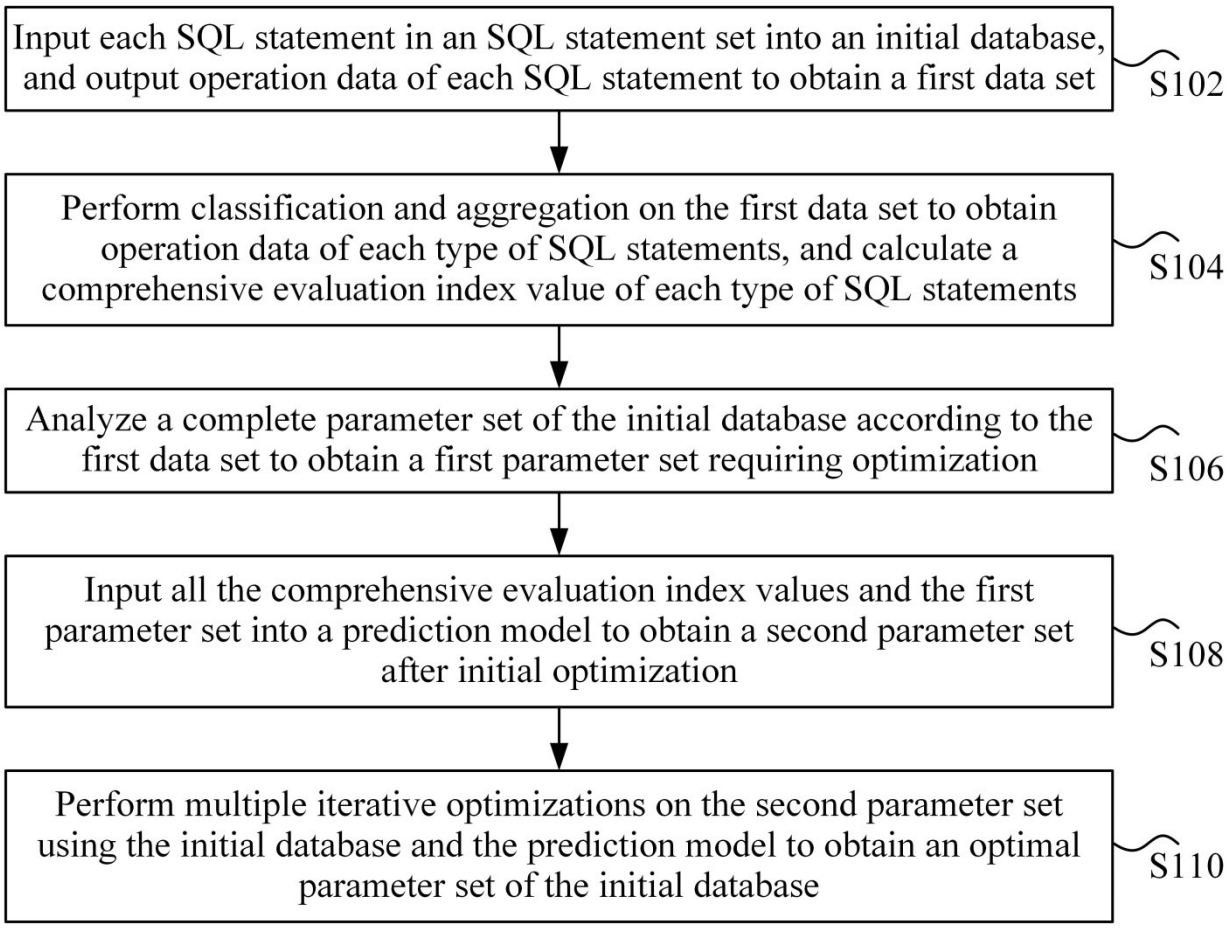

Input each SQL statement in an SQL statement set into an initial database, and output operation data of each SQL statement to obtain a first data set
S102
Perform classification and aggregation on the first data set to obtain operation data of each type of SQL statements, and calculate a comprehensive evaluation index value of each type of SQL statements
S104
Analyze a complete parameter set of the initial database according to the first data set to obtain a first parameter set requiring optimization
S106
Input all the comprehensive evaluation index values and the first parameter set into a prediction model to obtain a second parameter set after initial optimization
S108
Perform multiple iterative optimizations on the second parameter set using the initial database and the prediction model to obtain an optimal parameter set of the initial database
S110

