Farcenal Football Club

Database Systems Design Project

This document highlights the analysis, design and implementation of a database for Farcenal Football Club who are a professional football club in the English Premiere League.

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Database Systems

04/25/2014

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Executive Summary

This document highlights the analysis and design of a database created for Farcenal Football Club. The database is meant to aid managers, and support staff in their day to day activities for the club. Some use cases include

Managers:

- Get injury updates
- Scouting information
- Assessment of available roster before an upcoming game
- Management of available roster before an upcoming game
- Look up goals established by management for a particular season

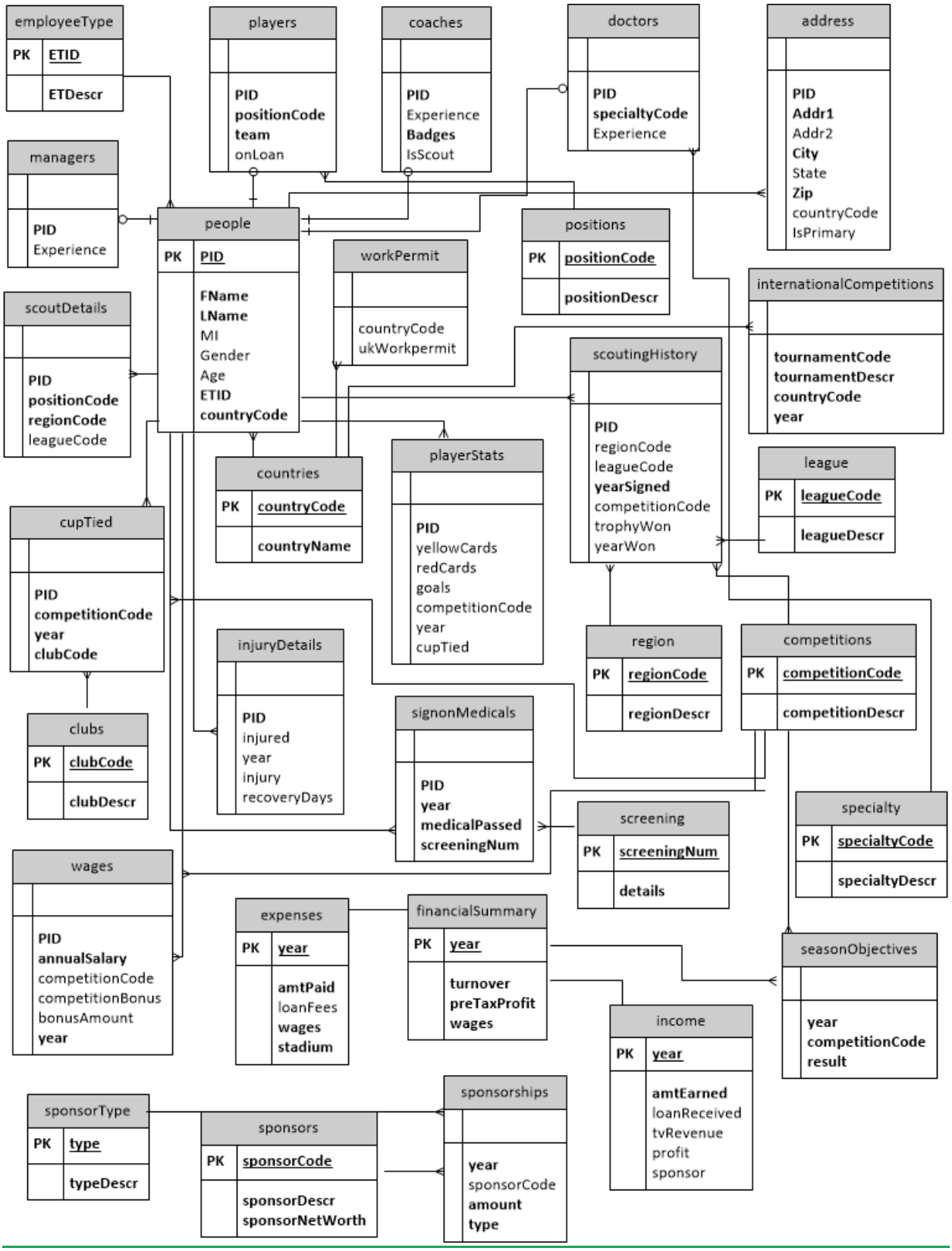
Doctors:

- Get health reports on current players in the squad
- Look up health history for current players in the squad to assess treatments

Financial employees:

- Get a snapshot of the club's finances
- Financial details pertaining to sponsorship deals for any given year

Entity Relationship Diagram



Tables

People table

Purpose: Stores all personal and demographic information related to an employee of the club.

