<u>EXPERIMENT 4</u>   Date: 3rd February 2023

TITLE: DDL (Data Definition Language) commands with Data Constraints

Objective: To understand the concept of data constraints that is enforced on data being stored in the table. Focus on Primary Key, Foreign Key and constraints.

1. **Create table AUTHOR = {Author_ID, Lastname, Firstname, Email, City, Country}**

   Constraints:

   - **Author_ID – text data type, 5 characters, primary key**
   - **Lastname – text data type, 15 characters, not null**
   - **Firstname – text data type, 15 characters, not null**
   - **Email – text data type, 40 characters,**
   - **City – text data type, 15 characters,**
   - **Country – text data type, 15 characters**

   Query:

   ```
   CREATE TABLE AUTHOR (
       AUTHOR_ID VARCHAR(5) PRIMARY KEY,
      LASTNAME VARCHAR(15),
      FIRSTNAME VARCHAR(15),
      EMAIL VARCHAR(40),
      CITY VARCHAR(15),
      COUNTRY VARCHAR(15)
   );
   DESC AUTHOR;
   ```

Field	Type	Null	Key	Default	Extra
AUTHOR_ID	varchar(5)	NO	PRI	NULL	
LASTNAME	varchar(15)	YES		NULL	
FIRSTNAME	varchar(15)	YES		NULL	
EMAIL	varchar(40)	YES		NULL	
CITY	varchar(15)	YES		NULL	
COUNTRY	varchar(15)	YES		NULL	

2. **Create Table BOOK = {Book_ID, Book_Title, Copies}**

   Constraints:

   - **Book_ID – text data type, 5 characters Primary Key Start With Character B**
   - **Book_Title - Text data Type Not Null**
   - **Copies- No.of copies Data Type int always greater the 2**

   Query:

   CREATE TABLE BOOK (
     BOOK_ID VARCHAR(5) PRIMARY KEY CHECK(BOOK_ID LIKE "B%"),
     BOOK_TITLE VARCHAR(50),
     COPIES INT CHECK(COPIES>2)
   );
   DESC BOOK;

Field	Type	Null	Key	Default	Extra
BOOK_ID	varchar(5)	NO	PRI	NULL	
BOOK_TITLE	varchar(50)	YES		NULL	
COPIES	int	YES		NULL	

3. **Create table AUTHOR_LIST = {Author_ID , Book_ID , Role}**

   Constraints:

   - **Author_ID – text data type, 5 characters, referenced by Author_ID from AUTHOR table**
   - **Book_ID – text data type, 5 characters, referenced by Book_ID from BOOK table**
   - **Role – text data type, 15 characters**
   - **and primary key is: Author_ID, Book_ID**

   Query:

   CREATE TABLE AUTHOR_LIST (
      AUTHOR_ID VARCHAR(5),
      BOOK_ID VARCHAR(5),
      ROLE VARCHAR(15),
      PRIMARY KEY (AUTHOR_ID, BOOK_ID),
      FOREIGN KEY (AUTHOR_ID) REFERENCES AUTHOR(AUTHOR_ID),

FOREIGN KEY (BOOK_ID) REFERENCES BOOK(BOOK_ID)

);

DESC AUTHOR_LIST;

Field	Type	Null	Key	Default	Extra
AUTHOR_ID	varchar(5)	NO	PRI	NULL	
BOOK_ID	varchar(5)	NO	PRI	NULL	
ROLE	varchar(15)	YES		NULL	

4. Add four records in each tables AUTHOR, BOOK, BOOK_LIST.

A. AUTHOR Table

INSERT INTO AUTHOR VALUES("A0001", "Tripathi", "Amish",

"amish.tripathi@gmail.com", "London", "United Kingdom");

INSERT INTO AUTHOR VALUES("A0002", "Christie", "Agatha",

"agatha.christie@gmail.com", "London", "United Kingdom");

INSERT INTO AUTHOR VALUES("A0003", "Doyle", "Arthur Cona",

"ac.doyle@gmail.com", "London", "United Kingdom");

INSERT INTO AUTHOR VALUES("A0004", "Verne", "Jules",

"jules.verne@gmail.com", "Paris", "France");

SELECT * FROM AUTHOR;

AUTHOR_ID	LASTNAME	FIRSTNAME	EMAIL	CITY	COUNTRY
A0001	Tripathi	Amish	amish.tripathi@gmail.com	London	United Kingdom
A0002	Christie	Agatha	agatha.christie@gmail.com	London	United Kingdom
A0003	Doyle	Arthur Cona	ac.doyle@gmail.com	London	United Kingdom
A0004	Verne	Jules	jules.verne@gmail.com	Paris	France
NULL	NULL	NULL	NULL	NULL	NULL

B. BOOK Table

INSERT INTO BOOK VALUES("B0001", "War of Lanka", 200);

INSERT INTO BOOK VALUES("B0002", "The Immortals of Meluha", 500);

INSERT INTO BOOK VALUES("B0003", "Murder on the Orient Express", 300);

INSERT INTO BOOK VALUES("B0004", "The Adventues of Sherlock Holmes", 400);

SELECT * FROM BOOK;

BOOK_ID	BOOK_TITLE	COPIES
B0001	War of Lanka	200
B0002	The Immortals of Meluha	500
B0003	Murder on the Orient Express	300
B0004	The Adventues of Sherlock Holmes	400
NULL	NULL	NULL

C. AUTHOR_LIST Table

INSERT INTO AUTHOR_LIST VALUES("A0001", "B0001", "Writer");

INSERT INTO AUTHOR_LIST VALUES("A0001", "B0002", "Author");

INSERT INTO AUTHOR_LIST VALUES("A0002", "B0003", "Author");

INSERT INTO AUTHOR_LIST VALUES("A0003", "B0004", "Author");

SELECT * FROM AUTHOR_LIST;

AUTHOR_ID	BOOK_ID	ROLE
A0001	B0001	Writer
A0001	B0002	Author
A0002	B0003	Author
A0003	B0004	Author
NULL	NULL	NULL

5. **Alter structure of table AUTHOR_LIST add the field Publisher data type of 30 Character.**

ALTER TABLE AUTHOR_LIST ADD PUBLISHER VARCHAR(30);

Field	Type	Null	Key	Default	Extra
AUTHOR_ID	varchar(5)	NO	PRI	NULL	
BOOK_ID	varchar(5)	NO	PRI	NULL	
ROLE	varchar(15)	YES		NULL	
PUBLISHER	varchar(30)	YES		NULL	