## **Explanation A**

The method parseSQL(query) returns an SQL expression parsed for a given query.

In line 4, the code obtains the SQL keyword of the expression returned by parseSQL(query). The assertion in line 6 checks if keyward has the same value as the variable expected.

Internally, in line 11, the method computes the value of keyword as a function of the input query. However,

- 1. In V1, if the value of *keyword* is equal to "select" (line 12), the variable is reassigned to its uppercase version, i.e., "SELECT" (line 13).
- 2. In V2, lines 12 and 13 are deleted and, thus, keyword is not reassigned to its uppercase version. Then, in both versions,

the variable keyword is appended to the variable expr (line 14). Next, expr is further appended with function, table, and predicate in lines 16, 18, and 20, respectively.

In summary, the deletion of lines 12-13 leads to the difference in the value of keyword in V1 and V2.

This difference causes the assertion to fail.

V1

expr = expr.append(table);

return expr;

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**Explanation B** 

The method parseSQL(query) returns an SQL expression parsed for a given query. The input query is initialized in line 2 as "select sum(c1) from sales where c2>1". In line 4, the code obtains the SQL keyword of the expression returned by parseSQL(query). The assertion in line 6 checks if keyward has the same value as the variable expected, which is set in line 5 to be "SELECT".

Internally, in line 11, the method computes the value of *keyword* as a function of the input *query*. However,

- 1. In V1, if the value of keyword is equal to "select" (line 12), the variable is reassigned to its uppercase version, i.e., "SELECT" (line 13).
- 2. In V2, lines 12 and 13 are deleted and, thus, keyword is not reassigned to its uppercase version. Then, in both versions,

the variable expr is computed as a function of both keyword and query (line 20).

In summary, the deletion of lines 12-13 leads to the difference in the value of keyword in V1 and V2, for queries with keyword = "select".

This difference causes the assertion to fail

**Explanation C** 

The method parseSQL(query) returns an SQL expression parsed for a given query.

In line 4, the code obtains the SQL keyword of the expression returned by parseSQL(query). The assertion in line 6 checks if keyward has the same value as the variable expected.

Internally, in line 11, the method computes the value of *keyword* as a function of the input *query*.

- 1. In V1, if the value of keyword is equal to "select" (line 12), the variable is reassigned to its uppercase version, i.e., "SELECT" (line 13).
- 2. In V2, lines 12 and 13 are deleted and, thus, keyword is not reassigned to its uppercase version. Then, in both versions,

the variable expr is computed as a function of both keyword and query (line 20).

In summary, the deletion of lines 12-13 leads to the difference in the value of keyword in V1 and V2.

This difference causes the assertion to fail

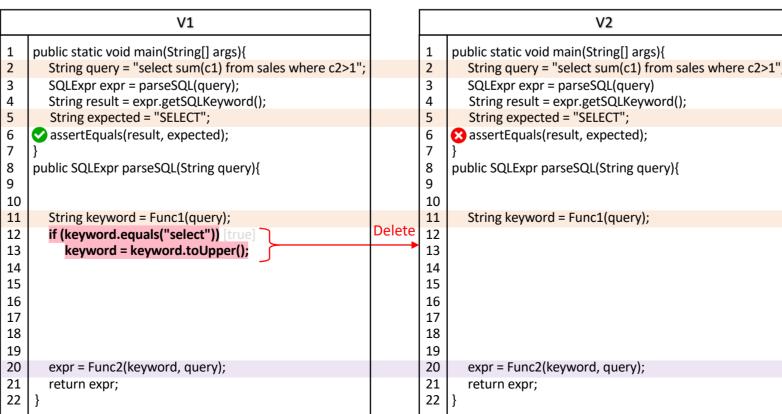
Notations: Colored backgrounds highlight the differences between the views.

FYI: Views are given below again, for your reference.

View A

V2 public static void main(String[] args){ public static void main(String[] args){ SQLExpr expr = parseSQL(query) SQLExpr expr = parseSQL(query) String result = expr.getSQLKeyword(); String result = expr.getSQLKeyword(); assertEquals(result, expected); assertEquals(result, expected); public SQLExpr parseSQL(String query){ public SQLExpr parseSQL(String query){ 11 if (keyword.equals("select")) | 12 | 13 keyword = keyword.toUpper(); expr = expr.append(keyword); expr = expr.append(keyword); expr = expr.append(function); expr = expr.append(function); expr = expr.append(table); expr = expr.append(predicate); expr = expr.append(predicate); 21 return expr;

View B



View C

