

Question 2

Given the FDs below

orderID-→custID, amount_due, discount

orderID, itemNo-→quantity

custID, orderID-→amount_due, discount

2.1)

Give the minimal basis for the given FDs

The following constitutes a basis

orderID, itemNo-→quantity

custID, orderID-→amount_due, discount

this is because the first FD is not needed since it's implied by the third FD

but custID, ordeID-→amount_due, discount has multiple attributes on its right side. This can be split into two pieces

custID, orderID-→amount_due

custID, orderID-→discount

so the minimal basis is the set

orderID, itemNo-→quantity

custID, orderID-→amount_due

custID, orderID-→discount

2.2)

Candidate key is only orderID and ItemNo.

Unfortunately, all the left hand side FDs does not include orderID and ItemNO, hence making the relation not in BCNF

To check for 3NF, candidate key are orderID and ItemNo

Checking the FDs one by one

custID, orderID-→amount_due, discount: this is not ok, because custID is not a candidate key and amount_due, discount are not part of candidate key orderID and ItemNo.

2.3)