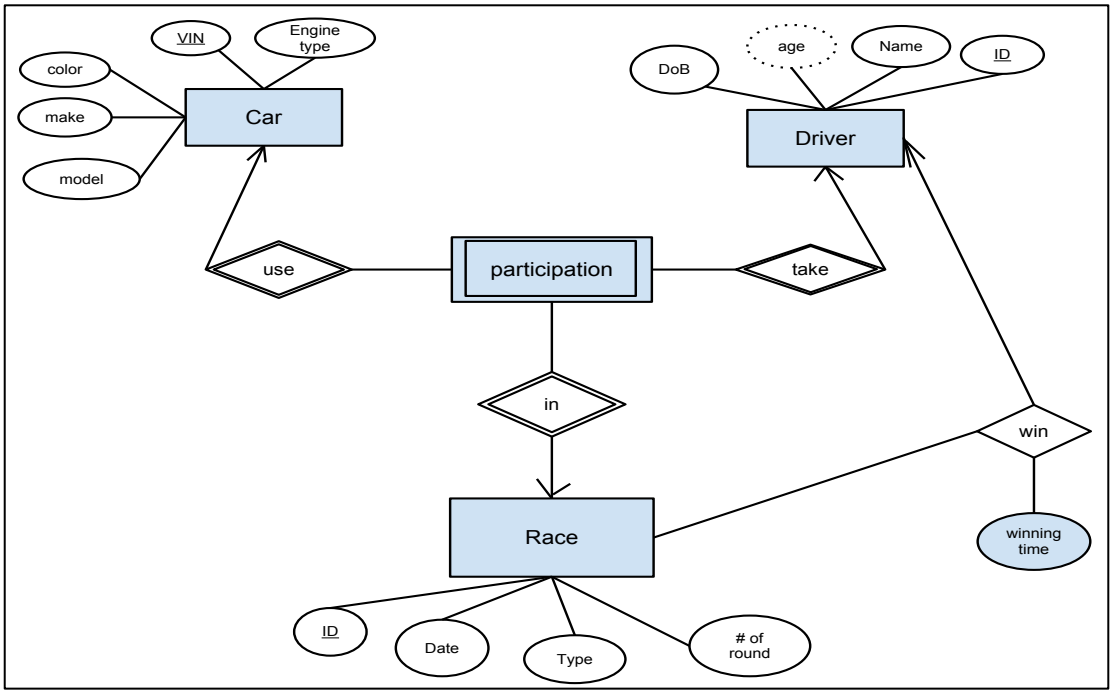
Student Name:

CS3431: Database Systems I
C-Term 2013, Quiz 2

The ERD given below captures the ***car race database*** given in Quiz 1 with the same requirements as below:

- We have cars, for each car we keep its VIN number (unique ID), engine type, color, make, and model
- We have drivers, for each driver we keep ID (unique), name, DoB, age
- Drivers use cars to enter races, each race has some attributes such as the race number (unique ID), race type, the number of rounds, and date.
- Each driver can enter many races and can use the same car or different one in each race. Thus the same car can participate in many races.
- In the design, we want to capture which car is used by which driver and in which race.
- We also need to capture the winner of each race (the driver who won the race) and the winning time (the time taken to finish and win the race).



Question1 (10 Points)

Convert The above ER diagram to its relational model. You are only required to put the relations in the form of: R(A1,A2, …An), and underline the primary key attribute(s).

Question 2 (10 Points) (Relational Algebra)

Given the following relations:

Student(Student_ID, name, start_year) // Student Info

Department(Dept_ID, name) // Departments Info

Course(Course_ID, Title, Dep_ID, Num_Credits) // Course Info

Registration(Student_ID, Course_ID, year, grade) // Students take courses in certain year and
// obtain a certain grade (A, B, C, D)

Write the algebraic expression for the following queries:

Q1 (3 Points): Select the names of students who started in year 2010.

Q2 (3 Points): Select the IDs of students who started in year 2010 or registered in courses in year 2010.

Q3 (4 Points): Select the course Id and Title offered by department name "Computer Science"