

Air Travel ER Diagram

Overview

This ER Model is about Air Travel which contains some basic entities like Passenger, Ticket, Flight these are the strong entities that has their own primary key independent of any entity. There are some child entities like passenger type, ticket type etc. which has foreign key relationship with these entities. This ER diagram shows the what kind of relationship is there between these entities like ONE-ONE, ONE-MANY and MANY-MANY. In this ER diagram there are examples of dis-joint inheritance, Overlap Inheritance etc..

Passenger Entity

Primary Key column is ID, which should be unique and not null. Which ac

Three entities “Ticket”, “Passenger Type” and “Phone no” have foreign key relationship with this entity (With ID attribute)

The main purpose of this entity is to store the details of the passenger travelling on the flight. It is a Strong Entity. There is another entity called “Phone No” which is owned by this entity because it is a weak entity (A passenger can have multiple mobile numbers)

There are total 4 other attributes (Columns) in this entity.

- Name
- Age
- Email
- Ticket Number
- ID

Name is the attribute to store data of passenger name the data type of the column is varchar, which store the string values. Size of this column is 255 I.e it has character length of 255. Varchar can allow numbers which is considered as string.

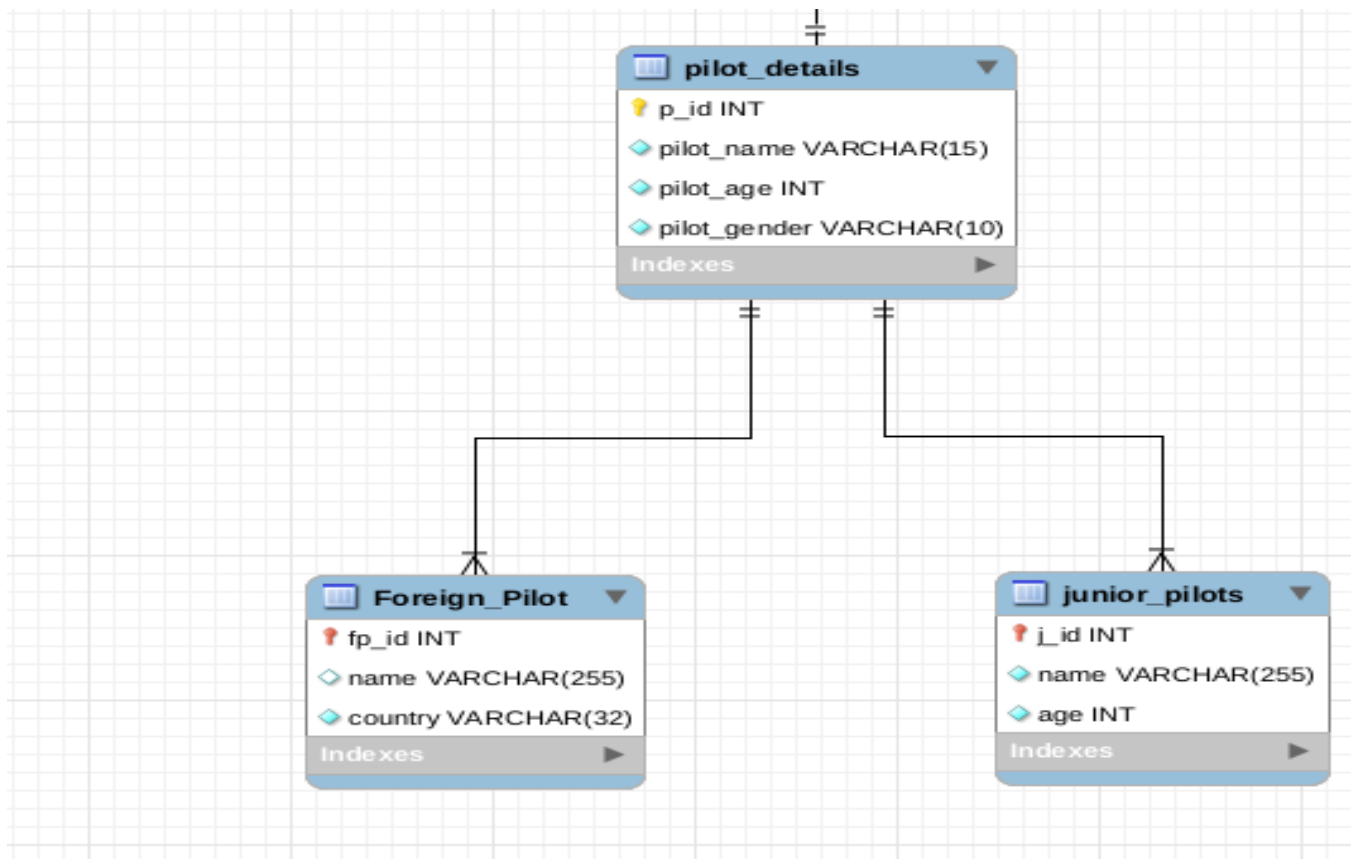
Age is a column which has datatype int, it can only store integer values. This column is used to store the passenger age.

