Lab 09 – Normalization (2NF, 3NF)

Luca Novello | 038515003

Part A – Second Normal Form (2NF)

Step 1: Create the UNF Relation

UNF:

Order [OrderNo, OrderDate, (FK CustomerNo, CustomerLName), (FK SalesRepNo, SalesRepLastName)]

Step 2: Create the 1NF Relations

1NF:

Order [**PK OrderNo**, OrderDate, **FK CustomerNo**, **FK SalesRepNo**]
Customer [**PK CustomerNo**, CustomerLName]
SalesRep [**PK SalesRepNo**, SalesRepLastName]

Step 3: Resolve Partial Dependencies to Achieve 2NF

2NF:

Order [**PK OrderNo**, OrderDate, **FK CustomerNo**, **FK SalesRepNo**]
Customer [**PK CustomerNo**, CustomerLName]
SalesRep [**PK SalesRepNo**, SalesRepLastName]

Part B – Third Normal Form (3NF)

Identifying Key and Non-key Attributes in 2NF Relations

Order Relation:

- **Key attribute:** OrderNo
- **Non-key attributes:** OrderDate, CustomerNo, SalesRepNo

Customer Relation:

- **Key attribute:** CustomerNo
- **Non-key attribute:** CustomerLName

SalesRep Relation:

- **Key attributes:** SalesRepNo
- **Non-key attributes:** SalesRepLastName

Checking the Customer Relation for Transitive Dependencies

In the Customer relation, no non-key attributes determine any other non-key attributes, so it is already in 3NF.

Checking the Order Relation for Transitive Dependencies

In the Order relation, the non-key attribute CustomerNo does not determine any other non-key attributes, so it is also already in 3NF.

Checking the SalesRep Relation for Transitive Dependencies

In the Order relation, the non-key attribute CustomerNo does not determine any other non-key attributes, so it is also already in 3NF.

Final 3NF Relations

3NF:

Order [**PK** **OrderNo**, OrderDate, **FK CustomerNo**, **FK SalesRepNo**]
Customer [**PK** **CustomerNo**, CustomerLName]
SalesRep [**PK** **SalesRepNo**, SalesRepLastName]