-- cac function/proc/tricgger o duoi tao boi user adminadmin duoc sysdba grant cac quyen:

--grant create on dba\_users to adminadmin;

-- grant all privileges to adminadmin;

-- GRANT UNLIMITED TABLESPACE TO adminadmin;

-- grant connect to adminadmin;

-- grant alter user to adminadmin;

-- GRANT EXECUTE ON SYS.DBMS\_CRYPTO TO adminadmin;

--dung tap ky tu 'AL32UTF8'

alter session set "\_ORACLE\_SCRIPT"=true;

set echo on

set serveroutput on

-- user adminadmin tao cac func/stored/trigger o duoi:

CREATE USER adminadmin

IDENTIFIED BY 123

DEFAULT TABLESPACE USERS

TEMPORARY TABLESPACE TEMP;

--CÂU 1: TAO BANG

--DROP TABLE SINHVIEN;

CREATE TABLE SINHVIEN(

MSSV VARCHAR2 (10) PRIMARY KEY,

HotenSV VARCHAR2 (30),

DTB NUMBER (2)

);

--DROP TABLE MONHOC;

CREATE TABLE MONHOC(

MaMH VARCHAR2 (10) PRIMARY KEY,

TenMH VARCHAR2 (20),

GVPhuTrach VARCHAR2(30)

);

--DROP TABLE DANGKY;

CREATE TABLE DANGKY(

MSSV VARCHAR2 (10),

MaMH VARCHAR2 (10),

HocKy number (2),

DiemThi NUMBER (2),

primary key (MSSV,MaMH,HocKy)

);

-- t?o khóa ngo?i:

ALTER TABLE DANGKY ADD CONSTRAINT FK\_DK\_MSSV\_SV FOREIGN KEY (MSSV) REFERENCES SINHVIEN(MSSV);

ALTER TABLE DANGKY ADD CONSTRAINT FK\_DK\_MaMH\_MH FOREIGN KEY (MaMH) REFERENCES MONHOC(MaMH);

--them du lieu

-- xem du lieu cac bang:

select \* from SINHVIEN;

select \* from MONHOC;

select \* from DANGKY

--////////////////////////////////////////////////////////////////////////////////

--CÂU 3A:

-- genrate key:

DECLARE

key\_bytes\_raw RAW(32);

key\_char NVARCHAR2(64);

BEGIN

key\_bytes\_raw := DBMS\_CRYPTO.RANDOMBYTES(32);

key\_char := UTL\_I18N.RAW\_TO\_CHAR(UTL\_ENCODE.BASE64\_ENCODE(key\_bytes\_raw), 'AL32UTF8');

DBMS\_OUTPUT.PUT\_LINE('Key: ' || key\_char);

END;

/

--Key: aVOQ35o4z7lCLqZ/s0RG06vwqosi2DJ5JPLrumpdqTo='

-- function ma hoa:

--Key to be used for encryption: 52AB32; ^ $! ER94988OPS3W21

--Initialization vector (IV) to be used for encryption: TY54ABCX

-- store 'iv' voi 'key' vao table, chuyen sang dang hex

drop table ALGPARAMETERS

CREATE TABLE ALGPARAMETERS

(

NAME VARCHAR2(100 BYTE),

VALUE NVARCHAR2(100)

);

INSERT INTO ALGPARAMETERS

SELECT 'key' NAME,

RAWTOHEX ('52AB32;^$!ER94988OPS3W21') VALUE

FROM DUAL

UNION

SELECT 'iv' NAME, RAWTOHEX ('TY54ABCX') VALUE FROM DUAL;

COMMIT;

-- xem lai key vs iv vua tao trong ALGPARAMETERS;

SELECT \* FROM ALGPARAMETERS;

--tao function encrypt voi input/ouput varchar2

CREATE OR REPLACE FUNCTION F\_ENCRYPT (p\_input VARCHAR2)