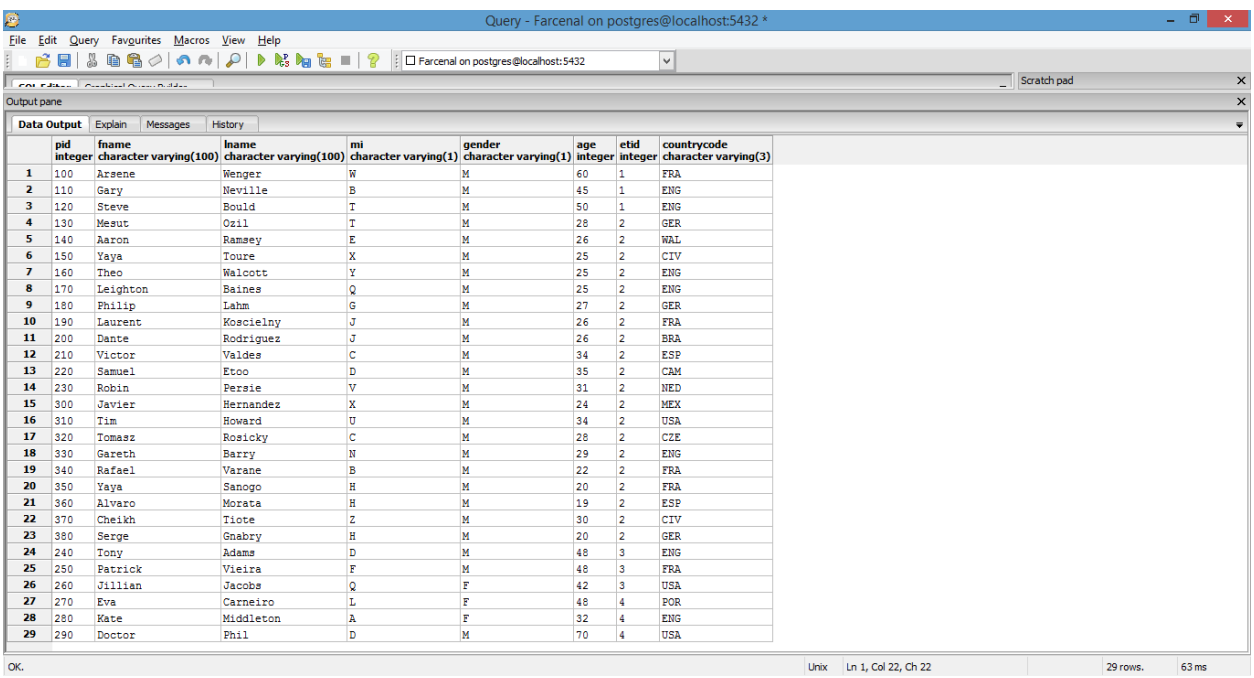
Functional dependencies

PID -> FName, LName, MI, Gender, Age, ETID, countryCode

Table create statement

```
CREATE TABLE people (
       PID           integer PRIMARY KEY,
       FName         varchar(100) NOT NULL,
       LName         varchar(100) NOT NULL,
       MI            varchar(1),
       Gender        varchar(1),
       Age           integer,
       ETID          integer NOT NULL,
       countryCode   varchar(3) NOT NULL,
       constraint gendercontraint CHECK (Gender = 'M' OR Gender = 'F'),
       constraint etid CHECK (ETID = 1 OR ETID = 2 OR ETID = 3 OR ETID = 4)
);
```

Sample data



	pid integer	fname character varying(100)	lname character varying(100)	mi character varying(1)	gender character varying(1)	age integer	etid integer	countrycode character varying(3)
1	100	Arsene	Wenger	W	M	60	1	FRA
2	110	Gary	Neville	B	M	45	1	ENG
3	120	Steve	Bould	T	M	50	1	ENG
4	130	Mesut	Ozil	T	M	28	2	GER
5	140	Aaron	Ramsey	E	M	26	2	WAL
6	150	Yaya	Toure	X	M	25	2	CIV
7	160	Theo	Walcott	Y	M	25	2	ENG
8	170	Leighton	Baines	Q	M	25	2	ENG
9	180	Philip	Lahm	G	M	27	2	GER
10	190	Laurent	Koscielny	J	M	26	2	FRA
11	200	Dante	Rodriguez	J	M	26	2	BRA
12	210	Victor	Valdes	C	M	34	2	ESP
13	220	Samuel	Etoo	D	M	35	2	CAM
14	230	Robin	Persie	V	M	31	2	NED
15	300	Javier	Hernandez	X	M	24	2	MEX
16	310	Tim	Howard	U	M	34	2	USA
17	320	Tomasz	Rosicky	C	M	28	2	CZE
18	330	Gareth	Barry	N	M	29	2	ENG
19	340	Rafael	Varane	B	M	22	2	FRA
20	350	Yaya	Sanogo	H	M	20	2	FRA
21	360	Alvaro	Morata	H	M	19	2	ESP
22	370	Cheikh	Tiote	Z	M	30	2	CIV
23	380	Serge	Gnabry	H	M	20	2	GER
24	240	Tony	Adams	D	M	48	3	ENG
25	250	Patrick	Vieira	F	M	48	3	FRA
26	260	Jillian	Jacobs	Q	F	42	3	USA
27	270	Eva	Carneiro	L	F	48	4	POR
28	280	Kate	Middleton	A	F	32	4	ENG
29	290	Doctor	Phil	D	M	70	4	USA

Address table

Purpose: For each PID established in the people table above, it stores address information.

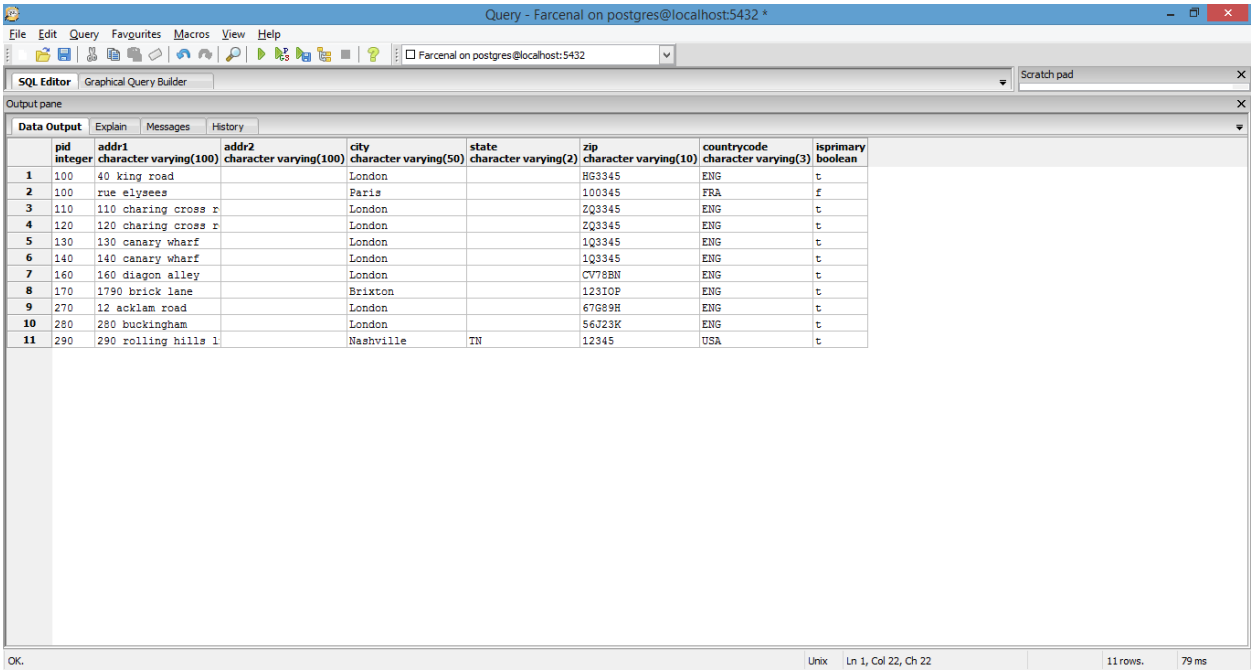
Functional dependencies

PID -> Addr1, Addr2, City, State, Zip, countryCode, IsPrimary

Table create statement

```
CREATE TABLE address (
       PID           integer NOT NULL,
       Addr1         varchar(100) NOT NULL,
       Addr2         varchar(100),
       City          varchar(50) NOT NULL,
       State         varchar(2),
       Zip           varchar(10) NOT NULL,
       countryCode   varchar(3),
       IsPrimary     boolean
);
```

Sample data



	pid integer	addr1 character varying(100)	addr2 character varying(100)	city character varying(50)	state character varying(2)	zip character varying(10)	countrycode character varying(3)	isprimary boolean
1	100	40 king road		London		HG3345	ENG	t
2	100	rue elysees		Paris		100345	FRA	f
3	110	110 charing cross r		London		ZQ3345	ENG	t
4	120	120 charing cross r		London		ZQ3345	ENG	t
5	130	130 canary wharf		London		1Q3345	ENG	t
6	140	140 canary wharf		London		1Q3345	ENG	t
7	160	160 diagon alley		London		CV78BN	ENG	t
8	170	1790 brick lane		Brixton		123IOP	ENG	t
9	270	12 acklam road		London		67G89H	ENG	t
10	280	280 buckingham		London		56J23K	ENG	t
11	290	290 rolling hills 1		Nashville	TN	12345	USA	t

EmployeeType table

Purpose: Establishes the types of employees that can be employed at the club.

