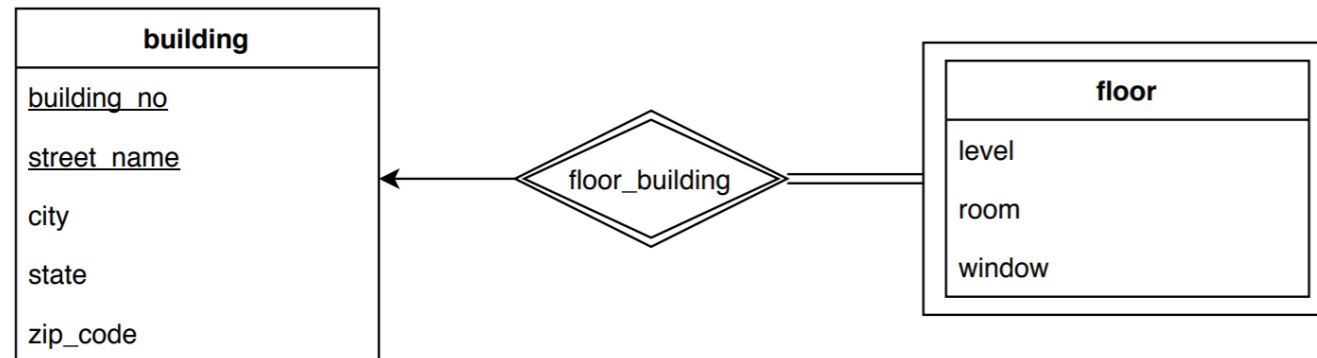


Assignment 4: E-R Diagram

EPPS 6354: Information Management

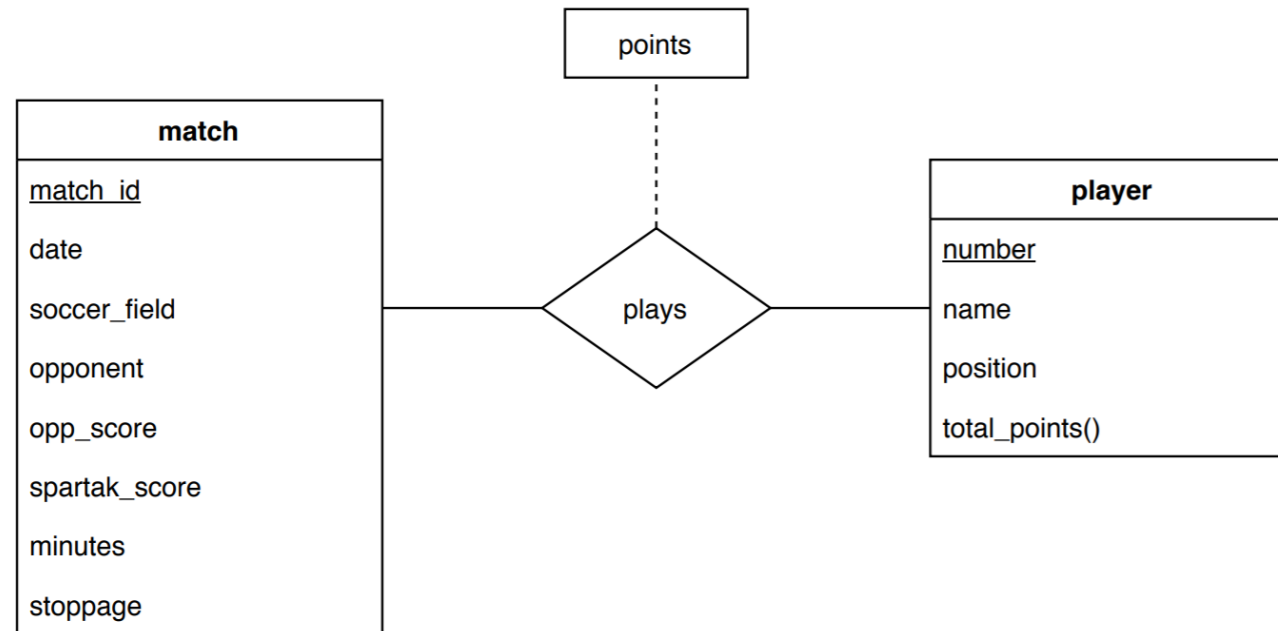
1. Explain the difference between a weak and strong entity set

- The identifying entity set for *floor* is *building*, and the relationship *floor_building*, which associates *floor* entities with their corresponding *building* entities, is the identifying relationship.
- The primary key is {*building_no*, *street_name*, *level*, *room*, *window*}
- The weak entity set *floor* depends on the strong entity set *building* via the relationship set *floor_building*