RETURN VARCHAR2

AS

v\_encrypted\_raw RAW (2000);

v\_key RAW (320);

v\_encryption\_type PLS\_INTEGER

:= DBMS\_CRYPTO.DES\_CBC\_PKCS5;

v\_iv RAW (320);

BEGIN

SELECT VALUE

INTO v\_key

FROM algparameters

WHERE name = 'key';

SELECT VALUE

INTO v\_iv

FROM algparameters

WHERE name = 'iv';

v\_encrypted\_raw :=

DBMS\_CRYPTO.encrypt (src => UTL\_I18N.STRING\_TO\_RAW (p\_input, 'AL32UTF8'),

typ => v\_encryption\_type,

key => v\_key,

iv => v\_iv);

RETURN UTL\_RAW.CAST\_TO\_VARCHAR2 (UTL\_ENCODE.base64\_encode (v\_encrypted\_raw));

END;

-- tao function decrypt voi in/out varchar2

CREATE OR REPLACE FUNCTION F\_DECRYPT (p\_input VARCHAR2)

RETURN VARCHAR2

AS

v\_decrypted\_raw RAW (2000);

v\_key RAW (320);

v\_encryption\_type PLS\_INTEGER := DBMS\_CRYPTO.DES\_CBC\_PKCS5;

v\_iv RAW (320);

BEGIN

SELECT VALUE

INTO v\_key

FROM algparameters

WHERE name = 'key';

SELECT VALUE

INTO v\_iv

FROM algparameters

WHERE name = 'iv';

v\_decrypted\_raw :=

DBMS\_CRYPTO.DECRYPT (

src => UTL\_ENCODE.base64\_decode (UTL\_RAW.CAST\_TO\_RAW (p\_input)),

typ => v\_encryption\_type,

key => v\_key,

iv => v\_iv);

RETURN UTL\_I18N.RAW\_TO\_CHAR (v\_decrypted\_raw, 'AL32UTF8');

END;

-- tao bang sinhvien\_ENC de luu du lieu ma hoa

drop table sinhvien\_enc

CREATE TABLE SINHVIEN\_ENC(

MSSV VARCHAR2 (10) PRIMARY KEY,

HotenSV VARCHAR2 (30),

DTB varchar2 (200)

);

--tao trigger de ma hoa cot diemtrungbinh trong bang sinh vien va cot diemthi trong bang dangky:

-- xoa trigger neu ton tai

drop trigger DTB\_AFTER\_TRIGGER

-- tao trigger ma hoa du lieu diem khi insert vao bang sinh vien

CREATE OR REPLACE TRIGGER DTB\_AFTER\_TRIGGER

FOR INSERT ON SINHVIEN\_ENC

COMPOUND TRIGGER

row\_id rowid;

AFTER EACH ROW IS

BEGIN

row\_id := :new.rowid;

END AFTER EACH ROW;

AFTER STATEMENT IS

BEGIN

UPDATE SINHVIEN\_ENC

SET DTB = F\_ENCRYPT(DTB)

WHERE rowid = row\_id;

END AFTER STATEMENT;

END DTB\_AFTER\_TRIGGER;

/

--tao bang dangky\_ENC de luu tru du lieu ma hoa cua bang dangky

CREATE TABLE DANGKY\_ENC(

MSSV VARCHAR2 (10),

MaMH VARCHAR2 (10),

HocKy number (2),

DiemThi varchar2(200),

primary key (MSSV,MaMH,HocKy)

);

-- trigger de ma hoa du lieu diem thi sau khi dc insert

CREATE OR REPLACE TRIGGER DiemThi\_AFTER\_TRIGGER

FOR INSERT ON DANGKY\_ENC

COMPOUND TRIGGER

row\_id rowid;

AFTER EACH ROW IS

BEGIN

row\_id := :new.rowid;

END AFTER EACH ROW;

AFTER STATEMENT IS

BEGIN

UPDATE DANGKY\_ENC

SET DiemThi = F\_ENCRYPT(DiemThi)