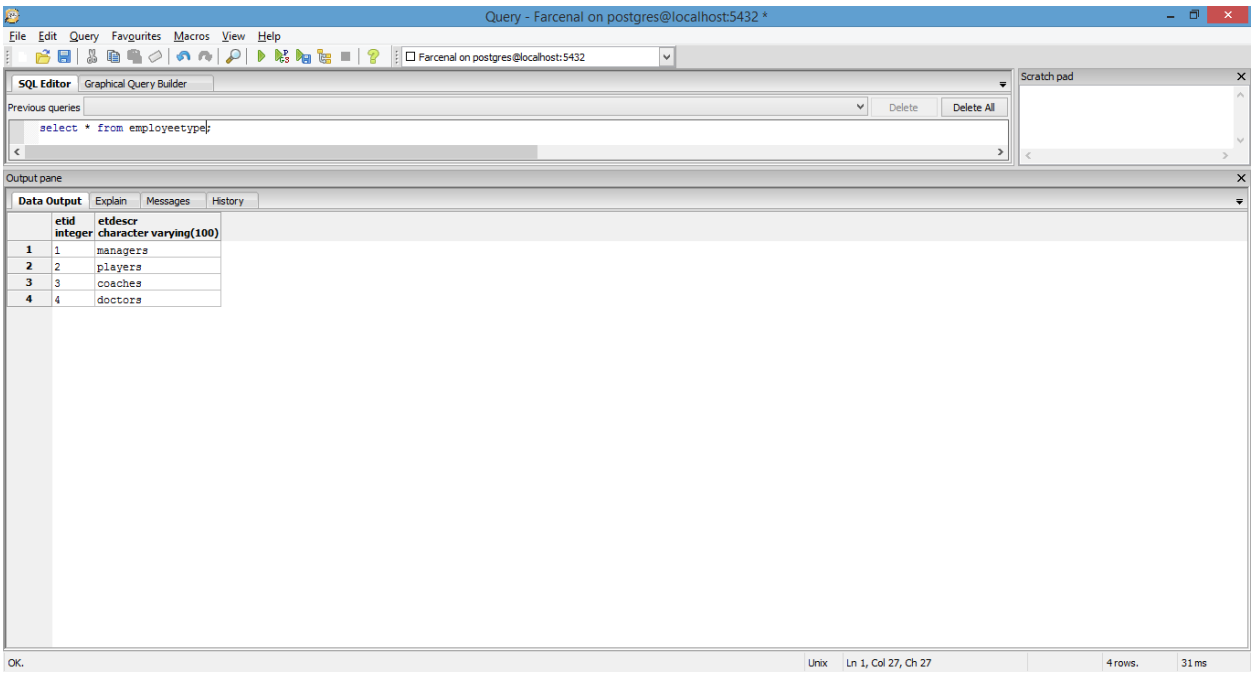
Functional dependencies

ETID -> ETDescr

Table create statement

```
CREATE TABLE employeeType (
	ETID		integer PRIMARY KEY,
	ETDescr		varchar(100) NOT NULL,
	constraint etid CHECK (ETID = 1 OR ETID = 2 OR ETID = 3 OR ETID = 4)
);
```

Sample data



Managers table

Purpose: To store information regarding the number of years of experience for all managers at the club.

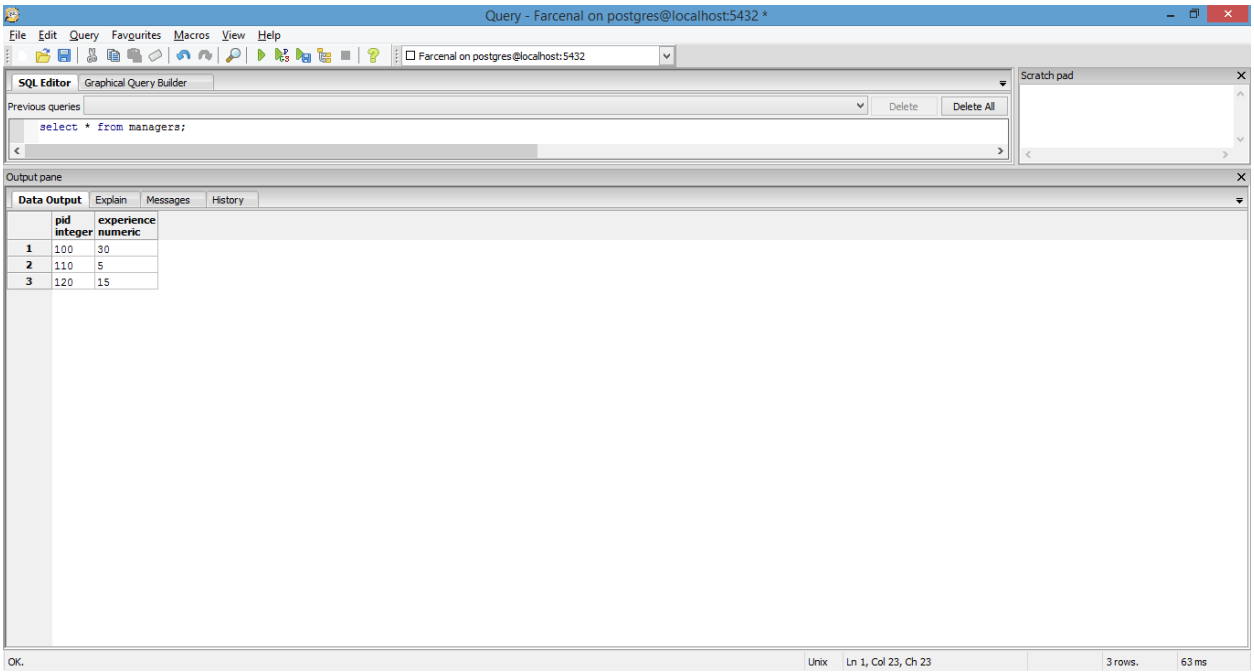
Functional dependencies

PID -> Experience

Table create statement

```
CREATE TABLE managers (
	PID		integer NOT NULL,
	Experience	decimal
);
```

Sample data



Players table

Purpose: To give summary information for each player who is on the roster.