Email this column contains emails of the passenger which helps admin to contact the passenger whenever it is required.

Ticket Number which is also unique constraint but not considered as primary key for this entity. This constraint has foreign key relationship with Ticket Entity which has this constraint as primary key.

Passenger Entity has one more relationship with entity called Passenger_Type which is having same column as a primary key.

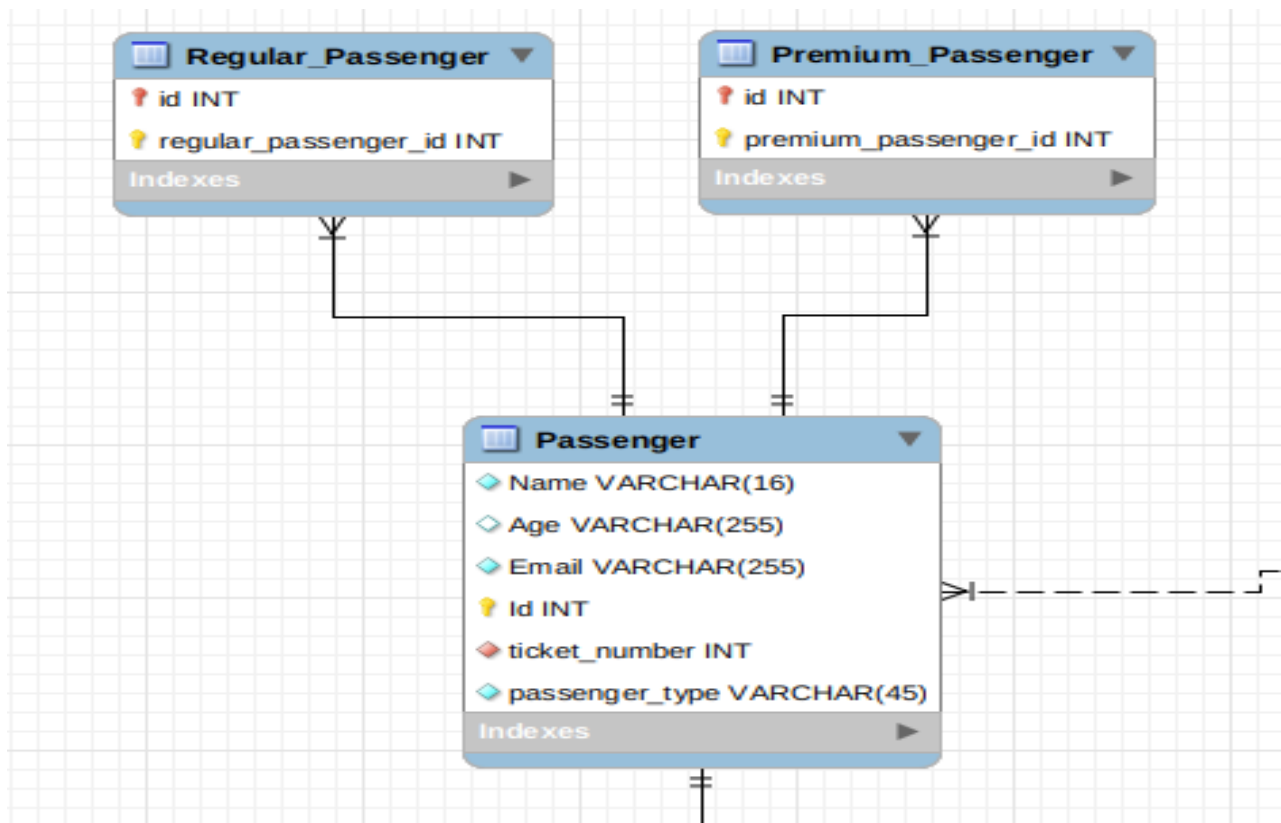
OverLap Inheritance



The above figure is an example of overlap inheritance. Because, we have divided pilots with two different bases. One is foreign pilot and other is junior pilot. There may be a chance that foreign pilots are in junior pilot table, on the other hand some of junior pilots are foreigners. This type of example is called overlap inheritance. While creating an ER diagram we often face this situation. One more thing is both of these entities are derived from the one parent entity called pilot details.

