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Lab Exercise 3

Programme	:	MTech AI&ML,CPS	Semester	:	FALL 2021-22
Course Title	:	DBMS Lab	Code	:	CSE5003
			Class Nbr(s)		CH2021221700142
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DDL Commands and Constraints

Q.No.	Question Description	Marks
1	**Create and describe the following tables:** A) **NAME**: branch **FIELDS** **DATATYPE** branch_name varchar2(30) branch_city varchar2(30) assets number(8,2) B) **NAME**: account **FIELDS** **DATATYPE** account_no varchar2(11) branch_name varchar2(30) balance number(8) C) **NAME**: customer **FIELD** **DATATYPE** customer_id varchar2(11) customer_name varchar2(20) customer_street varchar2(15) customer_city varchar2(15) D) **NAME**: depositor **FIELD** **DATATYPE** customer_id varchar2(11) account_no varchar2(11) E) **NAME**: loan **FIELDS** **DATATYPE** loan_no varchar2(4) branch_name varchar2(30) amount number(8,2) F) **NAME**: borrower **FIELDS** **DATATYPE** customer_id varchar2(11) loan_no varcahr2(4)	**10**

2

Describe the structure of all database schemas.

3

Alter the structure of the Database

- **a.** Add a new column 'account opening date' in the account table.
- **b.** Increase the width of the column customer_street in table customer to 20.

4 **Add primary keys to all the tables for the specified attributes**

A) **NAME**: branch

FIELDS	**DATATYPE**
branch_name	varchar2(30) primary key
branch_city	varchar2(30)
assets	number(8,2)

B) **NAME**: account

FIELDS	**DATATYPE**
account_no	varchar2(11) primary key
branch_name	varchar2(30)
balance	number(8)

C) **NAME**: customer

FIELD	**DATATYPE**
customer_id	varchar2(11) primary key
customer_name	varchar2(20)
customer_street	varchar2(15)
customer_city	varchar2(15)

D) **NAME**: loan

FIELDS	**DATATYPE**
loan_no	varchar2(4) primary key
branch_name	varchar2(30)
amount	number(8,2)

5 **Add foreign keys to the following tables for the specified attributes with mentioned reference table**

B) **NAME**: account

FIELDS	**DATATYPE**
account_no	varchar2(11) primary key
branch_name	varchar2(30) references branch(branch_name)
balance	number(8)

C) **NAME**: depositor

FIELD	**DATATYPE**
customer_id	varchar2(11)references customer (customer_id)
account_no	varchar2(11)references account (account_no)

D) **NAME**: loan

FIELDS	**DATATYPE**
loan_no	varchar2(4) primary key
branch_name	varchar2(30) references branch(branch_name) (Create constraint with constraint name)
amount	number(8,2)

6 Drop foreign key constraint from loan table

7 Set loan_no attribute of borrower table as foreign key with cascade deletion,
which refers to loan table loan_no column.

8 Add foreign key for the customer_id of borrower table which refers to customer table with constraint name.

Insert the following values into the tables

9 **1. branch :**

BRANCH_NAME	BRANCH_CITY	ASSETS
Perryridge	Rye	5000000
Downtown	Stamford	1000000
Brighton	Paloalto	2500000
Redwood	Harrison	1500000
Mianus	Pitsfield	4500000
Roundhill	Princeton	1500000

2. account :

ACCOUNT_NO	BRANCH_NAME	BALANCE
019_28_3746	Perryridge	15000
182_73_6091	Downtown	23000
192_83_7465	Brighton	18000
321_12_3123	Redwood	5000
336_66_9999	Mianus	5000
963_96_3963	Roundhill	5000
376_66_9999	Mianus	9000
963_96_3964	Mianus	13000

3. loan :

LOAN	BRANCH_NAME	AMOUNT
1_11	Roundhill	9000
1_14	Downtown	15000
1_15	Perryridge	15000
1_16	Perryridge	13000
1_17	Downtown	10000
1_23	Redwood	20000
1_93	Mianus	500

4. depositor

CUSTOMER_ID	ACCOUNT_NO
c_08	182_73_6091
c_03	192_83_7465
c_05	321_12_3123
c_07	336_66_9999
c_08	963_96_3963
c_02	376_66_9999

5. customer

CUSTOMER_ID	CUSTOMER_NAME	CUSTOMER_STREET	CUSTOMER_CIT
c_01	smith	north	rye
c_02	turner	putnam	stamford
c_03	johnson	alma	palo alto
c_04	curry	north	rye
c_05	jones	main	harrisdon
c_06	adoms	spring	pittsfield
c_07	lindsay	park	pittsfield

		c_08	**hayes**	**main**	**harrison**
		c_09	**williams**	**nassau**	**Princeton**