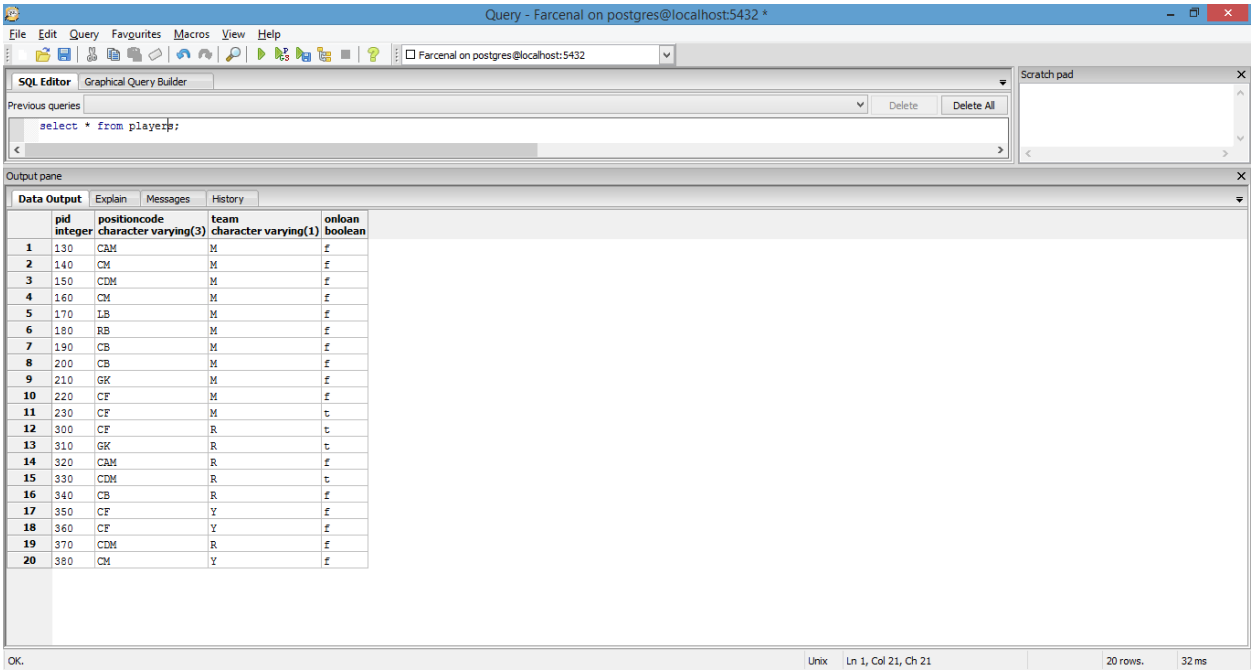
Functional dependencies

PID -> positionCode, Team, onLoan,

Table create statement

```
CREATE TABLE players (
       PID           integer NOT NULL,
       positionCode  varchar(3) NOT NULL,
       Team          varchar(1) NOT NULL,
       OnLoan        boolean,
       constraint positionCode CHECK (positionCode = 'CF' OR positionCode = 'RB' OR
positionCode = 'LB' or positionCode = 'CB' or positionCode = 'CDM' or positionCode =
'CAM' or positionCode = 'CM' or positionCode = 'GK'),
       constraint team CHECK (Team = 'M' OR Team = 'R' OR Team = 'Y')
);
```

Sample data



	pid integer	positioncode character varying(3)	team character varying(1)	onloan boolean
1	130	CAM	M	f
2	140	CM	M	f
3	150	CDM	M	f
4	160	CM	M	f
5	170	LB	M	f
6	180	RB	M	f
7	190	CB	M	f
8	200	CB	M	f
9	210	GK	M	f
10	220	CF	M	f
11	230	CF	M	t
12	300	CF	R	t
13	310	GK	R	t
14	320	CAM	R	f
15	330	CDM	R	t
16	340	CB	R	f
17	350	CF	Y	f
18	360	CF	Y	f
19	370	CDM	R	f
20	380	CM	Y	f

Coaches table

Purpose: To give summary information for each coach who is on staff.

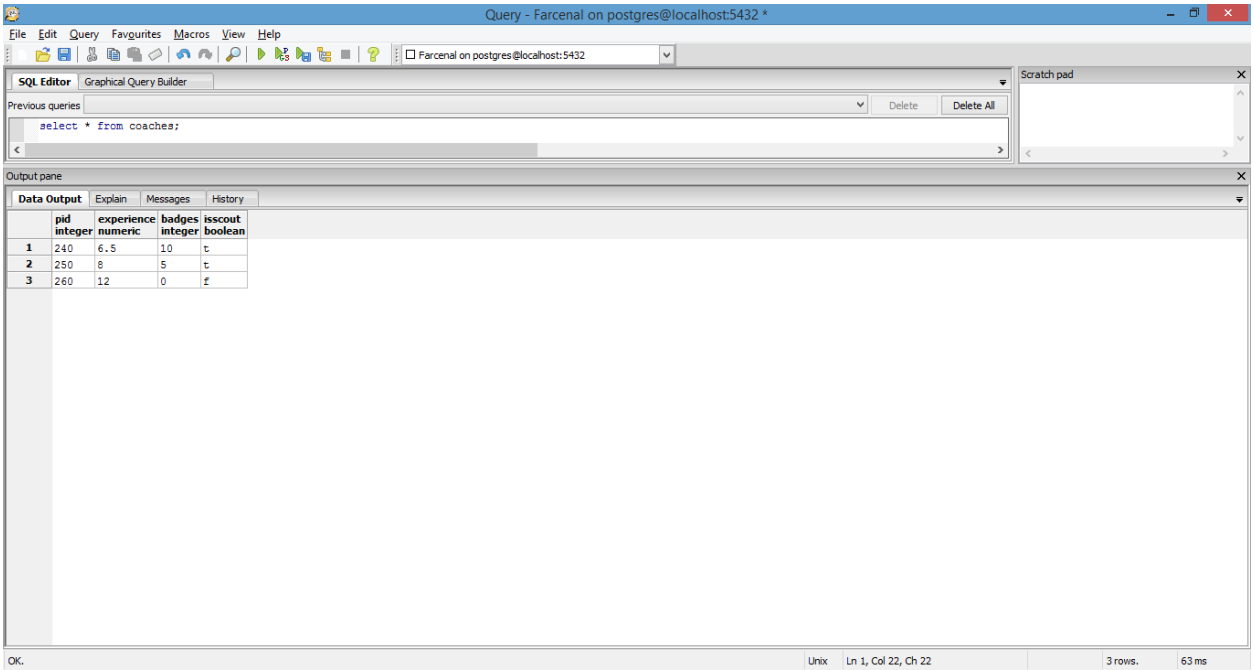
Functional dependencies

PID -> Experience, Badges, IsScout

Table create statement

```
CREATE TABLE coaches (
       PID           integer NOT NULL,
       Experience    decimal,
       Badges        integer NOT NULL,
       IsScout               boolean
);
```

Sample data



Doctors table

Purpose: To give information on the specialty and years of experience of each doctor on staff.

