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Rapport sur

devoire maison : creation et manipultion de base de donee IOT

SOUMIS PAR :
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SECITION A SOFTWARE ENGINEERING.
GROUPE 1.

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Partie 1

1.Création des deux Tablespaces IOT_TBS et IOT_TempTBS

```
SQL> connect sys/1234 as sysdba
Connected.
SQL> CREATE TABLESPACE iot_tbs DATAFILE 'C:\Users\LENOVO\OneDrive\Desktop\devoire_maison_BDD\TBA_IOT.DAT' SIZE 100M AUTOEXTEND ON ONLINE;

Tablespace created.

SQL> CREATE TEMPORARY TABLESPACE IOT_TempTBS TEMPFILE 'C:\Users\LENOVO\OneDrive\Desktop\devoire_maison_BDD\TBS_TEM_IOT.DAT' SIZE 100M AUTOEXTEND ON;

Tablespace created.

SQL>
```

2. Créer un utilisateur DBAIOT en lui attribuant les deux tablespaces créés précédemment

```
SQL> Create User DBAIOT  Identified by 1234 Default Tablespace iot_tbs   Temporary Tablespace IOT_TempTBS;

User created.
```

3. Donner tous les privilèges à cet utilisateur.

```
SQL> GRANT ALL privileges to DBAIOT ;

Grant succeeded.
```

Partie 2

4. Créer les relations de base avec toutes les contraintes d'intégrité.

```
SQL> connect dbaiot/1234
Connected.
SQL>
```

```
SQL> CREATE TABLE USERS (
  2      IDUSER NUMBER PRIMARY KEY,
  3      LASTNAME VARCHAR(20) ,
  4      FIRSTNAME VARCHAR(20),
  5      EMAIL VARCHAR(40) UNIQUE
  6  );

Table created.
```

```
SQL> -- Création de la table SERVICE
SQL> CREATE TABLE SERVICE (
  2      IDSERVICE NUMBER PRIMARY KEY,
  3      NAME VARCHAR(20),
  4      SERVICETYPE VARCHAR(20)
  5  );

Table created.
```

```
SQL> -- Création de la table SUBSCRIBE
SQL> CREATE TABLE SUBSCRIBE (
  2      IDUSER NUMBER REFERENCES USERS(IDUSER) ON DELETE CASCADE,
  3      IDSERVICE NUMBER REFERENCES SERVICE(IDSERVICE) ON DELETE CASCADE,
  4      PRIMARY KEY (IDUSER, IDSERVICE)
  5  );

Table created.
```

5. Ajouter l'attribut ADRESSUSER de type chaine de caractères dans la relation USER.

```
SQL>
SQL> ALTER TABLE USERS
  2  ADD ADRESSUSER VARCHAR(30);

Table altered.
```

6. Ajouter la contrainte not null pour les attributs ADRESSUSER et LASTNAME de la relation USER.

```
SQL> ALTER TABLE USERS
  2  MODIFY ADRESSUSER VARCHAR(30) NOT NULL;

Table altered.

SQL>
```

```
SQL> ALTER TABLE USERS
  2  MODIFY LASTNAME VARCHAR(20) NOT NULL;

Table altered.
```

7. Modifier la longueur de l'attribut ADRESSUSER (agrandir, réduire).

```
SQL> ALTER TABLE USERS
  2  MODIFY ADRESSUSER VARCHAR(80);

Table altered.

SQL> desc users
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 IDUSER                                    NOT NULL NUMBER
 LASTNAME                                  NOT NULL VARCHAR2(20)
 FIRSTNAME                                          VARCHAR2(20)
 EMAIL                                              VARCHAR2(40)
 ADRESSUSER                                NOT NULL VARCHAR2(80)
```

```
SQL> ALTER TABLE USERS
  2  MODIFY ADRESSUSER VARCHAR(40);

Table altered.

SQL> desc users
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 IDUSER                                    NOT NULL NUMBER
 LASTNAME                                  NOT NULL VARCHAR2(20)
 FIRSTNAME                                          VARCHAR2(20)
 EMAIL                                              VARCHAR2(40)
 ADRESSUSER                                NOT NULL VARCHAR2(40)
```

8. Renommer la colonne ADRESSUSER dans la table USER par ADRUSER. Vérifier.

```
SQL> ALTER TABLE USERS
  2  RENAME COLUMN ADRESSUSER TO ADRUSER;

Table altered.

SQL> DESC USERS;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 IDUSER                                    NOT NULL NUMBER
 LASTNAME                                  NOT NULL VARCHAR2(20)
 FIRSTNAME                                          VARCHAR2(20)
 EMAIL                                              VARCHAR2(40)
 ADRUSER                                   NOT NULL VARCHAR2(40)
```

9. Supprimer la colonne ADRUSER dans la table USER. Vérifier la suppression.

```
SQL> ALTER TABLE USERS
  2  DROP COLUMN ADRUSER;

Table altered.

SQL> DESC USERS;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 IDUSER                                    NOT NULL NUMBER
 LASTNAME                                  NOT NULL VARCHAR2(20)
 FIRSTNAME                                          VARCHAR2(20)
 EMAIL                                              VARCHAR2(40)
```

10. Un utilisateur s'inscrit à un service pour une période délimitée par un début et fin. Donner les instructions SQL pour répondre à ce besoin.

```
SQL> ALTER TABLE SUBSCRIBE
  2  ADD START_DATE DATE;

Table altered.

SQL> ALTER TABLE SUBSCRIBE
  2  ADD END_DATE DATE;

Table altered.
```

