

W2025 CIS115-01 Intro to Databases and SQL

ASSIGNMENT 2

Topic: Creation of tables and Constraints

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Instructions:

Write the queries for the following and paste the snapshots of query and its output under each question. The name of table should be tablename_studentid format, columns and data should be of your choice, not what is given. This is to avoid plagiarism. Choose the data type of columns according to the sample data.

1. Create the following tables for a library management system and insert the data.

Librarians (PK – LibrarianID)

LibrarianID	Name	Email	HireDate	Branch
L101	Sarah Brown	Sarah.brown@lib.com	2023-02-01	Downtown
L102	Mark Lewis	Mark.lewis@lib.com	2021-06-15	Uptown
L103	Emma Clark	Emma.clark@lib.com	2022-09-20	Suburban
L104	John Miller	John.miller@lib.com	2020-11-05	Central

Books (PK – BookID)

BookID	Title	Author	Genre	Price
B201	The Silent Patient	Alex Michaelides	Thriller	\$12.99
B202	Becoming	Michelle Obama	Biography	\$14.50
B203	Educated	Tara Westover	Memoir	\$18.75
B204	The Alchemist	Paulo Coelho	Fiction	\$10.99

Members (PK – MemberID)

MemberID	FullName	ContactNumber	MemberShipDate	LibrarianID
M301	Alice Johnson	555-123-4567	2023-03-01	L101
M302	Bob Harris	555-234-5678	2022-07-15	L102
M303	Clarie Evans	555-345-6789	2023-01-20	L103
M304	David Wilson	555-546-7890	2021-05-05	L104

BorrowedBooks (PK – BorrowID)

BorrowID	MemberID	BookID	BorrowDate	ReturnDate	Fine Amount
B701	M301	B201	2023-03-15	2023-03-25	\$0.00
B702	M302	B202	2022-08-10	2022-08-20	\$5.00
B703	M303	B203	2023-01-25	2023-02-05	\$0.00
B704	M304	B204	2021-05-20	2021-06-01	\$2.50

```

1  -- part 1 creating tables
2  CREATE TABLE LIBRARIANS_A00205055 (LIBRARIAN_ID VARCHAR2(50) PRIMARY KEY,
3  NAME VARCHAR2(100), EMAIL VARCHAR2(100), HIRE_DATE DATE, BRANCH VARCHAR2(100));
4
5  ALTER TABLE LIBRARIANS_A00205055 RENAME COLUMN NAME TO LIBRARIAN_NAME;
6
7  CREATE TABLE BOOKS_A00205055 (BOOK_ID VARCHAR2(50) PRIMARY KEY,
8  TITLE VARCHAR2(100), AUTHOR VARCHAR2(100), GENRE VARCHAR2(100), PRICE DECIMAL);
9
10 ALTER TABLE BOOKS_A00205055 RENAME COLUMN TITLE TO BOOK_TITLE;
11
12 CREATE TABLE MEMBERS_A00205055 (MEMBER_ID VARCHAR2(50) PRIMARY KEY,
13 FULL_NAME_MEMBER VARCHAR2(100), CONTACT_NUMBER VARCHAR2(100),
14 MEMBERSHIP_DATE DATE, LIBRARIAN_ID VARCHAR2(50));
15
16 CREATE TABLE BorrowedBooks_A00205055 (BORROWID VARCHAR2(50) PRIMARY KEY,
17 MEMBER_ID VARCHAR2(50), BOOK_ID VARCHAR2(50), BORROW_DATE DATE,
18 RETURN_DATE DATE, FINE_AMOUNT DECIMAL(10,2));
19
20 --inserting into librarians table
21
22 INSERT INTO LIBRARIANS_A00205055 (LIBRARIAN_ID, LIBRARIAN_NAME, EMAIL,
23 HIRE_DATE, BRANCH) VALUES ('L110', 'Amy Grumy', 'amy.grumy@library.com',
24 TO_DATE('2019-03-14', 'YYYY-MM-DD'), 'College Drive');
25
26 INSERT INTO LIBRARIANS_A00205055 (LIBRARIAN_ID, LIBRARIAN_NAME, EMAIL,
27 HIRE_DATE, BRANCH) VALUES ('L111', 'Khol Whims', 'khol.whims@library.com',
28 TO_DATE('2018-12-28', 'YYYY-MM-DD'), 'Frasser Street');
29
30 INSERT INTO LIBRARIANS_A00205055 (LIBRARIAN_ID, LIBRARIAN_NAME, EMAIL,
31 HIRE_DATE, BRANCH) VALUES ('L112', 'Many Glysomn', 'many.glysomn@library.com',
32 TO_DATE('2022-10-08', 'YYYY-MM-DD'), 'Cassell Street');
33
34 INSERT INTO LIBRARIANS_A00205055 (LIBRARIAN_ID, LIBRARIAN_NAME, EMAIL,
35 HIRE_DATE, BRANCH) VALUES ('L113', 'Many Glysomn', 'many.glysomn@library.com',
36 TO_DATE('2022-10-08', 'YYYY-MM-DD'), 'Cassell Street');
37
38 --inserting into books table
39
40 INSERT INTO BOOKS_A00205055 (BOOK_ID, BOOK_TITLE, AUTHOR, GENRE, PRICE) VALUES
41 ('B127', 'Haikyuu!!', 'Haruichi Furudate', 'Shonen Manga', 13.00);
42
43 INSERT INTO BOOKS_A00205055 (BOOK_ID, BOOK_TITLE, AUTHOR, GENRE, PRICE) VALUES
44 ('B128', 'Slam Dunk', 'Takehiko Inoue', 'Shonen Manga', 12.00);
45
46 INSERT INTO BOOKS_A00205055 (BOOK_ID, BOOK_TITLE, AUTHOR, GENRE, PRICE) VALUES
47 ('B129', 'The Tell-Tale Heart', 'Edgar Allan Poe', 'Horror Fiction', 14.50);
48
49 INSERT INTO BOOKS_A00205055 (BOOK_ID, BOOK_TITLE, AUTHOR, GENRE, PRICE) VALUES
50 ('B130', 'The Fault in Our Stars', 'John Green', 'Romance', 18.95);
51
52

