HOMEWORK 4

EPPS 6354

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QUESTION 1

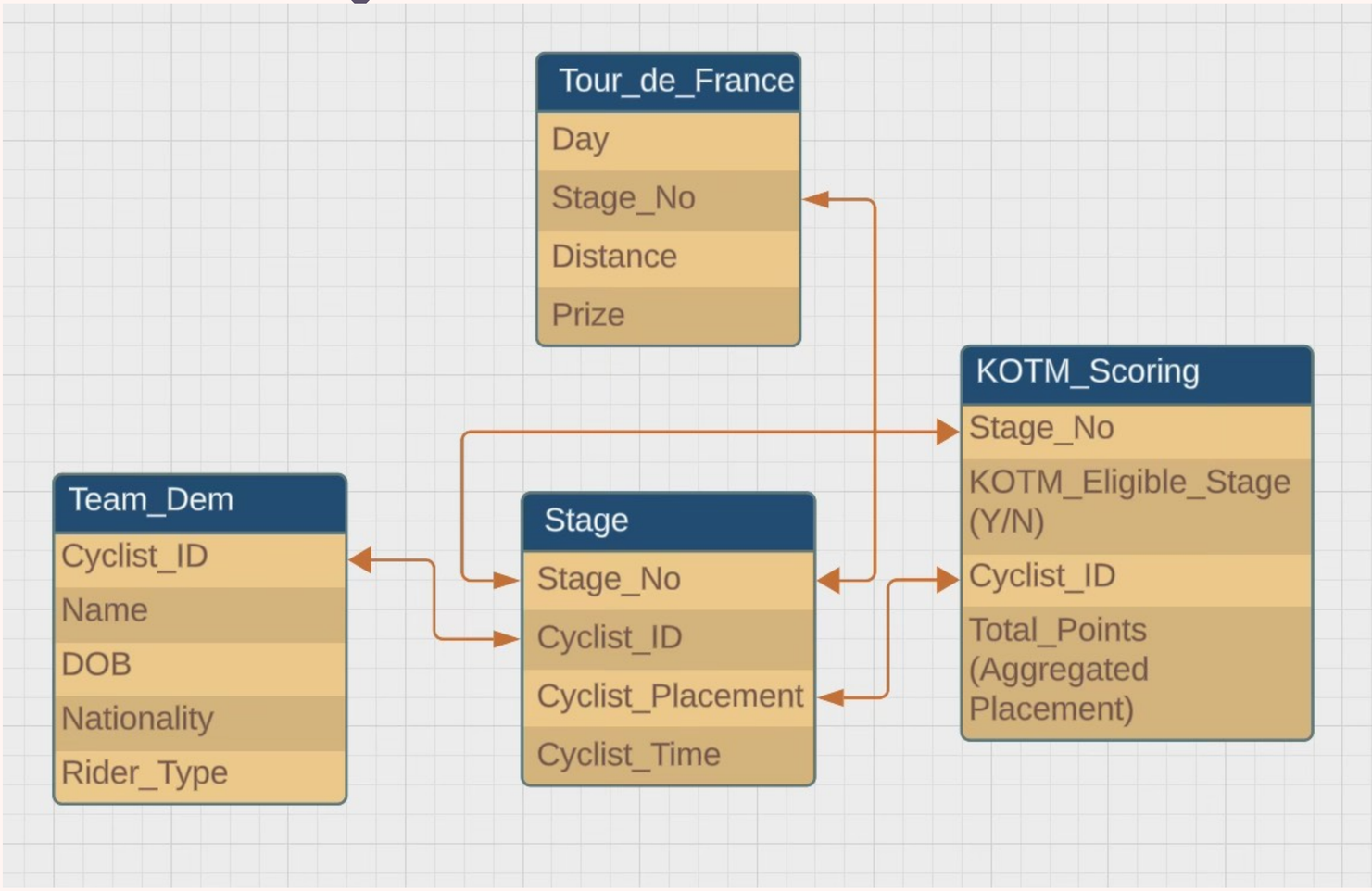
1. Explain the difference between a weak and a strong entity set. Use an example other than the one in Chapter 6 to illustrate. (Consult Ch. 6, 6.5.3)

- **Weak entity set: does not have a primary key; has to get identifying information from another table.**
- **Strong entity set: has a primary key that allows you to uniquely identify each tuple.**
- **Example:**
- **Strong entity set: Player table: name, position, team, year**
- **Weak entity set: Injury table: type of injury, time out of the season**

