School Database

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Problem

- Often, we see that public schools are behind the curve when it comes to the implementation of technology.

- Software is often outsourced to third parties and restricted to administrative purposes.

- School databases often lack support for sports and club activities.

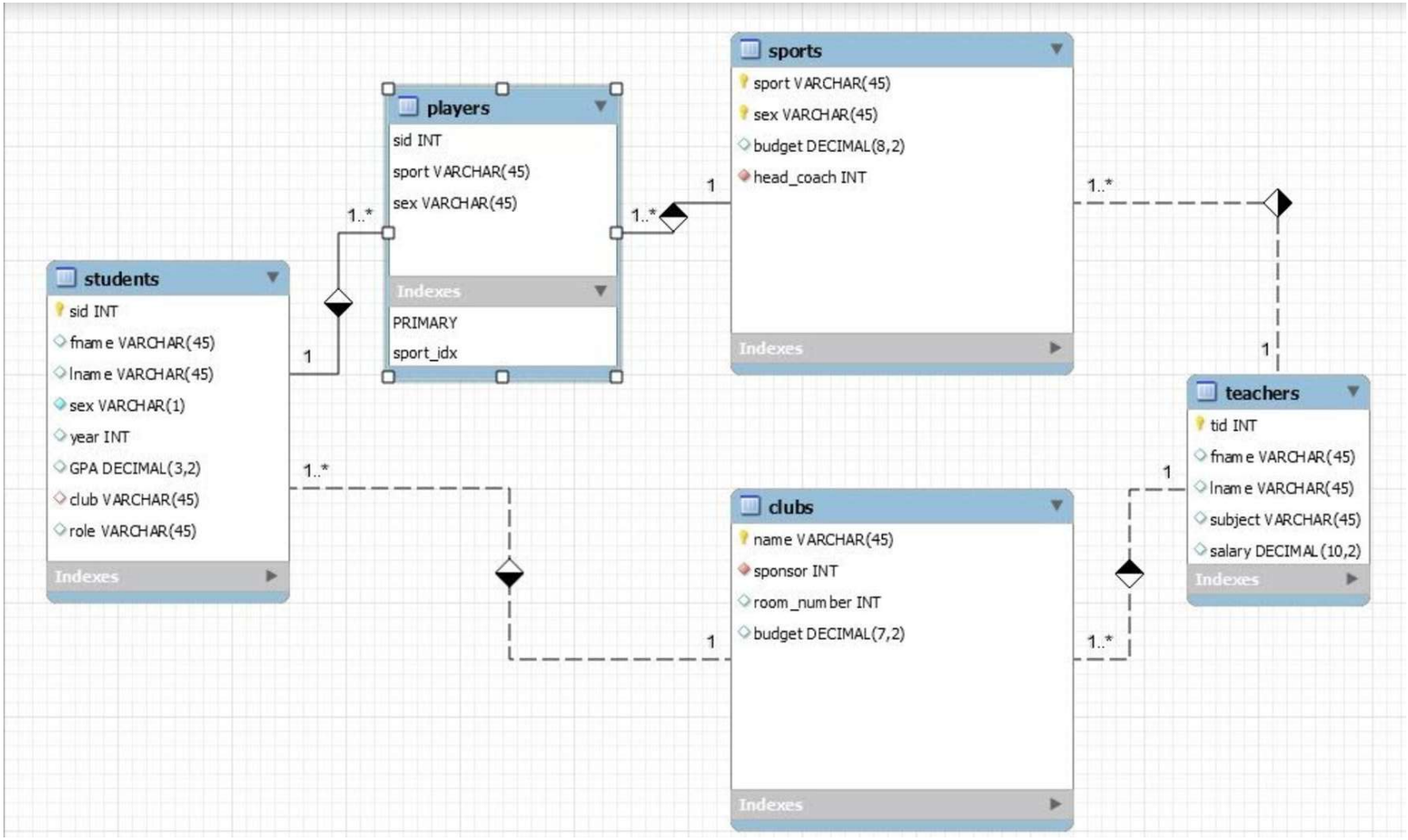
Our Solution

- We created a database system that allows for greater control, analysis, and management of extracurricular activities.

- We divided the database into different tables with each table holding relevant information to the clubs and individuals related to the club.