Disjoint Inheritance

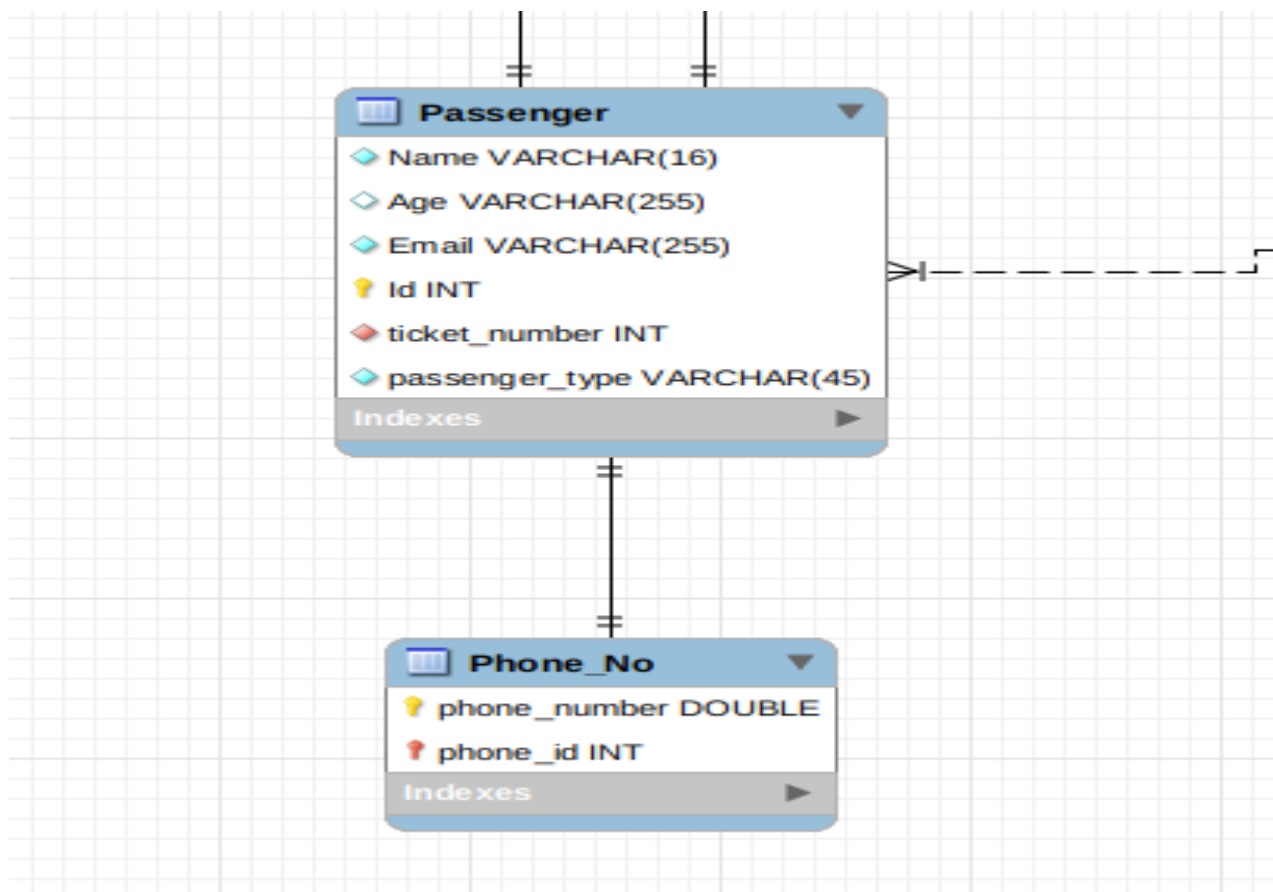
When no entity belongs to not more than one lower child, then it called disjoint inheritance.



This is unlike overlap inheritance because from the above figure we can observe that we divided passengers based on the type like premium passenger and regular passenger. We have divided passengers based on column in the parent table “passenger type”. So, passenger can be a premium or regular but cannot both. Hence this is apt example for disjoint inheritance.

