

# ER Diagram for Airline management system

An airline management system wants to implement a database application system for its passenger. The passenger should be able to view the passenger and confirm booking. The passenger should then make a payment to the airline.

## entities

- 1) Admin (Strong Entity)
- 2) Passenger (Strong Entity)
- 3) Booking (Strong Entity)
- 4) Payment (Strong Entity)
- 5) Flight (Strong Entity)

## Attributes

- 1) Admin (Adid ; Ad-Name, Phone no, Ad-Gender, Salary, Qualification, Ad-timings)

Simple Attribute : - Ad-Gender

Composite - Ad-Name (FName, LName)

Multi-Valued - Phone-no

Single-Valued - Ad-Id, Ad-DoB

- 2) Passenger (P-Name, Phone-no, P-Gender, P-DoB, P-Admin)

Simple : P-Gender

Composite: P-Name (FName, LName)

Multi-Valued - Phone-no



3) Booking : (B-id, B-date)

Single values - B-id, B-date

4) Payment : (Pay-id, Pay-Name, Pay Receiver, Pay-date)

Single values - Pay-id, Pay-date

Simple - Pay-Name, Pay-Receiver, Pay-Amount

Multivalues - Pay-mode (credit, debit, UPI)

5) Flight ~~id~~ (F-id, F-Name, F-destination,  
F-timing, F-Source, F-Dest)

Single-Values - F-id, F-date, F-timing

Simple - F-Name, F-destination, F-Source

### Relations

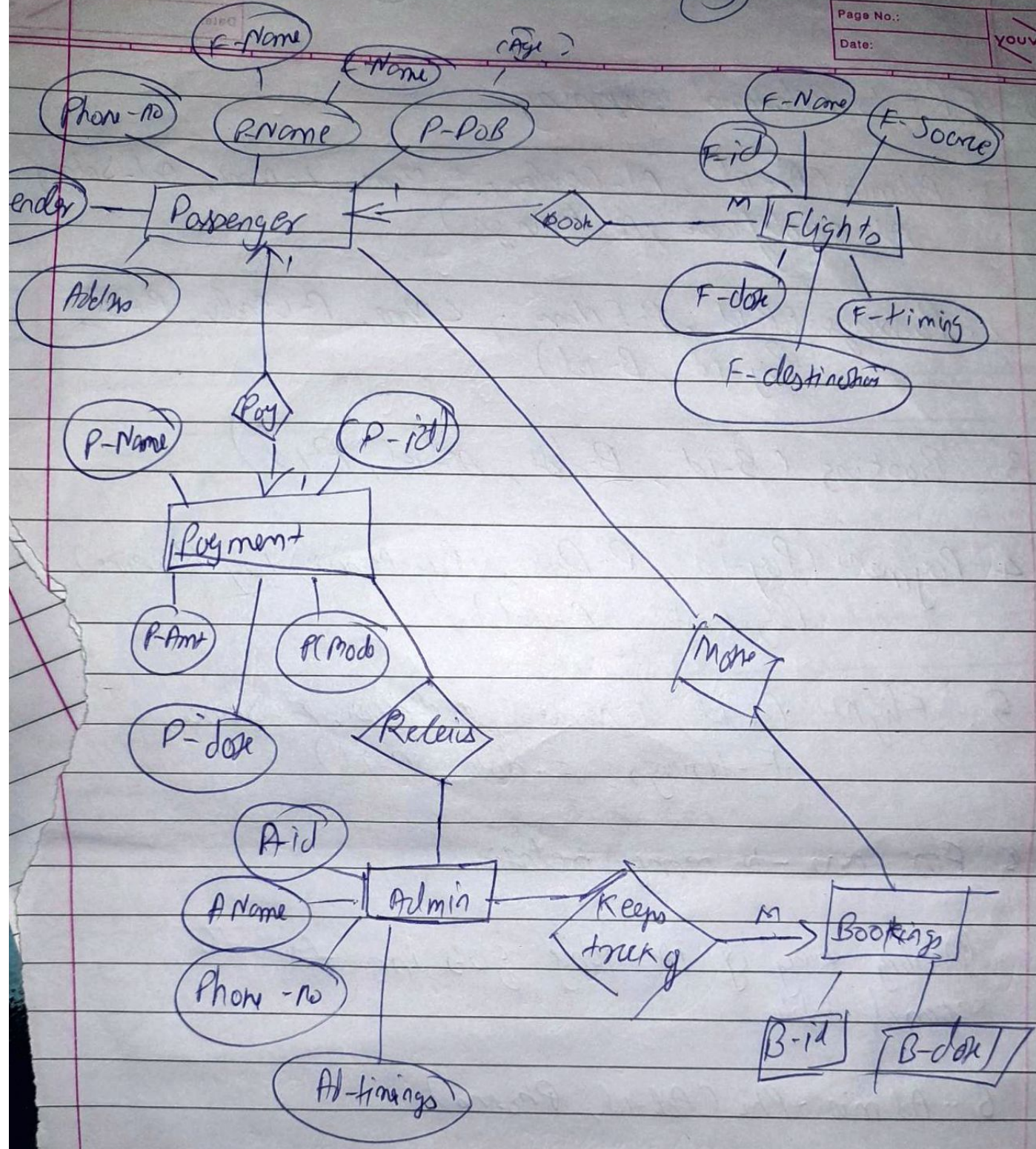
1. Passenger books flight
2. Admin keep track of bookings
3. Passenger pay the payment
4. Admin receive payment
5. Passenger make booking.