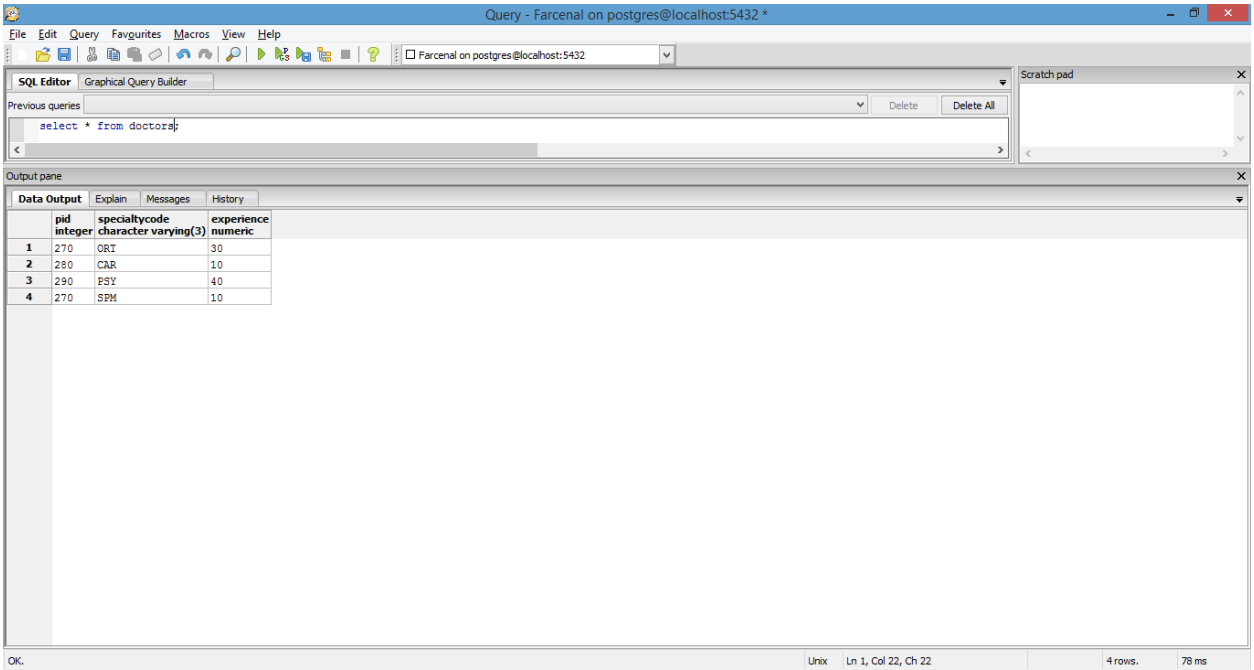
Functional dependencies

PID -> specialtyCode, Experience

Table create statement

```
CREATE TABLE doctors (
       PID           integer NOT NULL,
       specialtyCode varchar(3) NOT NULL,
       Experience    decimal
);
```

Sample data



Countries table

Purpose: Due to the multi-national nature of staff, we need to maintain a table with details on nationality of each employee

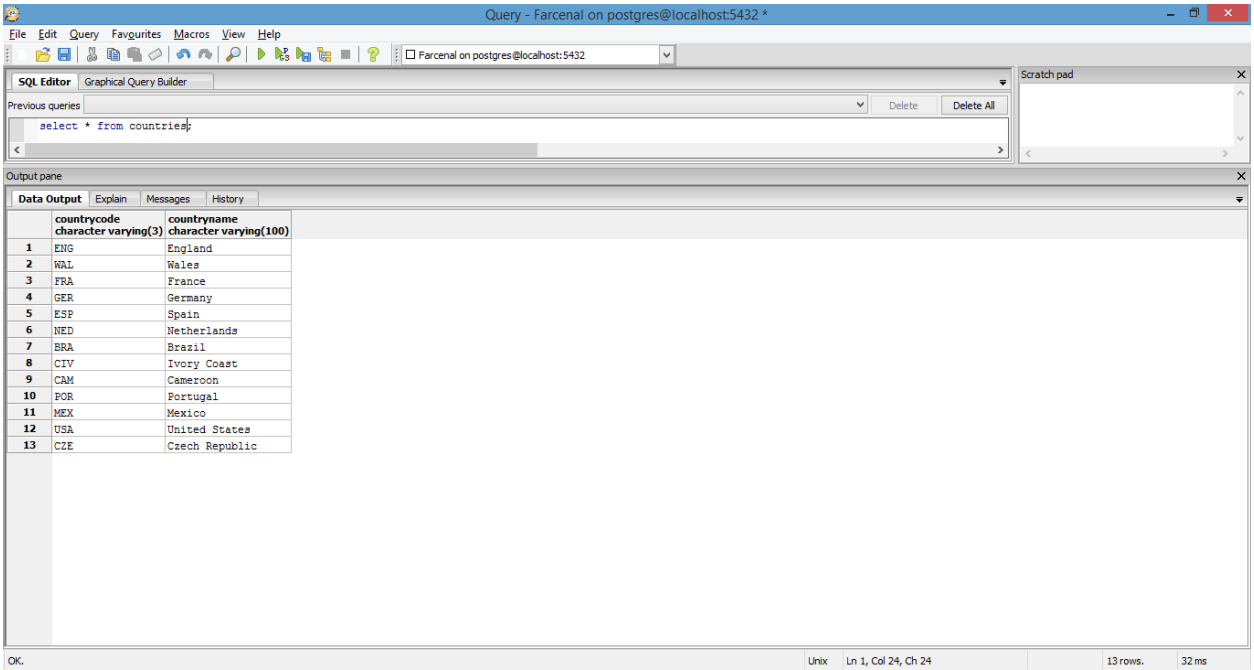
Functional dependencies

countryCode -> countryName

Table create statement

```
CREATE TABLE countries (
       countryCode   varchar(3) PRIMARY KEY,
       countryName   varchar(100) NOT NULL
);
```

Sample data



WorkPermit table

Purpose: Again, due to the multi-national nature of staff, we want to make sure they are authorized to work in the United Kingdom, where Farcenal FC is located.

