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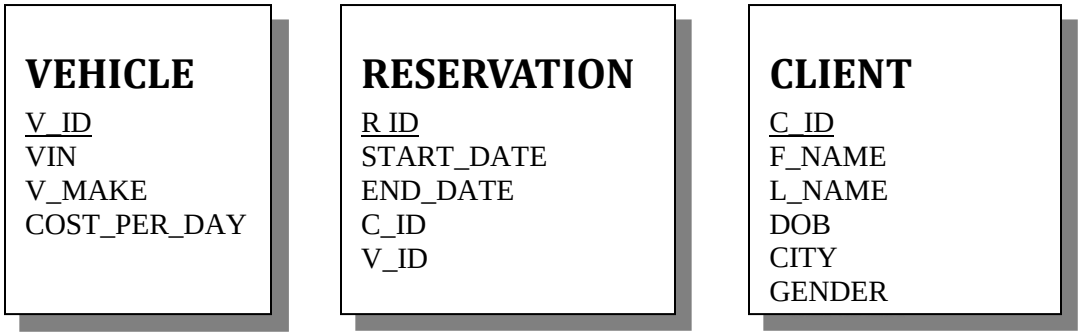
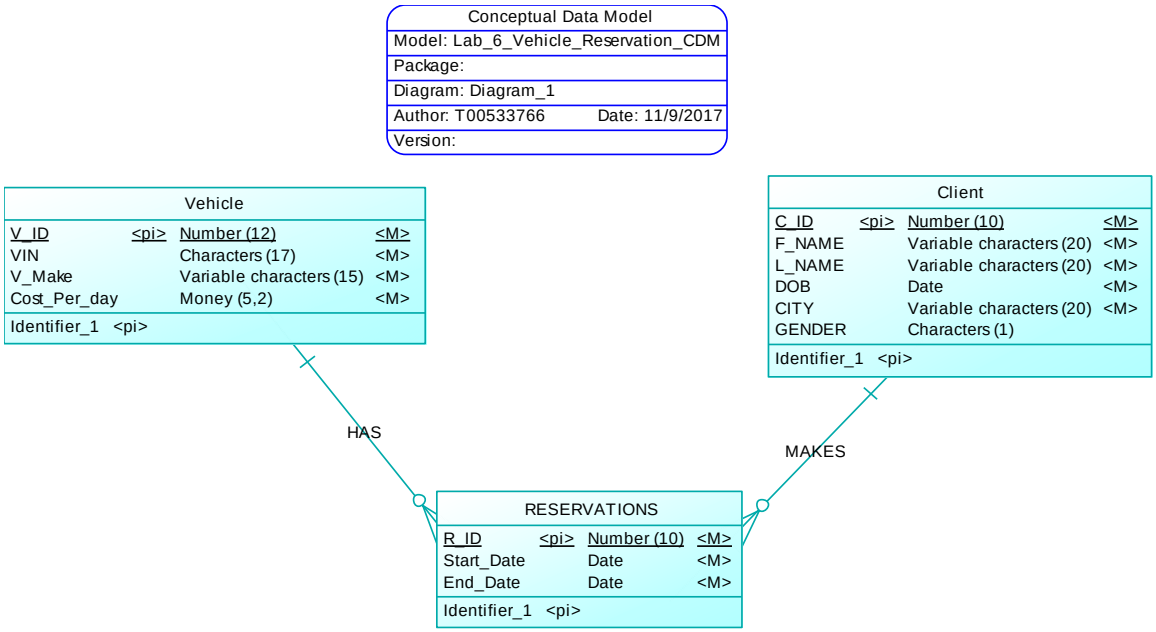
Lab 6

Business Description:

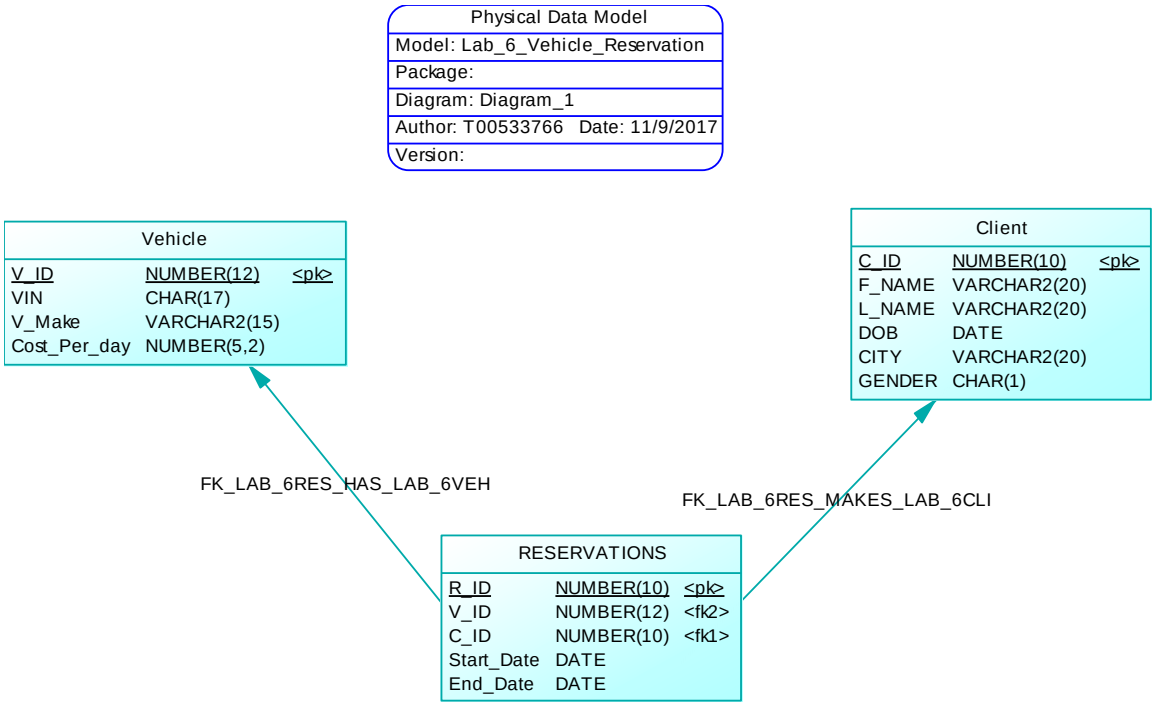
The following three tables: VEHICLE, RESERVATION, and CLIENT are used by a Vehicle Reservation System. Business rules: A vehicles may be rented **for a period of one day or many days**. A vehicle can be rented only once per day. (For example: a car returned at 15:00 on November 6 will be ready for rental for November 7).