```

```

52  --inserting into members table
53
54  INSERT INTO MEMBERS_A00205055 (MEMBER_ID, FULL_NAME_MEMBER, CONTACT_NUMBER,
55  MEMBERSHIP_DATE, LIBRARIAN_ID) VALUES ('M404', 'Ben Leigh', '705-302-7654',
56  TO_DATE('2022-04-10', 'YYYY-MM-DD'), 'L110');
57
58  INSERT INTO MEMBERS_A00205055 (MEMBER_ID, FULL_NAME_MEMBER, CONTACT_NUMBER,
59  MEMBERSHIP_DATE, LIBRARIAN_ID) VALUES ('M405', 'Enzo Peter', '705-804-3245',
60  TO_DATE('2024-02-14', 'YYYY-MM-DD'), 'L111');
61
62  INSERT INTO MEMBERS_A00205055 (MEMBER_ID, FULL_NAME_MEMBER, CONTACT_NUMBER,
63  MEMBERSHIP_DATE, LIBRARIAN_ID) VALUES ('M406', 'Melany Fruits', '705-564-5434',
64  TO_DATE('2024-01-23', 'YYYY-MM-DD'), 'L112');
65
66  INSERT INTO MEMBERS_A00205055 (MEMBER_ID, FULL_NAME_MEMBER, CONTACT_NUMBER,
67  MEMBERSHIP_DATE, LIBRARIAN_ID) VALUES ('M407', 'Emmanuel Lopez', '705-800-8135',
68  TO_DATE('2023-09-03', 'YYYY-MM-DD'), 'L113');
69
70  --inserting borrowed books
71
72  INSERT INTO BORROWEDBOOKS_A00205055 (BORROWID, MEMBER_ID, BOOK_ID, BORROW_DATE,
73  RETURN_DATE, FINE_AMOUNT) VALUES ('B980', 'M404', 'B127',
74  TO_DATE('2024-02-03', 'YYYY-MM-DD'), TO_DATE('2024-02-13', 'YYYY-MM-DD'), 1.00);
75
76  INSERT INTO BORROWEDBOOKS_A00205055 (BORROWID, MEMBER_ID, BOOK_ID, BORROW_DATE,
77  RETURN_DATE, FINE_AMOUNT) VALUES ('B981', 'M405', 'B128',
78  TO_DATE('2024-02-04', 'YYYY-MM-DD'), TO_DATE('2024-02-24', 'YYYY-MM-DD'), 2.50);
79
80  INSERT INTO BORROWEDBOOKS_A00205055 (BORROWID, MEMBER_ID, BOOK_ID, BORROW_DATE,
81  RETURN_DATE, FINE_AMOUNT) VALUES ('B982', 'M406', 'B129',
82  TO_DATE('2024-03-10', 'YYYY-MM-DD'), TO_DATE('2024-03-14', 'YYYY-MM-DD'), 0.00);
83
84  INSERT INTO BORROWEDBOOKS_A00205055 (BORROWID, MEMBER_ID, BOOK_ID, BORROW_DATE,
85  RETURN_DATE, FINE_AMOUNT) VALUES ('B983', 'M407', 'B130',
86  TO_DATE('2024-03-20', 'YYYY-MM-DD'), TO_DATE('2024-04-08', 'YYYY-MM-DD'), 2.00);
87