WHERE rowid = row\_id;

END AFTER STATEMENT;

END DiemThi\_AFTER\_TRIGGER;

/

-- xem lai du dieu sau khi ma hoa

select \* from sinhvien\_ENC

select \* from dangky\_ENC

-- grant bang proceduced

CREATE PROCEDURE grant\_select(

username VARCHAR2,

grantee VARCHAR2)

AS

BEGIN

FOR r IN (

SELECT owner, table\_name

FROM all\_tables

WHERE owner = username

)

LOOP

EXECUTE IMMEDIATE

'GRANT SELECT ON '||r.owner||'.'||r.table\_name||' to ' || grantee;

END LOOP;

END;

--EXEC grant\_select('a101','SINHVIEN')

-- stored de chi sinh vien do duoc xem diem trung binh cua minh thong qua user name va password

-- loi phan check password

create or replace procedure check\_user\_login(p\_MSSV varchar2, p\_password varchar2)

is

v\_account\_status varchar2(255);

diemtrungbinh varchar2(200);

diemthi varchar2(200);

monhoc varchar2(200);

in\_user varchar2(200);

in\_pass varchar2(200);

p\_buff varchar2(20);

xor SYS\_REFCURSOR;

begin

p\_buff:='A'||p\_MSSV;

select username,password,account\_status

into in\_user,in\_pass,v\_account\_status

from dba\_users

where username = p\_buff;

--and password = p\_password;

-- kiem tra trang thai account neu chua open thi return

if v\_account\_status like '%LOCKED%' then

return;

end if;

--grant\_select(p\_MSSV,'SINHVIEN\_ENC');

-- decrypt diem trung binh:

select F\_DECRYPT(DTB)

into diemtrungbinh

from SINHVIEN\_ENC

where MSSV = p\_MSSV ;

DBMS\_OUTPUT.PUT\_LINE('MSSV:' || p\_MSSV || ' ---- DTB:' || diemtrungbinh );

-- implit cursor in danh sach diem mon hoc, decrypt diem thi

BEGIN

FOR rec IN

(

select MSSV, MAMH, F\_DECRYPT(DiemThi) as diem

--into diemthi,monhoc

from DANGKY\_ENC

where MSSV = p\_MSSV

) LOOP

DBMS\_OUTPUT.PUT\_LINE(rec.MAMH || ': ' || rec.diem);

END LOOP;

END;

DBMS\_OUTPUT.PUT\_LINE('Chu thich: 261: Giai tich; 262: XSTK; 263: Dai So' );

--exeption khi no\_data\_found

exception

when no\_data\_found then

return;

end check\_user\_login;

-- EXEC de xem diem cua sinh vien mssv 101:

EXEC check\_user\_login('101',null)

================================================

VPD

--Thong tin nhom:

--1712391 - Tran Bao Duy

--1712395 - Van Quoc Duy

--1712413 - Bui Ngoc Bao Han

--1712828 - Huynh Thanh Khai Tran

--1712831 - Nguyen Cao Tri

---------Cau 1------------

------ Xoa cac bang EMPHOLIDAY trong he thong ----------------

CONN SYSTEM

DECLARE dem NUMBER;

BEGIN

SELECT COUNT(\*) INTO dem FROM user\_tables WHERE table\_name = 'EMPHOLIDAY';

IF dem > 0 THEN

EXECUTE IMMEDIATE 'DROP TABLE EMPHOLIDAY CASCADE CONSTRAINTS';

END IF;

END;

/

-- Tao bang EMPHOLIDAY

CREATE TABLE EMPHOLIDAY(

EmpNo NUMBER(5),

Name VARCHAR2(60),

Holiday DATE,

PRIMARY KEY(EmpNo)

);

---------Cau 2---------------

----Xoa cac user Hann,Annu,Theota

CONNECT SYS AS SYSDBA;

alter session set "\_oracle\_script"=true;

