DATABASE CHALLENGE

AM Challenge #2 – Database

1. Crear una base de datos challenge.

```
--Create Table Space
CREATE TABLESPACE challenge DATAFILE
'C:\app\JuSuarez\product\21c\oradata\XE\ChallengeTableSpace.dbf'
SIZE 10M;

-- Create User
CREATE USER challenge IDENTIFIED BY "password";

-------------------------
-- Some Privileges to user challenge
-------------------------

-- Privileges - tablespace
ALTER USER challenge
DEFAULT TABLESPACE Challenge
QUOTA UNLIMITED ON challenge;

GRANT UNLIMITED TABLESPACE TO challenge;

-- Privileges: Tablespace
ALTER USER challenge
DEFAULT TABLESPACE Challenge
QUOTA UNLIMITED ON challenge;

GRANT UNLIMITED TABLESPACE TO challenge;
GRANT ALTER TABLESPACE TO challenge;

-- Privileges: User
GRANT
    CREATE SESSION,
    CREATE TABLE,
    CREATE VIEW,
    CREATE SEQUENCE
TO challenge;

--Privileges: Directory
GRANT
    CREATE ANY DIRECTORY,
    DROP ANY DIRECTORY
```

```
TO challenge;

GRANT
    READ, WRITE
    ON DIRECTORY img_dir
TO challenge;

-- Privileges: Procedures PL/SQL
GRANT
    CREATE ANY PROCEDURE,
    ALTER ANY PROCEDURE,
    DROP ANY PROCEDURE
TO challenge;

-- Privileges: Dictionary/Views (DBA_TABLES)
GRANT
    SELECT ANY DICTIONARY,
    CREATE SESSION
TO challenge;

-- Privileges: Triggers
GRANT
    ADMINISTER DATABASE TRIGGER,
    ALTER ANY TRIGGER,
    CREATE ANY TRIGGER,
    DROP ANY TRIGGER
TO challenge;
```

2. Crear un usuario de solo lectura en la bd.

```
CREATE USER readonly_user IDENTIFIED BY "password";
GRANT
    CREATE SESSION,
    SELECT ANY TABLE
TO readonly_user;
```

3. Crear un usuario de lectura/escritura.

```
CREATE USER readwrite_user IDENTIFIED BY "password";
GRANT
    CREATE SESSION,
    SELECT ANY TABLE,
    INSERT ANY TABLE,
    DELETE ANY TABLE,
    UPDATE ANY TABLE
```

```
TO readwrite_user;
```

4. Crear una tabla llamada challenge con las especificaciones presentadas en la última sección del documento (Consideraciones)

```
-- Create table
CREATE TABLE challenge.challenge (
    seq NUMBER GENERATED ALWAYS AS IDENTITY NOT NULL PRIMARY KEY,
    yn CHAR(1) DEFAULT 'Y' NOT NULL,
    age SMALLINT DEFAULT 0,
    birthday DATE,
    bool CHAR(5) DEFAULT 'true' NOT NULL,
    city VARCHAR2(20 CHAR),
    ccnumber NUMBER(12, 0) DEFAULT 1000,
    "date" DATE,
    digit NUMBER(1, 0),
    dollar NUMBER(19, 4),
    "first" VARCHAR2(50 CHAR),
    chifre NUMBER,
    "name" VARCHAR2(50 CHAR),
    "last" VARCHAR2(50 CHAR),
    paragraph VARCHAR2(1000 CHAR),
    sentence VARCHAR2(1000 CHAR),

    CONSTRAINT check_yn CHECK (yn IN ('Y', 'N')),
    CONSTRAINT check_bool CHECK (bool IN ('true', 'false')),
    CONSTRAINT check_age CHECK (age BETWEEN 0 and 120),
    CONSTRAINT check_ccnumber CHECK (ccnumber BETWEEN 1000 and 999999999999)
) TABLESPACE challenge;
```

5. Crear una tabla llamada logo.

```
CREATE TABLE challenge.logo (
    "ref" NUMBER,
    "description" varchar2(30 CHAR),
    file_dir BLOB DEFAULT EMPTY_BLOB(),

    CONSTRAINT logo PRIMARY KEY ("ref")
) TABLESPACE challenge;
```