Partie 3

11. Remplir toutes les tables par les instances représentées ci-dessus. Quels sont les problèmes rencontrés ?

Table users

```
SQL> --Remplissage de la table USERS
SQL> INSERT INTO USERS (IDUSER, LASTNAME, FIRSTNAME, EMAIL)
  2  VALUES (1, 'Souad', 'MESBAH', 'souad.mesbah@gmail.com');

1 row created.

SQL> INSERT INTO USERS (IDUSER, LASTNAME, FIRSTNAME, EMAIL)
  2  VALUES (2, 'Younes', 'CHALAH', 'younes.chalah@gmail.com');

1 row created.

SQL> INSERT INTO USERS (IDUSER, LASTNAME, FIRSTNAME, EMAIL)
  2  VALUES (3, 'Chahinaz', 'MELEK', 'chahinaz.melek@gmail.com');

1 row created.
```

```
SQL> INSERT INTO USERS (IDUSER, LASTNAME, FIRSTNAME, EMAIL)
  2  VALUES (4, 'Samia', 'OUALI', 'samia.ouali@gmail.com');

1 row created.

SQL> INSERT INTO USERS (IDUSER, LASTNAME, FIRSTNAME, EMAIL)
  2  VALUES (5, 'Djamel', 'MATI', 'djamel.mati@gmail.com');

1 row created.

SQL> INSERT INTO USERS (IDUSER, LASTNAME, FIRSTNAME, EMAIL)
  2  VALUES (6, 'Assia', 'HORRA', 'assia.horra@gmail.com');

1 row created.
```

```
SQL> INSERT INTO USERS (IDUSER, LASTNAME, FIRSTNAME, EMAIL)
  2  VALUES (7, 'Lamine', 'MERABAT', 'lamine.MERABAT@gmail.com');

1 row created.

SQL> INSERT INTO USERS (IDUSER, LASTNAME, FIRSTNAME, EMAIL)
  2  VALUES (8, 'Seddik', 'HMIA', 'seddik.hmia@gmail.com');

1 row created.

SQL> INSERT INTO USERS (IDUSER, LASTNAME, FIRSTNAME, EMAIL)
  2  VALUES (9, 'Widad', 'TOUATI', 'widad.touati@gmail.com');

1 row created.
```

Table service

```
SQL>
SQL> insert into SERVICE values (1,'myKWHome','smarthome');

1 row created.

SQL> insert into SERVICE values (2,'FridgAlert','smarthome');

1 row created.

SQL> insert into SERVICE values (3,'RUNstats','quantifiedself');

1 row created.

SQL> insert into SERVICE values (4,'traCARE','quantifiedself');

1 row created.

SQL> insert into SERVICE values (5,'dogWATCH','');

1 row created.

SQL> insert into SERVICE values (6,'CarUse','');

1 row created.
```

Table thing

```
SQL> insert into THING values('f0:de:f1:39:7f:17',1,'','');

1 row created.

SQL> insert into THING values('f0:de:f1:39:7f:18',2,'','');

1 row created.

SQL> insert into THING values('f0:de:f1:39:7f:19',2,'thingtempo','60');

1 row created.
```

```
SQL> insert into THING values('f0:de:f1:39:7f:25',10,'','');
insert into THING values('f0:de:f1:39:7f:25',10,'','')
*
ERROR at line 1:
ORA-02291: integrity constraint (DBAIOT.SYS_C007489) violated - parent key not
found
```

Ici, nous avons rencontré un problème à cause d'une contrainte d'intégrité violée, car la clé parente n'a pas été trouvée.

```
SQL> insert into THING values('f0:de:f1:39:7f:20',2,'thingtempo','1.5');

1 row created.

SQL> insert into THING values('f0:de:f1:39:7f:21',4,'','');

1 row created.

SQL> insert into THING values('f0:de:f1:39:7f:22',4,'','');

1 row created.
```

Table subscribe

```
SQL>
SQL> insert into SUBSCRIBE values (2,1,null,null);

1 row created.

SQL> insert into SUBSCRIBE values (2,2,null,null);

1 row created.

SQL> insert into SUBSCRIBE values (1,3,null,null);

1 row created.
```

```
SQL> insert into SUBSCRIBE values (3,7,null,null);
insert into SUBSCRIBE values (3,7,null,null)
*
ERROR at line 1:
ORA-02291: integrity constraint (DBAIOT.SYS_C007492) violated - parent key not
found
```

Ici, nous avons rencontré le meme problème à cause d'une contrainte d'intégrité violée, car la clé parente n'a pas été trouvée.

Partie 4

1. Connectez vous avec l'utilisateur DBAIOT et créez un autre utilisateur : Admin en lui donnant les mêmes tablespace que DBAIOT.

```
SQL> connect dbaiot/1234
Connected.
SQL>
```

```
SQL> CREATE USER ADMIN IDENTIFIED BY 1234
  2  DEFAULT TABLESPACE IOT_TBS
  3  TEMPORARY TABLESPACE IOT_TempTBS;

User created.
```

2. Connectez-vous à l'aide cet utilisateur. Que remarquez-vous ?

```
SQL> CONNECT ADMIN/1234
ERROR:
ORA-01045: user ADMIN lacks CREATE SESSION privilege; logon denied


Warning: You are no longer connected to ORACLE.
SQL>
```

Il s'agit d'un problème, car l'administrateur n'a pas le privilège de création de session.