```

2. Add a column Address to the Members table to record the addresses of the members.

```

88  --Part 2
89  ALTER TABLE MEMBERS_A00205055 ADD MEMBER_ADDRESS VARCHAR2(100);
90
91  UPDATE MEMBERS_A00205055 SET MEMBER_ADDRESS='12 Maint St West'
92  WHERE MEMBER_ID = 'M404';
93
94  UPDATE MEMBERS_A00205055 SET MEMBER_ADDRESS='15 College Dr East'
95  WHERE MEMBER_ID = 'M405';
96
97  UPDATE MEMBERS_A00205055 SET MEMBER_ADDRESS='154 McIntyre St West'
98  WHERE MEMBER_ID = 'M406';
99
100  UPDATE MEMBERS_A00205055 SET MEMBER_ADDRESS='Algonquin Maplewood Ave'
101  WHERE MEMBER_ID = 'M407';
102
103

```

3. Add a foreign key constraint between the Members table and the Librarians table (LibrarianID as FK). Demonstrate how this enforces referential integrity.

```

1  ALTER TABLE MEMBERS_A00205055 ADD FOREIGN KEY (LIBRARIAN_ID)
2  REFERENCES LIBRARIANS_A00205055(LIBRARIAN_ID);

```

4. Add a foreign key constraint between the BorrowedBooks table and the Members table (MemberID as FK). Ensure that deleting a member record automatically deletes all their borrowing history. Demonstrate this with queries and outputs.

```
3
4 ALTER TABLE BORROWEDBOOKS_A00205055 ADD FOREIGN KEY (MEMBER_ID)
5 REFERENCES MEMBERS_A00205055(MEMBER_ID);
```

5. Remove the Genre column from the Books table.

```
6
7 ALTER TABLE BOOKS_A00205055 DROP COLUMN GENRE;
```

6. Add a NOT NULL constraint to the Name column in the Librarians table.

```
8
9 ALTER TABLE LIBRARIANS_A00205055 MODIFY LIBRARIAN_NAME NOT NULL;
```

7. Add a CHECK constraint to the BorrowedBooks table to ensure that FineAmount is always greater than or equal to 0.

```
10
11 ALTER TABLE BORROWEDBOOKS_A00205055 ADD CONSTRAINT FINE_AMOUNT
12 CHECK (FINE_AMOUNT >= 0.00);
```

8. Create a backup table named Books_Backup and copy all records from the Books table into this backup table.

```
13
14 CREATE TABLE BOOKS_BACKUP_A00205055 AS SELECT * FROM BOOKS_A00205055;
```