6. Guardar el logo de Endava en la tabla logo.

```
--Create Directory
```

```
GRANT CREATE ANY DIRECTORY TO challenge;
CREATE DIRECTORY img_dir as 'D:\Endava\Challenge\3. Data Base - SQL';


-- Grant Permission from System to the user
GRANT READ, WRITE ON DIRECTORY img_dir TO challenge;


--Option 1
INSERT INTO challenge.logo VALUES
    (1, 'No image', EMPTY_BLOB());
INSERT INTO challenge.logo VALUES
    (2, 'Endava`s Logo', BFILENAME('IMG_DIR','EndavaLogo.jpg'));


-- Option 2
DECLARE
    V_TEMP BLOB;
    V_NAME VARCHAR2(20);
    V_BFILE BFILE;

BEGIN

    --INSERT
    INSERT INTO challenge.logo VALUES
    (3, 'Endavas Logo 2', EMPTY_BLOB()) Returning FILE_DIR INTO V_TEMP;

    V_NAME := 'EndavaLogo.jpg';
    V_BFILE := BFILENAME('IMG_DIR', V_NAME);

    DBMS_LOB.OPEN(V_BFILE, DBMS_LOB.LOB_READONLY);
    DBMS_LOB.LOADFROMFILE(V_TEMP, V_BFILE, DBMS_LOB.GETLENGTH(V_BFILE));
    DBMS_LOB.CLOSE(V_BFILE);
    COMMIT;

END;
```

7. Hacer un back - up de la BD challenge.

```
(En RMAN)

RMAN> CONNECT TARGET;
RMAN> SHUTDOWN IMMEDIATE;
RMAN> STARTUP FORCE DBA;
```

```
RMAN> SHUTDOWN IMMEDIATE;
RMAN> STARTUP MOUNT;
RMAN> BACKUP DATABASE;
RMAN> ALTER DATABASE OPEN;
```

```
RMAN> BACKUP DATABASE;

Starting backup at 02-MAR-22
allocated channel: ORA_DISK_1
channel ORA_DISK_1: SID=622 device type=DISK
channel ORA_DISK_1: starting full datafile backup set
channel ORA_DISK_1: specifying datafile(s) in backup set
input datafile file number=00001 name=C:\APP\JUSUAREZ\PRODUCT\21C\ORADATA\XE\SYSTEM01.DBF
input datafile file number=00003 name=C:\APP\JUSUAREZ\PRODUCT\21C\ORADATA\XE\SYSAUX01.DBF
input datafile file number=00004 name=C:\APP\JUSUAREZ\PRODUCT\21C\ORADATA\XE\UNDOTBS01.DBF
input datafile file number=00018 name=C:\APP\JUSUAREZ\PRODUCT\21C\ORADATA\XE\CHALLENGETABLESPACE.DBF
input datafile file number=00007 name=C:\APP\JUSUAREZ\PRODUCT\21C\ORADATA\XE\USERS01.DBF
channel ORA_DISK_1: starting piece 1 at 02-MAR-22
channel ORA_DISK_1: finished piece 1 at 02-MAR-22
piece handle=C:\APP\JUSUAREZ\PRODUCT\21C\DBHOMEXE\DATABASE\0E0NCMLN_14_1_1 tag=TAG20220302T123150 comment=NONE
channel ORA_DISK_1: backup set complete, elapsed time: 00:00:07
channel ORA_DISK_1: starting full datafile backup set
channel ORA_DISK_1: specifying datafile(s) in backup set
input datafile file number=00010 name=C:\APP\JUSUAREZ\PRODUCT\21C\ORADATA\XE\XEPDB1\SYSAUX01.DBF
input datafile file number=00009 name=C:\APP\JUSUAREZ\PRODUCT\21C\ORADATA\XE\XEPDB1\SYSTEM01.DBF
input datafile file number=00011 name=C:\APP\JUSUAREZ\PRODUCT\21C\ORADATA\XE\XEPDB1\UNDOTBS01.DBF
input datafile file number=00012 name=C:\APP\JUSUAREZ\PRODUCT\21C\ORADATA\XE\XEPDB1\USERS01.DBF
channel ORA_DISK_1: starting piece 1 at 02-MAR-22
channel ORA_DISK_1: finished piece 1 at 02-MAR-22
piece handle=C:\APP\JUSUAREZ\PRODUCT\21C\DBHOMEXE\DATABASE\0F0NCMLU_15_1_1 tag=TAG20220302T123150 comment=NONE
channel ORA_DISK_1: backup set complete, elapsed time: 00:00:03
channel ORA_DISK_1: starting full datafile backup set
channel ORA_DISK_1: specifying datafile(s) in backup set
input datafile file number=00006 name=C:\APP\JUSUAREZ\PRODUCT\21C\ORADATA\XE\PDBSEED\SYSAUX01.DBF
input datafile file number=00005 name=C:\APP\JUSUAREZ\PRODUCT\21C\ORADATA\XE\PDBSEED\SYSTEM01.DBF
input datafile file number=00008 name=C:\APP\JUSUAREZ\PRODUCT\21C\ORADATA\XE\PDBSEED\UNDOTBS01.DBF
channel ORA_DISK_1: starting piece 1 at 02-MAR-22
channel ORA_DISK_1: finished piece 1 at 02-MAR-22
piece handle=C:\APP\JUSUAREZ\PRODUCT\21C\DBHOMEXE\DATABASE\0G0NCMM1_16_1_1 tag=TAG20220302T123150 comment=NONE
channel ORA_DISK_1: backup set complete, elapsed time: 00:00:03
Finished backup at 02-MAR-22

Starting Control File and SPFILE Autobackup at 02-MAR-22
piece handle=C:\APP\JUSUAREZ\PRODUCT\21C\DBHOMEXE\DATABASE\C-2979382357-20220302-03 comment=NONE
Finished Control File and SPFILE Autobackup at 02-MAR-22
```

