Assignment 1

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1. **Create all the tables given in the following schema.**
2. **Define required constraints on given tables.**
3. **Define triggered actions that will be attached to each foreign key constraint.**

CREATE TABLE PUBLISHER (Name VARCHAR(20) NOT NULL, Address VARCHAR(50),Phone
NUMBER,CONSTRAINT PUBLISHER_CHECK CHECK(length(Phone)=10),
CONSTRAINT PUBLISHER_PRIMARY PRIMARY KEY (Name));

CREATE TABLE LIBRARY_BRANCH(Branch_id int NOT NULL, Branch_Name Varchar(20) Not Null, Address
Varchar(50),CONSTRAINT LIBRARY_BRANCH_PRIMAY PRIMARY KEY(BRANCH_ID));

CREATE TABLE BORROWER(Card_no int NOT NULL,Name Varchar(20) NOT NULL, Address Varchar(50),
Phone NUMBER,CONSTRAINT BORROWER_PRIMARY PRIMARY KEY(Card_no),
CONSTRAINT BORROWER_CHECK CHECK(length(Phone)=10));

CREATE TABLE BOOK(Book_id int Not NUll, Title varchar(25) not null,Publisher_name varchar(20),
CONSTRAINT BOOK_PRIMARY PRIMARY KEY(Book_id),
CONSTRAINT BOOK_FOREIGN FOREIGN KEY(Publisher_name) references PUBLISHER(Name) ON DELETE SET
NULL);

CREATE TABLE BOOK_AUTHORS(Book_id int NOT NULL,Author_name varchar(20) NOT NULL, CONSTRAINTS
BOOK_AUTHOR_PRIMARY PRIMARY KEY (Book_id,Author_name),
CONSTRAINT BOOK_AUTHOR_FOREIGN FOREIGN KEY(Book_id) REFERENCES BOOK(Book_id) ON DELETE
CASCADE);

CREATE TABLE BOOK_COPIES(Book_id int NOT NULL, Branch_id int NOT NULL, No_of_copies int,
CONSTRAINT BOOK_COPIES_PRIMARY PRIMARY KEY (Book_id,Branch_id),
CONSTRAINT BOOK_COPIES_FOERIGN_1 FOREIGN KEY(Book_id) REFERENCES BOOK(Book_id) ON DELETE
CASCADE,
CONSTRAINT BOOK_COPIES_FOERIGN_2 FOREIGN KEY(Branch_id) REFERENCES
LIBRARY_BRANCH(Branch_id) ON DELETE CASCADE);

CREATE TABLE BOOK_LOANS(Book_id int NOT NULL,Branch_id int NOT NULL,Card_no int NOT NULL,
Date_out date NOT NULL, Due_Date date NOT NULL,
CONSTRAINT BOOK_LOANS_PRIMARY PRIMARY KEY (Book_id,Branch_id,Card_no),
CONSTRAINT BOOK_LOANS_FOREIGN_1 FOREIGN KEY(Book_id) REFERENCES BOOK(Book_id) on delete
cascade,
CONSTRAINT BOOK_LOANS_FOREIGN_2 FOREIGN KEY(Branch_id) REFERENCES
LIBRARY_BRANCH(Branch_id) on delete cascade,
CONSTRAINT BOOK_LOANS_FOREIGN_3 FOREIGN KEY(Card_no) REFERENCES BORROWER(Card_no) on
delete cascade);

ALTER TABLE BOOK_LOANS ADD RETURN_DATE DATE;

4. Insert 3 imaginary tuples into each table.

INSERT INTO PUBLISHER VALUES('AVAL_PUBLISHER','PUNJAB INDIA',1234567890);

INSERT INTO PUBLISHER (NAME,ADDRESS,PHONE)VALUES('KARTHIK_PUBLISHER','HYDRABAD INDIA',9999999999);

INSERT INTO PUBLISHER (NAME,ADDRESS,PHONE)VALUES('RAJ_PUBLISHER','CHENNAI INDIA',1111111111);

INSERT INTO PUBLISHER (NAME,ADDRESS,PHONE)VALUES(:1,:2,:3);

SELECT * FROM PUBLISHER;

INSERT INTO LIBRARY_BRANCH VALUES(004,'Lone Star','Texas USA');

