



UTM
UNIVERSITI TEKNOLOGI MALAYSIA

SECTION 07 SCSD2523

DATABASE

LAB ASSIGNMENT 1

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SCSD2523-07 DATABASE

Semester I 2019/2020

LAB ASSIGNMENT 1

Instruction:

1. This is an individual assignment.
2. Due date: **14 OCTOBER 2019, 11:59PM.**
3. Students need to upload (in e-learning):
 - SQL statement for all DDL (All SQL Statement is in .txt)
 - View of the table structures that have been created after each question (snap picture, compile all pictures in ONE file and save as .pdf)

QUESTION 1 (10 marks)

Create the tables as given below. Please include the constraints when creating the tables.

{2 marks}

ATTRIBUTE	DATATYPE	DETAILS
book_ID	VARCHAR2 (5)	Primary Key
title	VARCHAR2 (30)	Requires value

Table 1: Relation BOOK

```
SQL> CREATE TABLE BOOK (  
2  book_ID VARCHAR2(5) PRIMARY KEY,  
3  title VARCHAR2(30) NOT NULL  
4  );
```

Table created.

```
SQL> DESCRIBE BOOK;
```

Name	Null?	Type
-----	-----	-----
BOOK_ID	NOT NULL	VARCHAR2(5)
TITLE	NOT NULL	VARCHAR2(30)

{3 marks}

ATTRIBUTE	DATATYPE	DETAILS
book_ID	VARCHAR2 (5)	Primary key References book_ID from BOOK
author_name	VARCHAR2 (30)	

Table 2: Relation BOOK_AUTHORS

```
SQL> CREATE TABLE BOOK_AUTHORS (  
2  book_ID VARCHAR2(5) REFERENCES BOOK(book_ID),  
3  author_name VARCHAR2(30),  
4  PRIMARY KEY (book_ID)  
5  );
```

Table created.

```
SQL> DESCRIBE BOOK_AUTHORS;
```

Name	Null?	Type
-----	-----	-----
BOOK_ID	NOT NULL	VARCHAR2(5)
AUTHOR_NAME		VARCHAR2(30)

{3 marks}

ATTRIBUTE	DATATYPE	DETAILS
book_ID	VARCHAR2 (5)	Primary key References book_ID from BOOK
branch_ID	VARCHAR2 (5)	Primary key. Requires value.
no_of_copies	INTEGER	Requires value

Table 3: Relation BOOK_COPIES

```
SQL> CREATE TABLE BOOK_COPIES (  
2  book_ID VARCHAR2(5) REFERENCES BOOK(book_ID),  
3  branch_ID VARCHAR2(5) NOT NULL,  
4  no_of_copies INTEGER NOT NULL,  
5  PRIMARY KEY (book_ID,branch_ID)  
6  );
```

Table created.

```
SQL> DESCRIBE BOOK_COPIES;
```

Name	Null?	Type
-----	-----	-----
BOOK_ID	NOT NULL	VARCHAR2(5)
BRANCH_ID	NOT NULL	VARCHAR2(5)
NO_OF_COPIES	NOT NULL	NUMBER(38)

{2 marks}

ATTRIBUTE	DATATYPE	DETAILS
card_no	VARCHAR2 (8)	Requires value
name	VARCHAR2 (30)	Requires value
address	VARCHAR2(40)	Requires value
City	VARCHAR2 (20)	
phone	INTEGER	

Table 4: Relation BORROWER

```
SQL> CREATE TABLE BORROWER (  
2  card_no VARCHAR2(8) NOT NULL,  
3  name VARCHAR2(30) NOT NULL,  
4  address VARCHAR2(40) NOT NULL,  
5  city VARCHAR2(20),  
6  phone INTEGER  
7  );
```

Table created.

```
SQL> DESCRIBE BORROWER
```

Name	Null?	Type
-----	-----	-----
CARD_NO	NOT NULL	VARCHAR2(8)
NAME	NOT NULL	VARCHAR2(30)
ADDRESS	NOT NULL	VARCHAR2(40)
CITY		VARCHAR2(20)
PHONE		NUMBER(38)

QUESTION 2 (7 marks)

Alter the tables from Question (1) as below:

- Add constraint to the table BORROWER named borrower_cardno_pk to create the attribute name as the primary key.