8. Borrar la base de datos challenge y recuperarla desde el back-up.

```
SELECT table_name from all_tables where owner = 'CHALLENGE';
```

Script Output | Query Result

SQL | All Rows Fetched: 2 in 0.486 seconds

	TABLE_NAME
1	CHALLENGE
2	LOGO

```
DROP TABLESPACE challenge INCLUDING CONTENTS;
```

```
SELECT table_name from all_tables where owner = 'CHALLENGE';
```

Script Output | Query Result

SQL | All Rows Fetched: 0 in 0.516 seconds

TABLE_...

```
(En RMAN)

CONNECT TARGET;
SHUTDOWN ABORT;
STARTUP NOMOUNT;
RESTORE CONTROLFILE FROM 'C:\app\JuSuarez\product\21c\dbhomeXE\database\C-
2979382357-20220302-03';
ALTER DATABASE MOUNT;
RUN {
    SET UNTIL TIME "to_date('02-MAR-2022 12:33:00','DD-MON-YYYY HH24:Mi:SS')";
    RESTORE DATABASE;
    RECOVER DATABASE;
}
ALTER DATABASE OPEN RESETLOGS;
```

```
RMAN> RESTORE CONTROLFILE FROM 'C:\app\JuSuarez\product\21c\dbhomeXE\database\C-2979382357-20220302-03';

Starting restore at 02-MAR-22
using channel ORA_DISK_1

channel ORA_DISK_1: restoring control file
channel ORA_DISK_1: restore complete, elapsed time: 00:00:01
output file name=C:\APP\JUSUAREZ\PRODUCT\21C\ORADATA\XE\CONTROL01.CTL
output file name=C:\APP\JUSUAREZ\PRODUCT\21C\ORADATA\XE\CONTROL02.CTL
Finished restore at 02-MAR-22
```

```
RMAN> RUN {
2> SET UNTIL TIME "to_date('02-MAR-2022 12:33:00','DD-MON-YYYY HH24:Mi:SS')";
3> RESTORE DATABASE;
4> RECOVER DATABASE;
5> }

executing command: SET until clause

Starting restore at 02-MAR-22
allocated channel: ORA_DISK_1
channel ORA_DISK_1: SID=620 device type=DISK

skipping datafile 5; already restored to file C:\APP\JUSUAREZ\PRODUCT\21C\ORADATA\XE\PDBSEED\SYSTEM01.DBF
skipping datafile 6; already restored to file C:\APP\JUSUAREZ\PRODUCT\21C\ORADATA\XE\PDBSEED\SYSAUX01.DBF
skipping datafile 8; already restored to file C:\APP\JUSUAREZ\PRODUCT\21C\ORADATA\XE\PDBSEED\UNDOTBS01.DBF
channel ORA_DISK_1: starting datafile backup set restore
channel ORA_DISK_1: specifying datafile(s) to restore from backup set
channel ORA_DISK_1: restoring datafile 00001 to C:\APP\JUSUAREZ\PRODUCT\21C\ORADATA\XE\SYSTEM01.DBF
channel ORA_DISK_1: restoring datafile 00003 to C:\APP\JUSUAREZ\PRODUCT\21C\ORADATA\XE\SYSAUX01.DBF
channel ORA_DISK_1: restoring datafile 00004 to C:\APP\JUSUAREZ\PRODUCT\21C\ORADATA\XE\UNDOTBS01.DBF
