INFS2200 Assignment, Semester 2 - 2017

Details

- **Student Number**: 43926871
- **Student Name**: Maxwell Bo
- **DOG_ID**: TODO

Task 1: Constraints

a)

```
SQL> SELECT OWNER, CONSTRAINT_NAME, TABLE_NAME,
SEARCH_CONDITION, INDEX_NAME FROM USER_CONSTRAINTS;

OWNER           CONSTRAINT_NAME      TABLE_NAME
SEARCH_CONDITION     INDEX_NAME
--------------- -------------------- ----------------
--------- -------------------- --------------------
C##S4392687     PK_STORES            STORES
PK_STORES
C##S4392687     PK_DOG_BREEDS        DOG_BREEDS
PK_DOG_BREEDS
C##S4392687     PK_SERVICES          SERVICES
PK_SERVICES
C##S4392687     PK_DOGS              DOGS
PK_DOGS
C##S4392687     PK_SERVICE_HISTORY   SERVICE_HISTORY
PK_SERVICE_HISTORY
C##S4392687     PK_SHD
SERVICE_HISTORY_DETAIL                          PK_SHD
C##S4392687     NN_PRICE             SERVICES
PRICE IS NOT NULL
```

```
C##S4392687     NN_DOG_NAME          DOGS
DOG_NAME IS NOT NULL
C##S4392687     FK_DOG_BREED         DOGS
C##S4392687     FK_SH_STORE_ID       SERVICE_HISTORY
C##S4392687     FK_SH_DOG_ID         SERVICE_HISTORY
C##S4392687     FK_SHD_SERVICE_ID
SERVICE_HISTORY_DETAIL
C##S4392687     FK_SERVICE_NAME
SERVICE_HISTORY_DETAIL

13 rows selected.
```

b)

```
SQL> ALTER TABLE CUSTOMERS ADD CONSTRAINT
"PK_CUSTOMERS" PRIMARY KEY (C_ID);

Table altered.
```

```
SQL> ALTER TABLE DOGS ADD CONSTRAINT "FK_C_ID"
FOREIGN KEY (C_ID) REFERENCES CUSTOMERS(C_ID);

Table altered.
```

```
SQL> ALTER TABLE SERVICE_HISTORY_DETAIL ADD
CONSTRAINT "FK_SHD_SERVICE_ID" FOREIGN KEY
(SERVICE_ID) REFERENCES SERVICE_HISTORY(SERVICE_ID);

Table altered.
```

```
SQL> ALTER TABLE CUSTOMERS ADD CONSTRAINT "NN_DOB"
CHECK (DOB IS NOT NULL);

Table altered.
```

```
SQL> ALTER TABLE SERVICE_HISTORY ADD CONSTRAINT
"CK_FINISHED" CHECK (FINISHED IN ('T', 'F'));

Table altered.
```

```
SQL> ALTER TABLE CUSTOMERS ADD CONSTRAINT "CK_DOB"
CHECK (DOB < DATE '1999-01-01');

Table altered.
```

```
SQL> ALTER TABLE SERVICE_HISTORY_DETAIL ADD
CONSTRAINT "CK_START_TIME_END_TIME" CHECK (START_TIME
< END_TIME);

Table altered.
```

```
SQL> ALTER TABLE SERVICE_HISTORY_DETAIL ADD
CONSTRAINT "CK_SERVICE_DATE" CHECK (END_TIME < DATE
'2018-01-01');

Table altered.
```

Task 2: Triggers

a)

```
SQL> CREATE OR REPLACE TRIGGER "TR_CUSTOMER_ID"

  2  BEFORE INSERT ON CUSTOMERS

  3  FOR EACH ROW

  4  BEGIN

  5  SELECT "SEQ_CUSTOMER".NEXTVAL INTO :NEW.C_ID
FROM DUAL;

  6  END;

  7  /



Trigger created.
```

b)

```
SQL> CREATE OR REPLACE TRIGGER "TR_SERVICE_ID"

  2  BEFORE INSERT ON SERVICE_HISTORY

  3  FOR EACH ROW

  4  BEGIN

  5  SELECT SEQ_SERVICE_HISTORY.NEXTVAL INTO
:NEW.SERVICE_ID FROM DUAL;
```

```
  6  END;

  7  /


Trigger created.
```

