1. FLIGHT-TIMETABLE

FLIGHT#	DEPART	ORIGIN		DESTINATION		ARRIVAL	PLANE TYPE	MAX SEATS
		AIRPORT	COUNTRY	AIRPORT	COUNTRY			
BA687	07:30	Heathrow	UK	Arlanda	Sweden	09:20	TriPlus	275
AF471	08:20	Orly	France	JFK	USA	11:20	XBus	420
SA572	10:15	Heathrow	UK	Arlanda	Sweden	12:05	707S	185
BA242	11:20	Heathrow	UK	Orly	France	12:00	TriPlus	275
PA109	12:10	Gatwick	UK	O'Hare	USA	15:20	XBus	420

Primary key: FLIGHT#

TIMETABLE is NOT in 1NF

TIMETABLE (.....**ORIGIN** (AIRPORT, COUNTRY), **DESTINATION** (AIRPORT, COUNTRY).....)

1NF-**TIMETABLE** (FLIGHT#, DEPART, ORIG-PORT, ORIG-COUNTRY, DEST-PORT, DEST-COUNTRY, ARRIVAL, TYPE, SEATS)

Functional dependencies:

ORIG-PORT --> ORIG-COUNTRY
DEST-PORT --> DEST-COUNTRY
TYPE --> SEATS

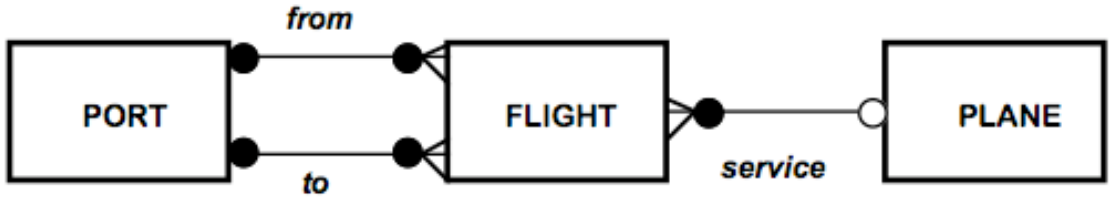
and, of course, all non-prime attributes functionally dependent on FLIGHT#

Decomposition results:

FLIGHT (FLIGHT#, DEPART, ORI-PORT, DEST-PORT, ARRIVAL, TYPE)
PLANE (TYPE, SEATS)
PORT1 (ORIG-PORT, ORIG-COUNTRY)
PORT2 (DEST-PORT, DEST-COUNTRY)

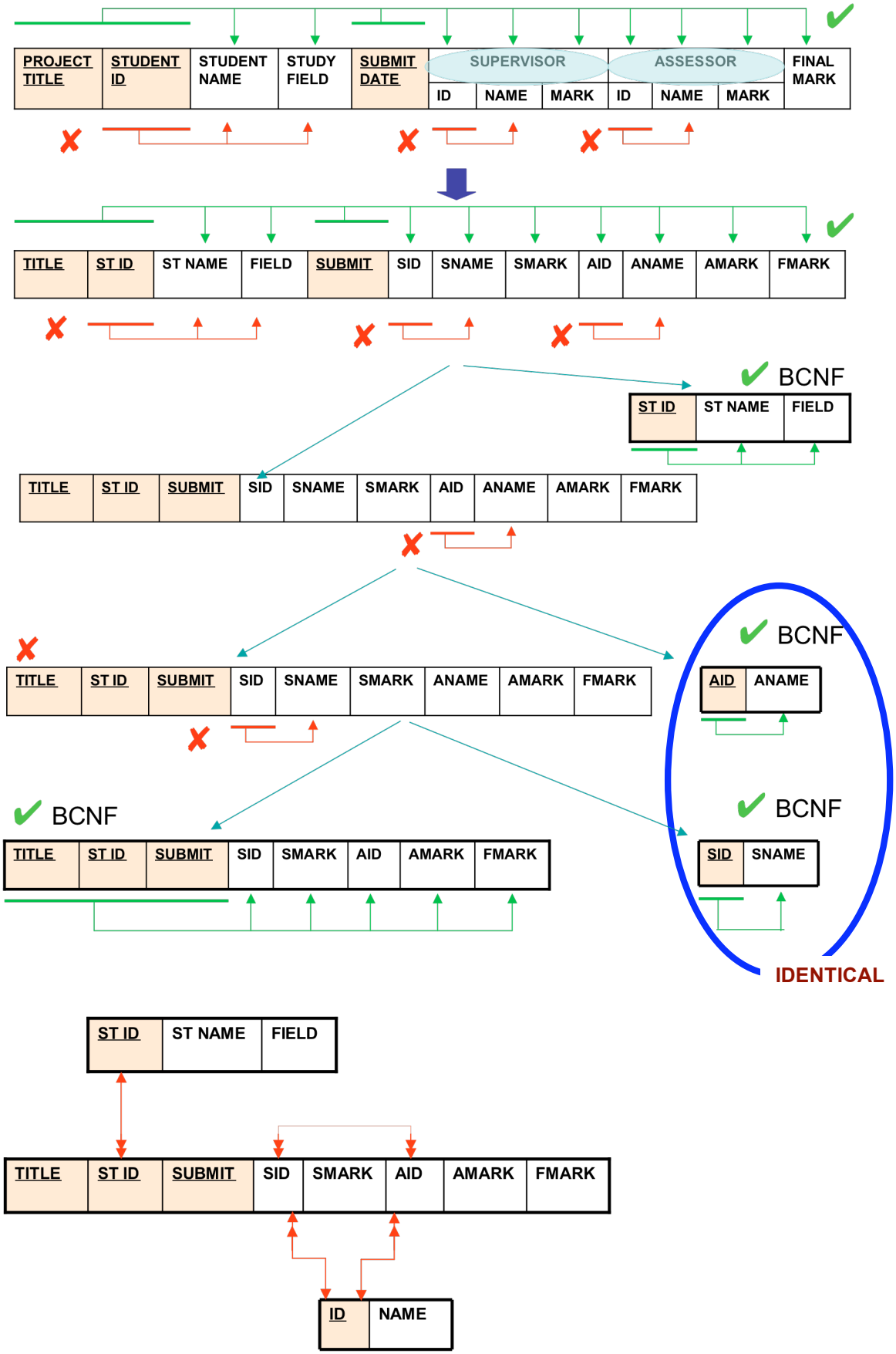
but PORT1 = PORT2 as long as each airport serves for both landing and taking-off.