{2 Marks}

```
SQL> ALTER TABLE BORROWER  
2  ADD CONSTRAINT borrower_cardno_pk PRIMARY KEY(card_no);
```

Table altered.

```
SQL> DESCRIBE TABLE BORROWER
```

Usage: DESCRIBE [schema.]object[@db_link]

```
SQL> DESCRIBE BORROWER;
```

Name	Null?	Type
-----	-----	-----
CARD_NO	NOT NULL	VARCHAR2(8)
NAME	NOT NULL	VARCHAR2(30)
ADDRESS	NOT NULL	VARCHAR2(40)
CITY		VARCHAR2(20)
PHONE		NUMBER(38)

- b. Delete the column city from the table BORROWER.

{1 Mark}

```
SQL> ALTER TABLE BORROWER
2 DROP COLUMN City;
```

Table altered.

```
SQL> DESCRIBE BORROWER;
```

Name	Null?	Type
CARD_NO	NOT NULL	VARCHAR2(8)
NAME	NOT NULL	VARCHAR2(30)
ADDRESS	NOT NULL	VARCHAR2(40)
PHONE		NUMBER(38)

- c. Modify column the column phone from table BORROWER to type varchar2 with a length of 10.

{2 Marks}

```
SQL> ALTER TABLE BORROWER
2 MODIFY phone VARCHAR2(10);
```

Table altered.

```
SQL> DESCRIBE BORROWER;
```

Name	Null?	Type
CARD_NO	NOT NULL	VARCHAR2(8)
NAME	NOT NULL	VARCHAR2(30)
ADDRESS	NOT NULL	VARCHAR2(40)
PHONE		VARCHAR2(10)

- d. Add the column author_name in the table BOOK with the same datatype in BOOK_AUTHORS and requires value.

{1 Mark}

```
SQL> ALTER TABLE BOOK
2 ADD author_name VARCHAR2(30) NOT NULL;
```

Table altered.

```
SQL> DESCRIBE BOOK;
```

Name	Null?	Type
BOOK_ID	NOT NULL	VARCHAR2(5)
TITLE	NOT NULL	VARCHAR2(30)
AUTHOR_NAME	NOT NULL	VARCHAR2(30)

- e. Delete the table BOOK_AUTHORS.

{1 Mark}

```
SQL> DROP TABLE BOOK_AUTHORS;

Table dropped.

SQL> DESCRIBE BOOK_AUTHORS;
ERROR:
ORA-04043: object BOOK_AUTHORS does not exist
```

QUESTION 3 (8 marks)

Create a new table from the existing tables in Question (1).

- a. Create a new table BOOK_LOANS by copying the BOOK_COPIES table.

{2 marks}

```
SQL> CREATE TABLE BOOK_LOANS (
  2  book_ID VARCHAR2(5) REFERENCES BOOK (book_ID),
  3  branch_ID VARCHAR2(5) NOT NULL,
  4  no_of_copies INTEGER NOT NULL
  5 );

Table created.

SQL> DESCRIBE BOOK_LOANS;
Name                               Null?    Type
-----
BOOK_ID                             VARCHA2(5)
BRANCH_ID                           NOT NULL VARCHA2(5)
NO_OF_COPIES                         NOT NULL NUMBER(38)
```

- b. Delete the column no_of_copies from the table BOOK_LOANS.

{1 marks}

```
SQL> ALTER TABLE BOOK_LOANS
  2  DROP COLUMN no_of_copies;

Table altered.

SQL> DESCRIBE BOOK_LOANS;
Name                               Null?    Type
-----
BOOK_ID                             VARCHA2(5)
BRANCH_ID                           NOT NULL VARCHA2(5)
```

- c. Add the columns card_no, date_out and due_date to the table BOOK_LOANS.

{2 marks}

```
SQL> ALTER TABLE BOOK_LOANS
  2  ADD card_no VARCHAR(8)
  3  ADD date_out DATE
  4  ADD due_date DATE;
```

Table altered.

```
SQL> DESCRIBE BOOK_LOANS;
```

Name	Null?	Type

BOOK_ID		VARCHAR2(5)
BRANCH_ID	NOT NULL	VARCHAR2(5)
CARD_NO		VARCHAR2(8)
DATE_OUT		DATE
DUE_DATE		DATE

- d. Add the constraints for BOOK_LOANS to create the primary key which consists of the set of (book_id and card_no). Name the constraint book_loans_pk.

{3 marks}

```
SQL> ALTER TABLE BOOK_LOANS
  2  ADD CONSTRAINT book_loans_pk PRIMARY KEY (book_id,card_no);
```

Table altered.

```
SQL> DESCRIBE BOOK_LOANS;
```

Name	Null?	Type

BOOK_ID	NOT NULL	VARCHAR2(5)
BRANCH_ID	NOT NULL	VARCHAR2(5)
CARD_NO	NOT NULL	VARCHAR2(8)
DATE_OUT		DATE
DUE_DATE		DATE