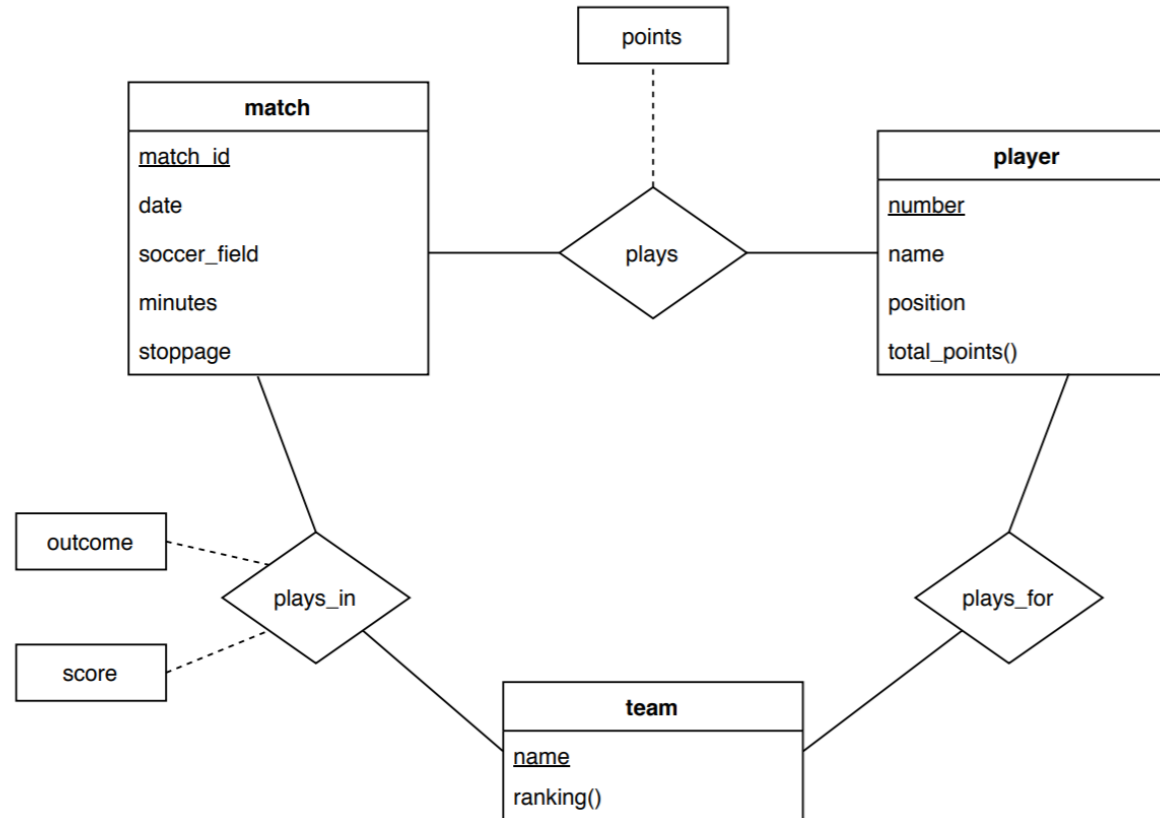
2. E-R Diagram for keeping track of the scoring statistics of sports team

- FC Spartak Moscow
- *total_points* represents sum of points earned by a player during each game



2a. Expand to all teams in the league

- *ranking()* is derived by comparing a team's score to other team's in the league



3a. SQL exercise

- i. Appending **natural join** *section* in the **from** clause will not change the result because *section* provides the same attributes as *takes* and therefore its addition is redundant when providing a new relation about 2017 courses that students were enrolled in.
- ii. This is evident in the results:

```
SELECT course_id, semester, year, sec_id, avg (tot_cred)
FROM takes NATURAL JOIN student
WHERE year = 2017
GROUP BY course_id, semester, year, sec_id
HAVING COUNT (ID) >= 2;
```

course_id	semester	year	sec_id	avg (tot_cred)
CS-101	Fall	2017	1	65
CS-190	Spring	2017	2	43
CS-347	Fall	2017	1	67

```
SELECT course_id, semester, year, sec_id, avg (tot_cred)
FROM takes NATURAL JOIN student NATURAL JOIN section
WHERE year = 2017
GROUP BY course_id, semester, year, sec_id
HAVING COUNT (ID) >= 2;
```

course_id	semester	year	sec_id	avg (tot_cred)
CS-101	Fall	2017	1	65
CS-190	Spring	2017	2	43
CS-347	Fall	2017	1	67

3b. SQL exercise

- Find ID of each student who has never taken a course at the university

```
SELECT DISTINCT s.id, s.name  
FROM student AS s  
LEFT OUTER JOIN takes AS t ON s.id = t.id  
WHERE t.id IS NULL;
```

ID	name
70557	Snow