Composite Attribute

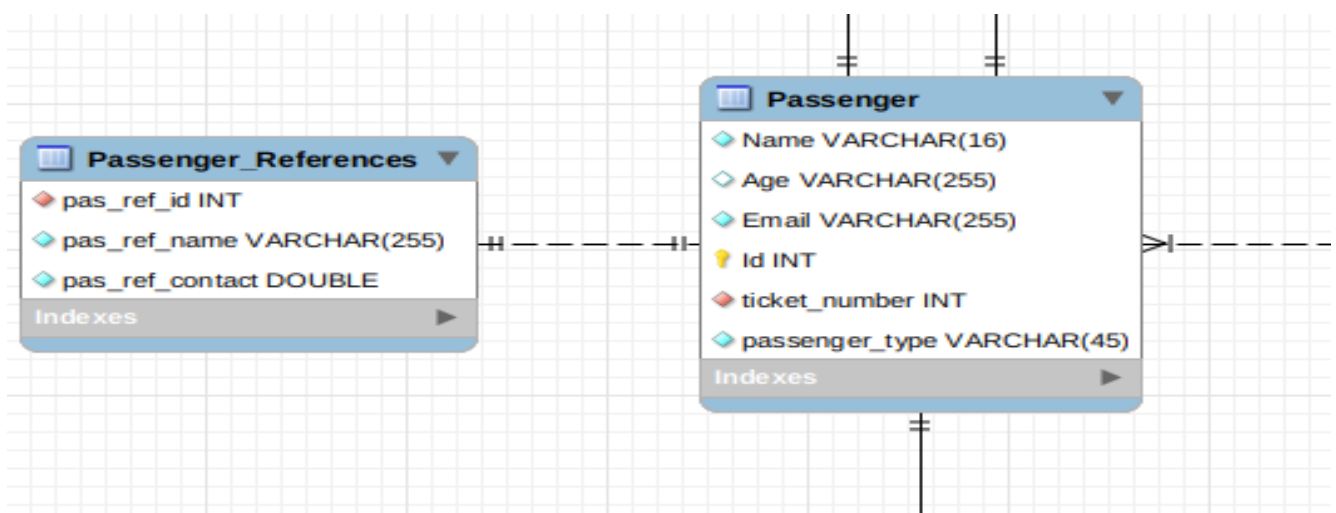
Composite attribute or key is a key which is the combination of more than one field or column of a given table. It may be a candidate key or primary key.



Above figure illustrates the example of Composite Attribute, If you observe the Phone_No table carefully it has two columns phone number and phone_id. Both columns are primary key. Because two passengers may have same mobile number or one passenger has multiple mobile number. So, to uniquely identify the rows we have taken both keys are primary. Combination of two columns cannot be duplicated in this scenario and we can identify the rows easily.