FIG. 1

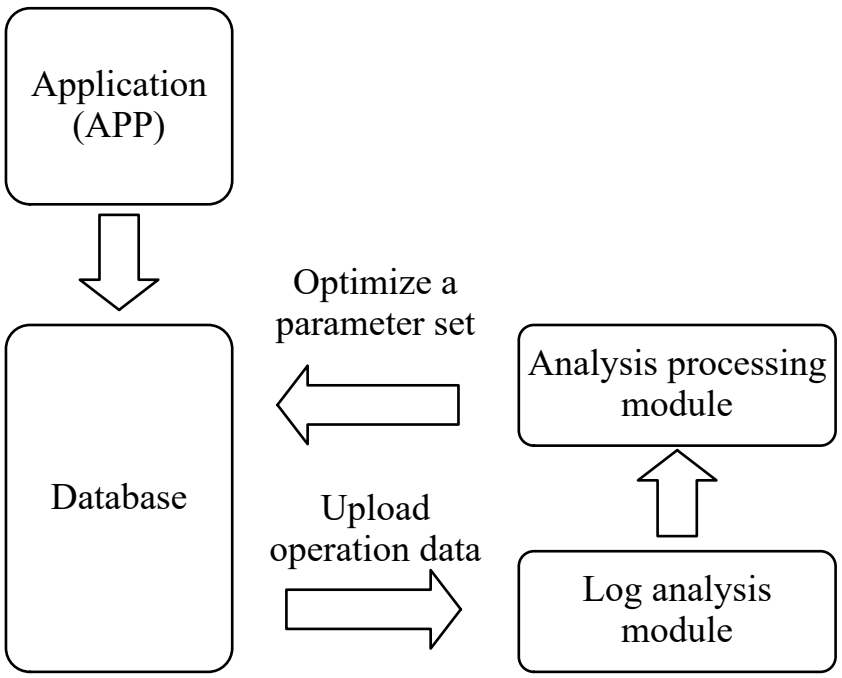

Application (APP)
Database
Optimize a parameter set
Upload operation data
Analysis processing module
Log analysis module