EAR diagram:



2. PROJECT_ASSESSMENT

PROJECT TITLE	STUDENT ID	STUDENT NAME	STUDY FIELD	SUBMIT DATE	SUPERVISOR			ASSESSOR			FINAL MARK
					ID	NAME	MARK	ID	NAME	MARK	
Opera DB	S1234567	Drake	Co Sc	4-01-05	L23	Smith	87	L65	Jones	72	82



3. RESIDENCE

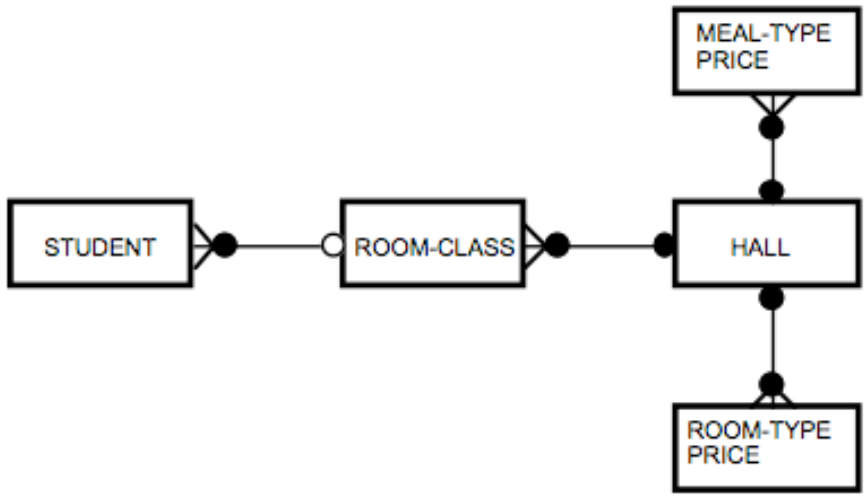
ST#	STNAME	FIIELD	HOME	HALL	LOCATION	ROOM#	RMTYPE	RATE	MEAL	CHARGE

Primary key: **ST#**
RESIDENCE in 2NF (is in 1NF as all attributes atomic and has a single attribute key)

Functional dependencies (FIRST CASE):
HALL --> LOCATION (HALL, RMTYPE) --> RATE
(HALL, ROOM#) --> RMTYPE (HALL, MEAL) --> CHARGE
and all non-prime attributes functionally dependent on ST#

Decomposition results:
(ST#, STNAME, FIELD, HOME_AD, HALL, ROOM#, MEAL) - student-details, place in hall, choice of meal
(HALL, LOCATION) - where are the halls
(HALL, MEAL, CHARGE) - how much for any choice of accomodation in that hall
(HALL, ROOM#, RMTYPE) - what is the type of any room in any hall
(HALL, RMTYPE, RATE) - how much for any type of room in that hall

EAR-diagram



Functional dependencies (SECOND CASE):
HALL --> LOCATION RMTYPE --> RATE
MEAL --> CHARGE (HALL, ROOM#) --> RMTYPE (and hence - by transitivity - to RATE)
and, as previously, all non-prime attributes functionally dependent on ST#

Decomposition results:
(ST#, STNAME, FIELD, HOME_AD, HALL, ROOM#, MEAL) - student-details, place in hall, choice of meal
(HALL, LOCATION) - where are the halls
(MEAL, CHARGE) - how much for any choice of accomodation (all halls)
(HALL, ROOM#, RMTYPE) - what is the type of any room in any hall
(RMTYPE, RATE) - how much for any type of room (all halls)

EAR diagram: