CLAIMS

What is claimed is:

1. A database access method, comprising:

receiving (S310) a database access statement;

parsing (S320) the database access statement to determine a target user parameter in the database access statement;

determining (S330) a statement type of the database access statement, wherein determining the statement type comprises

parameterizing (S550) the database access statement to obtain a parameterized database access statement by

(1) extracting (S530) a corresponding object set from the database access statement,

(2) for an object in the object set, determining (S540) an object type group that the object belongs to, and obtaining a corresponding group name, and

(3) replacing the object in the database access statement with the corresponding group name, and replacing the target user parameter with a wildcard, and

determining (560) the statement type based on the parameterized database access statement;

obtaining (S340) a pre-stored execution plan group corresponding to statement type of the database access statement, wherein execution plans in the execution plan group are distinguished by using different user parameters;

selecting (S350) a target execution plan from the execution plan group based on the target user parameter; and

executing (S360) the target execution plan.

2. The method according to claim 1, further comprising a step of determining multiple object type groups, comprising:

selecting multiple objects with the same object pattern from a database;

grouping the multiple objects;

repeating the previously described selection and grouping steps until all objects in

the database are categorized into corresponding multiple groups; and

using the multiple groups obtained by categorization as the multiple object type groups, and establishing a mapping relationship between each object in the database and the multiple object type groups, wherein

the determining an object type group that the object belongs to comprises:

determining the object type group that the object belongs to, based on the mapping relationship.

3. The method according to claim 1 or 2, wherein the selecting a target execution plan from the execution plan group based on the target user parameter comprises:

for the object in the object set, determining whether an object pattern of the object is the same as an object pattern of each object in the object type group that the object belongs to;

if the object patterns are the same, successively calculating a similarity between the object and each object; and

when a similarity between the object and any object is less than a predetermined threshold, selecting the target execution plan from the execution plan group based on the target user parameter; or

when no similarity between the object and each object is less than a predetermined threshold, re-determining an object type group that the object belongs to, and obtaining a corresponding target execution plan based on the re-determined object type group.

4. The method according to claim 2, further comprising:

for each object in each object type group, periodically and successively calculating similarities between the object and other objects in the object type group; and

when none of the similarities between the object and other objects is less than a predetermined threshold, re-determining an object type group that the object belongs to.

5. The method according to claim 1, wherein the selecting a target execution plan from the execution plan group based on the target user parameter comprises:

calculating an Euclidean distance between the target user parameter and a user parameter corresponding to each execution plan in the execution plan group; and

when an Euclidean distance between the target user parameter and a user

parameter corresponding to any execution plan is less than a distance threshold, using the any execution plan as the target execution plan.

6. The method according to claim 1, wherein when the target execution plan is not obtained by selection, the method further comprises:

generating a new execution plan based on the target user parameter; and

adding the new execution plan to the execution plan group and executing the new execution plan.

7. A database access apparatus, comprising:

a receiving unit (601), configured to receive a database access statement;

a parsing unit (602), configured to parse the database access statement received by the receiving unit (601), to determine a target user parameter comprised in the database access statement;

a determining unit (603), configured to determine a statement type of the database access statement, the determining a statement type of the database access statement comprising:

parameterizing the database access statement to obtain a parameterized database access statement, the parametrizing comprising:

extracting a corresponding object set from the database access statement;

for an object in the object set, determining an object type group that the object belongs to, and obtaining a corresponding group name; and

replacing the object in the database access statement with the corresponding group name, and replacing the target user parameter with a wildcard; and

determining the statement type based on the parameterized database access statement;

an acquisition unit (604), configured to obtain a pre-stored execution plan group corresponding to the database access statement of the statement type determined by the determining unit (603), wherein execution plans in the execution plan group are distinguished by using different user parameters;

a selection unit (605), configured to select a target execution plan from the execution plan group obtained by the acquisition unit (604), based on the target user parameter; and

an execution unit (606), configured to execute the target execution plan selected by the selection unit (605).

8. The apparatus according to claim 7, wherein the apparatus further comprises a grouping unit and an establishment unit;

the selection unit is further configured to select multiple objects with the same object pattern from a database;

the grouping unit is configured to group the multiple objects selected by the selection unit;

the execution unit is further configured to repeat the previously described selection and grouping steps until all objects in the database are categorized into corresponding multiple groups;

the establishment unit is configured to use the multiple groups obtained by the grouping unit as the multiple object type groups, and establish a mapping relationship between each object in the database and the multiple object type groups; and

the determining unit is further configured to:

determine the object type group that the object belongs to, based on the mapping relationship.

9. The apparatus according to claim 7, wherein the selection unit is configured to:

for the object in the object set, determine whether an object pattern of the object is the same as an object pattern of each object in the object type group that the object belongs to;

if the object patterns are the same, successively calculate a similarity between the object and each object; and

when a similarity between the object and any object is less than a predetermined threshold, select the target execution plan from the execution plan group based on the target user parameter; or

when no similarity between the object and each object is less than a predetermined threshold, re-determine an object type group that the object belongs to, and obtain a corresponding target execution plan based on the re-determined object type group.

10. The apparatus according to claim 8, wherein the apparatus further comprises:

a calculation unit, configured to: for each object in each object type group,

periodically and successively calculate similarities between the object and other objects in the object type group; and

the determining unit is further configured to: when none of the similarities between the object and other objects is less than a predetermined threshold, re-determine an object type group that the object belongs to.

11. The apparatus according to claim 7, wherein the selection unit is further configured to:

calculate an Euclidean distance between the target user parameter and a user parameter corresponding to each execution plan in the execution plan group; and

when an Euclidean distance between the target user parameter and a user parameter corresponding to any execution plan is less than a distance threshold, use the any execution plan as the target execution plan.

12. The apparatus according to claim 7, wherein the apparatus further comprises:

a generation unit, configured to generate a new execution plan based on the target user parameter; and

an adding unit, configured to add the new execution plan generated by the generation unit to the execution plan group, and execute the new execution plan.

13. A computer-readable medium comprising instructions stored thereon which, when executed by a computing device, cause the computing device to perform the method of any of claims 1 to 6.