## Complaint

Complaint(CID, Complaint\_text, Complaint\_status, Filed-date-time, UID)

Keys: CID

Primary Key: CID

FDs: CID->Text, status, Filed-date-time, UID

The relation is in 3NF

Complaints-On-Shop(CID, SID)

Keys: CID

Primary Key: CID

FDs: CID->SID

The relation is in 3NF

Complaints-On-Restaurant(CID, OID)

Keys: CID

Primary Key: CID

FDs: CID->OID

The relation is in 3NF

## User-Account

User-Account(UID, Name, Gender, DOB)

Keys: UID

Primary Key: UID

FDs:UID -> Name, Gender, DOB

The relation is in 3NF

## Related

Related(UID1, UID2, Related\_type)

Keys: UID1UID2 (composite key)

Primary Key: UID1UID2

FDs: UID1UID2 -> Type

The relation is in 3NF

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## Shop\_transaction

Shop(UID, SID, Amount-spent, Date-time-in, Date-time-out)

Keys: UIDSID (composite key)

Primary Key: UIDSID

FDs: UIDSID -> Amount-spent, Date-time-in, Date-time-out

The relation is in 3NF

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## Dine

Dine(UID, OID, Amount-spent, Date-time-in, Date-time-out)

Keys: UIDOID (composite key)

Primary Key: UIDOID

FDs: UIDOID -> Amount-spent, Date-time-in, Date-time-out

The relation is in 3NF

## Shop(Noun)

Shop(SID,Type, MID)

Keys: SID

Primary Key: SID

FDs: SID->Type, MID

The relation is in 3NF

## Voucher

Voucher(VID, Description, Date-issued, Expiry-date, Status)

Keys: VID

Primary Key: VID

FDs: VID -> Description, Date-issued, Expiry-date, Status

The relation is in 3NF

Using ER approach for subclasses:

### Purchase-Voucher

Purchase-Voucher(VID, Purchase-discount, UID, Date-time)

Keys: VID

Primary Key: VID

FDs: VID -> Purchase-discount, UID, Date-time

The relation is in 3NF

### Dine-Voucher

Dine-Voucher(VID, Cash-discount, UID, Date-time)

Keys: VID

Primary Key: VID

FDs: VID -> Cash-discount, UID, Date-time

The relation is in 3NF

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### Group-Voucher

Group-Voucher(VID, Group-size, Group-discount, UID, Date-time)

Keys: VID

Primary Key: VID

FDs: VID -> Group-size, Group-discount, UID, Date-time

The relation is in 3NF

### Package-Voucher

Package-Voucher(VID, Package-discount)

Keys: VID

Primary Key: VID

FDs: VID -> Package-discount

The relation is in 3NF

## Recommendation

Recommendation(NID,MID,OID,DID,VID,Valid-period,Date-Issued)

Keys: NID

Primary Key: NID

FDs: NID ->MID,OID,DID,VID,Valid-period,Date-Issued

The relation is in 3NF

UserAccount-Use-Recommendation(UID, NID)

Keys: UIDNID (composite key)

Primary Key: UIDNID

FDs: Only trivial FDs

The relation is in 3NF

## Mall

Mall(MID,CID,Address,NumShops)

Keys: MID

Primary Key: MID

FDs: MID->CID, Address,NumShops

The relation is in 3NF

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Mall-Has-DayPackage(DID, MID)

Keys: DIDMID (composite key)

Primary Key: DIDMID

FDs: Only trivial FDs

The relation is in 3NF

## Day Package

Day-Package(DID,UID,VID,Description)

Keys: DID

Primary Key: DID

FDs: DID->UID,VID,Description

The relation is in 3NF

DayPackage-Has-RestaurantOutlet(OID, DID)

Keys: DIDOID

Primary Key: DIDOID

FDs: Only trivial FDs

The relation is in 3NF

## Mall-Mgmt-Company

Mall-Mgmt-Company(CID, Address)

Keys: CID

Primary Key: CID

FDs: CID → Address

The relation is in 3NF.

## Restaurant Chain

Restaurant-Chain(RID, Address)

Keys: RID

Primary Key: RID

FDs: RID → Address

The relation is in 3NF.

## Restaurant Outlet

Restaurant-Outlet(OID, RID, MID);

Keys: OID

Primary Key: OID  
FDs: OID → RID, MID

The relation is in 3NF.