FIG. 2

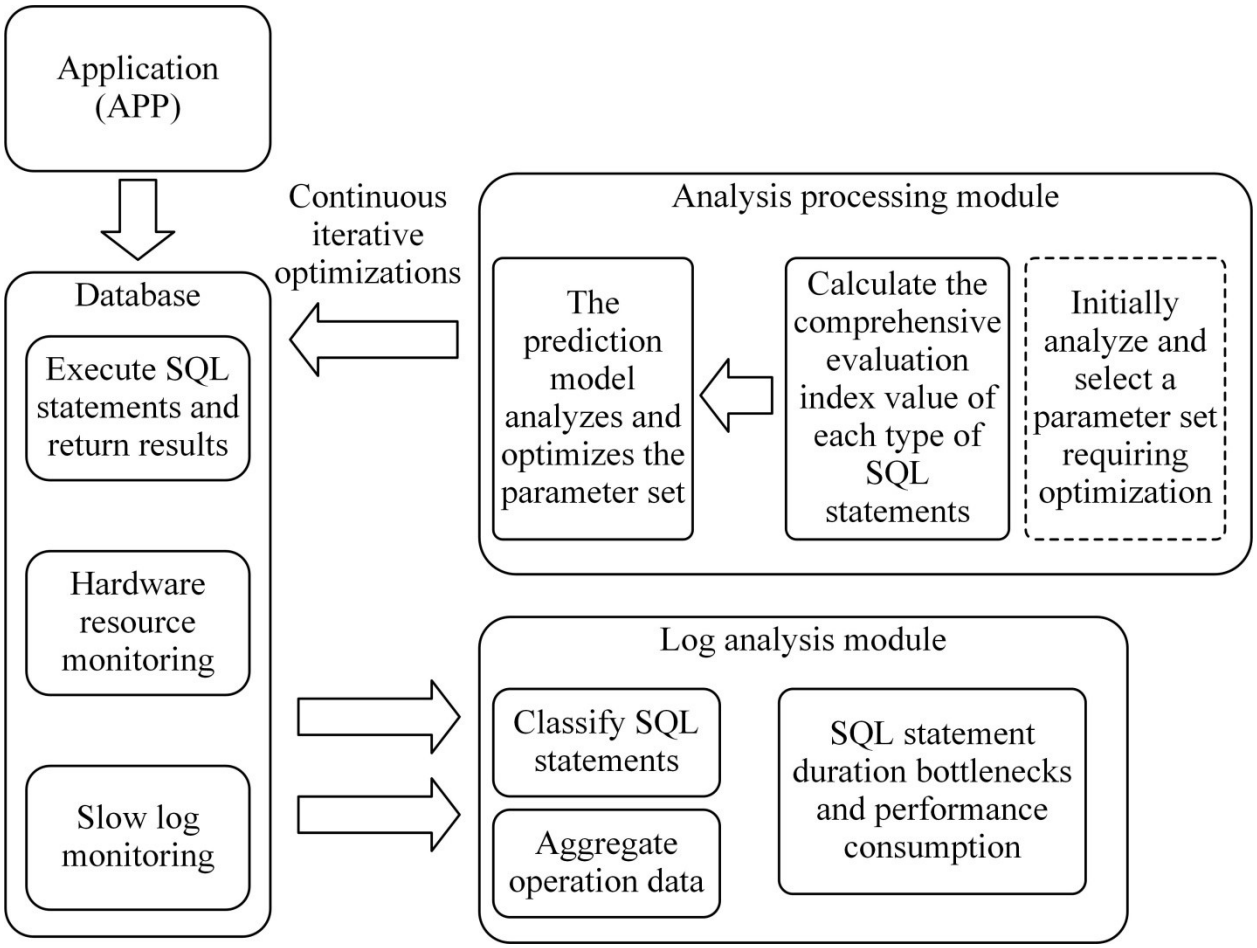

Application (APP)
Continuous iterative optimizations
Analysis processing module
Database
Execute SQL statements and return results
Hardware resource monitoring
Slow log monitoring
The prediction model analyzes and optimizes the parameter set
Calculate the comprehensive evaluation index value of each type of SQL statements
Initially analyze and select a parameter set requiring optimization
Log analysis module
Classify SQL statements
Aggregate operation data
SQL statement duration bottlenecks and performance consumption