channel ORA_DISK_1: restoring datafile 00007 to C:\APP\JUSUAREZ\PRODUCT\21C\ORADATA\XE\USERS01.DBF
channel ORA_DISK_1: restoring datafile 00018 to C:\APP\JUSUAREZ\PRODUCT\21C\ORADATA\XE\CHALLENGETABLESPACE.DBF
channel ORA_DISK_1: reading from backup piece C:\APP\JUSUAREZ\PRODUCT\21C\DBHOMEXE\DATABASE\0E0NCMLN_14_1_1
channel ORA_DISK_1: piece handle=C:\APP\JUSUAREZ\PRODUCT\21C\DBHOMEXE\DATABASE\0E0NCMLN_14_1_1 tag=TAG20220302T123150
channel ORA_DISK_1: restored backup piece 1
channel ORA_DISK_1: restore complete, elapsed time: 00:00:03
channel ORA_DISK_1: starting datafile backup set restore
channel ORA_DISK_1: specifying datafile(s) to restore from backup set
channel ORA_DISK_1: restoring datafile 00009 to C:\APP\JUSUAREZ\PRODUCT\21C\ORADATA\XE\XEPDB1\SYSTEM01.DBF
channel ORA_DISK_1: restoring datafile 00010 to C:\APP\JUSUAREZ\PRODUCT\21C\ORADATA\XE\XEPDB1\SYSAUX01.DBF
channel ORA_DISK_1: restoring datafile 00011 to C:\APP\JUSUAREZ\PRODUCT\21C\ORADATA\XE\XEPDB1\UNDOTBS01.DBF
channel ORA_DISK_1: restoring datafile 00012 to C:\APP\JUSUAREZ\PRODUCT\21C\ORADATA\XE\XEPDB1\USERS01.DBF
channel ORA_DISK_1: reading from backup piece C:\APP\JUSUAREZ\PRODUCT\21C\DBHOMEXE\DATABASE\0F0NCMLU_15_1_1
channel ORA_DISK_1: piece handle=C:\APP\JUSUAREZ\PRODUCT\21C\DBHOMEXE\DATABASE\0F0NCMLU_15_1_1 tag=TAG20220302T123150
channel ORA_DISK_1: restored backup piece 1
channel ORA_DISK_1: restore complete, elapsed time: 00:00:03
Finished restore at 02-MAR-22

Starting recover at 02-MAR-22
using channel ORA_DISK_1

starting media recovery

archived log for thread 1 with sequence 1 is already on disk as file C:\APP\JUSUAREZ\PRODUCT\21C\ORADATA\XE\REDO01.LOG
archived log file name=C:\APP\JUSUAREZ\PRODUCT\21C\ORADATA\XE\REDO01.LOG thread=1 sequence=1
media recovery complete, elapsed time: 00:00:01
Finished recover at 02-MAR-22
```

```
SELECT table_name from all_tables where owner = 'CHALLENGE';
```

Script Output | Query Result

SQL | All Rows Fetched: 2 in 0.482 seconds

	TABLE_NAME
1	CHALLENGE
2	LOGO

9. Borrar una tabla challenge y recuperarla desde el back-up.

```
SELECT table_name from all_tables where owner = 'CHALLENGE';
```

Script Output | Query Result

SQL | All Rows Fetched: 2 in 0.486 seconds

	TABLE_NAME
1	CHALLENGE
2	LOGO

```
DROP TABLE challenge.challenge;
```

```
SELECT table_name from all_tables where owner = 'CHALLENGE';
```