Weak Entity

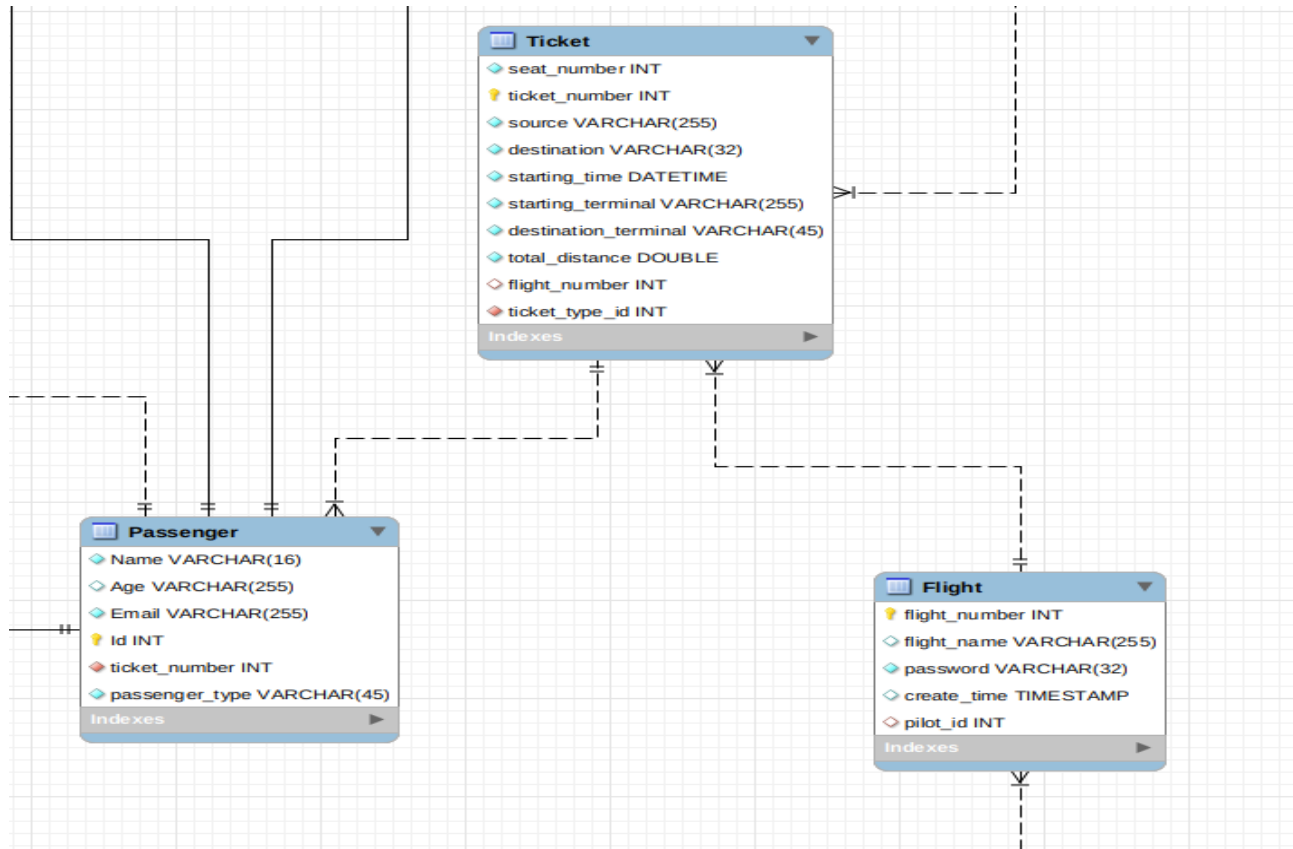
An entity that has a primary key which is formed by the primary key of the Strong entity.



We cannot give unique id to every passenger reference, we give passenger_reference table same primary key as passenger table. A reference to a passenger is technically dependent on passenger, without a passenger there cannot be a reference, or