3. Donnez le droit de création d'une session pour cet utilisateur (Create Session) et reconnectez-vous.

```
SQL> grant create session to admin ;

Grant succeeded.

SQL> connect admin/1234;
Connected.
```

4. Donnez les privilèges suivants à Admin: créer des tables, des utilisateurs. Vérifiez.

```
SQL> connect DBAIOT/1234 ;
Connected.
SQL> GRANT CREATE TABLE, CREATE USER TO Admin;

Grant succeeded.
```

```
SQL> connect admin/1234;
Connected.
SQL> SELECT * FROM USER_SYS_PRIVS;

USERNAME                       PRIVILEGE                                ADM
------------------------------ ---------------------------------------- ---
ADMIN                          CREATE TABLE                             NO
ADMIN                          CREATE SESSION                           NO
ADMIN                          CREATE USER                              NO
```

verification

5. Exécutez la requête Q1 suivante : Select * from DBAIOT.USERS ; on remarque :

```
SQL> Select * from DBAIOT.USERS ;
Select * from DBAIOT.USERS
                     *
ERROR at line 1:
ORA-00942: table or view does not exist
```

Une erreur se produira car Admin n'a pas les privilèges de lecture sur la table USERS.

6. Donnez le droit de lecture à cet utilisateur pour la table USERS. Exécutez la requête Q1 maintenant.

```
SQL> connect dbaiot/1234
Connected.
SQL> GRANT SELECT ON DBAIOT.USERS TO Admin;

Grant succeeded.
```

```
SQL> Select * from DBAIOT.USERS;

    IDUSER LASTNAME            FIRSTNAME
---------- ------------------- -------------------
EMAIL
----------------------------------------
         1 Souad               MESBAH
souad.mesbah@gmail.com

         2 Younes              CHALAH
younes.chalah@gmail.com

         3 Chahinaz            MELEK
chahinaz.melek@gmail.com


    IDUSER LASTNAME            FIRSTNAME
---------- ------------------- -------------------
EMAIL
----------------------------------------
         4 Samia               OUALI
samia.ouali@gmail.com

         5 Djamel              MATI
djamel.mati@gmail.com

         6 Assia               HORRA
assia.horra@gmail.com


    IDUSER LASTNAME            FIRSTNAME
---------- ------------------- -------------------
EMAIL
----------------------------------------
         7 Lamine              MERABAT
lamine.MERABAT@gmail.com

         8 Seddik              HMIA
seddik.hmia@gmail.com

         9 Widad               TOUATI
widad.touati@gmail.com
```

7. On veut créer une vue USER_THING qui sauvegarde pour chaque utilisateur ses objets connectés. Que faut-il faire ? Que remarquez-vous ?

```
SQL> CREATE VIEW USER_THING AS
  2  SELECT U.IDUSER, U.LASTNAME, U.FIRSTNAME, T.MAC, T.THINGTYPE, T.PARAM
  3  FROM DBAIOT.USERS U , DBAIOT.THING T
  4  WHERE U.IDUSER = T.IDUSER;
FROM DBAIOT.USERS U , DBAIOT.THING T
                      *
ERROR at line 3:
ORA-00942: table or view does not exist
```

Une erreur se produira car Admin n'a pas les privilèges de creation des vues.

8. Donnez le droit de création de vue à cet utilisateur, le droit de lecture sur la table THING et réessayez de refaire la création de la vue.

```
SQL> connect dbaiot/1234
Connected.
SQL> GRANT CREATE VIEW TO Admin;

Grant succeeded.

SQL> GRANT SELECT ON DBAIOT.THING TO Admin;

Grant succeeded.
```

```
SQL> connect admin/1234
Connected.
SQL> CREATE VIEW USER_THING AS
  2  SELECT U.IDUSER, U.LASTNAME, U.FIRSTNAME, T.MAC, T.THINGTYPE, T.PARAM
  3  FROM DBAIOT.USERS U , DBAIOT.THING T
  4  WHERE U.IDUSER = T.IDUSER;

View created.
```

9. Créez un index NAMESERVICE_IX sur l'attribut NAME de la table SERVICE. Que remarquez-vous ?

```
SQL> CREATE INDEX NAMESERVICE_IX ON DBAIOT.SERVICE(NAME);
CREATE INDEX NAMESERVICE_IX ON DBAIOT.SERVICE(NAME)
                                   *

ERROR at line 1:
ORA-00942: table or view does not exist
```

Une erreur se produira car Admin n'a pas les privilèges de creation des index et de l'accee a la table service

10. Donnez le droit de création d'index à Admin pour la table SERIVCE, ensuite réessayez de créer l'index. Que se passe-t il ?

```
SQL> connect dbaiot/1234
Connected.
SQL> GRANT CREATE ANY INDEX TO Admin;

Grant succeeded.

SQL>
```

```
SQL> connect admin/1234
Connected.
SQL> CREATE INDEX NAMESERVICE_IX ON DBAIOT.SERVICE(NAME);
CREATE INDEX NAMESERVICE_IX ON DBAIOT.SERVICE(NAME)
                                   *

ERROR at line 1:
ORA-01950: no privileges on tablespace 'IOT_TBS'
```