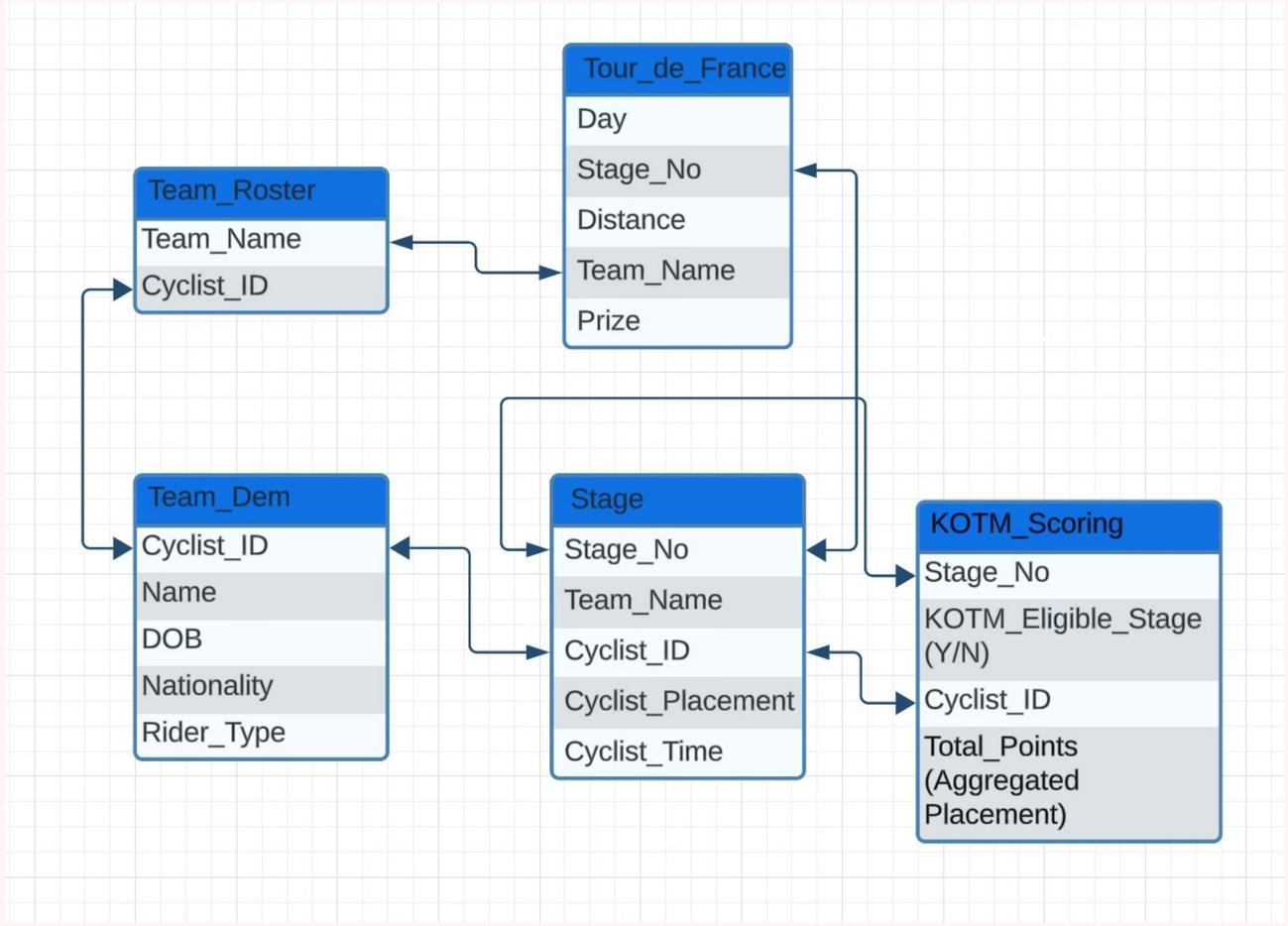
QUESTION 2

2. Design an E-R diagram for keeping track of the scoring statistics of your favorite sports team. You should store the matches played, the scores in each match, the players in each match, and individual player scoring statistics for each match. Summary statistics should be modeled as derived attributes with an explanation as to how they are computed. (Consult: Practice Exercise solutions on textbook website)
   a) Draw the E-R diagram using draw.io. Read this website for instructions.
   b) Expand to all teams in the league (Hint: add team entity)

QUESTION 2A


Tour_de_France
Day
Stage_No
Distance
Prize
KOTM_Scoring
Stage_No
KOTM_Eligible_Stage (Y/N)
Cyclist_ID
Total_Points (Aggregated Placement)
Team_Dem
Cyclist_ID
Name
DOB
Nationality
Rider_Type
Stage
Stage_No
Cyclist_ID
Cyclist_Placement
Cyclist_Time

QUESTION 2B


Tour_de_France
Day
Stage_No
Distance
Team_Name
Prize
Team_Roster
Team_Name
Cyclist_ID
Team_Dem
Cyclist_ID
Name
DOB
Nationality
Rider_Type
Stage
Stage_No
Team_Name
Cyclist_ID
Cyclist_Placement
Cyclist_Time
KOTM_Scoring
Stage_No
KOTM_Eligible_Stage (Y/N)
Cyclist_ID
Total_Points (Aggregated Placement)

QUESTION 3B

b) Write an SQL query using the university schema to find the ID of each student who has never taken a course at the university. Do this using no subqueries and no set operations (use an outer join). (Consult Ch. 4, 4.1.3)

Enter SQL commands here

```
1  SELECT DISTINCT
2       A.ID,
3       NAME
4  FROM
5       STUDENT A
6  LEFT OUTER JOIN
7       TAKES B
8       ON
9       A.ID <> B.ID
```

Execute | Save the db | Load an SQLite database file:

Choose File | no file selected

ID	name
00128	Zhang
12345	Shankar
19991	Brandt
23121	Chavez
44553	Peltier
45678	Levy
54321	Williams
55739	Sanchez
70557	Snow
76543	Brown
76653	Aoi
98765	Bourikas
98988	Tanaka

QUESTION 3C

c) Consider the following database, write a query to find the ID of each employee with no manager. Note that an employee may simply have no manager listed or may have a *null* manager(use natural left outer join). (Consult Ch. 4, 4.1.3)

---

employee (*ID*, *person_name*, *street*, *city*)
works (*ID*, *company_name*, *salary*)
company (*company_name*, *city*)
manages (*ID*, *manager_id*)

```
SELECT DISTINCT
    ID
    COMPANY_NAME
FROM
    WORKS W

NATURAL LEFT OUTER JOIN
(SELECT DISTINCT
    COMPANY_NAME
FROM
   WORKS

INNER JOIN
    MANAGES M
    ON
    W.ID = M.ID
) EXCLUDE
ON
W.ID <> EXCLUDE.ID
```