6. borrower

CUSTOMER_ID	**LOAN_NO**
c_01	**1_11**
c_01	**1_23**
c_03	**1_93**
c_05	**1_17**
c_03	**1_16**
c_05	**1_14**

Create the Database Schema for a Employee-pay scenario

10

a) employee(emp_id : integer, emp_name: string, address: string, city: string)
b) department(dept_id: integer, dept_name:string)
c) paydetails(emp_id : integer, dept_id: integer, basic: integer, deductions: integer, additions: integer, DOJ: date)
d) payroll(emp_id : integer, pay_date: date)

For the above schema, perform the following:

Create PRIMARY KEY for employee(emp_id) and department(dept_id).
11 Enforce NOT NULL constraint for emp_name.
12 Creates a DEFAULT constraint on the "City" column of employee table.
13 Create NOT NULL for dept_id on department table.
14 Create NOT NULL for basic in pay details.
15 Enforce CHECK constraints for (deductions > 780) on pay details.
16

10

OUTPUT

1

```
SQL> create table branch (branch_name varchar2(30), branch_city varchar2(30), assets number(8,2));

Table created.

SQL> create table account (account_no varchar2(11), branch_name varchar2(30), balance number(8));

Table created.

SQL> create table customer (customer_id varchar2(11), customer_name varchar2(20), customer_street varchar2(15), customer_city varchar2(15));

Table created.

SQL> create table depositor (customer_id varchar2(11), account_no varchar2(11));

Table created.

SQL> create table loan (loan_no varchar2(4), branch_name varchar2(30), amount number(8,2));

Table created.
```

```
SQL> create table borrower (customer_id varchar2(11), loan_no varchar(4));

Table created.
```

```
SQL> desc branch;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 BRANCH_NAME                                        VARCHAR2(30)
 BRANCH_CITY                                        VARCHAR2(30)
 ASSETS                                             NUMBER(8,2)

SQL> desc account
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 ACCOUNT_NO                                         VARCHAR2(11)
 BRANCH_NAME                                        VARCHAR2(30)
 BALANCE                                            NUMBER(8)

SQL> desc customer;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 CUSTOMER_ID                                        VARCHAR2(11)
 CUSTOMER_NAME                                      VARCHAR2(20)
 CUSTOMER_STREET                                    VARCHAR2(15)
 CUSTOMER_CITY                                      VARCHAR2(15)

SQL> desc depositor;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 CUSTOMER_ID                                        VARCHAR2(11)
 ACCOUNT_NO                                         VARCHAR2(11)

SQL> desc loan;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 LOAN_NO                                            VARCHAR2(4)
 BRANCH_NAME                                        VARCHAR2(30)
 AMOUNT                                             NUMBER(8,2)

SQL> desc borrower;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 CUSTOMER_ID                                        VARCHAR2(11)
 LOAN_NO                                            VARCHAR2(4)

SQL>
```

2

```
SQL> desc branch;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 BRANCH_NAME                                        VARCHAR2(30)
 BRANCH_CITY                                        VARCHAR2(30)
 ASSETS                                             NUMBER(8,2)

SQL> desc account
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 ACCOUNT_NO                                         VARCHAR2(11)
 BRANCH_NAME                                        VARCHAR2(30)
 BALANCE                                            NUMBER(8)

SQL> desc customer;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 CUSTOMER_ID                                        VARCHAR2(11)
 CUSTOMER_NAME                                      VARCHAR2(20)
 CUSTOMER_STREET                                    VARCHAR2(15)
 CUSTOMER_CITY                                      VARCHAR2(15)

SQL> desc depositor;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 CUSTOMER_ID                                        VARCHAR2(11)
 ACCOUNT_NO                                         VARCHAR2(11)

SQL> desc loan;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 LOAN_NO                                            VARCHAR2(4)
 BRANCH_NAME                                        VARCHAR2(30)
 AMOUNT                                             NUMBER(8,2)

SQL> desc borrower;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 CUSTOMER_ID                                        VARCHAR2(11)
 LOAN_NO                                            VARCHAR2(4)

SQL>
```

3

```
SQL> alter table account add account_opening_date DATE
  2  ;

Table altered.

SQL> alter table customer modify customer_street varchar2(20);

Table altered.
```

4

```
SQL> alter table loan add primary key(loan_no);

Table altered.

SQL> alter table branch add primary key(branch_name);

Table altered.

SQL> alter table account add primary key(account_no);

Table altered.

SQL> alter table customer add primary key(customer_id);

Table altered.

SQL>
```