Une erreur se produira car Admin n'a pas les privilèges sur la table space iot_tbs

11. Enlevez les privilèges précédemment accordés.

```
SQL> connect dbaiot/1234
Connected.
SQL> REVOKE CREATE ANY INDEX FROM ADMIN;

Revoke succeeded.

SQL> REVOKE CREATE TABLE FROM ADMIN;

Revoke succeeded.

SQL> REVOKE CREATE SESSION FROM ADMIN;

Revoke succeeded.

SQL> REVOKE CREATE USER FROM ADMIN;

Revoke succeeded.
```

12. Vérifiez que les privilèges ont bien été supprimés.

```
SQL> connect admin/1234
ERROR:
ORA-01045: user ADMIN lacks CREATE SESSION privilege; logon denied


Warning: You are no longer connected to ORACLE.
SQL>
```

comme on ne pas connecter au tant que admin ca veut dire que les privileges de admin on t ete supprimer

13. Créez un profil « IOT_Profil » .

```
SQL> connect dbaiot/1234
Connected.
SQL> CREATE PROFILE IOT_Profil
  2  LIMIT
  3       SESSIONS_PER_USER         3
  4       CPU_PER_CALL              3500
  5       CONNECT_TIME              90
  6       LOGICAL_READS_PER_CALL    1200
  7       PRIVATE_SGA               25K
  8       IDLE_TIME                 30
  9       FAILED_LOGIN_ATTEMPTS     5
 10       PASSWORD_LIFE_TIME        50
 11       PASSWORD_REUSE_TIME       40
 12       PASSWORD_REUSE_MAX        UNLIMITED
 13       PASSWORD_LOCK_TIME        1
 14       PASSWORD_GRACE_TIME       5;

Profile created.
```

14. Affectez ce profil à l'utilisateur Admin.

```
SQL> ALTER USER Admin PROFILE IOT_Profil;

User altered.
```

15. Créez le rôle : « SUBSCRIBE_MANAGER » qui peut voir les tables USERS, SERVICE et peut modifier les lignes de la table SUBSCRIBE.

```
SQL>
SQL> GRANT SELECT ON DBAIOT.USERS TO SUBSCRIBE_MANAGER;

Grant succeeded.

SQL> GRANT SELECT ON DBAIOT.SERVICE TO SUBSCRIBE_MANAGER;

Grant succeeded.

SQL> GRANT UPDATE ON DBAIOT.SUBSCRIBE TO SUBSCRIBE_MANAGER;

Grant succeeded.

SQL>
```

16. Assignez ce rôle à Admin. Vérifier que les autorisations assignées au rôle SUBSCRIBE_MANAGER , ont été bien transférées sur l'utilisateur à Admin.

```
SQL> CONNECT Admin/1234 ;
Connected.
SQL> SELECT * FROM ROLE_TAB_PRIVS WHERE ROLE = 'SUBSCRIBE_MANAGER';

ROLE                           OWNER
------------------------------ ------------------------------
TABLE_NAME                     COLUMN_NAME
------------------------------ ------------------------------
PRIVILEGE                                GRA
---------------------------------------- ---
SUBSCRIBE_MANAGER              DBAIOT
SERVICE
SELECT                                   NO

SUBSCRIBE_MANAGER              DBAIOT
USERS
SELECT                                   NO

ROLE                           OWNER
------------------------------ ------------------------------
TABLE_NAME                     COLUMN_NAME
------------------------------ ------------------------------
PRIVILEGE                                GRA
---------------------------------------- ---

SUBSCRIBE_MANAGER              DBAIOT
SUBSCRIBE
UPDATE                                   NO
```

Partie 5

1. Connecter en tant que « System ». Lister le catalogue « DICT ». Il contient combien d'instances ? Donner sa structure ? (Describe DICT; select * from dict;)

```
SQL> connect system/1234
Connected.
SQL> DESCRIBE DICT;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 TABLE_NAME                                         VARCHAR2(30)
 COMMENTS                                           VARCHAR2(4000)

SQL> _
```

```
2551 rows selected.

SQL> _
```

il contient 2551 line

il est structure :

- TABLE_NAME : répertorie les noms des vues disponibles dans le dictionnaire.
- COMMENTS : fournit une description textuelle de chaque vue.

2. Donner le rôle et la structure des tables (ou vues) suivantes :
ALL_TAB_COLUMNS

```
SQL> DESCRIBE ALL_TAB_COLUMNS;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 OWNER                                     NOT NULL VARCHAR2(30)
 TABLE_NAME                                NOT NULL VARCHAR2(30)
 COLUMN_NAME                               NOT NULL VARCHAR2(30)
 DATA_TYPE                                          VARCHAR2(106)
 DATA_TYPE_MOD                                      VARCHAR2(3)
 DATA_TYPE_OWNER                                    VARCHAR2(120)
 DATA_LENGTH                               NOT NULL NUMBER
 DATA_PRECISION                                     NUMBER
 DATA_SCALE                                         NUMBER
 NULLABLE                                           VARCHAR2(1)
 COLUMN_ID                                          NUMBER
 DEFAULT_LENGTH                                     NUMBER
 DATA_DEFAULT                                       LONG
 NUM_DISTINCT                                       NUMBER
 LOW_VALUE                                          RAW(32)
 HIGH_VALUE                                         RAW(32)
 DENSITY                                            NUMBER
 NUM_NULLS                                          NUMBER
 NUM_BUCKETS                                        NUMBER
 LAST_ANALYZED                                      DATE
 SAMPLE_SIZE                                        NUMBER
 CHARACTER_SET_NAME                                 VARCHAR2(44)
 CHAR_COL_DECL_LENGTH                               NUMBER
 GLOBAL_STATS                                       VARCHAR2(3)
 USER_STATS                                         VARCHAR2(3)
 AVG_COL_LEN                                        NUMBER
 CHAR_LENGTH                                        NUMBER
 CHAR_USED                                          VARCHAR2(1)
 V80_FMT_IMAGE                                      VARCHAR2(3)
 DATA_UPGRADED                                      VARCHAR2(3)
 HISTOGRAM                                          VARCHAR2(15)
```

```
SQL> SELECT COMMENTS FROM DICT WHERE TABLE_NAME ='ALL_TAB_COLUMNS';

COMMENTS
--------------------------------------------------------------------------------
Columns of user's tables, views and clusters
```