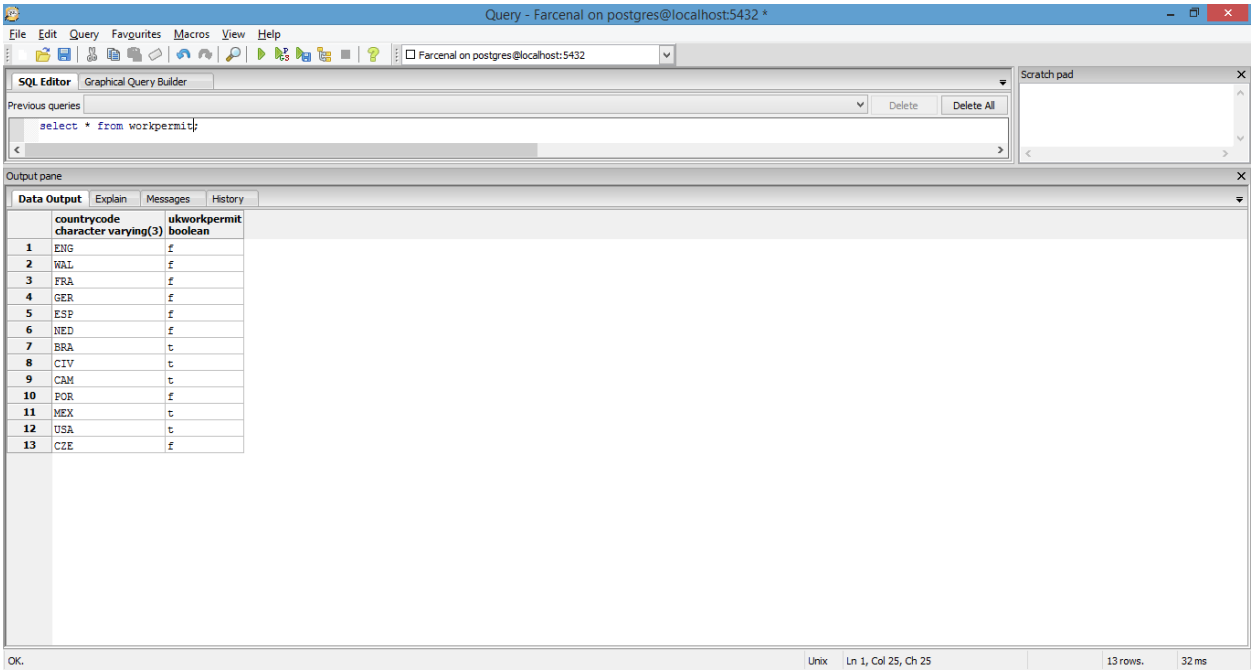
Functional dependencies

countryCode -> ukWorkPermit

Table create statement

```
CREATE TABLE workPermit (
       countryCode   varchar(3),
       ukWorkPermit  boolean
);
```

Sample data



	countrycode character varying(3)	ukworkpermit boolean
1	ENG	f
2	WAL	f
3	FRA	f
4	GER	f
5	ESP	f
6	NED	f
7	BRA	t
8	CIV	t
9	CAM	t
10	POR	f
11	MEX	t
12	USA	t
13	CZE	f

financialSummary table

Purpose: Gives snap shot information regarding club's finances for a particular year.

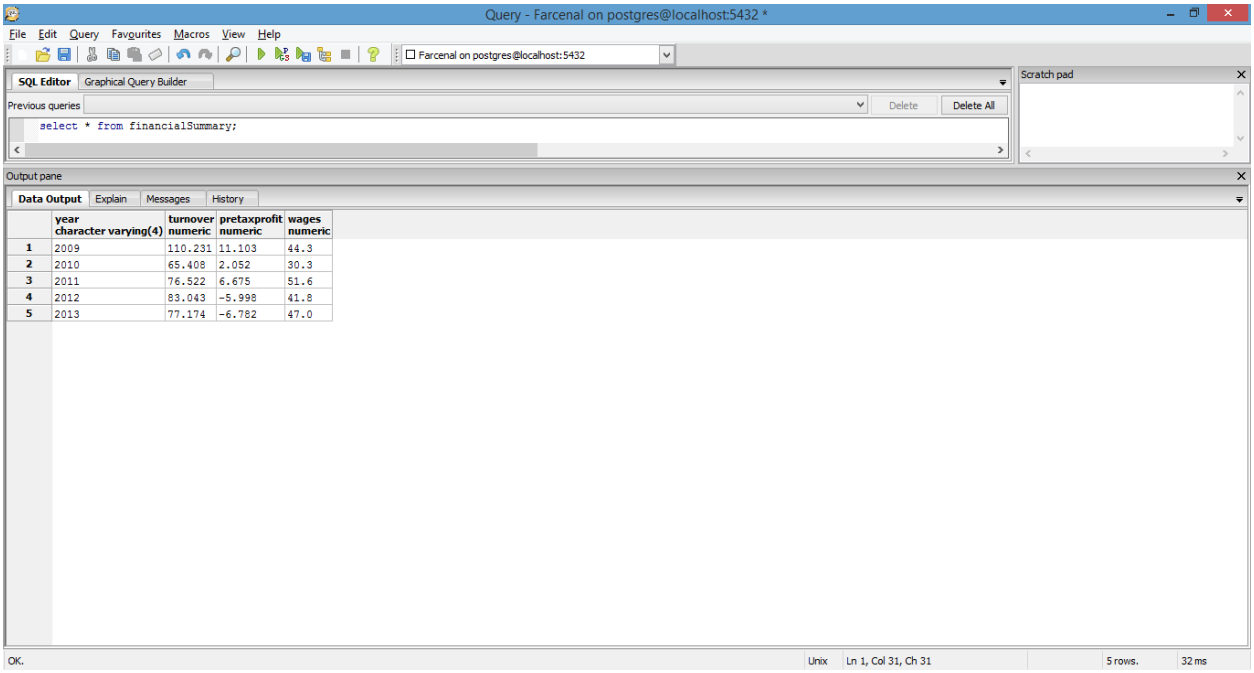
Functional dependencies

Year -> turnover, preTaxProfit, wages

Table create statement

```
CREATE TABLE financialSummary (
       year          varchar(4) PRIMARY KEY,
       turnover      decimal NOT NULL,
       preTaxProfit  decimal NOT NULL,
       wages         decimal NOT NULL
);
```

Sample data



	year character varying(4)	turnover numeric	pretaxprofit numeric	wages numeric
1	2009	110.231	11.103	44.3
2	2010	65.408	2.052	30.3
3	2011	76.522	6.675	51.6
4	2012	83.043	-5.998	41.8
5	2013	77.174	-6.782	47.0

Expenses table

Purpose: Gives breakdown of club expenses by category for a particular year.

