

# Airport Management System

## Group Details (G3 2):

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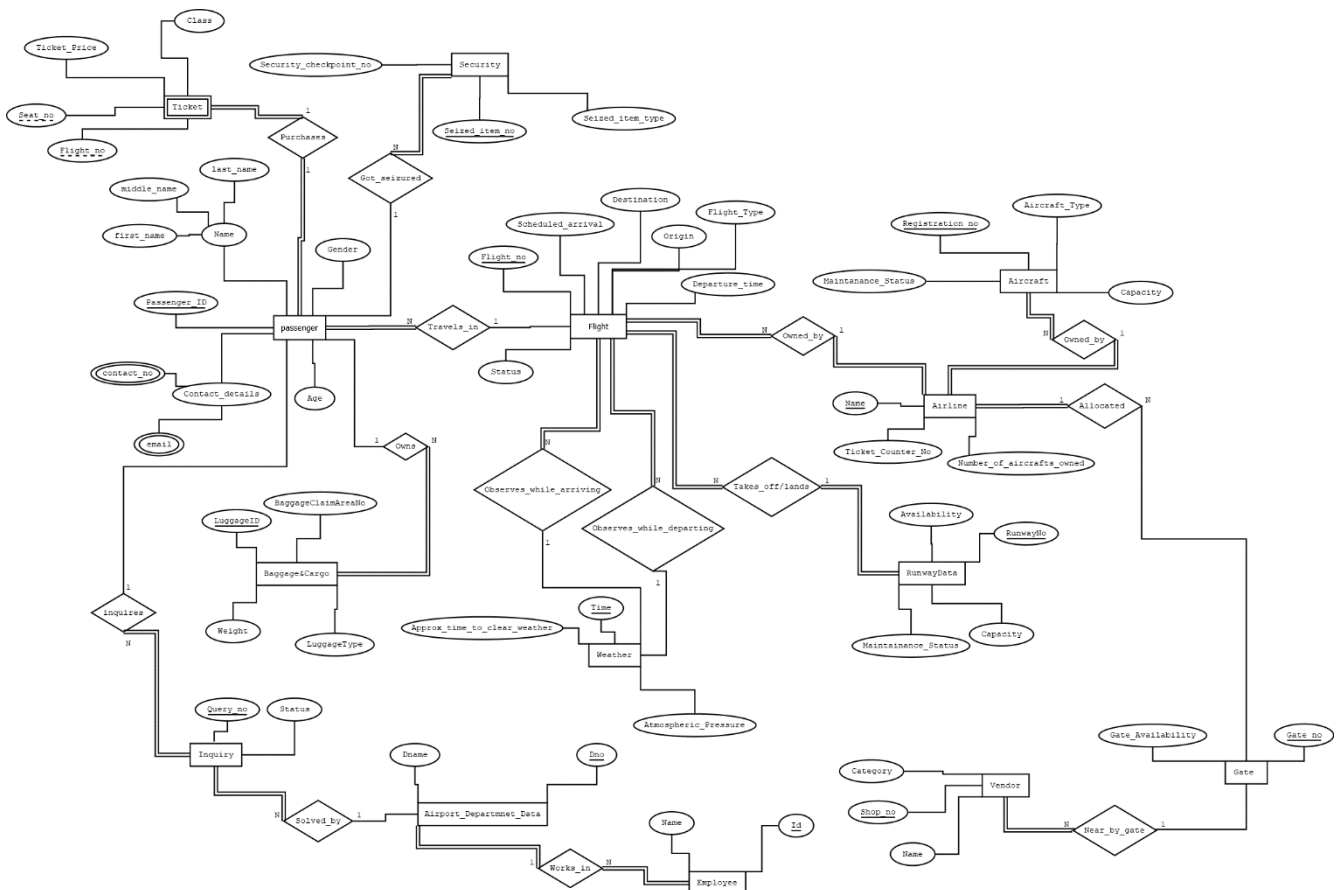
202101181-Juhi Andharia

