flight_id	date	destination	arrange_time	plane_id	reserved_seat	available_seat
102	05.05.2021	IST	09:00	Boeing 727	124	41
329	05.05.2021	IZM	09:10	DC9	269	0
507	05.05.2021	ANK	12:45	Boeing 747	372	68
102	05.05.2021	IST	09:00	DC9	188	60
329	05.05.2021	IZM	09:10	DC9	230	18
507	05.05.2021	ANK	12:45	DC9	157	91
329	05.05.2021	IZM	09:10	Boeing 727	131	34

(INF)

flight_id, date → reserved_seat

reserved_seat → available_seat

flight_id → destination, date, arrange_time, plane_id

plane_id → reserved_seat, available_seat

2NF;

FLIGHT_DATE (flight_id, date, reserved_seat)

SEAT (reserved_seat, available_seat) --> we should remove this. If $\alpha \to \beta$, α should be PK!

FLIGHT_ARRANGE (flight_id , destination, date , arrange_time, plane_id)

RESERVED_PLANE (reserved_seat , available_seat), plane_id, flight_id)

F: flight_id, date → reserved_seat
reserved_seat → available_seat
flight_id → destination , date, arrange_time, plane_id.
plane_id → reserved_seat, available_seat

Fc: $(flight\_id, date)^+$ = flight_id, date, reserved_seat (R_1)
$(reserved\_seat)^+$ = reserved_seat, available_seat (R_2)
$(flight\_id)^+$ = flight_id, destination, date, arrange_time, plane_id (R_3)
$(plane\_id)^+$ = plane_id, reserved_seat, available_seat. (R_4)

decomposition:

$R_1 \cap R_2 = \{\emptyset\}$
$R_1 \cap R_3 = \{flight\_id, date\}$
$R_1 \cap R_4 = \{reserved\_seat\}$
$R_2 \cap R_3 = \{\emptyset\}$
$R_2 \cap R_4 = \{reserved\_seat, available\_seat\}$

$(flight\_id, date)^+$ = flight_id, date, reserved_seat (dependency), (lossless)
$(reserved\_seat)^+$ = reserved_seat, available_seat (dependency), (lossless)
$(reserved\_seat, available\_seat)^+$ = reserved_seat, available_seat (not dependency)

BCNF;

reserved_seat → available_seat
plane_id → reserved_sed, available_seat → i don't need this. Because I've already a relation to achieve to available_seat. So that new form of the table will be;

flight_id, date → reserved_seat
reserved_seat → available_seat
flight_id → destination, date, arrange_time, plane_id.
plane_id → reserved_seat