USER_USERS

```
SQL> DESCRIBE USER_USERS;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 USERNAME                                  NOT NULL VARCHAR2(30)
 USER_ID                                   NOT NULL NUMBER
 ACCOUNT_STATUS                            NOT NULL VARCHAR2(32)
 LOCK_DATE                                          DATE
 EXPIRY_DATE                                        DATE
 DEFAULT_TABLESPACE                        NOT NULL VARCHAR2(30)
 TEMPORARY_TABLESPACE                      NOT NULL VARCHAR2(30)
 CREATED                                   NOT NULL DATE
 INITIAL_RSRC_CONSUMER_GROUP                        VARCHAR2(30)
 EXTERNAL_NAME                                      VARCHAR2(4000)
```

```
SQL> SELECT COMMENTS FROM DICT WHERE TABLE_NAME ='USER_USERS';

COMMENTS
--------------------------------------------------------------------------------
Information about the current user
```

ALL_CONSTRAINTS

```
SQL> DESCRIBE ALL_CONSTRAINTS;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 OWNER                                              VARCHAR2(120)
 CONSTRAINT_NAME                           NOT NULL VARCHAR2(30)
 CONSTRAINT_TYPE                                    VARCHAR2(1)
 TABLE_NAME                                NOT NULL VARCHAR2(30)
 SEARCH_CONDITION                                   LONG
 R_OWNER                                            VARCHAR2(120)
 R_CONSTRAINT_NAME                                  VARCHAR2(30)
 DELETE_RULE                                        VARCHAR2(9)
 STATUS                                             VARCHAR2(8)
 DEFERRABLE                                         VARCHAR2(14)
 DEFERRED                                           VARCHAR2(9)
 VALIDATED                                          VARCHAR2(13)
 GENERATED                                          VARCHAR2(14)
 BAD                                                VARCHAR2(3)
 RELY                                               VARCHAR2(4)
 LAST_CHANGE                                        DATE
 INDEX_OWNER                                        VARCHAR2(30)
 INDEX_NAME                                         VARCHAR2(30)
 INVALID                                            VARCHAR2(7)
 VIEW_RELATED                                       VARCHAR2(14)
```

```
SQL> SELECT COMMENTS FROM DICT WHERE TABLE_NAME ='ALL_CONSTRAINTS';

COMMENTS
--------------------------------------------------------------------------------
Constraint definitions on accessible tables
```

USER_TAB_PRIVS

```
SQL> DESCRIBE USER_TAB_PRIVS;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 GRANTEE                                   NOT NULL VARCHAR2(30)
 OWNER                                     NOT NULL VARCHAR2(30)
 TABLE_NAME                                NOT NULL VARCHAR2(30)
 GRANTOR                                   NOT NULL VARCHAR2(30)
 PRIVILEGE                                 NOT NULL VARCHAR2(40)
 GRANTABLE                                          VARCHAR2(3)
 HIERARCHY                                          VARCHAR2(3)
```

```
SQL> SELECT COMMENTS FROM DICT WHERE TABLE_NAME ='USER_TAB_PRIVS'
  2  ;

COMMENTS
--------------------------------------------------------------------------------
Grants on objects for which the user is the owner, grantor or grantee
```

3. Trouver le nom d’utilisateur avec lequel vous êtes connecté

```
SQL> SELECT USER FROM DUAL;

USER
------------------------------
SYSTEM
```

4. Comparer la structure et le contenu des tables ALL_TAB_COLUMNS et USER_ TAB_COLUMNS ?

```
SQL> DESCRIBE USER_TAB_COLUMNS;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 TABLE_NAME                                NOT NULL VARCHAR2(30)
 COLUMN_NAME                               NOT NULL VARCHAR2(30)
 DATA_TYPE                                          VARCHAR2(106)
 DATA_TYPE_MOD                                      VARCHAR2(3)
 DATA_TYPE_OWNER                                    VARCHAR2(120)
 DATA_LENGTH                               NOT NULL NUMBER
 DATA_PRECISION                                     NUMBER
 DATA_SCALE                                         NUMBER
 NULLABLE                                           VARCHAR2(1)
 COLUMN_ID                                          NUMBER
 DEFAULT_LENGTH                                     NUMBER
 DATA_DEFAULT                                       LONG
 NUM_DISTINCT                                       NUMBER
 LOW_VALUE                                          RAW(32)
 HIGH_VALUE                                         RAW(32)
 DENSITY                                            NUMBER
 NUM_NULLS                                          NUMBER
 NUM_BUCKETS                                        NUMBER
 LAST_ANALYZED                                      DATE
 SAMPLE_SIZE                                        NUMBER
 CHARACTER_SET_NAME                                 VARCHAR2(44)
 CHAR_COL_DECL_LENGTH                               NUMBER
 GLOBAL_STATS                                       VARCHAR2(3)
 USER_STATS                                         VARCHAR2(3)
 AVG_COL_LEN                                        NUMBER
 CHAR_LENGTH                                        NUMBER
 CHAR_USED                                          VARCHAR2(1)
 V80_FMT_IMAGE                                      VARCHAR2(3)
 DATA_UPGRADED                                      VARCHAR2(3)
 HISTOGRAM                                          VARCHAR2(15)
```