FIG. 3

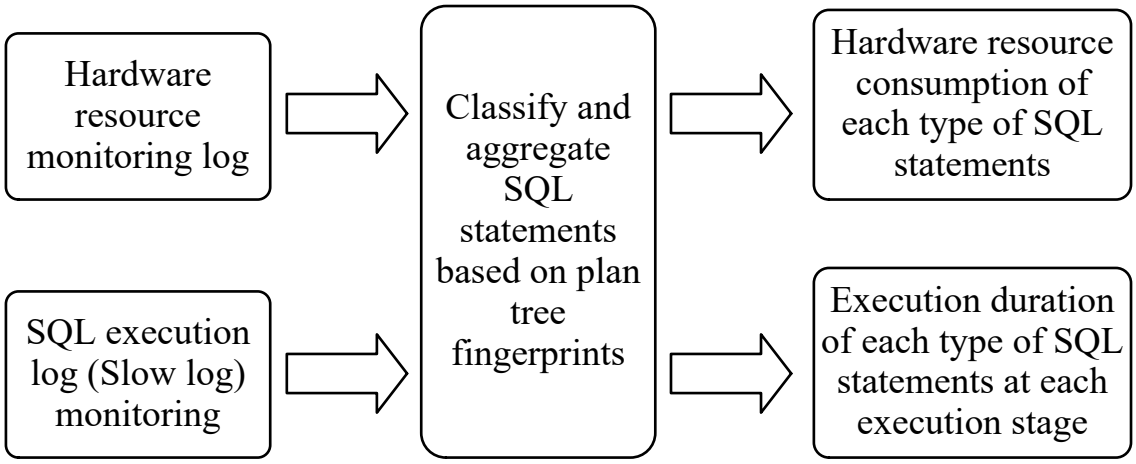

Hardware resource monitoring log
SQL execution log (Slow log) monitoring
Classify and aggregate SQL statements based on plan tree fingerprints
Hardware resource consumption of each type of SQL statements
Execution duration of each type of SQL statements at each execution stage

FIG. 4

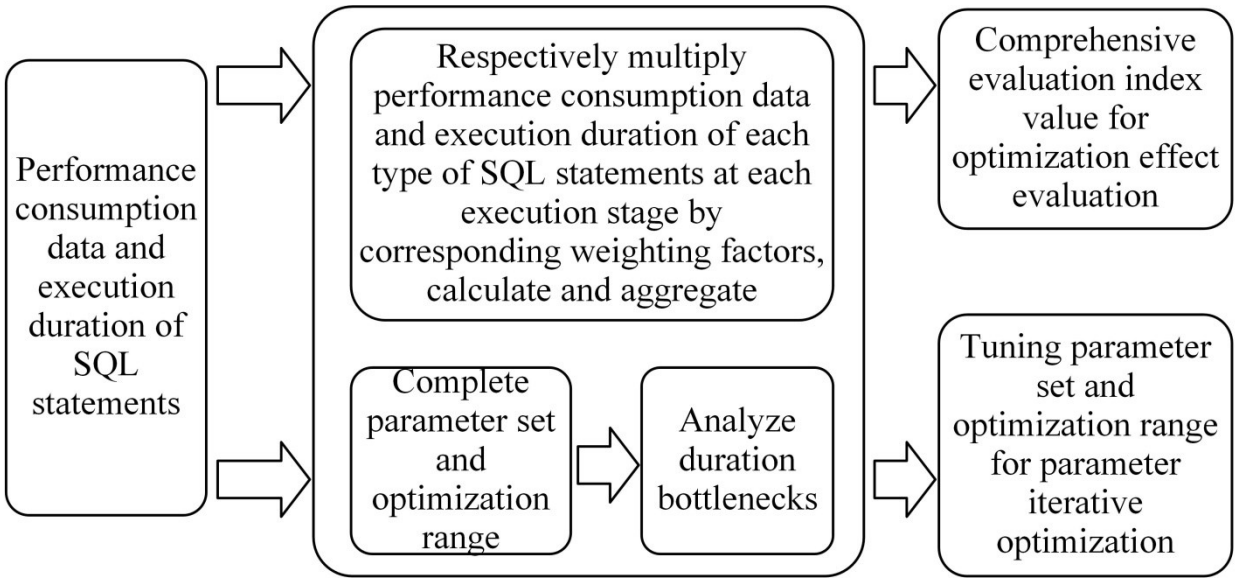

Performance consumption data and execution duration of SQL statements
Respectively multiply performance consumption data and execution duration of each type of SQL statements at each execution stage by corresponding weighting factors, calculate and aggregate
Comprehensive evaluation index value for optimization effect evaluation
Complete parameter set and optimization range
Analyze duration bottlenecks
Tuning parameter set and optimization range for parameter iterative optimization