c)

```
SQL> CREATE OR REPLACE TRIGGER
"TR_SERVICE_HISTORY_MESSAGE"

  2  BEFORE INSERT ON SERVICE_HISTORY

  3  FOR EACH ROW

  4  BEGIN

  5  IF :NEW.FINISHED = 'T' THEN

  6     SELECT 'Hi '

  7  || C.F_NAME || ' '

  8  || C.L_NAME || ', your dog '

  9  || D.DOG_NAME || ' of breed: '

 10  || D.DOG_BREED || ' is ready for pick up at '

 11  || S.STORE_AREA || '.'

 12  INTO :NEW.MESSAGE
```

```
 13  FROM CUSTOMERS C, DOGS D, STORES S

 14  WHERE C.C_ID = D.C_ID

 15  AND :NEW.STORE_ID = S.STORE_ID

 16  AND :NEW.DOG_ID   = D.DOG_ID;

 17  ELSE

 18  SELECT 'Hi '

 19  || C.F_NAME || ' '

 20  || C.L_NAME || ', your dog '

 21  || D.DOG_NAME || ' of breed: '

 22  || D.DOG_BREED|| ' is not ready to be picked up
yet.'

 23  INTO :NEW.MESSAGE

 24  FROM CUSTOMERS C, DOGS D

 25  WHERE C.C_ID = D.C_ID

 26  AND :NEW.DOG_ID = D.DOG_ID;

 27  END IF;

 28  END;

 29  /


Trigger created.
```

d)

```
SQL> INSERT INTO CUSTOMERS (F_NAME, L_NAME, DOB)

  2  VALUES ('Luke', 'Cheung', '08-OCT-1996');



1 row created.
```

```
SQL> SELECT * FROM CUSTOMERS WHERE F_NAME='Luke' AND
L_NAME='Cheung';



      C_ID F_NAME          L_NAME          DOB

---------- --------------- --------------- ----------
-----

     10000 Luke            Cheung          08-OCT-96
```

```
SQL> INSERT INTO SERVICE_HISTORY (DOG_ID, STORE_ID,
FINISHED)

  2  VALUES (1234, 30, 'F');



1 row created.
```

```
SQL> SELECT * FROM SERVICE_HISTORY WHERE DOG_ID=1234
AND STORE_ID=30;



    DOG_ID   STORE_ID SERVICE_ID F MESSAGE

---------- ---------- ---------- - ------------------
------------

      1234         30     125000 F Hi Lady Finland,
your dog Jack

                                   son of breed:
English Foxhound

                                    is not ready to
be picked up

                                   yet.
```

Task 3: Views

a)

```
SQL> CREATE VIEW "V_DOG_BREED_STATISTICS" AS

  2  SELECT D.DOG_BREED, SUM(S.PRICE) as TOTAL,
AVG(S.PRICE) as MEAN, STDDEV(S.PRICE) as
STANDARD_DEVIATION

  3  FROM DOGS D, SERVICE_HISTORY SH,
```

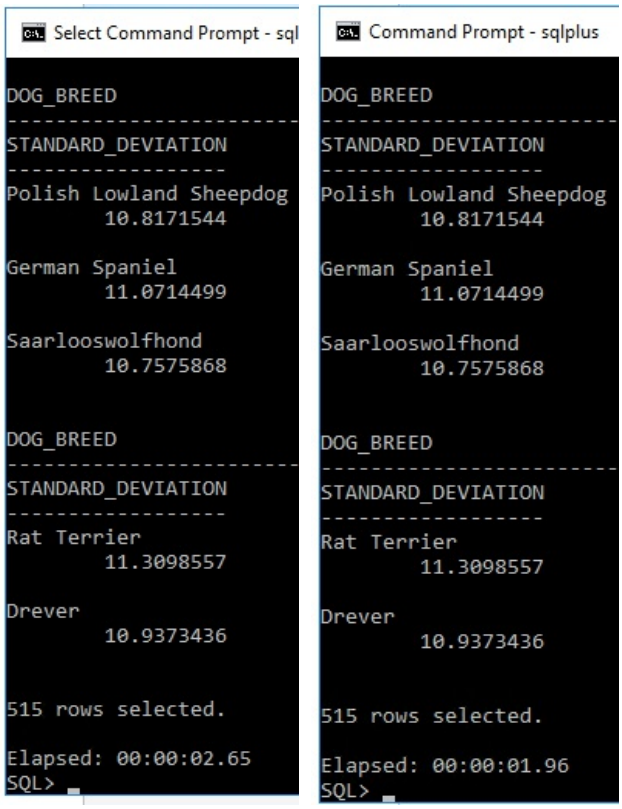
```
SERVICE_HISTORY_DETAIL SHD, SERVICES S

  4  WHERE D.DOG_ID = SH.DOG_ID

  5  AND SH.SERVICE_ID = SHD.SERVICE_ID

  6  AND SHD.SERVICE_NAME = S.SERVICE_NAME

  7  GROUP BY D.DOG_BREED;


View created.
```