DECLARE

dem INT;

BEGIN

SELECT COUNT(\*) INTO dem FROM dba\_users WHERE username = 'HANN';

IF dem = 1 THEN

EXECUTE IMMEDIATE 'DROP USER Hann CASCADE';

END IF;

END;

/

DECLARE

dem INT;

BEGIN

SELECT COUNT(\*) INTO dem FROM dba\_users WHERE username = 'ANNU';

IF dem = 1 THEN

EXECUTE IMMEDIATE 'DROP USER Annu CASCADE';

END IF;

END;

/

DECLARE

dem INT;

BEGIN

SELECT COUNT(\*) INTO dem FROM dba\_users WHERE username = 'THEOTA';

IF dem = 1 THEN

EXECUTE IMMEDIATE 'DROP USER Theota CASCADE';

END IF;

END;

/

--Tao cac user Hann,Annu,Theota

CREATE USER Hann IDENTIFIED BY abc123;

GRANT CREATE SESSION TO Hann;

CREATE USER Annu IDENTIFIED BY abc123;

GRANT CREATE SESSION TO Annu;

CREATE USER Theota IDENTIFIED BY abc123;

GRANT CREATE SESSION TO Theota;

-- Grant Execute DBMS\_RLS.add\_policy cho SYSTEM

GRANT EXECUTE ON DBMS\_RLS TO SYSTEM;

CONN SYSTEM;

-- Grant SELECT, INSERT, UPDATE, DELETE cho cac user Hann,Annu,Theota

GRANT SELECT, INSERT, UPDATE, DELETE ON EMPHOLIDAY TO Hann,Annu,Theota;

--a) Annu chi duoc xem va chinh sua thong tin ca nhan cua rieng minh.

CREATE OR REPLACE FUNCTION a\_Policy(

p\_schema IN VARCHAR2,

p\_object IN VARCHAR2)

RETURN VARCHAR2

AS

BEGIN

RETURN '(USER =''ANNU'' AND NAME=''Annu'') OR (USER!=''ANNU'')';

END;

/

BEGIN

DBMS\_RLS.add\_policy

(object\_schema => 'SYSTEM',

object\_name => 'EMPHOLIDAY',

policy\_name => 'HolidayControlA',

policy\_function =>'a\_Policy',

statement\_types =>'SELECT,UPDATE'

);

END;

/

--b) Theota khong duoc xem hay chinh sua bat ky thong tin nao

CREATE OR REPLACE FUNCTION b\_Policy(

p\_schema IN VARCHAR2,

p\_object IN VARCHAR2)

RETURN VARCHAR2

AS

BEGIN

RETURN 'USER != ''THEOTA''';

END;

/

BEGIN

DBMS\_RLS.add\_policy

(object\_schema => 'SYSTEM',

object\_name => 'EMPHOLIDAY',

policy\_name => 'HolidayControlB',

policy\_function =>'b\_Policy'

);

END;

/

--c) Theota khong duoc xem hay chinh sua bat ky thong tin nao

CREATE OR REPLACE FUNCTION c\_Policy(

p\_schema IN VARCHAR2,

p\_object IN VARCHAR2)

RETURN VARCHAR2

AS

BEGIN

RETURN '(USER=''HANN'' AND HOLIDAY >=(SELECT SYSDATE FROM DUAL)) OR (USER!=''HANN'')';

END;

/

BEGIN

DBMS\_RLS.add\_policy

(object\_schema => 'SYSTEM',

object\_name => 'EMPHOLIDAY',

policy\_name => 'HolidayControlC',

policy\_function =>'c\_Policy',

statement\_types =>'INSERT,UPDATE,DELETE',

update\_check=>true

);

END;

--------------- TEST-------------------

--a)

/

CONN Annu/abc123;

-- Chi co the UPDATE tren dong co Name la Annu.

