

# Analysis of Normal Form (BCNF):

Let's analyze each relation, including the newly added LUGGAGE relation, to determine if they are in Boyce-Codd Normal Form (BCNF):

PASSPORT DETAILS, PASSENGER DETAILS, BOARDING PASS DETAILS, FLIGHT DETAILS, EMPLOYEE, LUGGAGE: In these relations, the primary key is a single attribute, and it determines all other attributes. Therefore, for every functional dependency  $X \rightarrow Y$ ,  $X$  (the primary key) is a superkey. Thus, these relations are in BCNF.

CREW DETAILS: The primary key is a composite key (EmployeeID, FID). The only FD is EmployeeID, FID  $\rightarrow$  post. The left side of this FD (EmployeeID, FID) is the primary key (and therefore a superkey). Thus, this relation is in BCNF.

SECURITY CHECK: The primary key is a composite key (passengerID, SecurityID). The only FD is passengerID, SecurityID  $\rightarrow$  passed or not. The left side of this FD (passengerID, SecurityID) is the primary key (and therefore a superkey). Thus, this relation is in BCNF.

## CONCLUSION:

Based on the provided functional dependencies and identified primary keys, all the given relations are indeed in Boyce-Codd Normal Form (BCNF). This indicates a high level of data normalization, minimizing redundancy and anomalies.