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Exercises 1

We use the example from our book: a tennis club, founded in 1980. A database contains information about the players, the teams, the matches played and members of the board (figuur 1.1).

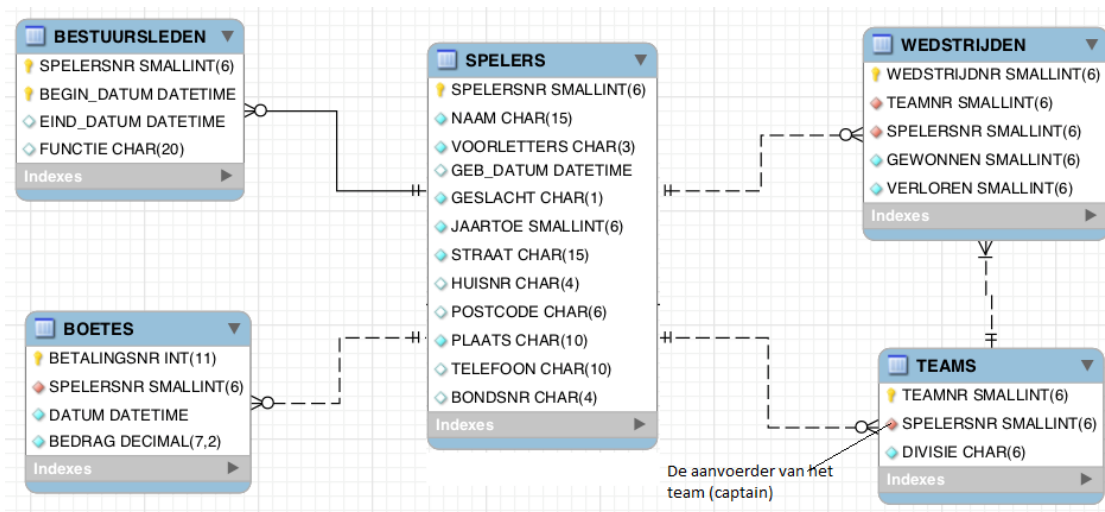


Figure 1.1 ERD of the tennis club

Players (spelers)

The **players** table contains the following information

- Spelersnummer (X): player's number
- Naam (X): name
- Voorletters (X): initials
- geboortedatum: date of birth

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- geslacht (X): sex
- jaar van toetreding (X): date of membership
- straat (X): street
- huisnummer: house number
- postcode: postal code
- woonplaats (X): city
- telefoonnummer: telephone number
- bondsnummer: id number in the national tennis association

Teams

Players form teams. Teams are not fixed: they change from competition to competition. The only way to find out who played for a team is by looking at the matches information. The **teams** table contains:

- Teamnummer(X): team number
- Spelersnummer(X): player's number of *the captain of the team*
- Divisie(X): division the team plays in

Matches (wedstrijden)

Players play matches. The information in the **matches** table is:

- wedstrijdnummer(X): match number
- teamnummer(X): our team's number
- spelersnummer(X): the number of the player from our club who played the match
- Gewonnen(X): the number of won sets for our player
- Verloren(X): the number of lost sets for our player

Fines (boetes)

Players can be given a fine for unsportmanlike behaviour, being late, The **fine** table contains:

- betalingsnummer(X): fine number
- spelersnummer(X): the number of the player that was fined
- datum(X): date
- bedrag(X): amount

Board members (bestuursleden)

Every organisation needs a board. The board of the tennis club consists of players. The table **board members** contains the following information:

- spelersnummer(X): player's number
- begindatum(X): start date
- einddatum: end date, empty if the player is still active on the board
- functie: function

Exercise 1.1

Give an overview of all players (number, name and initials in one column, and year of admission). Fig 1.2 doesn't show the complete list.

	spelersnr integer	naam text	jaartoe smallint
1	2	Elfring R	1975
2	6	Permentier R	1977
3	7	Wijers GWS	1981
4	8	Niewenburg B	1980
5	27	Cools DD	1983
6	28	Cools C	1983

Figure 1.2 All players

Exercise 1.2

Limit the overview from the first exercise to only those players that became a member after 1983.

	spelersnr integer	naam text	jaartoe smallint
1	57	Bohemen, van M	1985
2	104	Moerman D	1984
3	112	Baalen, van IP	1984

Figure 1.3 All players who became a member after 1983

Exercise 1.3

Limit the overview from the first exercise to the players that live in Zoetermeer.

	spelersnr integer	naam text	jaartoe smallint
1	27	Cools DD	1983
2	104	Moerman D	1984

Figure 1.4 All players from Zoetermeer

Exercise 1.4

Change the previous query so you only show the players from Zoetermeer who became a member of the club before 1984.

	spelersnr integer	naam text	jaartoe smallint
1	27	Cools DD	1983

Figure 1.5 All players from Zoetermeer who became member before 1984

Exercise 1.5

Make a list al all the teams where player number 27 is the captain.

