CS 564, Spring 2017: Quiz #2

This quiz is worth 30 point. You have 30 minutes to take this quiz.

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Please fill up the table below

LAST NAME	FIRST NAME	Student ID
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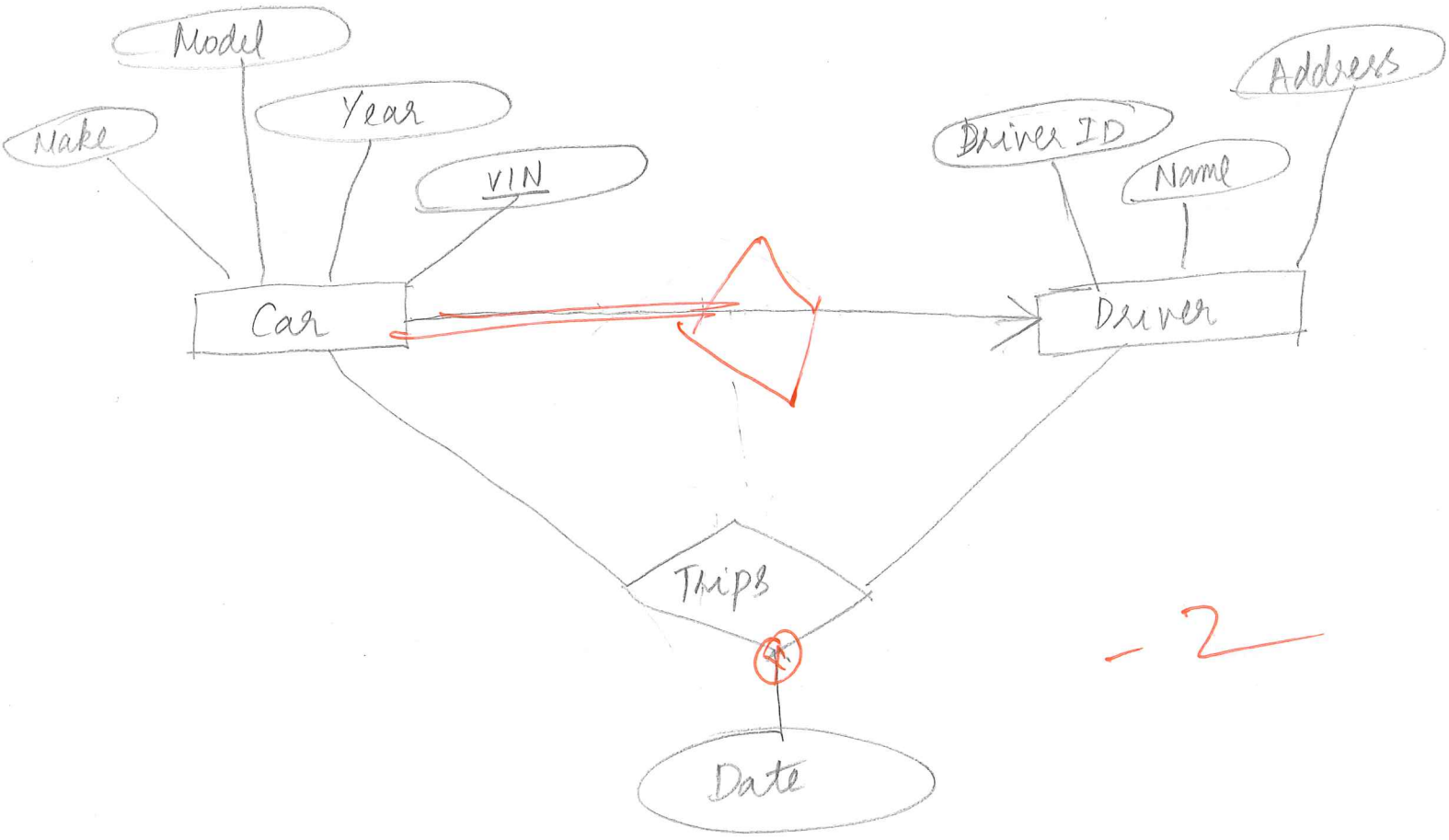
Question 1: [15 points] Draw an ER diagram to represent that following information for a self-driving car application in which you want to record the following information.

- For each **car,** record the *make*, *model*, *year* and a *unique VIN* (Vehicle Identification Number).
- Car **drivers** have a *name*, *address* and a unique *driverid*.
- Drivers own zero or more cars, and every car is owned by one or more drivers.
- We also want to record information about **trip**s. For each trip, we want to record the *driver* who was driving the car, the *car* that was driven, and the *date* on which the trip was taken.



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Question 1. [15 points] Relational Queries

Consider the following three relations for keeping track of customers, products, and purchases.

PRODUCT (**pid** INTEGER, name CHAR(80), type CHAR(1), mfgr CHAR(20), price FLOAT, PRIMARY KEY (pid))

CUST (**cid** INTEGER, cname CHAR(80), age INTEGER, sex CHAR(1), PRIMARY KEY (cid))

BUYS (**cid** INTEGER**, pid** INTEGER,
PRIMARY KEY (cid, pid),
FOREIGN KEY (cid) REFERENCES CUST,
FOREIGN KEY pid REFERENCES PRODUCT)

Write the following three queries in **SQL**. Make your answer concise, i.e. avoid joining more tables than needed.

a) **[5 points]** Select the names of products that have been purchased by at least one female customer.

```
Select P.name From Product P, Cust C, Buys B
Where (P.pid = Buys.Pid and C.cid = Buys.cid and C.sex = 'F')
Group By C.cid
Having 1 < (Select Count(*) From Cust C2 Where
            C2.cid = C.cid and C.sex = 'F');
```

b) **[5 points]** Print the product ids (pid) for which the average age of the customer is less than 25.

```
Select B.Pid From Buys B, Cust C
Where ( Select T.Average_Age From
        (Select Avg(C1.Age) As Average_Age From
Cust C1, Buys B1 Where C1.cid=B1.cid Group By B1.Pid ) As T )
        < 25;
```

c) **[5 points]** Select the names of customers who have never purchased any product that is priced over $1000.

```
Select C.cname From Cust C Where
Not Exists (Select * From Cust C1, Buys B1, Product P1
            Where C1.cid = B1.cid And P1.pid = B1.pid And
            C.cname = C1.cname And P1.Price > 1000)
```