INSERT INTO LIBRARY_BRANCH (BRANCH_ID,BRANCH_NAME,ADDRESS) VALUES ('002','CRICKET STARS','SYDNEY AUSTRALIA');

INSERT INTO LIBRARY_BRANCH (BRANCH_ID,BRANCH_NAME,ADDRESS) VALUES ('001','FOOTBALL STARS','LONDON ENGLAND');

SELECT * FROM LIBRARY_BRANCH;

INSERT INTO BOOK VALUES(1234,'MIDDLE EAST','AVAL_PUBLISHER');

INSERT INTO BOOK VALUES(5678,'SOUTH WEST','AVAL_PUBLISHER');

INSERT INTO BOOK VALUES(1456,'HISTORY','KARTHIK_PUBLISHER');

INSERT INTO BOOK VALUES(6784,'HELLO WORLD','RAJ_PUBLISHER');

SELECT * FROM BOOK;

INSERT INTO BORROWER VALUES(45634223232323,'NAVEEN','ERODE TAMILNADU',3456723453);

INSERT INTO BORROWER VALUES(65432123456634,'PARTHA','PONDICHERY',7653456344);

INSERT INTO BORROWER VALUES(09874456775467,'YUVA','WEST MECHICAN',4534343433);

SELECT * FROM BORROWER;

INSERT INTO BOOK_AUTHORS VALUES(6784,'RAJNATH');

INSERT INTO BOOK_AUTHORS VALUES(1456,'KARTHIK VISHWANATH');

INSERT INTO BOOK_AUTHORS VALUES(5678,'AVALJOTH');

INSERT INTO BOOK_AUTHORS VALUES(1234,'ABHISHK');

INSERT INTO BOOK_AUTHORS VALUES(1234,'AVAL ABHISHEK');

SELECT * FROM BOOK_AUTHORS;

INSERT INTO BOOK_COPIES VALUES(1234,004,5);

INSERT INTO BOOK_COPIES VALUES(5678,001,3);

INSERT INTO BOOK_COPIES VALUES(1456,001,0);

INSERT INTO BOOK_COPIES VALUES(6784,002,2);

SELECT * FROM BOOK_COPIES;

INSERT INTO BOOK_LOANS VALUES(6784,002,09874456775467,TO_DATE('16-JAN-16','DD-MM-YYYY'),TO_DATE('02-FEB-16','DD-MM-YYYY'),NULL);

INSERT INTO BOOK_LOANS VALUES(5678,001,65432123456634,TO_DATE('02-JAN-16','DD-MM-YYYY'),TO_DATE('20-JAN-16','DD-MM-YYYY'),TO_DATE('20-JAN-16','DD-MM-YYYY'));

INSERT INTO BOOK_LOANS VALUES(1234,004,45634223232323,TO_DATE('08-JAN-16','DD-MM-YYYY'),TO_DATE('02-FEB-16','DD-MM-YYYY'),TO_DATE('02-FEB-16','DD-MM-YYYY'));

SELECT * FROM BOOK_LOANS;

5. **Find the books that have been borrowed from a library branch (you will specify the branch) in last 14 days and that have not been returned yet.**

   SELECT B.TITLE FROM BOOK B,BOOK_LOANS C WHERE B.BOOK_ID = C.BOOK_ID AND C.BRANCH_ID=:1 AND C.RETURN_DATE IS NULL AND (TO_DATE(SYSDATE, 'DD-MM-YYYY')-C.DATE_OUT) <= 14 ;

6. **For a specific book (you will specify the book) at a specific branch (you will specify the branch), increase number of copies for the book by 5.**

UPDATE BOOK_COPIES B SET B.NO_OF_COPIES=B.NO_OF_COPIES+5 WHERE B.BOOK_ID=:1 AND B.BRANCH_ID=:2;

7. **Delete a user (borrower) from the system. Explain how other tables are affected from this delete based on the triggered actions you have defined at #3.**

DELETE FROM BORROWER B WHERE B.NAME=:1;

SELECT * FROM BOOK_LOANS;

SELECT * FROM BORROWER;

Deleting row in the borrower table has deleted the foreign key referenced row in the BOOK_LOANS table due to the on delete cascade triggered action specified in the constraint BOOK_LOANS_FOREIGN_3.