	teamnr integer	spelersnr integer	divisie character (6)
1	2	27	tweede

Figure 1.6 The complete information of all teams with number 27 as captain

Exercise 1.6

Give an overview of all won tennis matches.

	wedstrijdnr integer	teamnr integer	spelersnr integer	gewonnen smallint	verloren smallint
1	1	1	6	3	1
2	3	1	6	3	0
3	4	1	44	3	2
4	7	1	57	3	0
5	9	2	27	3	2
6	10	2	104	3	2

Figure 1.7 Teams from our club won these matches

Exercise 1.7

Make a list of all matches where player 6 won.

	wedstrijdnr integer	teamnr integer	spelersnr integer	gewonnen smallint	verloren smallint
1	1	1	6	3	1
2	3	1	6	3	0

Figure 1.8 These matches were won by player 6

Exercise 1.8

Give an overview of all matches from player 112 and calculate for each of those matches with how many sets he won or lost (fig. 1.9)

Exercise 1.9

Make a list of all the fines that were paid (fig. 1.10)

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	wedstrijdnr integer	spelersnr integer	verschil smallint
1	11	112	1
2	12	112	2

Figure 1.9 Player 112 lost or won these matches with this difference

	betalingsnr integer	spelersnr integer	datum date	bedrag numeric (7,2)
1	1	6	1980-12-08	100.00
2	2	44	1981-05-05	75.00
3	3	27	1983-09-10	100.00
4	4	104	1984-12-08	50.00
5	5	44	1980-12-08	25.00
6	6	8	1980-12-08	25.00
7	7	44	1982-12-30	30.00
8	8	27	1984-11-12	75.00

Figure 1.10 All fines

Exercise 1.10

Include in the list from the previous exercise also the name of the player (name and first letter(s) in one column). (The screen shot doesn't show all the rows)

	betalingsnr integer	spelersnr integer	naam text	datum date	bedrag numeric (7,2)
1	1	6	Permentier R	1980-12-08	100.00
2	2	44	Bakker, de E	1981-05-05	75.00
3	3	27	Cools DD	1983-09-10	100.00
4	4	104	Moerman D	1984-12-08	50.00
5	5	44	Bakker de F	1980-12-08	25.00

Figure 1.11 All fines with player names

Exercise 1.11

Find the largest and smallest amount of all the fines.

	min numeric	max numeric
1	25.00	100.00

Figure 1.12 Minimum and maximum fine

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Exercises 2

Exercise 2.1

Give an overview of all board member who are currently in function. Show their function. Give also their names (name and initials in one column).

	spelersnr integer	naam text	begin_datum date	functie character (20)
1	6	Permentier R	1993-01-01	Voorzitter
2	2	Elfring R	1994-01-01	Lid
3	112	Baalen, van IP	1994-01-01	Secretaris
4	8	Niewenburg B	1994-01-01	Lid
5	95	Meuleman P	1994-01-01	Penningmeester

Figure 2.1 All current board members

Exercise 2.2

Make a list of all female players that do not live in Leiden.

	spelersnr integer	naam character (15)	plaats character varying (30)	geslacht character (1)
1	8	Niewenburg	Rijswijk	V
2	27	Cools	Zoetermeer	V
3	104	Moerman	Zoetermeer	V
4	112	Baalen, van	Rotterdam	V

Figure 2.2 Female players not living in Leiden

Exercise 2.3

What was the average fine amount paid? How many fines were paid since the club was founded?

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	average numeric	number of fines bigint
1	60	8

Figure 2.3 Average fine and number of fines paid

Exercise 2.4

Give an overview of all fines bigger than € 30. Show the amount in eurocent. Also provide the number and name of the player who got fined.

	spelersnr integer	naam character (15)	bedrag in centen numeric
1	6	Permentier	10000
2	27	Cools	7500
3	27	Cools	10000
4	44	Bakker, de	7500
5	104	Moerman	5000

Figure 2.4 Fines above € 30

Exercise 2.5

Let's start from the previous exercise: a list of all the players that got fined more than € 30. The difference is: this time we only want a list of players (not a list of fines). A player that is more than once on this list (e.g. Cools has a fine of 75 and one of 100) will only appear in one row on your overview.

	spelersnr integer
1	44
2	6
3	27
4	104

Figure 2.5 All the players who have a least one fine bigger than € 30

Exercise 2.6

Make a list of all matches played by members of team number 2 and where our player won. Include the winning player's number and also the number of the captain of the team.

	wedstrijdnr integer	spelersnr integer	teamnr integer	captain integer
1	9	27	2	27
2	10	104	2	27

Figure 2.6 Games won by members of team 2

Exercise 2.7

Make a list of all competition players. Not all players in our club play in a competition. But those who want to play in official matches, need to be a member of the national tennis association (we don't show the complete output in fig 2.7).

	spelersnr integer	naam character (15)
1	2	Elfring
2	6	Permentier
3	8	Niewenburg
4	27	Cools
5	44	Bakker, de
6	57	Bohemen, van
7	83	Hofland

Figure 2.7 All players that play official matches

Exercise 2.8

Show the overview in the previous exercise, but only for the female players.

	spelersnr integer	naam character (15)	geslacht character (1)
1	8	Niewenburg	V
2	27	Cools	V
3	104	Moerman	V
4	112	Baalen, van	V

Figure 2.8 Female competition players

Exercise 2.9

Show name and initials, team, division for the captains of every team.