1. Create a Conceptual Data Model (**CDM**) for the Vehicle Reservation system. Hint: Conceptual model is represented by an ERD, which has the relationships, but not the foreign keys. Use the following specification:
    a. V_ID, R_ID, and C_ID are unique numbers generated by the database system.
    b. VIN is the Vehicle Identification Number, a **17-character** serial number used by the automotive industry (e.g., 1M8GDM9A*X*KP042788).
    c. F_NAME, L_NAME, and CITY are strings of characters (maximum 20 characters), NOT NULL (mandatory).
    d. DOB is mandatory.
    e. GENDER can be NULL.
    f. COST_PER_DAY is currency (max 999.99).



2. Generate a Physical Data Model (PDM) using Oracle 10g as a DBMS (or later versions if available).



3. Generate DDL script to create the three tables. Re-write the create statements to include the integrity constraints (or other constraints if necessary). The DDL script should have three CREATE statements.

4. Execute the script using your Oracle server account. Use the USER_OBJECTS data dictionary view to list the table names and their creation date and time (ISO standard).

```
SELECT object_name,to_char(created,'YYYY-MM-DD HH:mi:ss')
    FROM USER_OBJECTS WHERE
    EXTRACT(YEAR FROM CREATED) = EXTRACT(YEAR FROM SYSDATE)
    AND EXTRACT(MONTH FROM CREATED) = EXTRACT(MONTH FROM
SYSDATE)
    AND EXTRACT(DAY FROM CREATED) = EXTRACT(DAY FROM
SYSDATE)
    AND OBJECT_TYPE = 'TABLE';
```

	OBJECT_NAME	TO_CHAR(CREATED,'YYYY-MM-DDHH:MI:SS')
1	LAB_6VEHICLE	2017-11-09 11:41:05
2	LAB_6RESERVATIONS	2017-11-09 11:41:05
3	LAB_6CLIENT	2017-11-09 11:41:05

5. BONUS Add 5 clients to the CLIENT table. One of the clients should have a name, which includes single quote (e.g., O'Brian). Oracle 11g introduced the feature of a virtual column. Write an SQL statement to add a **virtual column INITALS**. This column has values generated from the first letter of the first name and the first letter

of the last name. INITIALS are in the upper case. Write a select statement to list the clients: C_ID, F_NAME, L_NAME, and INITIALS.

```
ALTER TABLE LAB_6CLIENT
    ADD (INITIALS VARCHAR2(8) GENERATED ALWAYS AS
    (trim (' ' FROM
concat(UPPER(substr(F_NAME,0,1)),UPPER(substr(L_NAME,0,1)))
)) VIRTUAL);

SELECT c_id, f_name, l_name, initials FROM lab_6client;
```

	C_ID	F_NAME	L_NAME	INITIALS
1	100	Client 1	O'Brian	CO
2	200	Client 2	Client 2	CC
3	600	N	A	NA
4	400	Dlient 4	Client 4	DC
5	500	elient 5	Client 5	eC
6	300	Client 3	O'Brian	CO

6. BONUS Write SQL statement to list **client Ids** (C_ID), DOB, and their **age in years** (column names should be CID, Initials, DOB, Age). Use the **ISO standard for DOB**. Sort the results by age in a descending order. You can use you FUNCTION calc_age from previous labs/assignments.

```
SELECT c_id, to_char(dob,'YYYY-MM-DD')"DOB", initials,
calc_age(dob)"AGE" FROM lab_6client ORDER BY AGE DESC;
```

	C_ID	DOB	INITIALS	AGE
1	800	1980-10-25	a	37
2	200	1990-10-05	CC	27
3	400	1991-10-05	DC	26
4	300	1991-10-05	CO	26
5	500	1991-10-05	eC	26
6	100	1995-10-05	CO	22
7	600	2017-11-22	NA	0