Différence :

- USER_TAB_COLUMNS : retourne les colonnes des tables appartenant à l'utilisateur connecté.
- ALL_TAB_COLUMNS : retourne les colonnes des tables accessibles par l'utilisateur, et des autres utilisateurs.

5. Vérifiez que les tables de la partie 1 ont été réellement créées (afficher la liste des tables de l'utilisateur connecté) ? Donner toutes les informations sur ces tables ?

```
SQL> connect dbaiot/1234
Connected.
SQL> SELECT TABLE_NAME FROM USER_TABLES;

TABLE_NAME
------------------------------
USERS
SERVICE
THING
SUBSCRIBE
```

```
SQL> SELECT table_name, column_name, data_type, data_length, nullable FROM user_tab_columns ORDER BY table_name, column_id;

TABLE_NAME                     COLUMN_NAME
------------------------------ ------------------------------
DATA_TYPE
--------------------------------------------------------------------------------
DATA_LENGTH N
----------- -
SERVICE                        IDSERVICE
NUMBER
         22 N

SERVICE                        NAME
VARCHAR2
         20 Y

TABLE_NAME                     COLUMN_NAME
------------------------------ ------------------------------
DATA_TYPE
--------------------------------------------------------------------------------
DATA_LENGTH N
----------- -

SERVICE                        SERVICETYPE
VARCHAR2
         20 Y

SUBSCRIBE                      IDUSER
NUMBER
```

```
15 rows selected.
```

6. Lister les tables de l'utilisateur « system » et celles de l'utilisateur DBAIOT (l'utilisateur de la partie 1).

```
SQL> SELECT TABLE_NAME FROM ALL_TABLES WHERE OWNER = 'DBAIOT';

TABLE_NAME
------------------------------
USERS
SERVICE
THING
SUBSCRIBE
```

```
SQL> SELECT TABLE_NAME FROM ALL_TABLES WHERE OWNER = 'SYSTEM';

TABLE_NAME
------------------------------
LOGMNR_GLOBAL$
LOGMNR_RESTART_CKPT_TXINFO$
LOGMNR_SESSION_ACTIONS$
LOGMNR_SESSION_EVOLVE$
LOGSTDBY$FLASHBACK_SCN
LOGMNR_PARAMETER$
LOGMNR_SESSION$
LOGMNR_FILTER$
MVIEW$_ADV_WORKLOAD
MVIEW$_ADV_BASETABLE
MVIEW$_ADV_SQLDEPEND

TABLE_NAME
------------------------------
MVIEW$_ADV_PRETTY
MVIEW$_ADV_TEMP
MVIEW$_ADV_FILTER
MVIEW$_ADV_LOG
MVIEW$_ADV_FILTERINSTANCE
MVIEW$_ADV_LEVEL
MVIEW$_ADV_ROLLUP
MVIEW$_ADV_AJG
MVIEW$_ADV_FJG
MVIEW$_ADV_GC
MVIEW$_ADV_CLIQUE
```

```
TABLE_NAME
------------------------------
PARTICIPANT
RESULTAT
CATEGORIE
CLIENT
FOURNISSEUR
MESSAGER
PRODUIT
EMPLOYE
COMMANDE
DETAILCOMMANDE
TABLEERREURS
```

```
171 rows selected.
```

