

Examples for Functional Dependencies and Database Normalization

Example 1:

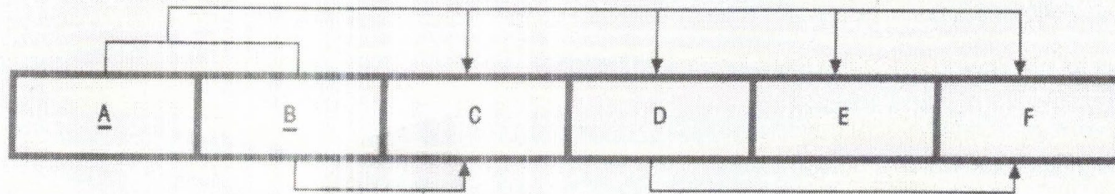
- 14.17 A company called *FastCabs* provides a taxi service to clients. The table shown in Figure 14.21 displays some details of client bookings for taxis. Assume that a taxi driver is assigned to a single taxi, but a taxi can be assigned to one or more drivers.
- (a) Identify the functional dependencies that exist between the columns of the table in Figure 14.21 and identify the primary key and any alternate key(s) (if present) for the table.
 - (b) Describe why the table in Figure 14.21 is not in 3NF.
 - (c) The table shown in Figure 14.21 is susceptible to update anomalies. Provide examples of how insertion, deletion, and modification anomalies could occur on this table.

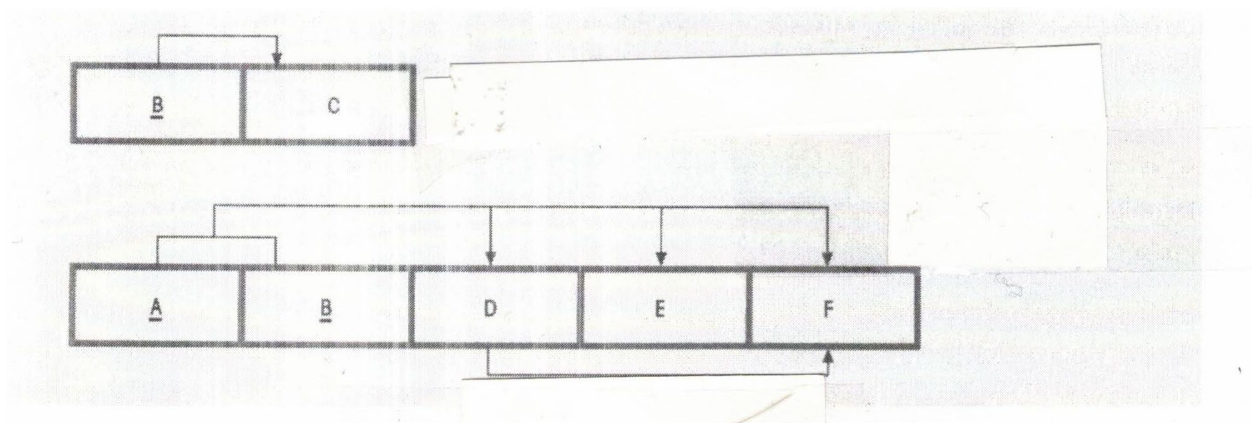
JobID	JobDate Time	driverID	driver Name	taxiID	clientID	clientName	jobPickUpAddress
1	25/07/14 10.00	D1	Joe Bull	T1	C1	Anne Woo	1 Storrie Rd, Paisley
2	29/07/14 10.00	D1	Joe Bull	T1	C1	Anne Woo	1 Storrie Rd, Paisley
3	30/07/14 11.00	D2	Tom Win	T2	C1	Anne Woo	3 High Street, Paisley
4	2/08/14 13.00	D3	Jim Jones	T3	C2	Mark Tin	1A Lady Lane, Paisley
5	2/08/14 13.00	D4	Steven Win	T1	C3	John Seal	22 Red Road, Paisley
6	25/08/14 10.00	D2	Tom Win	T2	C4	Karen Bow	17 High Street, Paisley

Figure 14.21 Table displaying sample data for *FastCabs*.

Example 2: 2NF decomposition based on given functional dependencies

The Initial 1NF Structure





Example 3: 3NF decomposition of schem from Exampple 2.