### Mapping cardinalities

1. one passenger can book multiple flights
2. one admin keep track of multiple bookings
3. one passenger make one payment
4. one passenger cross one booking.



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Q1.6 ER-to Relational mapping

1. Admin (Aid, A-Gender, A-Name, A-Salary, A-Education, A-Timings)
2. Passenger (Pid, P-FName, P-Name, P-Gender, PDOB, Pay-id, B-id)
3. Booking (B-id, B-Date, A-id, P-id)
4. Payment (Pay-id, P-DOB, Pay-Name, Pay-Receiver, Pay-Amt, P-id)
5. Flight (F-id, F-Name, F-Destination, F-Distance, F-Timings, F-Date, P-id)

6 For one-to many relation

Primary key of 1st table goes into the second table

6. Admin-Pho (Aid-id, Phone)
7. Pass Pho-- (P-id, Phone-no)
8. Payments made (Payid - P-name)



Q2

R(A, B, C, D, E)

$R_1(A, B, C) \leftarrow R_2(C, D, E)$

$F = A \rightarrow B, C \rightarrow E, B \rightarrow D, E \rightarrow A$

perform cartesian join on  $R_1$  &  $R_2$

$FD(R_1) = A \rightarrow B$

i.e.  $A \rightarrow B \leftarrow A \rightarrow C$  - applicable

$C \rightarrow E$  not applicable coz

E is not present in  $R_1$

$B \rightarrow D$  not applicable coz

D is not present in  $R_1$

$E \rightarrow A$  not applicable coz

E not present in  $R_1$

$FD(R_2) = C \rightarrow E$

$\therefore C \rightarrow E$  not applicable coz

C is not present in  $R_2$

$B \rightarrow D$  not applicable coz B is not present in  $R_2$

$E \rightarrow A$

applicable as E & A are present in  $R_2$

$\therefore F' = F(R_1 \cup R_2)$

$\therefore A \rightarrow B, E \rightarrow A, B \rightarrow D$

The above relation is not a lossy decomposition as data is lost while decomposing.



Q2

b  $R(A, B, C, D, E)$  $F = (A \rightarrow B, B \rightarrow C, C \rightarrow D, D \rightarrow E)$ 

Identifying the Super Key

 $(A, B, C, D, E)^+ = \{A, B, C, D, E\}$ Since  $A \rightarrow B$  by decomposition discards  
 $(A, (C, D, E))^+ = \{A, B, C, D, E\}$ Also  $A \rightarrow C$  by decomposition discards $(A, D, E)^+ = \{A, B, C, D, E\}$ As  $A \rightarrow C \leftarrow C \rightarrow D$  by transitivity $A \rightarrow D$  discards $(A, E)^+ = \{A, B, C, D, E\}$  $A \rightarrow D$  by transitivity $\leftarrow D \rightarrow E$  by transitivity $(A)^+ = \{A, B, C, D, E\}$ 

dependency among non-prime attributes



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Q3

$T_1 = R_1(A) \quad W_1(A) \quad (AW_1(B))$   
 $T_2 = R_2(A), W_2(A), R_2(A), R_2(B), W_2(B)$

The given schedule is in a conflict is not conflict serializable

Conflict serializability mean that the concurrent schedule should occur in a pot as though they are a serial schedule

For a conflict to occur in a pot as in the above given transactions  $T_1$  &  $T_2$   
 A read (A) of the same



Q3C

emp (eid, ename, esal, edes)  
 dept (did, dname, di)  
 work for(emp id, dept id)

- create table emp (eid number, ename varchar2(30), esal number, edes varchar2(30), primary key (eid))
- select ename, esal from emp
- select \* from emp where ename like 'A%'
- select ename, esal
- alter table work for dept cascade  
emp id, dept id