

1. Create the tables:

a. CREATE TABLE books:

SQL script:

```
CREATE TABLE books(  
ISBN VARCHAR(20) NOT NULL,  
title VARCHAR(100) NOT NULL,  
no_of_copies NUMBER(5) DEFAULT 0,  
author VARCHAR(20),  
CONSTRAINT ISBN_pk PRIMARY KEY(ISBN)  
);
```

Screenshot:

```
[SQL> CREATE TABLE books(  
[ 2 ISBN VARCHAR(20) NOT NULL,  
[ 3 title VARCHAR(100) NOT NULL,  
[ 4 no_of_copies NUMBER(5) DEFAULT 0,  
[ 5 author VARCHAR(20),  
[ 6 CONSTRAINT ISBN_pk PRIMARY KEY(ISBN)  
[ 7 );
```

Table created.

```
[SQL> DESC books;
```

Name	Null?	Type
ISBN	NOT NULL	VARCHAR2(20)
TITLE	NOT NULL	VARCHAR2(100)
NO_OF_COPIES		NUMBER(5)
AUTHOR		VARCHAR2(20)

b. CREATE TABLE book\_trans:

SQL script:

```
CREATE TABLE book_trans(  
book_trans_id NUMBER(6) NOT NULL,  
ISBN VARCHAR(20) NOT NULL,  
employee_id NUMBER(6) NOT NULL,  
checkout_dte DATE NOT NULL,  
due_dte DATE,  
return_dte DATE,  
pastdue_fees NUMBER(6),  
CONSTRAINT book_trans_id_pk PRIMARY KEY (book_trans_id),  
CONSTRAINT ISBN_fk FOREIGN KEY (ISBN) REFERENCES books(ISBN),  
CONSTRAINT employee_id_fk FOREIGN KEY (employee_id) REFERENCES employees(employee_id),  
CONSTRAINT book_trans_u UNIQUE (ISBN, employee_id, checkout_dte)  
);
```

Screenshot:

```
SQL> CREATE TABLE book_trans(  
  2 book_trans_id NUMBER(6) NOT NULL,  
  3 ISBN VARCHAR(20) NOT NULL,  
  4 employee_id NUMBER(6) NOT NULL,  
  5 checkout_dte DATE NOT NULL,  
  6 due_dte DATE NOT NULL,  
  7 return_dte DATE,  
  8 pastdue_fees NUMBER(6),  
  9 CONSTRAINT book_trans_id_pk PRIMARY KEY (book_trans_id),  
 10 CONSTRAINT ISBN_fk FOREIGN KEY (ISBN) REFERENCES books(ISBN),  
 11 CONSTRAINT employee_id_fk FOREIGN KEY (employee_id) REFERENCES employees(employee_  
id),  
 12 CONSTRAINT book_trans_u UNIQUE (ISBN, employee_id, checkout_dte)  
 13 );
```

Table created.

```
[SQL> desc book_trans;
```

Name	Null?	Type
BOOK_TRANS_ID	NOT NULL	NUMBER(6)
ISBN	NOT NULL	VARCHAR2(20)
EMPLOYEE_ID	NOT NULL	NUMBER(6)
CHECKOUT_DTE	NOT NULL	DATE
DUE_DTE		DATE
RETURN_DTE		DATE
PASTDUE_FEES		NUMBER(6)

2. Populate the books table:

SQL script:

```
INSERT INTO books VALUES
```

```
('0-07-225790-3', 'OCP Certification All-in-One Exam Guide', 5, 'John Watson');
```

```
INSERT INTO books VALUES
```

```
('0-201-43336-2', 'SQL Queries for Mere Mortals', 3, 'Michael Hernandez');
```

```
INSERT INTO books VALUES
```

```
('0-201-69471-9', 'Database Design for Mere Mortals', 2, 'Michael Hernandez');
```

```
INSERT INTO books VALUES
```

```
('0-07-225364-9', 'Databases Demystified', 7, 'Andy Oppel');
```

```
INSERT INTO books VALUES
```

```
('0-12-369379-9', 'SQL for Smarties', 1, 'Joe Celko');
```

Screenshot:

```
SQL> INSERT INTO books VALUES
  2 ('0-201-43336-2', 'SQL Queries for Mere Mortals', 3, 'Michael Hernandez');

1 row created.

SQL> INSERT INTO books VALUES
  2 ('0-201-69471-9', 'Database Design for Mere Mortals', 2, 'Michael Hernandez');

1 row created.

SQL> INSERT INTO books VALUES
  2 ('0-07-225364-9', 'Databases Demystified', 7, 'Andy Oppel');

1 row created.

SQL> INSERT INTO books VALUES
[ 2 ('0-12-369379-9', 'SQL for Smarties', 1, 'Joe Celko');

1 row created.

SQL> INSERT INTO books VALUES
  2 ('0-07-225790-3', 'OCP Certification All-in-One Exam Guide', 5, 'John Watson');

1 row created.
```

```
[SQL> select * from books;
```