we can say passenger reference table is owned by the passenger table. The above figure perfectly illustrates the example of weak entity.

Ternary Relationship

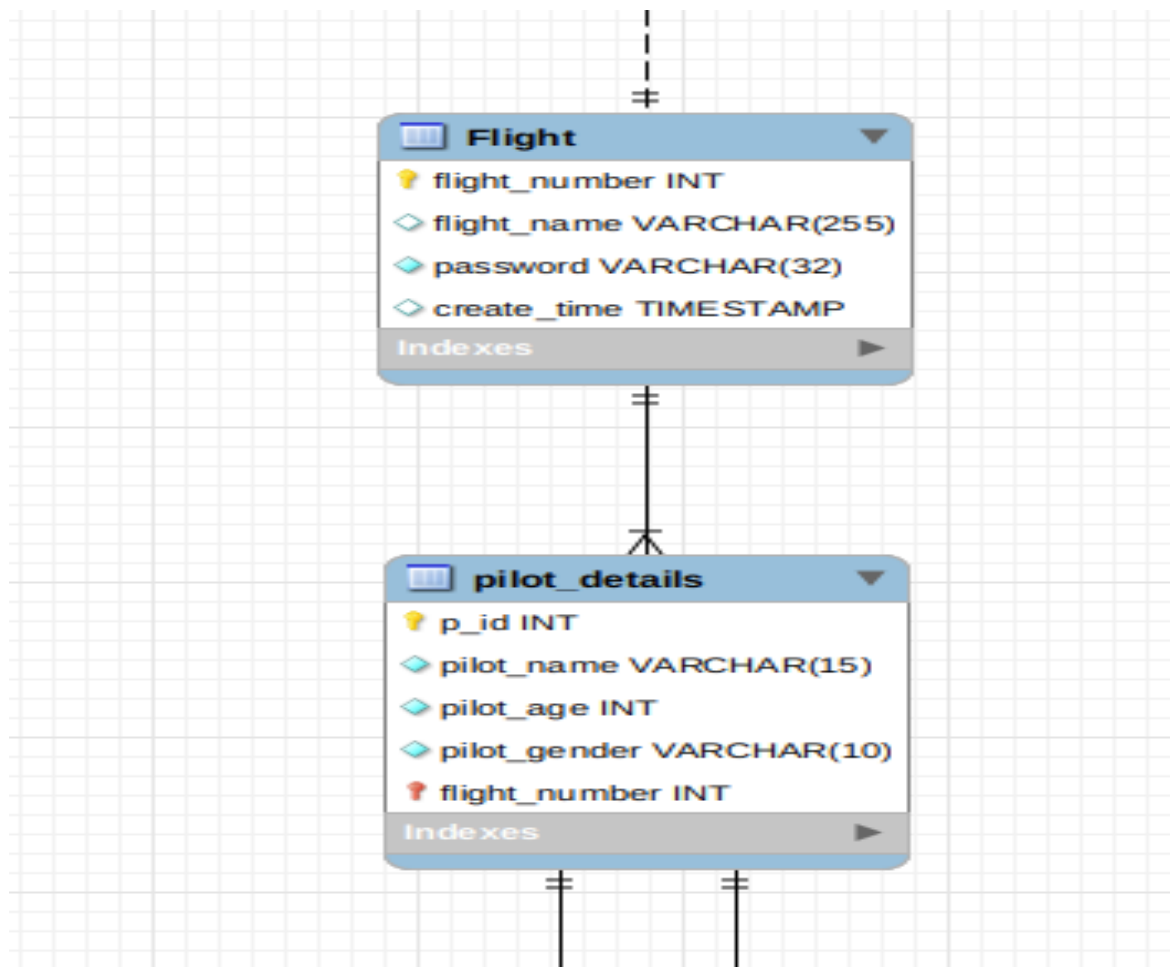
A relationship that has been associated among three entities, This type of relationship comes into picture when binary relationships are not satisfied to express the association.