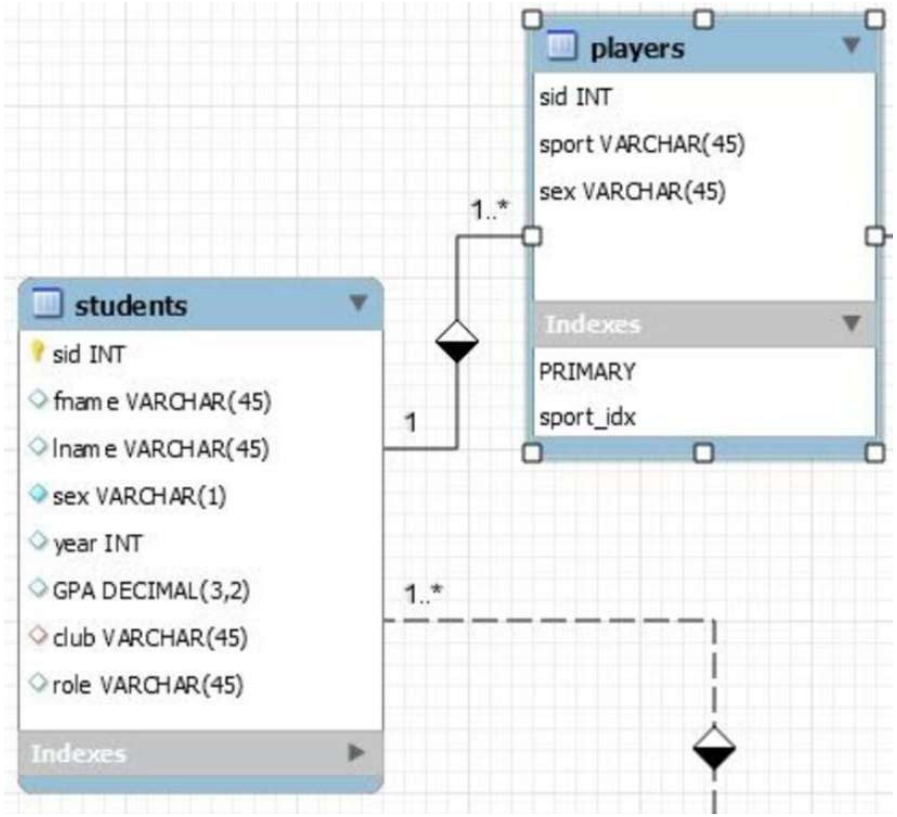
    The tables are divided into 5 tables: students, clubs, sports, teachers, and players.

Relational Diagram



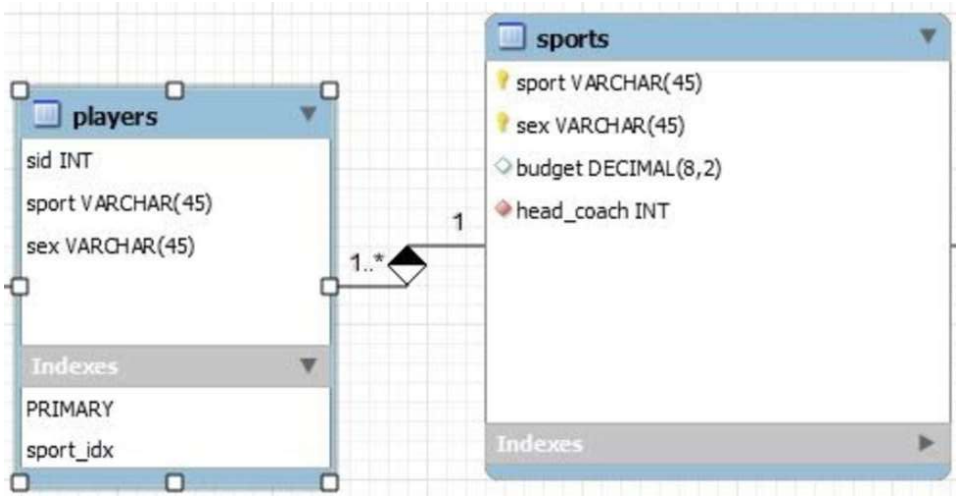
Students to Players

- One to Many
- One student can play on multiple sports teams
- Each player is only one student