ISBN	TITLE	NO_OF_COPIES	AUTHOR
0-201-43336-2	SQL Queries for Mere Mortals	3	Michael Hernandez
0-201-69471-9	Database Design for Mere Mortals	2	Michael Hernandez
0-07-225364-9	Databases Demystified	7	Andy Oppel
0-12-369379-9	SQL for Smarties	1	Joe Celko
0-07-225790-3	OCF Certification All-in-One Exam Guide	5	John Watson

3. Create the following checkout transactions:

SQL script:

```
INSERT INTO book_trans(book_trans_id, ISBN, employee_id, checkout_dte)
```

```
VALUES (1, '0-07-225790-3', 101, '15-NOV-2007');
```

```
INSERT INTO book_trans(book_trans_id, ISBN, employee_id, checkout_dte)
```

```
VALUES (2, '0-07-225790-3', 151, '12-NOV-2007');
```

```
INSERT INTO book_trans(book_trans_id, ISBN, employee_id, checkout_dte)
```

```
VALUES (3, '0-201-69471-9', 175, '14-NOV-2007');
```

```
INSERT INTO book_trans(book_trans_id, ISBN, employee_id, checkout_dte)
```

```
VALUES (4, '0-12-369379-9', 201, '16-NOV-2007');
```

```
UPDATE books SET no_of_copies = no_of_copies - 1
```

```
WHERE ISBN = '0-07-225790-3';
```

```
UPDATE books SET no_of_copies = no_of_copies - 1
```

```
WHERE ISBN = '0-07-225790-3';
```

```
UPDATE books SET no_of_copies = no_of_copies - 1
```

```
WHERE ISBN = '0-201-69471-9';
```

```
UPDATE books SET no_of_copies = no_of_copies - 1
```

```
WHERE ISBN = '0-12-369379-9';
```

Screenshot:

```
SQL> INSERT INTO book_trans(book_trans_id, ISBN, employee_id, checkout_dte)
[ 2* VALUES (1, '0-07-225790-3', 101, '15-NOV-2007');
1 row created.
SQL> INSERT INTO book_trans(book_trans_id, ISBN, employee_id, checkout_dte)
  2 VALUES (3, '0-201-69471-9', 175, '14-NOV-2007');

1 row created.

SQL> INSERT INTO book_trans(book_trans_id, ISBN, employee_id, checkout_dte)
  2 VALUES (4, '0-12-369379-9', 201, '16-NOV-2007');

1 row created.
SQL> INSERT INTO book_trans(book_trans_id, ISBN, employee_id, checkout_dte)
[ 2 VALUES (2, '0-07-225790-3', 151, '12-NOV-2007');

1 row created.
[SQL> UPDATE books SET no_of_copies = no_of_copies - 1
[ 2* WHERE ISBN = '0-07-225790-3';
1 row updated.

SQL> UPDATE books SET no_of_copies = no_of_copies - 1
[ 2* WHERE ISBN = '0-07-225790-3';

1 row updated.

SQL> UPDATE books SET no_of_copies = no_of_copies - 1
[ 2* WHERE ISBN = '0-201-69471-9';
1 row updated.

SQL> UPDATE books SET no_of_copies = no_of_copies - 1
[ 2* WHERE ISBN = '0-12-369379-9';
1 row updated.
[SQL> select * from book_trans;
```

BOOK_TRANS_ID	ISBN	EMPLOYEE_ID	CHECKOUT_	DUE_DTE	RETURN_DT	PASTDUE_FEES
1	0-07-225790-3	101	15-NOV-07			
3	0-201-69471-9	175	14-NOV-07			
4	0-12-369379-9	201	16-NOV-07			
2	0-07-225790-3	151	12-NOV-07			

```
[SQL> select * from books;
```

ISBN	TITLE	NO_OF_COPIES	AUTHOR
0-201-43336-2	SQL Queries for Mere Mortals	3	Michael Hernandez
0-201-69471-9	Database Design for Mere Mortals	1	Michael Hernandez
0-07-225364-9	Databases Demystified	7	Andy Oppel
0-12-369379-9	SQL for Smarties	0	Joe Celko
0-07-225790-3	OCF Certification All-in-One Exam Guide	3	John Watson



4. Update the due date in table book\_trans:

SQL script:

```
UPDATE book_trans
```

```
SET due_dte =
```

```
CASE WHEN TO_CHAR(checkout_dte + 30, 'D') IN (1, 7)
```

```
THEN checkout_dte + 32
```

```
ELSE checkout_dte + 30 END;
```

Screenshot:

```
SQL> UPDATE book_trans
  2  SET due_dte =
  3  CASE WHEN TO_CHAR(checkout_dte + 30, 'D') IN (1, 7)
  4  THEN checkout_dte + 32
  5* ELSE checkout_dte + 30 END;
```

4 rows updated.

```
SQL> select * from book_trans;
```

BOOK_TRANS_ID	ISBN	EMPLOYEE_ID	CHECKOUT_	DUE_DTE	RETURN_DT	PASTDUE_FEES
1	0-07-225790-3	101	15-NOV-07	17-DEC-07		
3	0-201-69471-9	175	14-NOV-07	14-DEC-07		
4	0-12-369379-9	201	16-NOV-07	18-DEC-07		
2	0-07-225790-3	151	12-NOV-07	12-DEC-07		

