Assignment 1

Due: Sun 3 April, 23:59

Question 1 (3 marks)

Fox Sports has hired you to develop a small database to store the information about English Premier League. They have given you the following requirements:

- Teams are identified by names, and for each team we want to record the official website, the founded time, current owner, and the seasons that the team won the champion of the league. For example, the name of Chelsea is "Chelsea F.C.", founded in March, 1905, and its owner is "Roman Abramovich". Chelsea won the champion in 2009-10, 2014-15, ...
- A team has exactly one home stadium.
- Stadium is identified by its name. For each stadium we also record its address, capacity and opened year. For the address, we record street name and city. For example, Old Trafford, its address is "Sir Matt Busby Way, Manchester", its capacity is 75635 and was opened in 1909.
- A team has at least 11 players, and a player plays for exactly one team.
- A team has exactly one manager, and a manager manages exactly one team. For example, Wenger is the manager of Arsenal currently.
- Every player has a number and a playing position. For example, Sergio Aguero has a number 10 and his position is Striker.
- Every manager, we record the times of UEFA Champions League has won.
- Both players and manager are types of employees.
- For each employee, we store a name, age, salary, place of birth, unique employee ID. For the place of birth, the name of city and the name of country are needed.
- Each team has one captain.
- Each team plays matches with other teams. For each match played between two teams, we store the time and the score.

Draw an ER diagram to represent this scenario, and clearly state the assumptions you make if any.

Question 2 (4 marks)

(1). (2 marks) Draw an ER diagram based on the following specifications about a moving company. State your assumptions if any.

- The company has multiple moving teams, identified by their team id. Team name and member number are also recorded.
- Each team has several employees, only one of which is the team leader, and several vehicles.
- An employee can work only in one team and is identified by his/her id. We also need to record their name, phone number and salary. Drivers and team leader are employees as well. Each leader can only lead one team to guarantee work quality.

- Each vehicle is identified by its plate number. Its model, colour and purchase date are also recorded. Each vehicle has different drivers and a driver may drive different vehicles.
- There are different maintenance projects for all the vehicles. A vehicle can take part in multiple projects with maintenance date and price recorded.
- The company receives orders identified by order ID, from location, to location, moving date, moving size and price. Each order is conducted by only one team and a team can conduct multiple orders.

(2). (2 marks) Convert the above ER-diagram into a relational model.

Question 3 (3 marks)

(1) (1.5 mark) Given a relation schema R with n attributes R(A1, A2, …, An). What's the maximum number of possible super-keys for R? Please justify your answer.

(2) (1.5 marks) Given a relation schema R with n attributes R(A1, A2, …, An). What's the maximum number of possible candidate keys for R? Please justify your answer.

Assignment Submission

We accept electronic submissions only. You can submit your assignment as follows:

- Ensure that you are in the directory containing the file to be submitted. (note: we only accept files with .pdf extension)
- Type "give cs9311 ass1 ass1.pdf"
- If you submit your assignment more than once, the last submission will replace the previous one.
- To prove successful submission, please take a screenshot as assignment submission instructions show and keep it by yourself.

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2. If the size of your pdf file is larger than 2MB, the system will not accept the submission. If you face this problem, try converting to compressed pdf.
3. If you have any problems in submissions, please email to longyuan@cse.unsw.edu.au.

Late Submission Penalty

Zero mark