7. Donner la description des attributs des tables THING et SUBSCRIBE (Exploiter la table USER_TAB_COLUMNS).

```
SQL> SELECT * FROM USER_TAB_COLUMNS WHERE TABLE_NAME ='THING';

TABLE_NAME                     COLUMN_NAME
------------------------------ ------------------------------
DATA_TYPE
--------------------------------------------------------------------------------
DAT
---
DATA_TYPE_OWNER
--------------------------------------------------------------------------------
DATA_LENGTH DATA_PRECISION DATA_SCALE N  COLUMN_ID DEFAULT_LENGTH
----------- -------------- ---------- - ---------- --------------
DATA_DEFAULT
--------------------------------------------------------------------------------
NUM_DISTINCT LOW_VALUE
------------ ----------------------------------------------------------------
HIGH_VALUE                                                          DENSITY
---------------------------------------------------------------- ----------
 NUM_NULLS NUM_BUCKETS LAST_ANA SAMPLE_SIZE
---------- ----------- -------- -----------
CHARACTER_SET_NAME                        CHAR_COL_DECL_LENGTH GLO USE
----------------------------------------- -------------------- --- ---
AVG_COL_LEN CHAR_LENGTH C V80 DAT HISTOGRAM
----------- ----------- - --- --- ---------------
THING                          MAC
```

```
SQL> SELECT * FROM USER_TAB_COLUMNS WHERE TABLE_NAME = 'SUBSCRIBE'
  2  ;

TABLE_NAME                     COLUMN_NAME
------------------------------ ------------------------------
DATA_TYPE
--------------------------------------------------------------------------------
DAT
---
DATA_TYPE_OWNER
--------------------------------------------------------------------------------
DATA_LENGTH DATA_PRECISION DATA_SCALE N  COLUMN_ID DEFAULT_LENGTH
----------- -------------- ---------- - ---------- --------------
DATA_DEFAULT
--------------------------------------------------------------------------------
NUM_DISTINCT LOW_VALUE
------------ ----------------------------------------------------------------
HIGH_VALUE                                                          DENSITY
---------------------------------------------------------------- ----------
 NUM_NULLS NUM_BUCKETS LAST_ANA SAMPLE_SIZE
---------- ----------- -------- -----------
CHARACTER_SET_NAME                        CHAR_COL_DECL_LENGTH GLO USE
----------------------------------------- -------------------- --- ---
AVG_COL_LEN CHAR_LENGTH C V80 DAT HISTOGRAM
----------- ----------- - --- --- ---------------
SUBSCRIBE                      IDUSER
```

8. Comment peut-on vérifie qu'il y a une référence de clé étrangère entre les tables THING et SUBSCRIBE?

```
SQL> SELECT CONSTRAINT_NAME, CONSTRAINT_TYPE FROM USER_CONSTRAINTS WHERE TABLE_NAME IN ('THING', 'SUBSCRIBE');

CONSTRAINT_NAME               C
------------------------------ -
SYS_C007490                    P
SYS_C007491                    R
SYS_C007492                    R
SYS_C007488                    P
SYS_C007489                    R
```

9. Donner toutes les contraintes créées lors de la partie et les informations qui les caractérisent (Exploitez la table USER_CONSTRAINTS);

```
SQL> SELECT * FROM USER_CONSTRAINTS WHERE TABLE_NAME IN ('THING', 'SUBSCRIBE');

OWNER
------------------------------------------------------------------------------
CONSTRAINT_NAME                C TABLE_NAME
------------------------------ - ------------------------------
SEARCH_CONDITION
------------------------------------------------------------------------------
R_OWNER
------------------------------------------------------------------------------
R_CONSTRAINT_NAME              DELETE_RU STATUS   DEFERRABLE     DEFERRED
------------------------------ --------- -------- -------------- ---------
VALIDATED     GENERATED      BAD RELY LAST_CHA INDEX_OWNER
------------- -------------- --- ---- -------- ------------------------------
INDEX_NAME                     INVALID VIEW_RELATED
------------------------------ ------- --------------
DBAIOT

OWNER
------------------------------------------------------------------------------
CONSTRAINT_NAME                C TABLE_NAME
------------------------------ - ------------------------------
SEARCH_CONDITION
------------------------------------------------------------------------------
R_OWNER
------------------------------------------------------------------------------
```

10. Retrouver toutes les informations permettant de recréer la table SUBSCRIBE.

```
SQL> SELECT COLUMN_NAME, DATA_TYPE, DATA_LENGTH FROM USER_TAB_COLUMNS WHERE TABLE_NAME = 'SUBSCRIBE';

COLUMN_NAME
------------------------------
DATA_TYPE
------------------------------------------------------------------------------
DATA_LENGTH
-----------
IDUSER
NUMBER
        22

IDSERVICE
NUMBER
        22

COLUMN_NAME
------------------------------
DATA_TYPE
------------------------------------------------------------------------------
DATA_LENGTH
-----------

START_DATE
DATE
         7

END_DATE
DATE

COLUMN_NAME
------------------------------
DATA_TYPE
------------------------------------------------------------------------------
DATA_LENGTH
-----------
         7
```

11. Trouver tous les privilèges accordés à Admin (comme on les a supprimé dans la partie 2, recréez 2 privilèges système et un privilège objet pour admin et les afficher en tant que admin et en tant que system).

```
SQL> connect dbaiot/1234
Connected.
SQL> GRANT CREATE SESSION, CREATE TABLE TO Admin;

Grant succeeded.

SQL> GRANT SELECT ON USERS TO Admin;

Grant succeeded.
```

creation des privileges

```
SQL> connect admin/1234
Connected.
SQL>
SQL> SELECT * FROM USER_SYS_PRIVS;

USERNAME                       PRIVILEGE                                ADM
------------------------------ ---------------------------------------- ---
ADMIN                          CREATE TABLE                             NO
ADMIN                          CREATE SESSION                           NO
SQL> SELECT * FROM USER_TAB_PRIVS;

GRANTEE                        OWNER
------------------------------ ------------------------------
TABLE_NAME                     GRANTOR
------------------------------ ------------------------------
PRIVILEGE                                GRA HIE
---------------------------------------- --- ---
ADMIN                          DBAIOT
THING                          DBAIOT
SELECT                                   NO  NO

ADMIN                          DBAIOT
USERS                          DBAIOT
SELECT                                   NO  NO

GRANTEE                        OWNER
------------------------------ ------------------------------
TABLE_NAME                     GRANTOR
------------------------------ ------------------------------
PRIVILEGE                                GRA HIE
---------------------------------------- --- ---
```