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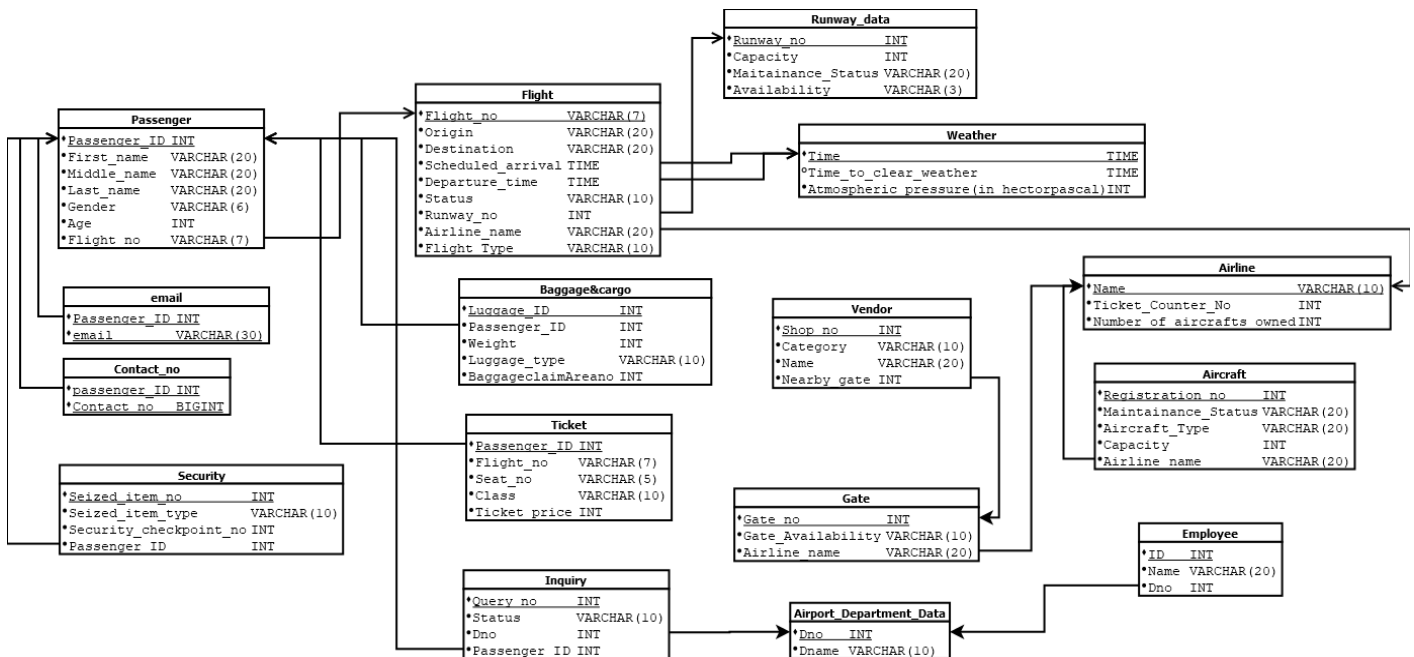
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Representative Contact Number - 9925787749

## ER Diagram:



## Relational Schema:



## FDs and Normalization Proof:

- ➔ We know that the relation is in BCNF, if the determinant of every functional dependency which holds on a relation is a super key of that relation.  
Here we can see that,

- **Passenger:**

Passenger\_ID -> {First\_name, Middle\_name, Last\_name, gender, age, flight\_no}

In the Passenger relation, Passenger\_ID is the key and it determines all the other attributes of the relation Passenger. So we can confirm that this relation is in BCNF.

- **Email:**

$\{\text{Passenger\_ID}, \text{email}\} \rightarrow \{\text{Passenger\_ID}, \text{email}\}$

In the Email relation,  $\{\text{Passenger\_ID}, \text{email}\}$  is the key and it determines all the other attributes of the relation Email. So we can confirm that this relation is in BCNF.