Both primary keys of the entity's passenger and flight are exist in the Ticket table. That is ticket number and flight number of these enties are exist in the Ticket table. Which clearly explains the relationship between passenger and flight table using Ticket table, which has required columns of these tables. This type of relationship is called ternary relationship.

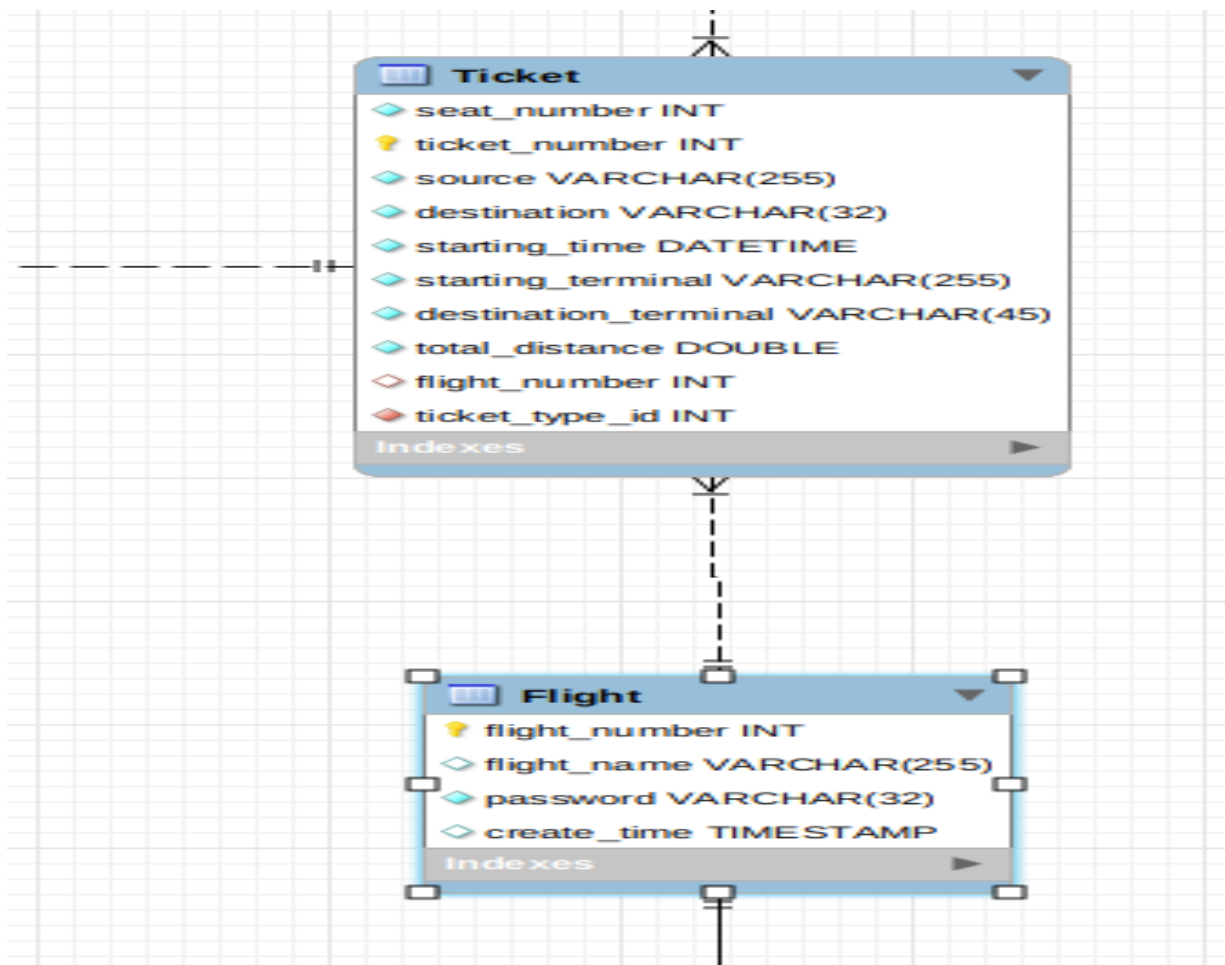
ONE-MANY RELATIONSHIP

One Flight can have more than one pilot, if we look in the other way two pilots can have same flight number, it means they have to work together in that flight, in this scenario the best way to indicate it in the ER diagram using one to many relationships.



Many to One Relationship

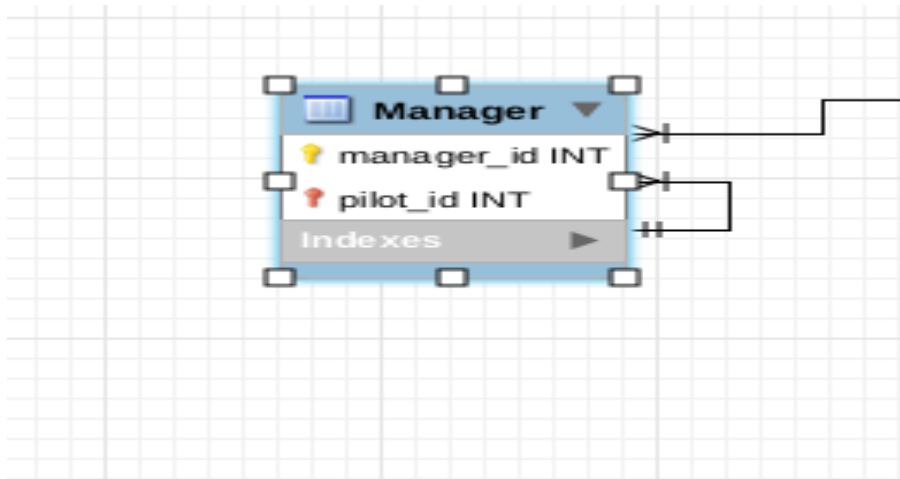
One more instance is that multiple tickets have same flight number which is also represented in the ER diagram using many to one relationship.



In the above figure if you observe ticket table has a column called flight number, so multiple tickets have same flight number which can be only represented using many to one relationship.