affichage des privileges de l'admin au tanque Admin

```
SQL> connect system/1234
Connected.
SQL>
SQL> SELECT * FROM DBA_SYS_PRIVS WHERE GRANTEE = 'ADMIN';

GRANTEE                        PRIVILEGE                                ADM
------------------------------ ---------------------------------------- ---
ADMIN                          CREATE TABLE                             NO
ADMIN                          CREATE SESSION                           NO

SQL> SELECT * FROM DBA_TAB_PRIVS WHERE GRANTEE = 'ADMIN';

GRANTEE                        OWNER
------------------------------ ------------------------------
TABLE_NAME                     GRANTOR
------------------------------ ------------------------------
PRIVILEGE                                GRA HIE
---------------------------------------- --- ---
ADMIN                          DBAIOT
THING                          DBAIOT
SELECT                                   NO  NO

ADMIN                          DBAIOT
USERS                          DBAIOT
SELECT                                   NO  NO

GRANTEE                        OWNER
------------------------------ ------------------------------
TABLE_NAME                     GRANTOR
------------------------------ ------------------------------
PRIVILEGE                                GRA HIE
---------------------------------------- --- ---
```

affichage des privileges de l'admin au tanque systeme

12. Trouver les rôles donnés à l'utilisateur Admin.

```
SQL> connect admin/1234
Connected.
SQL> SELECT * FROM USER_ROLE_PRIVS;

USERNAME                       GRANTED_ROLE                   ADM DEF OS_
------------------------------ ------------------------------ --- --- ---
ADMIN                          SUBSCRIBE_MANAGER              NO  YES NO
```

13. Trouver tous les objets appartenant à Admin.

```
SQL> SELECT OBJECT_NAME, OBJECT_TYPE
  2  FROM USER_OBJECTS;

OBJECT_NAME
--------------------------------------------------------------------------------
OBJECT_TYPE
-------------------
USER_THING
VIEW
```

14. L'administrateur cherche le propriétaire de la table SUBSCRIBE, comment il pourra le trouver ?

```
SQL> SELECT OWNER
  2  FROM ALL_TABLES
  3  WHERE TABLE_NAME = 'SUBSCRIBE';

OWNER
------------------------------
DBAIOT
```

15. Donner la taille en Ko de la table SUBSCRIBE (utiliser desc user_segments;).

```
SQL> connect dbaiot/1234
Connected.
SQL> SELECT BYTES / 1024 AS SIZE_IN_KB
  2  FROM USER_SEGMENTS
  3  WHERE SEGMENT_NAME = 'SUBSCRIBE';

SIZE_IN_KB
----------
        64
```

16. Vérifier l'effet produit par chacune des commandes de définition de données de la partie 1 sur le dictionnaire :
Créez un nouvel utilisateur comme dans la partie 1, donner lui tous les privilèges ensuite connectez-vous avec cet utilisateur
que vous venez de créer

```
SQL> CREATE USER user_iot IDENTIFIED BY 1234
  2  DEFAULT TABLESPACE IOT_TBS
  3  TEMPORARY TABLESPACE IOT_TempTBS;

User created.
```

creation de user_iot

```
SQL> GRANT ALL PRIVILEGES TO user_iot;

Grant succeeded.
```

donner tous les privileges a user_iot

```
SQL> select *from all_users;

USERNAME                       USER_ID CREATED
------------------------------ ---------- --------
XS$NULL                      2147483638 29/05/14
DBACOMPTOIRE                         49 05/11/24
DBACPMTOIRE                          48 05/11/24
APEX_040000                          47 29/05/14
APEX_PUBLIC_USER                     45 29/05/14
FLOWS_FILES                          44 29/05/14
HR                                   43 29/05/14
MDSYS                                42 29/05/14
ANONYMOUS                            35 29/05/14
XDB                                  34 29/05/14
CTXSYS                               32 29/05/14

USERNAME                       USER_ID CREATED
------------------------------ ---------- --------
APPQOSSYS                            30 29/05/14
DBSNMP                               29 29/05/14
ORACLE_OCM                           21 29/05/14
DIP                                  14 29/05/14
OUTLN                                 9 29/05/14
SYSTEM                                5 29/05/14
SYS                                   0 29/05/14
USER_IOT                             54 18/12/24
ADMIN                                52 17/12/24
DBAIOT                               50 17/12/24

21 rows selected.
```

```
SQL> select * from user_sys_privs;

USERNAME                       PRIVILEGE                                ADM
------------------------------ ---------------------------------------- ---
USER_IOT                       UPDATE ANY CUBE DIMENSION                NO
USER_IOT                       UPDATE ANY CUBE BUILD PROCESS            NO
USER_IOT                       DELETE ANY MEASURE FOLDER                NO
USER_IOT                       SELECT ANY CUBE DIMENSION                NO
USER_IOT                       CREATE ANY CUBE DIMENSION                NO
USER_IOT                       EXECUTE ANY ASSEMBLY                     NO
USER_IOT                       MANAGE SCHEDULER                         NO
USER_IOT                       EXECUTE ANY RULE                         NO
USER_IOT                       EXECUTE ANY RULE SET                     NO
USER_IOT                       GRANT ANY OBJECT PRIVILEGE               NO
USER_IOT                       DEQUEUE ANY QUEUE                        NO
```

```
200 rows selected.
```