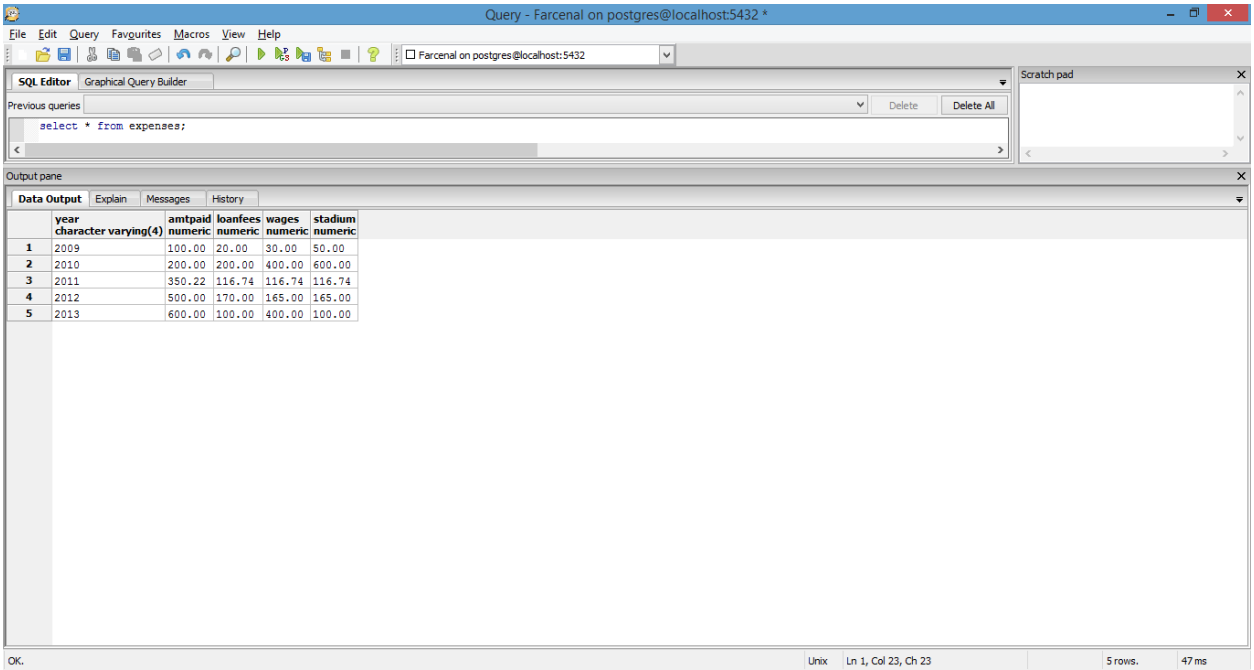
Functional dependencies

Year -> amtPaid, loanFees, wages, stadium

Table create statement

```
CREATE TABLE expenses (
	year		varchar(4) PRIMARY KEY,
	amtPaid		decimal NOT NULL,
	loanFees	decimal,
	wages		decimal NOT NULL,
	stadium		decimal NOT NULL
);
```

Sample data



	year character varying(4)	amtpaid numeric	loanfees numeric	wages numeric	stadium numeric
1	2009	100.00	20.00	30.00	50.00
2	2010	200.00	200.00	400.00	600.00
3	2011	350.22	116.74	116.74	116.74
4	2012	500.00	170.00	165.00	165.00
5	2013	600.00	100.00	400.00	100.00

Income table

Purpose: Gives breakdown of club income by category for a particular year.

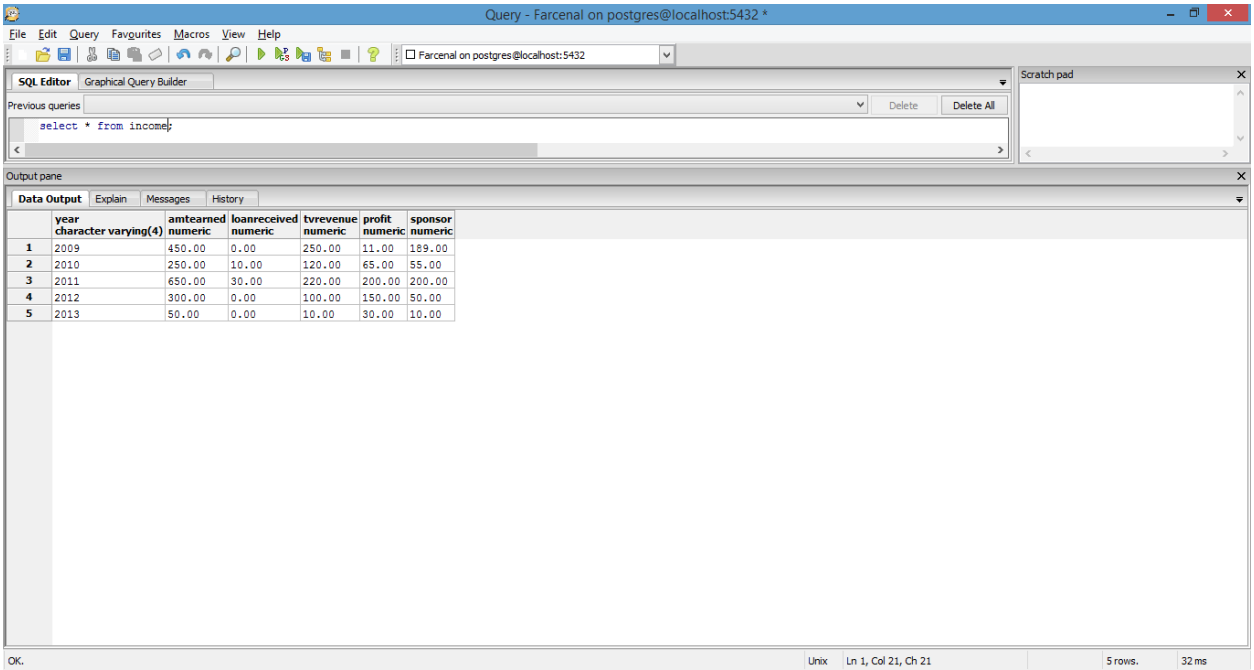
Functional dependencies

Year -> amtEarned, loanReceived, tvRevenue, profit, sponsor

Table create statement

```
CREATE TABLE income (
       year          varchar(4) PRIMARY KEY,
       amtEarned     decimal NOT NULL,
       loanReceived  decimal,
       tvRevenue     decimal,
       profit        decimal,
       sponsor              decimal
);
```

Sample data



	year character varying(4)	amtearned numeric	loanreceived numeric	tvrevenue numeric	profit numeric	sponsor numeric
1	2009	450.00	0.00	250.00	11.00	189.00
2	2010	250.00	10.00	120.00	65.00	55.00
3	2011	650.00	30.00	220.00	200.00	200.00
4	2012	300.00	0.00	100.00	150.00	50.00
5	2013	50.00	0.00	10.00	30.00	10.00

Sponsorships table

Purpose: Gives base level sponsor information for each sponsor associated with the club in a given year.

