CSCI 475
homework 1
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1> Based on entity, identify the primary key

- For the 'CHARTER' table, primary key could be 'CHARTER.CHAR_TRIP'.
- For the 'AIRCRAFT' table, primary key could be 'AIRCRAFT.AC_NUMBER'.
- For the 'PILOT' table, primary key could be 'PILOT.EMP_NUM'.
- For the 'EMPLOYEE' table, primary key could be 'EMPLOYEE.EMP_NUM'.
- For the 'CUSTOMER' table, primary key could be 'CUSTOMER.CUS_NUM'.

2) For each entity, identify foreign key and the entity it references.

a) In the 'CHARTER' table:

→ 'CHARTER.PILOT' and 'CHARTER.COPILOT' may reference the 'PILOT.EMP_NUM', since they appear to be employee numbers for pilots, making them foreign keys to the 'PILOT' entity.

→ 'CHARTER.AC_NUMBER' seems to reference to 'AIRCRAFT.AC_NUMBER. It's a foreign key to 'AIRCRAFT' entity.

→ 'CHARTER.CUS_CODE' likely refers to 'CUSTOMER.CUS_CODE', indicating a foreign key relationship to 'CUSTOMER' entity.

b) In the 'AIRCRAFT' table:

→ 'AIRCRAFT.MOD_CODE' might reference 'MODEL.MOD_CODE, suggesting a foreign key relationship to 'MODEL' ntity.

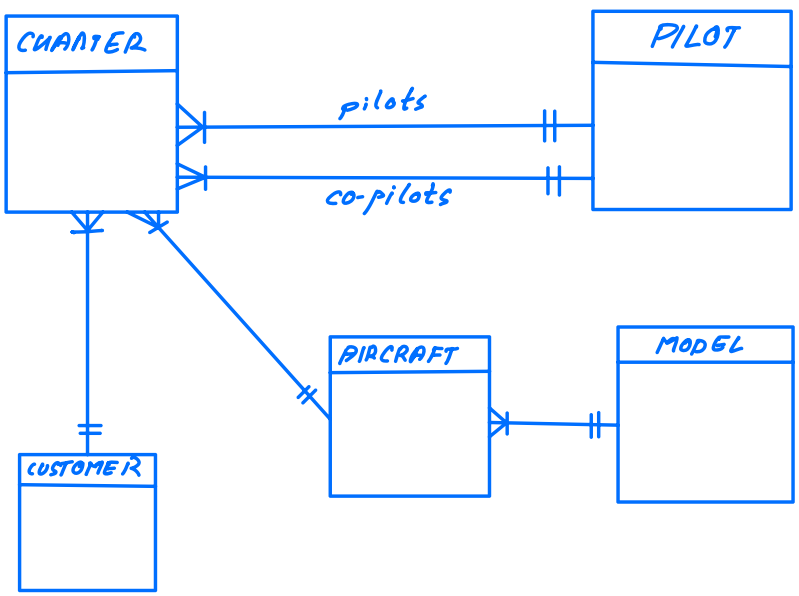
c) In the 'EMPLOYEE' table:

→ If employees can be a pilot, 'EMPLOYEE.EMP_NUM' might correspond to 'PILOT.EMP_NUM', suggesting a foreign key relationship to 'PILOT' entity.

d) In the 'CUSTOMER' table:

→ The 'CUSTOMER' table seems to be at one-to-many relationship, with 'CUSTOMER.CUS_CODE' likely being referenced by other tables.

3> Based on your answers in 2, draw the ERD using Crow's Foot Notation.



4. Give the SQL statement as well as the table that would result from applying the SELECT relational operator to the CHARTER table to return only the CHAR_PILOT, and CHAR_COPILOT attributes for charters flown to St. Louis, MO (STL). Results should contain 3 records.

SQL statement :

```
SELECT CHAR-PILOT, CHAR_COPILOT
FROM CHARTER
WHERE CHAR_DESTINATION = 'STL';
```

Table :

CHAR_PILOT	CHAR_COPILOT
106	0
109	101
101	109

Questions 5. – 8. may use NATURAL JOIN as well as some combination of AND & OR

5. Give the SQL statement as well as the table that would result from applying the SELECT & NATURAL JOIN relational operators to the EMPLOYEE, CHARTER, and CUSTOMER tables to return only the EMP_LNAME, CHAR_TRIP, CUS_LNAME attributes for the pilots and co-pilots flying charters to St. Louis, MO (STL). Results should contain 5 records.