- **Contact\_no:**

$\{\text{Passenger\_ID}, \text{Contact\_no}\} \rightarrow \{\text{Passenger\_ID}, \text{Contact\_no}\}$

In the Contact\_no relation,  $\{\text{Passenger\_ID}, \text{Contact\_no}\}$  is the key and it determines all the other attributes of the relation Contact\_no. So we can confirm that this relation is in BCNF.

- **Flight:**

$\text{Flight\_no} \rightarrow \{\text{Origin}, \text{Destination}, \text{Scheduled\_arrival}, \text{Departure\_time}, \text{Runway\_no}, \text{Airline\_name}, \text{Flight\_type}, \text{status}\}$

In the flight relation, flight\_no is the key and it determines all the other attributes of the relation flight. So we can confirm that this relation is in BCNF.

- **Ticket:**

$\text{Passenger\_ID} \rightarrow \{\text{flight\_no}, \text{seat\_no}, \text{class}, \text{ticket\_price}\}$

In the Ticket relation, passenger\_ID is the key and it determines all the other attributes of the relation Ticket. So we can confirm that this relation is in BCNF.

- **Airline:**

Name -> {ticket\_counter\_no, number\_of\_aircrafts\_owned}

In the Airline relation, name is the key and it determines all the other attributes of the relation Airline. So we can confirm that this relation is in BCNF.

- **Aircraft:**

Registration no -> {Maintenance\_Status, Aircraft\_Type, Capacity, Airline\_name}

In the Aircraft relation, Registration\_no is the key and it determines all the other attributes of the relation Aircraft. So we can confirm that this relation is in BCNF.

- **Security:**

Seized\_item\_no -> {Seized\_item\_type, Security\_checkpoint\_no, Passenger\_ID}

In the Security relation, seized\_item\_no is the key and it determines all the other attributes of the relation security. So we can confirm that this relation is in BCNF.

- **Baggage\_and\_cargo:**

Luggage\_ID -> {Passenger\_ID, flight\_no, Luggage\_type, weight, baggageclaimarea}

In the Baggage\_and\_cargo relation, Luggage\_ID is the key and it determines all the other attributes of the relation Baggage\_and\_cargo. So we can confirm that this relation is in BCNF.

- **Inquiry:**

Query\_no -> {Passenger\_Id, status, dno}

In the Inquiry relation, Query\_no is the key and it determines all the other attributes of the relation Inquiry. So we can confirm that this relation is in BCNF.

- **Runway\_Data:**

Runway\_no -> {Capacity, Maintainance\_status, Availability}

In the Runway\_Data relation, runway\_no is the key and it determines all the other attributes of the relation Runway\_Data. So we can confirm that this relation is in BCNF.

- **Weather:**

Time -> {Time\_to\_clear\_weather, Atmospheric\_pressure}

In the Weather relation, Time is the key and it determines all the other attributes of the relation weather. So we can confirm that this relation is in BCNF.

- **Vendor:**

Shop\_no -> {Category, name, nearyby\_gate}

In the Vendor relation, shop\_no is the key and it determines all the other attributes of the relation Vendor. So we can confirm that this relation is in BCNF.

- **Gate:**

Gate\_no -> {Gate\_availability, airline\_name}

In the Gate relation, gate\_no is the key and it determines all the other attributes of the relation Gate. So we can confirm that this relation is in BCNF.

- **Airport\_department\_data:**

Dno -> dname

In the Airport\_department\_data relation, Dno is the key and it determines all the other attributes of the relation Airport\_department\_data. So we can confirm that this relation is in BCNF.

- **Employee:**

Id -> {name, dno}

In the Employee relation, ID is the key and it determines all the other attributes of the relation Employee. So we can confirm that this relation is in BCNF.

➔ So, We can see that all the relations are in BCNF.