

# Functional Dependencies and their 3NF Checks

## 1. Table : UserProfile

- **Functional dependencies**

- i.  $\{user\_name\} \rightarrow \{first\_name, last\_name, email, password\}$
- ii.  $\{email\} \rightarrow \{first\_name, last\_name, user\_name, password\}$

This **table is in 3NF** as both  $\{user\_name\}$  and  $\{email\}$  are candidate keys.

## 2. Table : BusDetails

- **Functional dependencies**

- i.  $\{accomodation\_code, name\} \rightarrow \{refund\_percentage, id, no\_refund\_time, min\_refund\_time, additonal\_deduction\_percentage, additional\_deduction\_rate, last\_edit\}$
- ii.  $\{bus\_details\_id\} \rightarrow \{refund\_percentage, accomodation\_code, name, no\_refund\_time, min\_refund\_time, additonal\_deduction\_percentage, additional\_deduction\_rate, last\_edit\}$

This **table is in 3NF** as  $\{accomodation\_code, name\}$  is a super key and  $\{bus\_details\_id\}$  is a candidate key.

## 3. Table : Bus

- **Functional dependencies**

- i.  $\{rto\_number\} \rightarrow \{details, name, seats, last\_edit, active\}$

This **table is in 3NF** as  $\{rto\_number\}$  is a candidate key.

## 4. Table : DateWiseBusSchedule

- **Functional dependencies**

- i.  $\{id\} \rightarrow \{schedule, departure\_date, distance\_from\_source\}$

This **table is in 3NF** as  $id$  is a candidate key.

## 5. Table : IntermediateStops

- **Functional dependencies**

- i.  $\{stop\_id\} \rightarrow \{schedule, terminal\_details, distance\_from\_source\}$

This **table is in 3NF** as  $\{stop\_id\}$  is a candidate key.

## 6. Table : Schedule

- **Functional dependencies**

- i.  $\{schedule\_id\} \rightarrow \{source, destination, distance\}$

This **table is in 3NF** as  $\{schedule\_id\}$  is a candidate key.

## 7. Table : UserTicket

- **Functional dependencies**

- i.  $\{ticket\_id\} \rightarrow \{source\_stop, destination\_stop, user, date\_wise\_bus\_schedule, seats\_booked, booking\_status, fare\}$

This **table is in 3NF** as  $\{ticket\_id\}$  is a candidate key.

## 8. Table : BusSchedules

- **Functional dependencies**

- i.  $\{bus\_number\} \rightarrow \{bus, fare, reverse\_route, schedule, departure\_day, last\_edit, departure\_time\}$

This **table is in 3NF** as  $\{bus\_number\}$  is a candidate key.

## 9. Table : Terminal

- **Functional dependencies**

- i.  $\{\text{terminal\_code}\} \rightarrow \{\text{last\_edit}, \text{name}, \text{city}, \text{state}\}$
- ii.  $\{\text{name}, \text{city}, \text{state}\} \rightarrow \{\text{terminal\_code}, \text{last\_edit}\}$

This **table is in 3NF** as  $\{\text{name}, \text{city}, \text{state}\}$  is a super key and  $\text{terminal\_code}$  is a candidate key

**Hence, the Schema is in 3NF**