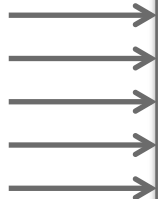
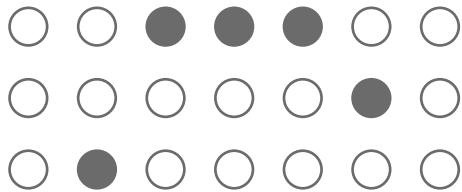


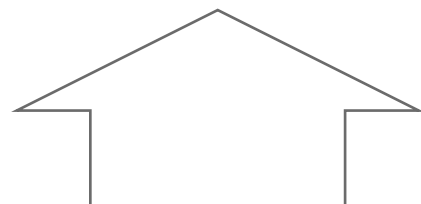
Users



Complaints



diagnoses query repairs



QUERYXRAY

optimizer

Query logs

```
UPDATE CUSTOMER SET C_BALANCE = C_BALANCE + ?  
WHERE C_ID = ? AND C_D_ID = ? AND C_W_ID = ?  
UPDATE CUSTOMER SET C_BALANCE = ?, C_YTD_PAYMENT  
= ?, C_PAYMENT_CNT = ?, C_DATA = ? WHERE C_W_ID  
= ? AND C_D_ID = ? AND C_ID = ?  
UPDATE WAREHOUSE SET W_YTD = W_YTD + ? WHERE  
W_ID = ?  
UPDATE ORDERS SET O_CARRIER_ID = ? WHERE O_ID  
= ? AND O_D_ID = ? AND O_W_ID = ?  
UPDATE CUSTOMER SET C_BALANCE = ?, C_YTD_PAYMENT  
= ?, C_PAYMENT_CNT = ? WHERE C_W_ID = ? AND  
C_D_ID = ? AND C_ID = ?  
INSERT INTO NEW_ORDER (NO_O_ID, NO_D_ID,  
NO_W_ID) VALUES (?, ?, ?)  
UPDATE STOCK SET S_QUANTITY = ?, S_YTD = ?,  
S_ORDER_CNT = ?, S_REMOTE_CNT = ? WHERE S_I_ID  
= ? AND S_W_ID = ?  
UPDATE DISTRICT SET D_YTD = D_YTD + ? WHERE  
D_W_ID = ? AND D_ID = ?  
UPDATE DISTRICT SET D_NEXT_O_ID = ? WHERE D_ID  
= ? AND D_W_ID = ?  
INSERT INTO HISTORY VALUES  
(?, ?, ?, ?, ?, ?, ?)  
INSERT INTO ORDERS (O_ID, O_D_ID, O_W_ID,  
O_C_ID, O_ENTRY_D, O_CARRIER_ID, O_OL_CNT,  
O_ALL_LOCAL) VALUES (?, ?, ?, ?, ?, ?, ?)  
DELETE FROM NEW_ORDER WHERE NO_D_ID = ? AND  
NO_W_ID = ? AND NO_O_ID = ?  
INSERT INTO ORDER_LINE (OL_O_ID, OL_D_ID,  
OL_W_ID, OL_NUMBER, OL_I_ID, OL_SUPPLY_W_ID,  
OL_DELIVERY_D, OL_QUANTITY, OL_AMOUNT,  
OL_DIST_INFO) VALUES  
(?, ?, ?, ?, ?, ?, ?, ?, ?, ?)  
UPDATE ORDER_LINE SET OL_DELIVERY_D = ? WHERE  
OL_O_ID = ? AND OL_D_ID = ? AND OL_W_ID = ?
```

density filtering



MIP transform



provenance filtering

step-by-step rollback