Script Output | Query Result

SQL | All Rows Fetched: 1 in 0.479 seconds

	TABLE_NAME
1	LOGO

```
(En RMAN)

CONNECT TARGET;
SHUTDOWN ABORT;
STARTUP FORCE MOUNT;
RESTORE DATABASE;
RECOVER DATABASE;
ALTER DATABASE OPEN RESETLOGS;
```

```
RMAN> RESTORE DATABASE;

Starting restore at 02-MAR-22
allocated channel: ORA_DISK_1
channel ORA_DISK_1: SID=621 device type=DISK

skipping datafile 5; already restored to file C:\APP\JUSUAREZ\PRODUCT\21C\ORADATA\XE\PDBSEED\SYSTEM01.DBF
skipping datafile 6; already restored to file C:\APP\JUSUAREZ\PRODUCT\21C\ORADATA\XE\PDBSEED\SYSAUX01.DBF
skipping datafile 8; already restored to file C:\APP\JUSUAREZ\PRODUCT\21C\ORADATA\XE\PDBSEED\UNDOTBS01.DBF
channel ORA_DISK_1: starting datafile backup set restore
channel ORA_DISK_1: specifying datafile(s) to restore from backup set
channel ORA_DISK_1: restoring datafile 00001 to C:\APP\JUSUAREZ\PRODUCT\21C\ORADATA\XE\SYSTEM01.DBF
channel ORA_DISK_1: restoring datafile 00003 to C:\APP\JUSUAREZ\PRODUCT\21C\ORADATA\XE\SYSAUX01.DBF
channel ORA_DISK_1: restoring datafile 00004 to C:\APP\JUSUAREZ\PRODUCT\21C\ORADATA\XE\UNDOTBS01.DBF
channel ORA_DISK_1: restoring datafile 00007 to C:\APP\JUSUAREZ\PRODUCT\21C\ORADATA\XE\USERS01.DBF
channel ORA_DISK_1: restoring datafile 00018 to C:\APP\JUSUAREZ\PRODUCT\21C\ORADATA\XE\CHALLENGETABLESPACE.DBF
channel ORA_DISK_1: reading from backup piece C:\APP\JUSUAREZ\PRODUCT\21C\DBHOMEXE\DATABASE\0E0NCMLN_14_1_1
channel ORA_DISK_1: piece handle=C:\APP\JUSUAREZ\PRODUCT\21C\DBHOMEXE\DATABASE\0E0NCMLN_14_1_1 tag=TAG20220302T123150
channel ORA_DISK_1: restored backup piece 1
channel ORA_DISK_1: restore complete, elapsed time: 00:00:07
channel ORA_DISK_1: starting datafile backup set restore
channel ORA_DISK_1: specifying datafile(s) to restore from backup set
channel ORA_DISK_1: restoring datafile 00009 to C:\APP\JUSUAREZ\PRODUCT\21C\ORADATA\XE\XEPDB1\SYSTEM01.DBF
channel ORA_DISK_1: restoring datafile 00010 to C:\APP\JUSUAREZ\PRODUCT\21C\ORADATA\XE\XEPDB1\SYSAUX01.DBF
channel ORA_DISK_1: restoring datafile 00011 to C:\APP\JUSUAREZ\PRODUCT\21C\ORADATA\XE\XEPDB1\UNDOTBS01.DBF
channel ORA_DISK_1: restoring datafile 00012 to C:\APP\JUSUAREZ\PRODUCT\21C\ORADATA\XE\XEPDB1\USERS01.DBF
channel ORA_DISK_1: reading from backup piece C:\APP\JUSUAREZ\PRODUCT\21C\DBHOMEXE\DATABASE\0F0NCMLU_15_1_1
channel ORA_DISK_1: piece handle=C:\APP\JUSUAREZ\PRODUCT\21C\DBHOMEXE\DATABASE\0F0NCMLU_15_1_1 tag=TAG20220302T123150
channel ORA_DISK_1: restored backup piece 1
channel ORA_DISK_1: restore complete, elapsed time: 00:00:03
Finished restore at 02-MAR-22

RMAN> RECOVER DATABASE;

Starting recover at 02-MAR-22
using channel ORA_DISK_1

starting media recovery

archived log for thread 1 with sequence 1 is already on disk as file C:\APP\JUSUAREZ\PRODUCT\21C\ORADATA\XE\REDO01.LOG
archived log for thread 1 with sequence 2 is already on disk as file C:\APP\JUSUAREZ\PRODUCT\21C\ORADATA\XE\REDO02.LOG
RMAN-08187: warning: media recovery until SCN 4840707 complete
Finished recover at 02-MAR-22
```

```
SELECT table_name from all_tables where owner = 'CHALLENGE';
```

