# Functional Dependencies & Normalisation

Train:

1. Train No → Train Type
2. Train No → Train Name
3. Train No → Frequency
4. Train No → # Each Coach Type.
5. Train No → Food Availability
6. Train No → Source.
7. Train No → Destination
8. Train No → Zone

$\{Train\ No\}^+ =$
$\{Train\ No, Train\ Type, Train\ Name, Freq, \#CoachType, Food, Source, Destination, Zone\}$.

Key: Train No.

Here Frequency is a composite type for days of the week.
Frequency → Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday.

Account:

1. UserId → Type Of Account
2. UserId → Password.

$\{Account\}$
$\{UserId\}^+ = \{UserId, Type, Password\}$.

Key: UserId

User:

1. UserId → Name
2. UserId → Gender
3. UserId → Mobile No.
4. UserId → Date Of Birth.
5. UserId → Email
6. UserId → Address.
7. UserId → ID_Type

$\{User\}^+ = \{Name, Gender, Mob, DOB, email, Address, \{ID\_Type, Id\_No\}\}$

$\{User$
$\{ID\_Type, ID\_No\} \rightarrow \{UserId, Name, Gender, Mob, DOB, email, Address\}$

Key: UserId, $\{ID\_Type, ID\_No\}$

Travellers:

1. UID → Gender.
2. UID → Name.
3 UID → DOB

$\{UID\}^+ = \{ Gender, Name, DOB, UID \}$

Key: UID

Seat:

1. UID, PNR → Coach.
2. UID, PNR → Seat No.

$\{UID, PNR\}^+ = \{ Coach, Seat No, UID, PNR \}$

Key: {UID, PNR}

Tickets:

1. PNR → Journey Date
2. PNR → Train No.
3. PNR → Start Station
4. PNR → End Station
5. PNR → # Seats
6. PNR → Coach
7 PNR → Status
8. PNR → UID
9. PNR → Reservation Date.

$\{PNR\}^+ = \{$ Journey Date, Train No, Start St., End St, # Seats, Coach, Status, UID, Reservation Date, Time Stamp, PNR $\}$

Key: PNR

Station:

1. StationID → Station Name
2. Station ID → Sta Address.
3. Station ID → # Platforms

$\{StationID\} = \{$ StationID, Station Name, Address, # Platforms $\}$

Key: StationID

Station Feedback:

1. {StationID, UserID} → Cleanliness.
2. {StationID, UserID} → Escalators
3. {StationID, UserID} → Safety
4. {StationID, UserID} → Lodging.

~~{StFeedback}+ = {~~

{StationID, UserID}+ = {StationID, UserID, Cleanliness, Escalators, Safety, Lodging}.

Key: {StationID, UserID}

Train Feedback:

1. {UserID, TrainNo} → Ticket Availability
2. {UserID, TrainNo} → Safety
3. {UserID, TrainNo} → Cleanliness
4. {UserID, TrainNo} → Rail fanning

{UserID, TrainNo}+ = {UserID, TrainNo, Ticket Availa., Safety, Cleanliness, Rail fan}

Key: UserID, TrainNo

BaseFare:

1. Coach → Bfare.
2. Coach → mDistance

{Coach}+ = {Coach, Bfare, mdistanc

Key: Coach.

Coach:

1. CoachCode → Coachname
2. CoachCode → Capacity
3. CoachCode → Fare
4. CoachCode → Reservation Charges
5. CoachCode → Superfast Charges

{CoachCode}+ = {CoachCode, CoachName, Capacity, Fare, Reservation Chrgs, Superfast Chrgs}

Key: CoachCode.

Train Stops :

1. {Train No, Station Id} → Arrival Time.
2. {Train No, Station Id} → Departure Time.
3. {Train No, Station Id} → platform No.
4. {Train No, Station Id} → Journey day
5. {Train No, Station Id} → Distance.

{Train No, Station Id}$^+$ = {Arrival Time, Departure Time, Platform No, Journey day, Distance, Train No, Station ID}

Key : {Train No, Station Id}

Since the determinant of every FD is the key of relation train stops the relation is in BCNF.