# INITIAL TABLE

1. **TravelRating**(Admin\_ID, Admin\_Name, Admin\_Email, Admin\_Password, Admin\_Contact, Admin\_Addr, Session\_ID, User\_ID, User\_Name, User\_Email, User\_Password, User\_Contact, User\_Addr, User\_DOB, Premium\_User, Discount, Review\_ID, Review, Rating, Enquiry\_ID, FAQ, Enquiry, T&C, Customer\_Care\_Contact, Place\_ID, Place\_Name, City, State, Country, Booking\_ID, Booking\_Date, Booking\_Type, Booking\_Desc, Duration, Date\_Of\_Stay, Booking \_Status, Payment\_ID, Payment\_Total, Payment\_Advance, Payment\_Due, Payment\_Due\_Date, Package\_ID, Package\_Name, Package\_desc, Package\_Type, Package\_Amount, Rating, Vehicle\_ID, Vehicle\_Name, Vehicle\_Number, Driver\_ID, Driver\_Name, Driver\_Contact, Hotel\_ID, Hotel\_Addr, Hotel\_Name)

Firstly, considering the NOT NULL constraint, we split the TravelRating table into several individual tables.

For 1-NF, the relation should have the following :

1. Primary key
2. No multi-valued attributes
3. No repeating groups
4. Admin\_ID -> User\_ID , has multiple values for each Admin\_ID, and hence,

**Admin\_Manages**(Admin\_ID, User\_ID)

1. User\_ID -> Enquiry\_ID , has multiple values for each User\_ID, and hence,

**User\_Ennquiry**(User\_ID, Enquiry\_ID)

1. User\_ID -> Review\_ID , has multiple values for each User\_ID, and hence,

**User\_Review**(User\_ID, Review\_ID)

1. Place\_ID -> Package\_ID , has multiple values for each Place\_ID, and hence,

**Place\_Package**(Place\_ID, Package\_ID)

1. User\_ID -> Package\_ID,Payment\_ID , has multiple values for each User\_ID, and hence,

**User\_Package\_Payment**(User\_ID, Package\_ID, Payment\_ID)

Our initial table already had a primary key & no repeating groups.

# 1 NF

1. **Administrator (**Admin\_ID, Admin\_Name, Admin\_Email, Admin\_Password, Admin\_Contact, Admin\_Addr)
2. **Guest Users (**Session\_ID)
3. **Users (**User\_ID, User\_Name, User\_Email, User\_Password, User\_Contact, User\_Addr, User\_DOB, Premium\_User, Discount)
4. **Admin\_Manages** (Admin\_ID, User\_ID)
5. **Review & Rating** (Review\_ID, Review, Rating)
6. **Customer Care & Enquiry** (Enquiry\_ID, FAQ, Enquiry, T&C, Customer\_Care\_Contact)
7. **Places** (Place\_ID, Place\_Name, City, State, Country,)
8. **Bookings** (Booking\_ID, Booking\_Date, Booking\_Type, Booking\_Desc, Duration, Date\_Of\_Stay, Booking \_Status, Payment\_ID, Payment\_Total, Payment\_Advance, Payment\_Due, Payment\_Due\_Date)
9. **Package** (Package\_ID, Package\_Name, Package\_desc, Package\_Type, Package\_Amount, Rating, Vehicle\_ID, Vehicle\_Name, Vehicle\_Number, Driver\_ID, Driver\_Name, Driver\_Contact, Hotel\_ID, Hotel\_Addr, Hotel\_Name)
10. **Place\_Package** (Place\_ID, Package\_ID)
11. **User\_Enquiry**(User\_ID, Enquiry\_ID)
12. **User\_Review**(User\_ID, Review\_ID)
13. **User\_Package\_Payment**(User\_ID, Package\_ID, Payment\_ID)

For a relation to be in 2-NF, it should have the following :

1. It should be in 1-NF
2. It should not have any partial dependencies
3. Package\_ID -> Payment\_ID , is a partial dependency, and hence,

**User\_Package\_Payment**(User\_ID, Package\_ID, Payment\_ID) is decomposed to

* 1. **User\_Package**(User\_ID, Package\_ID)
  2. **Package\_Payment(**Package\_ID, Payment\_ID)

# 2 NF

1. **Administrator (**Admin\_ID, Admin\_Name, Admin\_Email, Admin\_Password, Admin\_Contact, Admin\_Addr)
2. **Guest Users (**Session\_ID)
3. **Users (**User\_ID, User\_Name, User\_Email, User\_Password, User\_Contact, User\_Addr, User\_DOB, Premium\_User, Discount)
4. **Admin\_Manages** (Admin\_ID, User\_ID)
5. **Review & Rating** (Review\_ID, Review, Rating)
6. **Customer Care & Enquiry** (Enquiry\_ID, FAQ, Enquiry, T&C, Customer\_Care\_Contact)
7. **Places** (Place\_ID, Place\_Name, City, State, Country,)
8. **Booking** (Booking\_ID, Booking\_Date, Duration, Date\_Of\_Stay, Booking \_Status, Payment\_ID, Payment\_Total, Payment\_Advance, Payment\_Due, Payment\_Due\_Date)
9. **Package** (Package\_ID, Package\_Name, Package\_desc, Package\_Type, Package\_Amount, Rating, Vehicle\_ID, Vehicle\_Name, Vehicle\_Number, Driver\_ID, Driver\_Name, Driver\_Contact, Hotel\_ID, Hotel\_Addr, Hotel\_Name)
10. **Place\_Package** (Place\_ID, Package\_ID)
11. **User\_Enquiry**(User\_ID, Enquiry\_ID)
12. **User\_Review**(User\_ID, Review\_ID)
13. **User\_Package**(User\_ID, Package\_ID)
14. **Package\_Payment(**Package\_ID, Payment\_ID)

