Exercise Data Management in RDBMS using SQL
Week- 3

Solution

Answer the following Questions

1. Assume the following to be the structure of database tables "Modules" and "Teachers" for an educational institution:

Table: Modules Properties

Column name	Data type	Constraints
Code	Varchar(10)	Primary key
Title	Varchar(40)	not null
Prerequisites	Varchar(15)	null
Credit Hour	Varchar(7)	not null

Table: Modules Values

Code	Title	Prerequisites	Credit Hour
A101	Mathematics	Null	30
A102	Programming Language	A101	30
B109	Network	A101	20
B108	Databases	A101	20
B120	Data Science	B108	30

Table: Teachers Properties

Column name	Data type	Constraints
Teacher_ID	VARCHAR	Primary key
Code	Varchar(10)	Foreign Key
Designation	Varchar(20)	null

Table: Teachers Values

Teacher_ID	Code	Designation
T_201	B109	Lecturer
T_203	A102	Lecturer
T_205	A101	Lecturer
T_204	B120	Senior Lecturer
T_200	B108	Lecturer
T_209	B109	Senior Lecturer

Kimia Aksir

Now, write down the appropriate SQL statements to perform the following activities:

a) Create "Modules" and "Teachers" table using all the necessary constraint(s) with all the properties given above.

Ans:

CREATE TABLE MODULES

(M_CODE VARCHAR(10) PRIMARY KEY,

TITLE VARCHAR (40) NOT NULL,

PREREQUISITES VARCHAR(10),

CREDIT_HOUR VARCHAR(7));

CREATE TABLE TEACHERS(

(T_ID VARCHAR(10) PRIMARY KEY,

DESIGNATION VARCHAR (20),

M_CODE VARCHAR(10),

FOREIGHN KEY TEACHERS(M_CODE) REFERENCES MODULES(M_CODE)

b) Insert a new module in the existing "Modules" table as below:

C_120	Data Engineering	B120	30

Ans:
INSERT INTO MODULES VALUES("C_120", "Data Engineering", "B120", "30");

c) Find total number of modules which have got titles starting with the letter "D".
Ans:
SELECT COUNT(M_CODE)
FROM MODULES
WHERE TITLE LIKE "D%";

d) Update the designation of the teacher as "Senior Lecturer" whose ID is T_203.
Ans:
UPDATE TEACHERS
SET DESIGNATION= "SENIOR LECTURER"
WHERE T_ID= "T_203";

Kimia Aksir

e) Find the details of the Modules with no prerequisite(s).

Ans:

SELECT *

FROM MODULES

WHERE PREREQUISITE IS NULL;

f) Find the details of the modules where the prerequisite of the modules are not null or the credit hours are exactly 20.

Ans:

SELECT *

FROM MODULES

WHERE CREDIT_HOUR IS NOT NULL

AND CREDIT_HOUR=20;

g) Find the module/modules has got credit hour less than 20.

Ans:

SELECT *

FROM MODULES

WHERE CREDIT_HOUR<=20

h) How can you add another attribute/column in the Teachers table to store email addresses of the teachers.

Ans:

ALTER TABLE TEACHERS

ADD COLUMN EMAIL VARCHAR(30) NOT NULL;

i) The teacher with ID: T_205 doesn't work in this institution anymore. How can you remove the details of this teacher from the table?

Ans:

DELETE FROM TEACHERS

WHERE T_ID= "T_205"

j) Find the details of the teachers who are not Lecturers.

Ans:

SELECT *

FROM TEACHERS

WHERE DESIGNATION <> LECTURER;

Kimia Aksir