

Table 1: ETBC correction rules.

Category	Rule	Description
KC	1	Replace the string literal whose similarity to the keyword (case sensitive) in question Q is larger than θ_{query} with that keyword.
	2	In a path specification (n:SOURCE)-[r:RELATIONSHIP]->(m:TARGET) of an EXPAND operator, if the label RELATIONSHIP exists in the global multi-model schema, then correct the direction of r according to the schema.
SC	3	In a path specification (n:SOURCE)-[r:RELATIONSHIP]->(m:TARGET) of an EXPAND operator, if the label RELATIONSHIP does not exist in the global multi-model schema and there only exist relationships with one label in the global multi-model schema, then replace RELATIONSHIP with that label.
	4	In a path specification (n:SOURCE)-[r:RELATIONSHIP]->(m:TARGET) of an EXPAND operator, if there does not exist a relationship between nodes with labels SOURCE and TARGET, then remove this operator.
	5	In a path specification (n:SOURCE)-[r:RELATIONSHIP]->(m) of an EXPAND operator, if there only exist nodes with one label in the global multi-model schema, then specify the label for m.
CR	6	Remove empty RETURN operators.
	7	In a RETURN operator, remove attributes that do not exist in the previous operators.
	8	In a RETURN operator, remove attributes that do not conform to the grammar rules in terms of returning fields.
	9	If a RETURN operator does not appear at the end of a sub-query, then move the operator to the end of the corresponding sub-query.
	10	Move a SORT operator below the SCAN, EXPAND, or LET operator in which the variables occur in that SORT operator are introduced.
	11	Move an AGGREGATE operator below the SCAN, EXPAND, or LET operator in which the variables occur in that AGGREGATE operator are introduced.
	12	Move a FILTER operator below the SCAN, EXPAND, or LET operator in which the variables occur in that FILTER operator are introduced.
	13	If there exists a sub-query without any RETURN operator, then add one RETURN operator, whose attribute is the final variable occurs in the previous operators, at the end of this sub-query.
SM	14	If a RETURN operator contains only one attribute which conforms to the filter condition syntax, then correct this operator to FILTER.
	15	If a FILTER operator contains incomplete filter conditions that cannot be parsed, then remove these tokens.
	16	If a FILTER operator contains filter conditions whose comparison symbol cannot be parsed, then correct the symbol with EQ.
	17	If a SORT operator contains an invalid order specification which cannot be parsed, then correct the order with DESC.
	18	If the starting symbol does not identify any operator and the operands conform to the returning field syntax, then correct this operator to RETURN.