For a relation to be in 3-NF, it should have the following :

1. It should be in 2-NF
2. It should not have any transitive dependencies
3. In Booking relation, there is a transitive dependency,

Payment\_ID -> Payment\_Total, Payment\_Advance, Payment\_Due, Payment\_Due\_Date

Hence, we have,

**Booking** (Booking\_ID, Booking\_Date, Duration, Date\_Of\_Stay, Booking \_Status)

**Payment** (Payment\_ID, Payment\_Total, Payment\_Advance, Payment\_Due, Payment\_Due\_Date)

1. In Package relation, there are many transitive dependencies,

Vehicle\_ID, -> Vehicle\_Name, Vehicle\_Number

Driver\_ID -> Driver\_Name, Driver\_Contact

Hotel\_ID -> Hotel\_Addr, Hotel\_Name

Hence, we have,

**Package** (Package\_ID, Package\_Name, Package\_desc, Package\_Type, Package\_Amount, Rating)

**Vehicle** (Vehicle\_ID, Vehicle\_Name, Vehicle\_Number)

**Driver** (Driver\_ID, Driver\_Name, Driver\_Contact)

**Hotel** (Hotel\_ID, Hotel\_Addr, Hotel\_Name)

**PVH** (Package\_ID, Vehicle\_ID, Hotel\_ID)

**Vehicle\_Driver** (Vehicle\_ID, Driver\_ID)

# 3 NF

1. **Administrator (**Admin\_ID, Admin\_Name, Admin\_Email, Admin\_Password, Admin\_Contact, Admin\_Addr)
2. **Guest Users (**Session\_ID)
3. **Users (**User\_ID, User\_Name, User\_Email, User\_Password, User\_Contact, User\_Addr, User\_DOB, Premium\_User, Discount)
4. **Admin\_Manages** (Admin\_ID, User\_ID)
5. **Review & Rating** (Review\_ID, Review, Rating)
6. **Customer Care & Enquiry** (Enquiry\_ID, FAQ, Enquiry, T&C, Customer\_Care\_Contact)
7. **Places** (Place\_ID, Place\_Name, City, State, Country)
8. **Booking** (Booking\_ID, Booking\_Date, Duration, Date\_Of\_Stay, Booking \_Status)
9. **Payment** (Payment\_ID, Payment\_Total, Payment\_Advance, Payment\_Due, Payment\_Due\_Date)
10. **Booking\_Payment** (Booking\_ID, Payment\_ID)
11. **Package** (Package\_ID, Package\_Name, Package\_desc, Package\_Type, Package\_Amount, Rating)
12. **Vehicle** (Vehicle\_ID, Vehicle\_Name, Vehicle\_Number)
13. **Driver** (Driver\_ID, Driver\_Name, Driver\_Contact)
14. **Hotel** (Hotel\_ID, Hotel\_Addr, Hotel\_Name)
15. **PVH** (Package\_ID, Vehicle\_ID, Hotel\_ID)
16. **Vehicle\_Driver** (Vehicle\_ID, Driver\_ID)
17. **Place\_Package** (Place\_ID, Package\_ID)
18. **User\_Enquiry** (User\_ID, Enquiry\_ID)
19. **User\_Review** (User\_ID, Review\_ID)
20. **User\_Package** (User\_ID, Package\_ID)
21. **Package\_Payment (**Package\_ID, Payment\_ID)

For a relation to be in BCNF, it should have the following :

# BCNF

1. **Administrator (**Admin\_ID, Admin\_Email, Admin\_Password)
2. **Admin\_email** (Admin\_Email, Admin\_Name, Admin\_Contact, Admin\_Addr)
3. **Guest Users (**Session\_ID)
4. **User (**User\_ID, User\_Email, User\_Password)
5. **User\_email** ( User\_Email, User\_Name, User\_Contact, User\_Addr, User\_DOB, Premium\_User, Discount)
6. **Admin\_Manages** (Admin\_ID, User\_ID)
7. **Review & Rating** (Review\_ID, Review, Rating)
8. **Customer Care & Enquiry** (Enquiry\_ID, FAQ, Enquiry, T&C, Customer\_Care\_Contact)
9. **Places** (Place\_ID, Place\_Name, City, State, Country)
10. **Booking** (Booking\_ID, Booking\_Date, Booking\_Type, Booking\_Desc, Start\_date, End\_date, Booking \_Status)
11. **Payment** (Payment\_ID, Payment\_Total, Payment\_Advance, Payment\_Due, Payment\_Due\_Date)
12. **Booking\_Payment** (Booking\_ID, Payment\_ID)
13. **Package** (Package\_ID, Package\_Name, Package\_desc, Package\_Type, Package\_Amount, Rating)
14. **Vehicle** (Vehicle\_ID, Vehicle\_Name, Vehicle\_Number)
15. **Driver** (Driver\_ID, Driver\_Name, Driver\_Contact)
16. **Hotel** (Hotel\_ID, Hotel\_Addr, Hotel\_Name)
17. **PVH** (Package\_ID, Vehicle\_ID, Hotel\_ID)
18. **Vehicle\_Driver** (Vehicle\_ID, Driver\_ID)
19. **Place\_Package** (Place\_ID, Package\_ID)
20. **User\_Enquiry**(User\_ID, Enquiry\_ID)
21. **User\_Review**(User\_ID, Review\_ID)
22. **User\_Package**(User\_ID, Package\_ID)
23. **Package\_Payment(**Package\_ID, Payment\_ID)