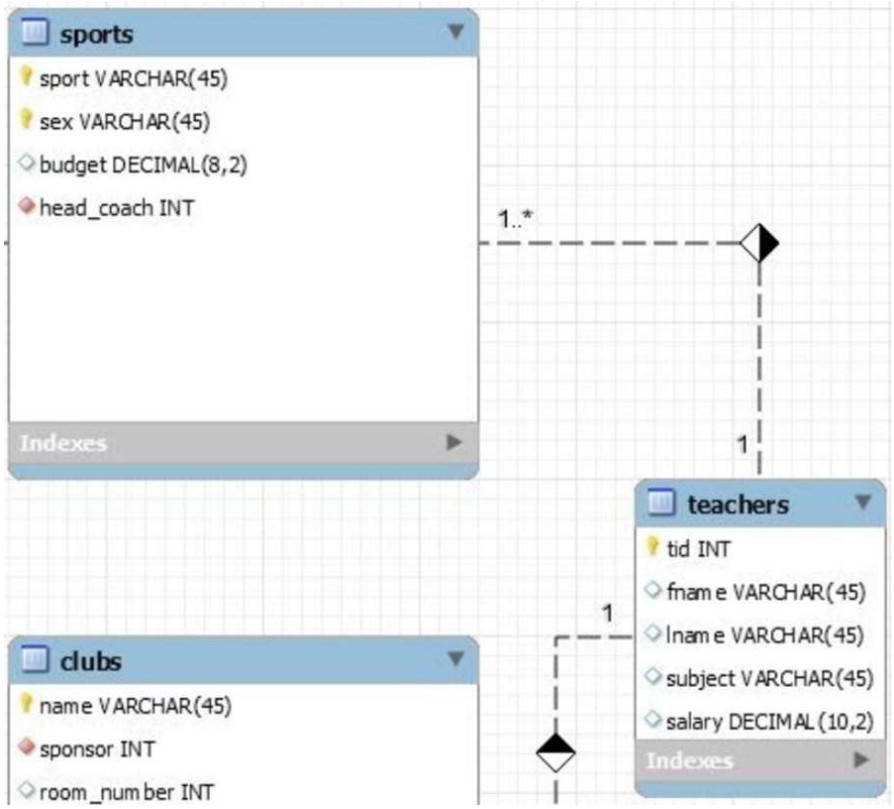
Players to Sports

- Many to one
- One sport can have many players
- Each player record matches one sport



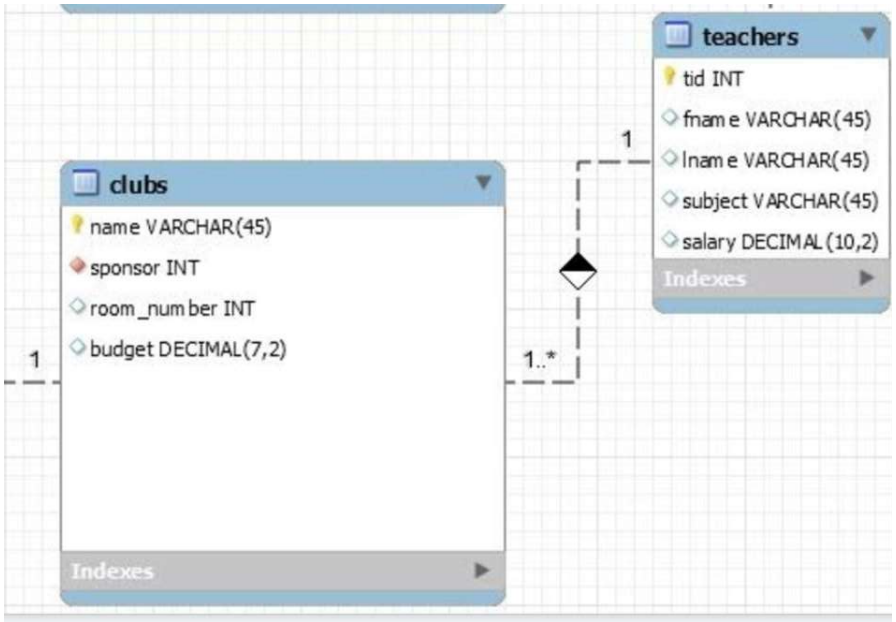
Sports to Teachers

- Many to one
- One teacher can be the coach of many sports
- Each sport only has one head_coach



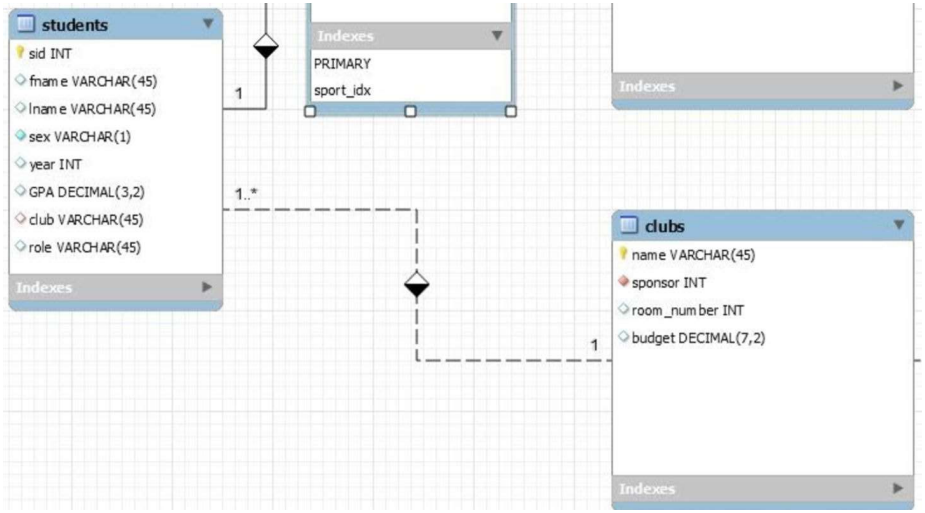
Clubs to Teachers

- Many to One
- One teacher can sponsor multiple clubs
- Each club can have one sponsor



Students to Clubs

- Many to One
- One club can house multiple students at a time.