UPDATE SYSTEM.EMPHOLIDAY SET HOLIDAY = TO\_DATE('3/3/2021','MM-DD-YYYY');

SELECT\* FROM SYSTEM.EMPHOLIDAY;

--b)

/

CONN Theota/abc123;

-- khong select duoc gi

SELECT\* FROM SYSTEM.EMPHOLIDAY;

-- khong the UPDATE

UPDATE SYSTEM.EMPHOLIDAY SET HOLIDAY = TO\_DATE('3/3/2021','MM-DD-YYYY');

/

--c)

CONN Hann/abc123;

SELECT\* FROM SYSTEM.EMPHOLIDAY;

-- khong the INSERT(bao loi) vi Holiday dua vao la '1/2/2019'

INSERT INTO SYSTEM.EMPHOLIDAY VALUES(4,'Duy',TO\_DATE('7/7/2017','MM-DD-YYYY'));

-- co the UPDATE vi Holiday cua EMPNO=2 la '3/3/2021'

UPDATE SYSTEM.EMPHOLIDAY SET NAME = 'AnnuChanged' WHERE EMPNO=2;

-- khong the DELETE vi HOLIDAY cua EMPNO=1 la '1/2/2019'

DELETE FROM SYSTEM.EMPHOLIDAY WHERE EMPNO=1;

SELECT\* FROM SYSTEM.EMPHOLIDAY;

AUDIT

-----Cau 1:

---- Xoa user ACCMASTER neu ton tai trong he thong-----

CONN SYS AS SYSDBA;

alter session set "\_ORACLE\_SCRIPT"=true;

DECLARE

dem INT;

BEGIN

SELECT COUNT(\*) INTO dem FROM dba\_users WHERE username = 'ACCMASTER';

IF dem = 1 THEN

EXECUTE IMMEDIATE 'DROP USER ACCMASTER CASCADE';

END IF;

END;

/

--------------Tao user ACCMASTER------------------

CREATE USER ACCMASTER IDENTIFIED BY abc123;

GRANT CREATE SESSION TO ACCMASTER;

GRANT CREATE TABLE TO ACCMASTER;

GRANT UNLIMITED TABLESPACE TO ACCMASTER;

/

CONN ACCMASTER/abc123

/

DECLARE dem NUMBER;

BEGIN

SELECT COUNT(\*) INTO dem FROM user\_tables WHERE table\_name = 'ACCOUNTS';

IF dem > 0 THEN

EXECUTE IMMEDIATE 'DROP TABLE ACCOUNTS CASCADE CONSTRAINTS';

END IF;

END;

/

------- Tao bang ACCOUNTS---------

CREATE TABLE ACCOUNTS(

ACCNO NUMBER(5),

ACCNAME VARCHAR2(60),

BAL NUMBER

);

------- Nhap du lieu vao bang----------

/

CONNECT SYS AS SYSDBA;

------Cau 2-----------

------Tao chinh sach fga cau 2--------------

begin

dbms\_fga.add\_policy(

object\_schema => 'ACCMASTER',

policy\_name=>'fga\_policyyyCau2',

object\_name => 'ACCOUNTS',

audit\_column => 'BAL',

audit\_condition =>'BAL>=20000',

statement\_types =>'SELECT'

);

end;

------------------TEST------------------------

/

CONNECT ACCMASTER/abc123;

select\* from ACCMASTER.ACCOUNTS WHERE BAL>=20000;

select ACCNO from ACCMASTER.ACCOUNTS WHERE BAL>=20000;

/

CONNECT SYS AS SYSDBA

colum SESSIONID format a10;

colum DBUID format a10;

colum POLICYNAME format a15;

colum LSQLTEXT format a60;

select SESSIONID,DBUID,OBJ$SCHEMA,OBJ$NAME,POLICYNAME,LSQLTEXT,NTIMESTAMP# from FGA\_LOG$ order by NTIMESTAMP#;

-------------Cau 3:-------------

--Cac cau lenh gay ra giam sat:

--A,C