**目前mariadb的函数索引，是通过生成“持久化的虚拟列+索引”来实现的，具体测试过程如下：**

**1、增加虚拟列：**

MariaDB [test]> alter table t\_mst\_item\_fzp add column `item\_name\_function` varchar(100) AS (regexp\_replace(item\_name,'[()&#,\*.$=+?%"/\_ -]','')) PERSISTENT;

Query OK, 140353 rows affected (5.410 sec)

Records: 140353 Duplicates: 0 Warnings: 0

MariaDB [test]> desc t\_mst\_item\_fzp;

+-------------------------+------------------+------+-----+---------+------------------+

| Field | Type | Null | Key | Default | Extra |

+-------------------------+------------------+------+-----+---------+------------------+

| item\_name\_function | varchar(100) | YES | | NULL | STORED GENERATED |

+-------------------------+------------------+------+-----+---------+------------------+

**2、虚拟列无索引的效率**

MariaDB [test]> select item\_id,item\_code,item\_name,i.item\_name\_function from t\_mst\_item\_fzp i where i.item\_name like concat('HOLDERUKE','%');

Empty set (0.001 sec)

MariaDB [test]> select item\_id,item\_code,item\_name,i.item\_name\_function from t\_mst\_item\_fzp i where regexp\_replace(i.item\_name,'[()&#,\*.$=+??%"/\_ -]','') like concat('HOLDERUKE','%');

+---------+----------------+------------------+--------------------+

| item\_id | item\_code | item\_name | item\_name\_function |

+---------+----------------+------------------+--------------------+

| 1913564 | RJPC1210000039 | HOLDER-UKE176 | HOLDERUKE176 |

| 1970420 | RJPV1110000768 | HOLDER-UKE189 | HOLDERUKE189 |

| 1973278 | RJPV1110002212 | HOLDER-UKE205(K) | HOLDERUKE205K |

| 1973655 | RJPV1110002408 | HOLDER-UKE189(P) | HOLDERUKE189P |

+---------+----------------+------------------+--------------------+

4 rows in set (0.912 sec)

MariaDB [test]> select item\_id,item\_code,item\_name,i.item\_name\_function from t\_mst\_item\_fzp i where i.item\_name\_function like concat('HOLDERUKE','%');

+---------+----------------+------------------+--------------------+

| item\_id | item\_code | item\_name | item\_name\_function |

+---------+----------------+------------------+--------------------+

| 1913564 | RJPC1210000039 | HOLDER-UKE176 | HOLDERUKE176 |

| 1970420 | RJPV1110000768 | HOLDER-UKE189 | HOLDERUKE189 |

| 1973278 | RJPV1110002212 | HOLDER-UKE205(K) | HOLDERUKE205K |

| 1973655 | RJPV1110002408 | HOLDER-UKE189(P) | HOLDERUKE189P |

+---------+----------------+------------------+--------------------+

4 rows in set (0.090 sec)

**3、增加索引**

MariaDB [test]> create index idx\_mst\_item\_fzp on t\_mst\_item\_fzp(item\_name\_function);

Query OK, 0 rows affected (0.738 sec)

Records: 0 Duplicates: 0 Warnings: 0

**4、虚拟列有索引的效率**

MariaDB [test]> select item\_id,item\_code,item\_name,i.item\_name\_function from t\_mst\_item\_fzp i where i.item\_name like concat('HOLDERUKE','%');

Empty set (0.000 sec)

MariaDB [test]> select item\_id,item\_code,item\_name,i.item\_name\_function from t\_mst\_item\_fzp i where regexp\_replace(i.item\_name,'[()&#,\*.$=+??%"/\_ -]','') like concat('HOLDERUKE','%');

+---------+----------------+------------------+--------------------+

| item\_id | item\_code | item\_name | item\_name\_function |

+---------+----------------+------------------+--------------------+

| 1913564 | RJPC1210000039 | HOLDER-UKE176 | HOLDERUKE176 |

| 1970420 | RJPV1110000768 | HOLDER-UKE189 | HOLDERUKE189 |

| 1973278 | RJPV1110002212 | HOLDER-UKE205(K) | HOLDERUKE205K |

| 1973655 | RJPV1110002408 | HOLDER-UKE189(P) | HOLDERUKE189P |

+---------+----------------+------------------+--------------------+

4 rows in set (0.220 sec)

MariaDB [test]> select item\_id,item\_code,item\_name,i.item\_name\_function from t\_mst\_item\_fzp i where i.item\_name\_function like concat('HOLDERUKE','%');

+---------+----------------+------------------+--------------------+

| item\_id | item\_code | item\_name | item\_name\_function |

+---------+----------------+------------------+--------------------+

| 1913564 | RJPC1210000039 | HOLDER-UKE176 | HOLDERUKE176 |

| 1970420 | RJPV1110000768 | HOLDER-UKE189 | HOLDERUKE189 |

| 1973278 | RJPV1110002212 | HOLDER-UKE205(K) | HOLDERUKE205K |

| 1973655 | RJPV1110002408 | HOLDER-UKE189(P) | HOLDERUKE189P |

+---------+----------------+------------------+--------------------+

4 rows in set (0.000 sec)

**5、测试结果**

无论虚拟列是否有创建索引，执行时间均比原始查询快；有索引情况下，执行时间在1ms内。