1

CREATE TABLE borrower  
(  
card-number int(50) NOT NULL PRIMARY KEY,  
date-granted date NOT NULL,  
name varchar(100) NOT NULL,  
address varchar(200) NOT NULL,  
telephone int(50) NOT NULL  
)

CREATE TABLE book  
(  
isbn varchar(20) NOT NULL PRIMARY KEY,  
title varchar(300) NOT NULL,  
authors varchar(300) NOT NULL,  
publisher varchar(200) NOT NULL,  
year int(4) Not NULL  
)

CREATE TABLE book-copy  
(  
copy-number int(20) NOT NULL PRIMARY KEY,  
isbn varchar FOREIGN KEY REFERENCES book(isbn),  
purchase-date date NOT NULL,  
purchase-price MONEY NULL)

CREATE TABLE loan  
(  
card-number int FOREIGN KEY REFERENCES borrower(card-number),  
copy-number int FOREIGN KEY REFERENCES book-copy(copy-number),  
date-borrowed date NOT NULL  
)

2

a)

b)

c)

3

a)  
SELECT b.name, b.card-number, bk.title, bk.year  
FROM borrower b, book bk, book-copy bc, loan l  
WHERE b.card-number = l.card-number AND l.copy-number = bc.copy-number AND bc.isbn = bk.isbn AND publisher = ‘Like’ AND year BETWEEN 2002 AND 2005

b)  
SELECT bk.publisher  
FROM book bk, book-copy bc  
WHERE bk.isbn = bc.isbn AND bc.copy-number NOT IN (SELECT l.copy-number FROM loan l)

c)  
SELECT bk.title  
FROM book bk  
WHERE bk.isbn IN (SELECT bc.isbn FROM book-copy bc, loan l WHERE bc.copy-number = l.copy-number)

4

a) avain: AC  
Yliavaimet AC, ABC

b) r(R)={(1,1,1), (1,2,2), (2,2,1), (2,1,2)}

c) r(R)={(1,1,1), (1,1,2), (1,2,2), (1,2,1), (2,2,2), (2,2,1), (2,1,1), (2,1,2)}

d) 8

e) n yliavainta, 1 avain??