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	teamnr integer	spelersnr integer	kapitein text	divisie character (6)
1	1	6	Permentier R	ere
2	2	27	Cools DD	tweede

Figure 2.9 Team captains

Exercise 2.10

Limit the previous query to the female captains.

	teamnr integer	spelersnr integer	kapitein text	divisie character (6)
1	2	27	Cools DD	tweede

Figure 2.10 Female captains

Solutions

Solution 1.1

```
SELECT spelersnr, naam || ' ' || voorletters AS naam, jaartoe
FROM spelers
```

Solution 1.2

```
SELECT spelersnr, naam || ' ' || voorletters AS naam, jaartoe
FROM spelers
WHERE jaartoe > 1983
```

Solution 1.3

```
SELECT spelersnr, naam || ' ' || voorletters AS naam, jaartoe
FROM spelers
WHERE plaats = 'Zoetermeer'
```

Solution 1.4

```
SELECT spelersnr, naam || ' ' || voorletters AS naam, jaartoe
FROM spelers
WHERE plaats = 'Zoetermeer' AND jaartoe < 1984
```

Solution 1.5

```
SELECT *
FROM teams
WHERE spelersnr = 27
```

Solution 1.6

```
SELECT *
FROM wedstrijden
WHERE gewonnen > verloren
```

Solution 1.7

```
SELECT *
FROM wedstrijden
WHERE spelersnr = 6 AND gewonnen = 3
```

Solutions

Solution 1.8

```
SELECT wedstrijdnr, spelersnr, abs(gewonnen - verloren) AS verschil
FROM wedstrijden
WHERE spelersnr = 112
```

Solution 1.9

```
SELECT *
FROM boetes
```

Solution 1.10

```
SELECT b.betalingsnr, b.spelersnr, s.naam || ' ' || s.voorletters AS naam, b.datum, b.bedrag
FROM boetes AS b, spelers AS s
WHERE b.spelersnr = s.spelersnr
```

Solution 1.11

```
SELECT min(bedrag) AS min, max(bedrag) AS max
FROM boetes
```

Solution 2.1

```
SELECT b.spelersnr, s.naam || ' ' || s.voorletters AS naam, b.begin_datum, b.functie
FROM bestuursleden AS b, spelers AS s
WHERE b.spelersnr = s.spelersnr AND eind_datum IS null
```

Solution 2.2

```
SELECT spelersnr, naam, plaats, geslacht
FROM spelers
WHERE geslacht = 'V' AND plaats != 'Leiden'
```

Solution 2.3

```
SELECT round(avg(bedrag)) AS average, count(bedrag) AS "number of fines"
FROM boetes
```

Solution 2.4

```
SELECT b.spelersnr, s.naam, round(bedrag*100) AS "bedrag in centen"
FROM boetes AS b, spelers AS s
WHERE b.spelersnr = s.spelersnr AND bedrag > 30
```

Solution 2.5

```
SELECT DISTINCT spelersnr  
FROM boetes  
WHERE bedrag > 30
```

Solution 2.6

```
SELECT w.wedstrijdnr, w.spelersnr, w.teamnr, t.spelersnr AS captain  
FROM wedstrijden AS w, teams AS t  
WHERE w.teamnr = t.teamnr AND w.teamnr = 2  
AND gewonnen-verloren >0
```

Solution 2.7

```
SELECT spelersnr, naam  
FROM spelers  
WHERE bondsnr IS NOT null
```

Solution 2.8

```
SELECT spelersnr, naam, geslacht  
FROM spelers  
WHERE bondsnr IS NOT null AND geslacht = 'V'
```

Solution 2.9

```
SELECT t.teamnr,t.spelersnr, s.naam || ' ' || s.voorletters AS kapitein, t.divisie  
FROM teams AS t, spelers AS s  
WHERE t.spelersnr = s.spelersnr
```

Solution 2.10

```
SELECT t.teamnr,t.spelersnr, s.naam || ' ' || s.voorletters AS kapitein, t.divisie  
FROM teams AS t, spelers AS s  
WHERE t.spelersnr = s.spelersnr  
AND s.geslacht = 'V'
```