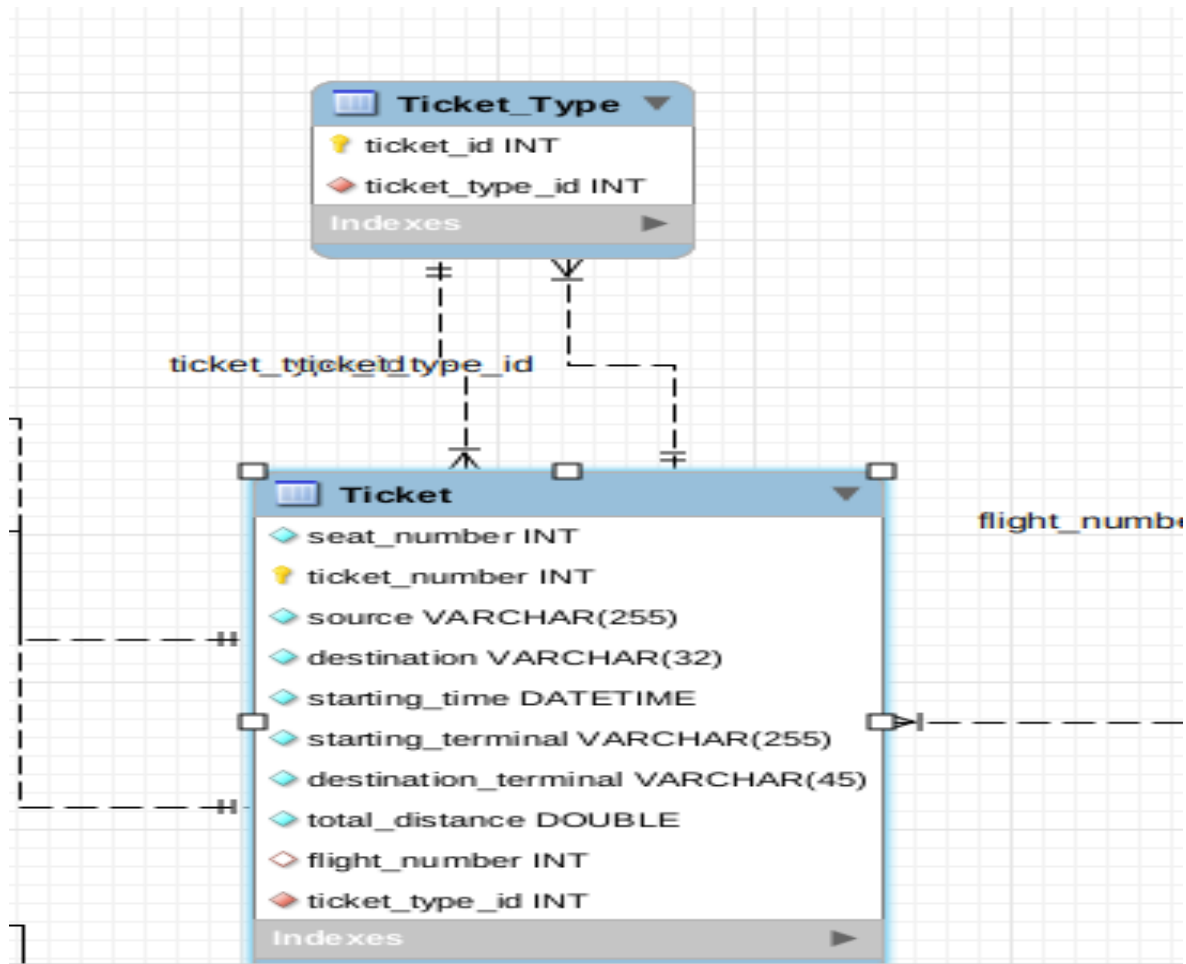
Reflexive Relation

An entity may be related to another entity is called reflexive relation.



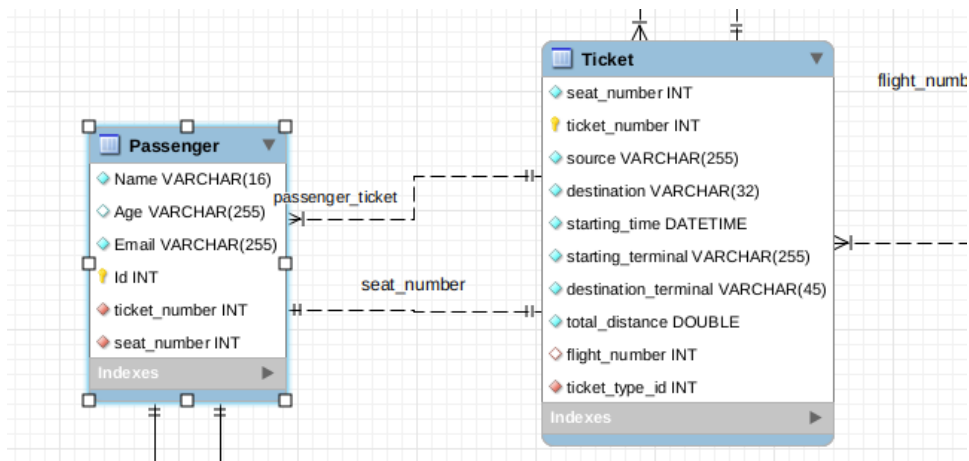
Every column of the one table is related to column in another table is called reflexive relationship. Every pilot has manager, similarly every manager has pilots working under him. The above figure shows the example of Reflexive Relationship

MANY_MANY Relationship



Above figure describes Many-Many Relationship, where ticket type has multiple tickets and aticket has multiple tickets is, which is an example of many to many relationship.

ONE-ONE Relationship



A passenger has unique seat number and a ticket has unique seat number which forms one-one relationship, the above figure shows the example of one –one relationship.