b)

```
SQL> CREATE MATERIALIZED VIEW
"MV_DOG_BREED_STATISTICS"

  2  BUILD IMMEDIATE

  3  AS

  4  SELECT D.DOG_BREED, SUM(S.PRICE) as TOTAL,
AVG(S.PRICE) as MEAN, STDDEV(S.PRICE) as
STANDARD_DEVIATION

  5  FROM DOGS D, SERVICE_HISTORY SH,
SERVICE_HISTORY_DETAIL SHD, SERVICES S

  6  WHERE D.DOG_ID = SH.DOG_ID

  7  AND SH.SERVICE_ID = SHD.SERVICE_ID

  8  AND SHD.SERVICE_NAME = S.SERVICE_NAME
```

```
    9  GROUP BY D.DOG_BREED;


  Materialized view created.
```

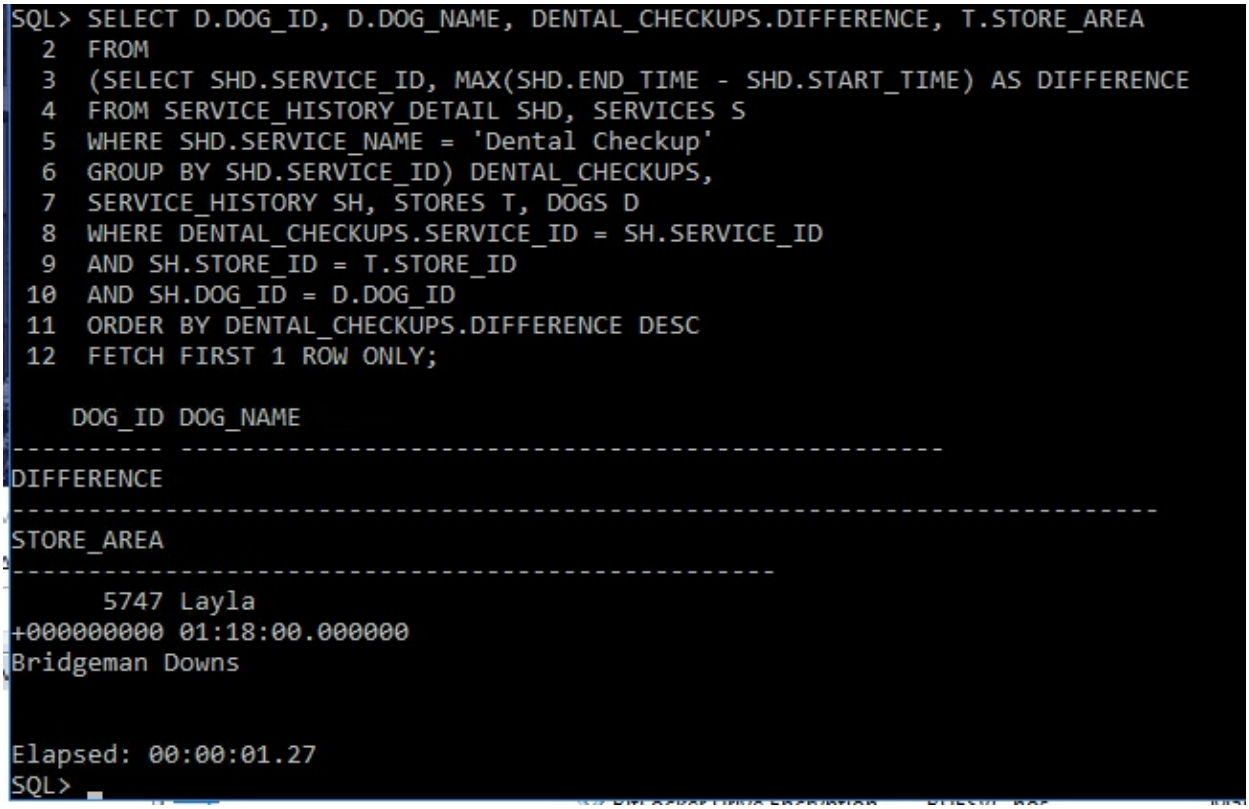
c)