Script Output | Query Result

SQL | All Rows Fetched: 2 in 0.501 seconds

	TABLE_NAME
1	CHALLENGE
2	LOGO

10. Alterar la tabla challenge y adicionar un campo numérico denominado trgr.

```
ALTER TABLE challenge.challenge
ADD trgr NUMBER DEFAULT 0 NOT NULL;
```

11. Actualizar el campo trgr con el valor de seq incrementando este valor en 100.

```
CREATE OR REPLACE TRIGGER update_trgr
AFTER INSERT
    ON challenge.challenge
DECLARE
    curr_seq NUMBER;
BEGIN

    SELECT seq
    INTO curr_seq
    FROM challenge.challenge
    WHERE seq = (SELECT MAX(seq) FROM challenge.challenge);

    UPDATE challenge.challenge
    SET trgr = curr_seq + 100
    WHERE seq = curr_seq;

END;
```

12. Crear un stored procedure llamado calculus que calcule la media, mediana, moda, mínimo y máximo para el atributo ccnumber.

```
CREATE OR REPLACE PROCEDURE calculus (l_cursor IN OUT SYS_REFCURSOR)
IS
BEGIN
    OPEN l_cursor FOR
        SELECT
            AVG(challenge.ccnumber) MEDIA,
            MEDIAN(challenge.ccnumber) MEDIANA,
```

```
            STATS_MODE(challenge.ccnumber) MODA,
            MIN(challenge.ccnumber) MINIMO,
            MAX(challenge.ccnumber) MAXIMO
        FROM challenge;
END;

--Execute Procedure
VARIABLE cursor_output REFCURSOR;
EXECUTE calculus(:cursor_output);
PRINT :cursor_output;
```

13. Cree todas las estructuras (llaves, índices, vistas, colecciones, etc.) que usted considere pertinentes para que todo se realice a la mayor velocidad posible.

```
CREATE INDEX challenge_yn_i
ON challenge.challenge(yn);
```

14. Generar 100.000 registros (con valores aleatorios pero que cada dato no exceda los límites máximos y mínimos de cada atributo) e insertarlos en la tabla challenge.

```
-- More space for the initial tablespace*
ALTER TABLESPACE challenge
    ADD DATAFILE 'C:\app\User\product\21c\oradata\XE\ChallengeTableSpace2E.dbf'
    SIZE 10M
    AUTOEXTEND ON;


-- Loop : Procedure
CREATE OR REPLACE PROCEDURE random_insert
    (numberOfRows IN NUMBER)


IS
    v_mindate NUMBER := TO_CHAR(TO_DATE('01/01/2000','DD/MM/YYYY'),'J');
    v_sysdate NUMBER :=  TO_CHAR(SYSDATE, 'J');
    v_rowsIn NUMBER := 0;
    v_numberOfRows NUMBER := numberOfRows;


BEGIN
```

```
    LOOP
        BEGIN
            INSERT INTO challenge.challenge(yn, age, birthday, bool, city,
ccnumber, "date", digit, dollar, "first", chifre, "name", "last", paragraph,
sentence)
            VALUES(
                decode(round(dbms_random.value), 1, 'Y', 'N'),
                dbms_random.value(0, 120),


                TO_DATE(TRUNC(DBMS_RANDOM.VALUE( v_mindate,v_sysdate )),'J'),


                decode(round(dbms_random.value), 1, 'true', 'false'),
                dbms_random.string('A',dbms_random.value(5, 20)),
                dbms_random.value(1000, 999999999999),


                TO_DATE(TRUNC(DBMS_RANDOM.VALUE(v_mindate,v_sysdate)),'J'),


                dbms_random.value(0,9),
                round(dbms_random.value(0, 999999), 4),
                dbms_random.string('A',dbms_random.value(5, 50)),
                dbms_random.value(0, 100),
                dbms_random.string('A',dbms_random.value(5, 50)),
                dbms_random.string('A',dbms_random.value(5, 50)),
                dbms_random.string('A',dbms_random.value(5, 500)),
                dbms_random.string('A',dbms_random.value(5, 100))
            );
            v_rowsIn := v_rowsIn + 1;
        END;
        EXIT WHEN v_rowsIn = v_numberOfRows;
    END LOOP;
    COMMIT;


END;

EXECUTE random_insert(100000);
```