5

```
SQL> alter table account add foreign key(branch_name) references branch(branch_name);

Table altered.

SQL> alter table depositor add foreign key(customer_id) references customer(customer_id);

Table altered.

SQL> alter table depositor add foreign key(account_no) references account(account_no);

Table altered.

SQL> alter table loan add constraint FK_branch foreign key(branch_name) references branch(branch_name);

Table altered.

SQL>
```

6

```
SQL> alter table loan drop constraint FK_branch;

Table altered.

SQL>
```

7

```
SQL> alter table borrower add constraint fk_loan foreign ke
y(loan_no) references loan(loan_no) on delete cascade;

Table altered.

SQL>
```

8

```
SQL> alter table borrower add constraint fk_cust foreign ke
y(customer_id) references customer(customer_id);

Table altered.
```

9

```
SQL> select * from borrower;

CUSTOMER_ID LOAN
----------- ----
c_01        1_11
c_01        1_23
c_03        1_93
c_03        1_16
c_05        1_17
c_05        1_14

6 rows selected.

SQL> select * from loan;

LOAN BRANCH_NAME                    AMOUNT
---- ------------------------------ ----------
1_11 Roundhill                        9000
1_14 Downtown                        15000
1_15 Perryridge                      13000
1_16 Perryridge                      15000
1_17 Downtown                        10000
1_23 Redwood                         20000
1_93 Mianus                            500

7 rows selected.

SQL> select * from depositor;

CUSTOMER_ID ACCOUNT_NO
----------- -----------
c_08        182_73_6091
c_03        192_83_7465
c_05        321_12_3123
c_07        336_66_9999
c_08        963_96_3963
c_02        376_66_9999

6 rows selected.
```

```
SQL> select * from customer;

CUSTOMER_ID CUSTOMER_NAME        CUSTOMER_STREET      CUSTOMER_CITY
----------- -------------------- -------------------- --------------
c_01        smith                north
              rye
c_02        turner               putnam
              stamford
c_03        johnson              alma
              palo alto
c_04        curry                north
              rye
c_05        jones                main
              harrisdon
c_06        adoms                spring
              pittsfield
c_07        lindsay              park
              pittsfield
c_08        hayes                main
              harrison
c_09        williams             nassau
              Princeton

9 rows selected.

SQL> select * from account;

ACCOUNT_NO  BRANCH_NAME                     BALANCE ACCOUNT_O
----------- ------------------------------ ---------- ---------
019_28_3746 Perryridge                      150000
182_73_6091 Downtown                        230000
192_83_7465 Brighton
         18000
321_12_3123 Redwood
          5000
336_66_9999 Mianus
          5000
963_96_3963 Roundhill
          5000
376_66_9999 Mianus
          9000
963_96_3964 Mianus
         13000
```

```
182_73_6091 Downtown                          230000
192_83_7465 Brighton
        18000
321_12_3123 Redwood
         5000
336_66_9999 Mianus
         5000
963_96_3963 Roundhill
         5000
376_66_9999 Mianus
         9000
963_96_3964 Mianus
        13000

8 rows selected.

SQL> select * from branch;

BRANCH_NAME                     BRANCH_CITY
                          ASSETS
------------------------------ ------------------------------ ----------
Perryridge                      Rye
                          500000
Downtown                        Stamford
                          100000
Brighton                        Paloalto
                          250000
Redwood                         Harrison
                          150000
Mianus                          Pitsfield
                          450000
Roundhill                       Princeton
                          150000

6 rows selected.
```

10

```
SQL> create table employee(emp_id number(10), emp_name varc
har(20), address varchar(20), city varchar(10));

Table created.

SQL> create table department(dept_id number(10), dept_name
varchar(20));

Table created.

SQL> create table paydetails(emp_id number(10), dept_id num
ber(10), basic number(10),deductions number(10),additions n
umber(10), DOJ date);

Table created.

SQL> create table payroll(emp_id number(10), pay_date date)
;

Table created.
```

11

```
SQL> alter table employee add primary key(emp_id);

Table altered.

SQL> alter table department add primary key(dept_id);

Table altered.
```


12

```
SQL> alter table employee modify emp_name int NOT NULL;

Table altered.
```

13

```
SQL> alter table employee modify city default 'Chennai';

Table altered.
```

14 , 15

```
SQL> alter table department modify dept_id int NOT NULL;

Table altered.

SQL> alter table paydetails modify basic int NOT NULL;

Table altered.
```

16

```
SQL> alter table paydetails add check(deductions>780);

Table altered.
```