TODO EXPLANATION

Task 4: Function Based Indexes

a)



```
SQL> SELECT D.DOG_ID, D.DOG_NAME, DENTAL_CHECKUPS.DIFFERENCE, T.STORE_AREA
  2  FROM
  3  (SELECT SHD.SERVICE_ID, MAX(SHD.END_TIME - SHD.START_TIME) AS DIFFERENCE
  4  FROM SERVICE_HISTORY_DETAIL SHD, SERVICES S
  5  WHERE SHD.SERVICE_NAME = 'Dental Checkup'
  6  GROUP BY SHD.SERVICE_ID) DENTAL_CHECKUPS,
  7  SERVICE_HISTORY SH, STORES T, DOGS D
  8  WHERE DENTAL_CHECKUPS.SERVICE_ID = SH.SERVICE_ID
  9  AND SH.STORE_ID = T.STORE_ID
 10  AND SH.DOG_ID = D.DOG_ID
 11  ORDER BY DENTAL_CHECKUPS.DIFFERENCE DESC
 12  FETCH FIRST 1 ROW ONLY;

    DOG_ID DOG_NAME
---------- --------------------------------------------------
DIFFERENCE
--------------------------------------------------------------------------------
STORE_AREA
--------------------------------------------------
      5747 Layla
+000000000 01:18:00.000000
Bridgeman Downs


Elapsed: 00:00:01.27
SQL>
```

b)

```
SQL> CREATE INDEX "IDX_SERVICE_TIME" ON
SERVICE_HISTORY_DETAIL(END_TIME - START_TIME);

Index created.
```

c)

```
SP2-0042: unknown command "3ca" - rest of line ignored.
SQL> SELECT D.DOG_ID, D.DOG_NAME, DENTAL_CHECKUPS.DIFFERENCE, T.STORE_AREA
  2  FROM
  3  (SELECT SHD.SERVICE_ID, MAX(SHD.END_TIME - SHD.START_TIME) AS DIFFERENCE
  4  FROM SERVICE_HISTORY_DETAIL SHD, SERVICES S
  5  WHERE SHD.SERVICE_NAME = 'Dental Checkup'
  6  GROUP BY SHD.SERVICE_ID) DENTAL_CHECKUPS,
  7  SERVICE_HISTORY SH, STORES T, DOGS D
  8  WHERE DENTAL_CHECKUPS.SERVICE_ID = SH.SERVICE_ID
  9  AND SH.STORE_ID = T.STORE_ID
 10  AND SH.DOG_ID = D.DOG_ID
 11  ORDER BY DENTAL_CHECKUPS.DIFFERENCE DESC
 12  FETCH FIRST 1 ROW ONLY;

    DOG_ID DOG_NAME
---------- --------------------------------------------------
DIFFERENCE
---------------------------------------------------------------------------
STORE_AREA
--------------------------------------------------
      5747 Layla
+000000000 01:18:00.000000
Bridgeman Downs


Elapsed: 00:00:01.13
SQL>
```

TODO EXPLANATION

Task 5: Bitmap Indexing

a)

```
TODO
```

b)

```
TODO
```

c)

```
DUPE OF A
```

TODO EXPLANATION

d)

TODO EXPLANATION

TASK 6: Execution Plan & Analysis

a)

```
TODO
```

b)

```
TODO
```

c)

```
TODO
```

d)

```
TODO
```

TODO explanation

e)

TODO EXPLANATION