15. Generar una consulta donde liste todas las tablas del sistema.

```
-- User tables *
```

```sql
SELECT table_name, tablespace_name
FROM USER_TABLES
ORDER BY TABLE_NAME;


--All tables
SELECT table_name, owner
FROM ALL_TABLES
ORDER BY owner, table_name;


-- Scheme Tables
SELECT table_name, owner
FROM ALL_TABLES
WHERE owner='CHALLENGE'
ORDER BY owner, table_name;


-- All Schemes Tables (DBA_TABLES: Data Dictionary)
SELECT table_name, owner
FROM DBA_TABLES
WHERE owner='CHALLENGE'
ORDER BY owner, table_name;
```

16. Generar una consulta donde liste todos los atributos.

```sql
-- All tables from an specific user/schema (SYS)
SELECT ATC.column_id,
    ATC.owner,
    ATC.table_name,
    ATC.column_name,
    ATC.data_type,
    ATC.data_length,
    AT.num_rows,
    ATC.data_precision,
    ATC.data_scale,
    ATC.nullable
FROM SYS.ALL_TAB_COLUMNS ATC
INNER JOIN SYS.ALL_TABLES AT
    ON ATC.owner = AT.owner
    AND ATC.table_name = AT.table_name
WHERE ATC.owner = 'CHALLENGE'
ORDER BY ATC.table_name, ATC.owner, ATC.column_id;
```

```
-- All tables (DBA)
SELECT DTC.column_id,
    DTC.owner AS schema_name,
    DTC.table_name,
    DT.tablespace_name,
    DTC.column_name,
    DTC.data_type,
    DTC.data_length,
    DT.num_rows,
    DTC.data_precision,
    DTC.data_scale,
    DTC.nullable
FROM SYS.DBA_TAB_COLUMNS DTC
INNER JOIN SYS.DBA_TABLES DT
    ON DTC.owner = DT.owner
    AND DTC.table_name = DT.table_name
--WHERE DTC.owner = 'CHALLENGE'
ORDER BY  DTC.owner, DTC.table_name, DTC.column_id;
```

17. Generar una consulta que filtre aquellos registros que en la columna yn tienen un valor Y y cruzarlos con los que tienen un valor de N en el campo yn donde el campo age tenga el mismo

```
WITH n AS (
    SELECT seq, age, yn
    FROM challenge.challenge
    WHERE yn = 'N'
),
y AS (
    SELECT seq, age, yn
    FROM challenge.challenge
    WHERE yn = 'Y'
)
SELECT y.seq AS y_seq, n.seq AS n_seq, y.age AS age
FROM y
LEFT OUTER JOIN n ON y.age = n.age;
```

18. En la consulta anterior adicionar una columna donde se cuente los registros que tienen N y los registros que tienen Y

```
WITH
```

```
    y_count AS (
        SELECT count(*) as y_total_count
        FROM challenge.challenge
        WHERE yn = 'Y'
    ),
    n_count AS (
        SELECT count(*) as n_total_count
        FROM challenge.challenge
        WHERE yn = 'N'
    ),
    y AS (
        SELECT seq, age, yn, y_total_count
        FROM challenge.challenge, y_count
        WHERE yn = 'Y'
    ),
    n AS (
        SELECT seq, age, yn, n_total_count
        FROM challenge.challenge, n_count
        WHERE yn = 'N'
    )
SELECT
    y.seq AS y_seq,
    n.seq AS n_seq,
    y.age AS age,
    y_total_count,
    n_total_count
FROM y
LEFT OUTER JOIN n ON y.age = n.age;
```

19. Crear una consulta que muestre el mes de los campos birthday y date

```
SELECT
    EXTRACT(MONTH FROM birthday) as birthday_month,
    EXTRACT(MONTH FROM "date") as date_month
FROM challenge.challenge;
```

20. Eliminar los 100.000 registros insertados por el grupo.

```
TRUNCATE TABLE challenge.challenge;
```