5. Create the following check-in transactions:

SQL script:

```
UPDATE book_trans
SET return_dte = '16-DEC-2007'
WHERE ISBN = '0-12-369379-9' AND employee_id = 201;

UPDATE book_trans
SET return_dte = '18-DEC-2007'
WHERE ISBN = '0-07-225790-3' AND employee_id = 151;

UPDATE books
SET no_of_copies = no_of_copies + 1
WHERE ISBN IN ('0-07-225790-3', '0-12-369379-9');
```

Screenshot:

```
SQL> UPDATE book_trans
  2 SET return_dte = '16-DEC-2007'
[ 3* WHERE ISBN = '0-12-369379-9' AND employee_id = 201;
SQL> UPDATE book_trans
  2 SET return_dte = '18-DEC-2007'
[ 3* WHERE ISBN = '0-07-225790-3' AND employee_id = 151;
[SQL> UPDATE books
[ 2 SET no_of_copies = no_of_copies + 1
[ 3 WHERE ISBN IN ('0-07-225790-3', '0-12-369379-9');
```

```
[SQL> select * from book_trans;
```

BOOK_TRANS_ID	ISBN	EMPLOYEE_ID	CHECKOUT_	DUE_DTE	RETURN_DT	PASTDUE_FEES
1	0-07-225790-3	101	15-NOV-07	17-DEC-07		
3	0-201-69471-9	175	14-NOV-07	14-DEC-07		
4	0-12-369379-9	201	16-NOV-07	18-DEC-07	16-DEC-07	
2	0-07-225790-3	151	12-NOV-07	12-DEC-07	18-DEC-07	

```
[SQL> select * from books;
```

ISBN	TITLE	NO_OF_COPIES	AUTHOR
0-201-43336-2	SQL Queries for Mere Mortals	3	Michael Hernandez
0-201-69471-9	Database Design for Mere Mortals	1	Michael Hernandez
0-07-225364-9	Databases Demystified	7	Andy Oppel
0-12-369379-9	SQL for Smarties	1	Joe Celko
0-07-225790-3	OCF Certification All-in-One Exam Guide	4	John Watson

6. Calculate the Past Due fees using SQL:

SQL script:

```
UPDATE book_trans
SET pastdue_fees =
CASE WHEN SIGN(return_dte-due_dte) IN (-1, 0)
THEN 0
WHEN SIGN(return_dte-due_dte) = 1
THEN (return_dte-due_dte)*2 END;
```

Screenshot:

```
SQL> UPDATE book_trans
2 SET pastdue_fees =
3 CASE WHEN SIGN(return_dte-due_dte) IN (-1, 0)
4 THEN 0
5 WHEN SIGN(return_dte-due_dte) = 1
6* THEN (return_dte-due_dte)*2 END;
```

4 rows updated.

```
[SQL> select * from book_trans;
```

BOOK_TRANS_ID	ISBN	EMPLOYEE_ID	CHECKOUT_	DUE_DTE	RETURN_DT	PASTDUE_FEES
1	0-07-225790-3	101	15-NOV-07	17-DEC-07		
3	0-201-69471-9	175	14-NOV-07	14-DEC-07		
4	0-12-369379-9	201	16-NOV-07	18-DEC-07	16-DEC-07	0
2	0-07-225790-3	151	12-NOV-07	12-DEC-07	18-DEC-07	12



7. Write a SQL statement displaying the following columns:

SQL script:

```
SELECT SUBSTR(CONCAT(CONCAT(e.last_name, ' '), e.first_name), 1, 30) name,  
SUBSTR(b.title , 1, 40) book,  
bt.checkout_dte, bt.due_dte, bt.return_dte, bt.pastdue_fees  
FROM book_trans bt LEFT OUTER JOIN employees e  
ON bt.employee_id = e.employee_id  
LEFT OUTER JOIN books b  
ON b.ISBN = bt.ISBN  
ORDER BY e.last_name;
```

Screenshot:

```
SQL> SELECT SUBSTR(CONCAT(CONCAT(e.last_name, ' '), e.first_name), 1, 30) name,  
2 SUBSTR(b.title , 1, 40) book,  
3 bt.checkout_dte, bt.due_dte, bt.return_dte, bt.pastdue_fees  
4 FROM book_trans bt LEFT OUTER JOIN employees e  
5 ON bt.employee_id = e.employee_id  
6 LEFT OUTER JOIN books b  
7 ON b.ISBN = bt.ISBN  
8* ORDER BY e.last_name;
```

NAME	BOOK	CHECKOUT_DTE	DUE_DTE	RETURN_DTE	PASTDUE_FEES
Bernstein, David	OCP Certification All-in-One Exam Guide	12-NOV-07	12-DEC-07	18-DEC-07	12
Hartstein, Michael	SQL for Smarties	16-NOV-07	18-DEC-07	16-DEC-07	0
Hutton, Alyssa	Database Design for Mere Mortals	14-NOV-07	14-DEC-07		
Kochhar, Neena	OCP Certification All-in-One Exam Guide	15-NOV-07	17-DEC-07		