Query Examples

- **Q1: Find all teachers in the Algebra or Calculus or Physics or Chemistry department that sponsor a club and a Sport**

  select distinct(t.tid), T.fname, T.lname, C.name, A.sport from Teachers as T, Clubs as C, Sports as A where T.tid = C.sponsor and T.tid = A.head_coach and (T.subject='Algebra' or T.subject = 'Calculus' or T.subject = 'Physics' or T.subject = 'Chemistry');

Purpose: Find teachers that are eligible for STEM teacher of the year award.

Output:

```
1007|Rachel|Davis|Science|Baseball
1013|Michelle|Taylor|FCA|Soccer
1019|James|Thompson|Debate|Gymnastics
1031|Laura|Young|DECA|Dance
1037|Todd|Green|Newspaper|Basketball
1046|James|Carter|Drama|Bowling
1052|Josh|Collins|4-H|Swim
1061|Clare|Rogers|Chess|Bowling
```

Query Examples

- **Q2: Find the sid, fname, and lname, all 2nd year or greater students in a sport and a club with a GPA < 2.0, sort in descending order by GPA**

```
select distinct(S.sid), S.fname, S.lname, S.GPA from Students as S,
Players as P where S.sid = P.sid and S.year > 2 and S.GPA < 2.0 and
S.club IS NOT NULL order by GPA desc;
```

Purpose: Need to meet with these students in order for them to focus on academics and graduate on time.

Output:

```
225240|Elaine|Klein|1.98
225164|Kirsteen|Gordon|1.94
225188|Henry|Harrington|1.92
225342|Kathleen|Parks|1.92
225172|Eric|Griffin|1.87
225234|William|Keller|1.87
225214|Fiona|Howell|1.85
225295|Nicholas|Miles|1.84
225178|Zoe|Hale|1.76
225351|Alasdair|Perez|1.76
225189|Justin|Harris|1.75
225006|Susan|Alvarado|1.74
225186|Samuel|Harmon|1.73
225143|Melanie|Frazier|1.65
225343|Patricia|Parsons|1.65
225360|Calum|Porter|1.64
225287|Stewart|Mcguire|1.62
225301|Jonathan|Montgomery|1.62
225253|Barry|Lewis|1.56
225419|Scott|Simmons|1.56
225282|Simon|Mccormick|1.55
225413|James|Scott|1.53
225047|Margaret|Bryant|1.48
225323|Marie|Nichols|1.43
225101|Helen|Davis|1.41
225244|Elizabeth|Lane|1.39
225168|Cheryl|Gray|1.35
225235|Kevin|Kelley|1.34
225331|Jamie|Olson|1.31
225446|Alison|Thornton|1.31
225239|Alison|King|1.29
225150|Greig|Garner|1.27
225131|Paula|Fleming|1.25
225109|Samantha|Dixon|1.23
225222|Jennifer|Jacobs|1.21
225163|Murray|Goodwin|1.19
225170|Dean|Greene|1.07
225278|Allan|Maxwell|1.07
225324|Philip|Norman|1
```

Query Examples

Output:

```
2.81769230769231|Basketball
2.66192307692308|Swim
2.56583333333333|Gymnastics
2.50260869565217|Track
2.48714285714286|Bowling
2.47933333333333|Soccer
2.38111111111111|Football
2.37888888888889|Tennis
2.34136363636364|Cross Country
2.32818181818182|Golf
```

- **Q3: Find the average GPA of each sports team that has at least 20 students, order by average GPA in descending order:**

select avg(S.GPA) as AVG_GPA, P.sport from Students as S, Players as P where S.sid = P.sid group by P.sport having count(P.sid) > 20 ORDER BY AVG_GPA desc;

Purpose: want to compare the academic achievements of the different sports teams at the school

Query Examples

- **Q4: Find students who are on at least 2 sports team, in a club, and have a GPA > 3.5 and return their id, first and last name, number of teams, and GPA and order them by gpa in descending order:**

```
select s.sid, s.fname, s.lname, count(p.sport), s.gpa from students s, players p where s.sid=p.sid and gpa>3.5 and club not null group by s.sid having count(p.sport)>1 order by s.gpa desc;
```

Purpose: Want to give a special award to students who are active in extracurricular activities, while maintaining a high GPA

output:

```
225229|Stuart|Johnston|2|3.85
225221|Robert|Jackson|2|3.81
225165|Katrina|Graham|2|3.8
```

Thank You for Listening!

Questions?