SQL statements :

```
SELECT E.EMP_LNAME, C.CHAR_TRIP, CU.CUS_LNAME
FROM EMPLOYEE_324 E
JOIN CHARTER C ON E.EMP_NUM = C.CHAR_PILOT
   OR E.EMP_NUM = C.CHAR_COPILOT
JOIN CUSTOMER CU ON C.CUS_CODE = CU.CUS_CODE
WHERE C.CHAR_DESTINATION = 'STL';
```

Table :

EMP_LNAME	CHAR_TRIP	CUS_LNAME
Duzak	10004	Smith
Lewis	10006	Williams
Travis	10006	Williams
Lewis	10017	Orlando
Travis	10017	Orlando

6. Give the SQL statement as well as the table that would result from applying SELECT & NATURAL JOIN relational operators to the CHARTER and CUSTOMER tables to return only the CHAR_TRIP, CUS_LNAME and CHAR_DESTINATION attributes for charters flown by pilot 109. Note that 109 is sometimes the pilot and other times the co-pilot. Display all these flights. Results should contain 6 records.

SQL Statements :

```
SELECT C.CHAR_TRIP, CU.CUS_LNAME, C.CHAR_DESTINATION
FROM CHARTER C
JOIN CUSTOMER CU ON C.CUS_CODE = CU.CUS_CODE
WHERE C.CHAR_PILOT = '109' OR C.CHAR_COPILOT = '109';
```

Table :

CHAR_TRIP	CUS_LNAME	CHAR_DESTINATION
10003	Orlando	GNV
10006	Williams	STL
10010	Brown	ATL
10011	Smith	BNA
10016	Dunne	MQY
1001F	Orlando	STL

7. Give the SQL statement as well as the table that would result from applying the SELECT & NATURAL JOIN relational operators to the CHARTER and CUSTOMER tables to return only the CHAR_TRIP, CHAR_PILOT, CHAR_COPILOT, CHAR_DATE, CHAR_DESTINATION and CUS_LNAME attributes for charters flown by either pilot 101 or pilot 109. You must consider that an employee can be either the pilot or co-pilot on any given flight. Results should contain 10 records.

SQL Statements :

```
SELECT C.CHAR_TRIP, C.CHAR_PILOT, C.CHAR_COPILOT,
       C.CHAR_DATE, C.CHAR_DESTINATION, CU.CUS_LNAME
FROM CHARTER C
NATURAL JOIN CUSTOMER CU
WHERE C.CHAR_PILOT IN ('101', '109') OR
      C.CHAR_COPILOT IN ('101', '109');
```

Table :

CHAR_TRIP	CHAR_PILOT	CHAR_COPILOT	CHAR_DATE	CHAR_DES	CUS_LNAME
10002	101	0	2024-02-05	BNA	Brown
10003	105	109	2024-02-05	ORV	Orlando
10005	101	104	2024-02-06	ATL	Dunne
10006	109	101	2024-02-06	STL	Williams
10010	109	101	2024-02-07	ATL	Brown
10011	101	109	2024-02-07	BNA	Smith
10019	101	0	2024-02-08	MOB	Ramos
10015	104	101	2024-02-08	ORV	Brown
10016	109	105	2024-02-09	MQY	Dunne
10017	101	109	2024-02-10	STL	Orlando

8. Give the SQL statement as well as the table that would result from applying the SELECT & NATURAL JOIN relational operators to the CHARTER and CUSTOMER tables to return only the CHAR_TRIP, CHAR_PILOT, CHAR_COPILOT, CHAR_DATE, CHAR_DESTINATION and CUS_LNAME attributes for charters flown by both pilot 101 and pilot 109. You must consider that an employee can be either the pilot or co-pilot on any given flight. Results should contain 4 records.

SQL statements:

```
SELECT C.CHAR_TRIP, C.CHAR_PILOT, C.CHAR_COPILOT,
       C.CHAR_DATE, C.CHAR_DESTINATION, CU_LNAME
FROM CHARTER C
NATURAL JOIN CUSTOMER CU
WHERE (C.CHAR_PILOT = '101' AND C.CHAR_COPILOT
   = '109') OR (C.CHAR_PILOT = '109' AND
   C.CHAR_COPILOT = '101');
```

Table:

CHAR_TRIP	CHAR_PILOT	CHAR_COPILOT	CHAR_DATE	CHAR_DES	CUS_LNAME
10006	109	101	2024-02-06	STL	Williams
10010	109	101	2024-02-07	ATL	Brown
10011	101	109	2024-02-07	BNA	Smith
10017	101	109	2024-02-10	ATL	Orlando