FIG. 5

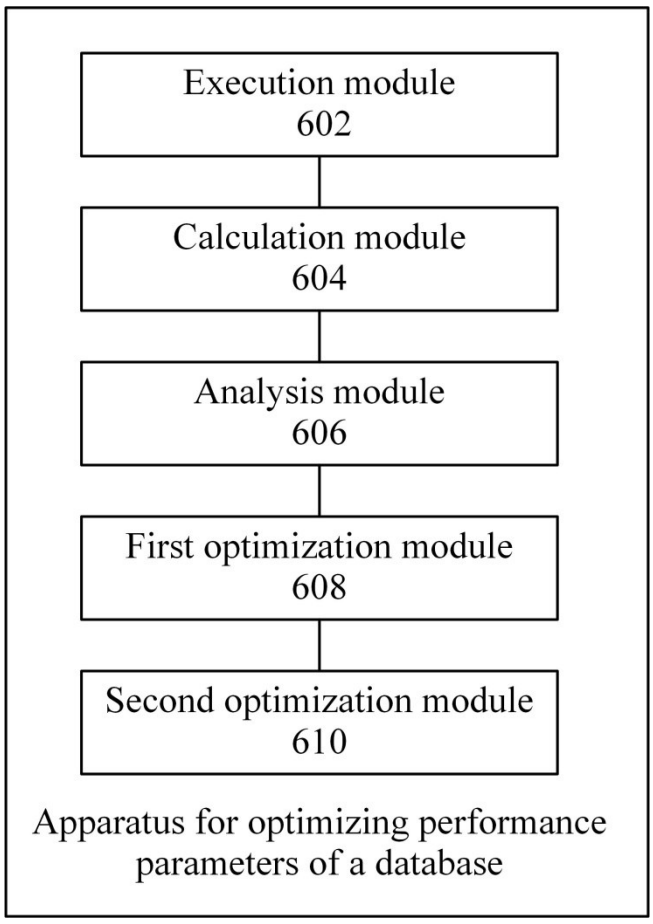

Execution module 602
Calculation module 604
Analysis module 606
First optimization module 608
Second optimization module 610
Apparatus for optimizing performance parameters of a database

FIG. 6

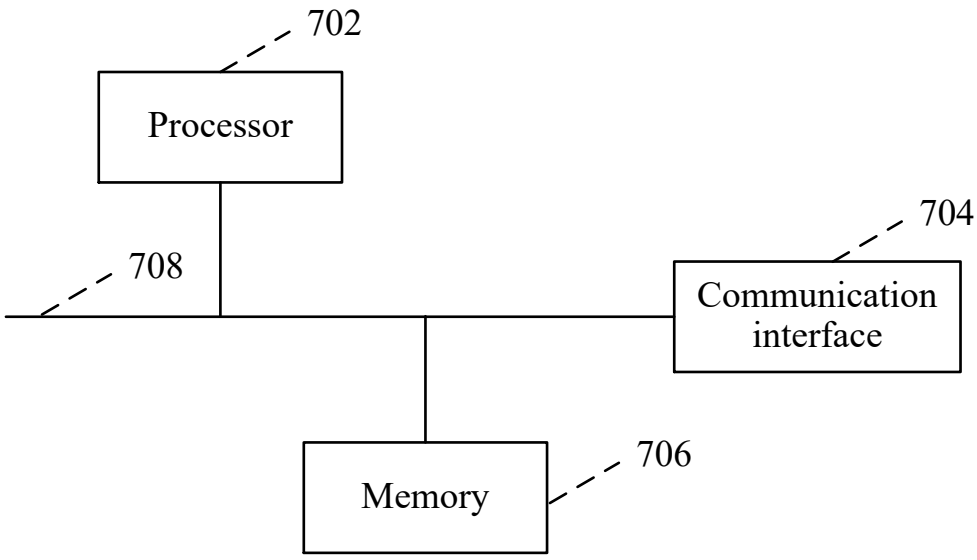


FIG. 7