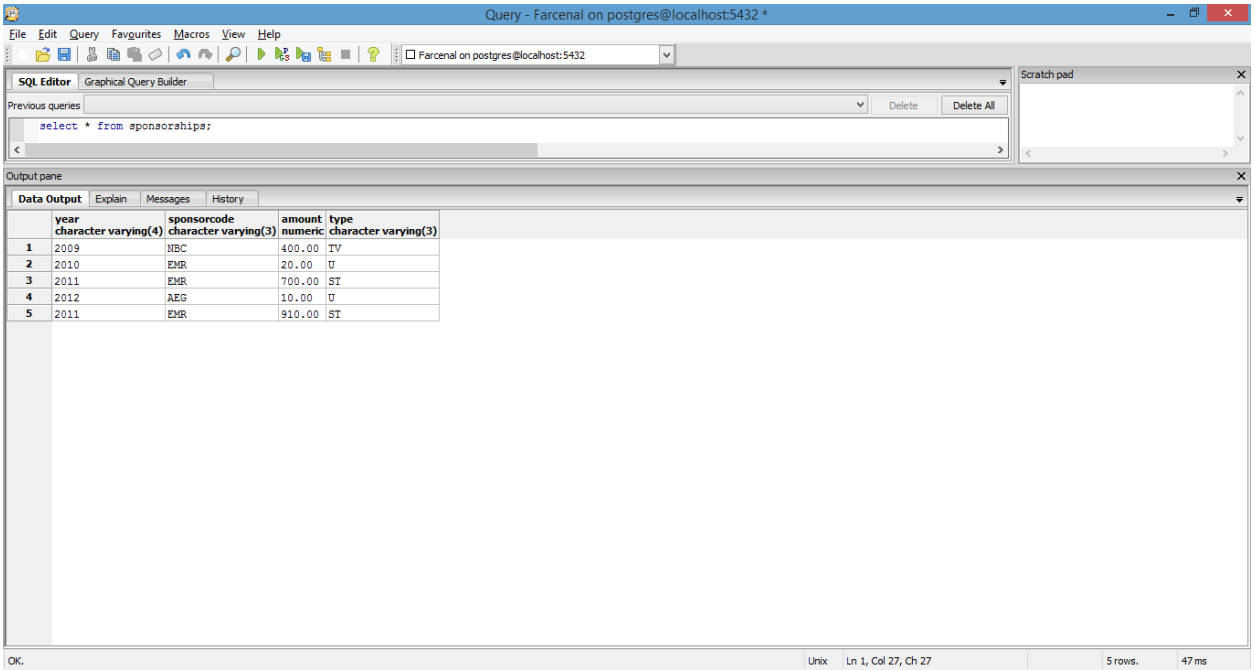
Functional dependencies

SponsorCode -> year, amount, type

Table create statement

```
CREATE TABLE sponsorships (
       year          varchar(4),
       sponsorCode   varchar(3),
       amount        decimal NOT NULL,
       type          varchar(3)
);
```

Sample data



	year character varying(4)	sponsorcode character varying(3)	amount numeric	type character varying(3)
1	2009	NBC	400.00	TV
2	2010	EMR	20.00	U
3	2011	EMR	700.00	ST
4	2012	AEG	10.00	U
5	2011	EMR	910.00	ST

Sponsors table

Purpose: Personal details about each sponsor featured in the table above.

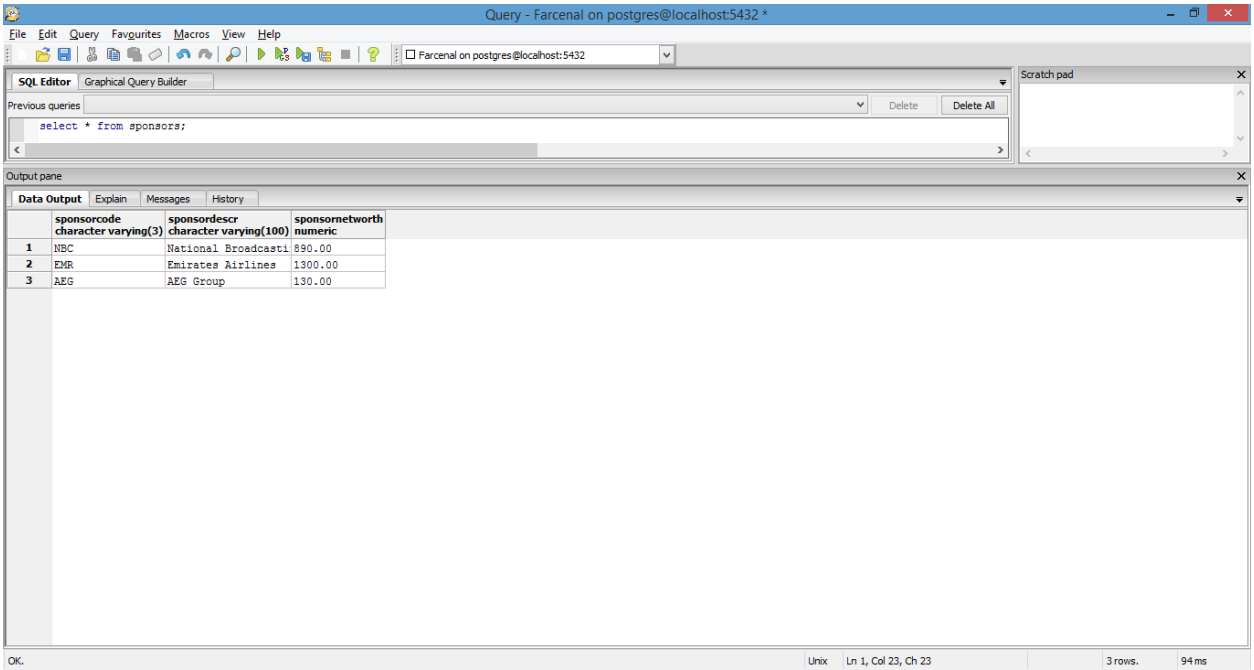
Functional dependencies

SponsorCode -> sponsorDescr, sponsorNetWorth

Table create statement

```
CREATE TABLE sponsors (
       sponsorCode   varchar(3) PRIMARY KEY,
       sponsorDescr  varchar(100) NOT NULL,
       sponsorNetWorth      decimal NOT NULL
);
```

Sample data



sponsorType table

Purpose: Information about the type of sponsorship for each sponsor associated with the club. Example: TV sponsor, versus stadium naming rights etc

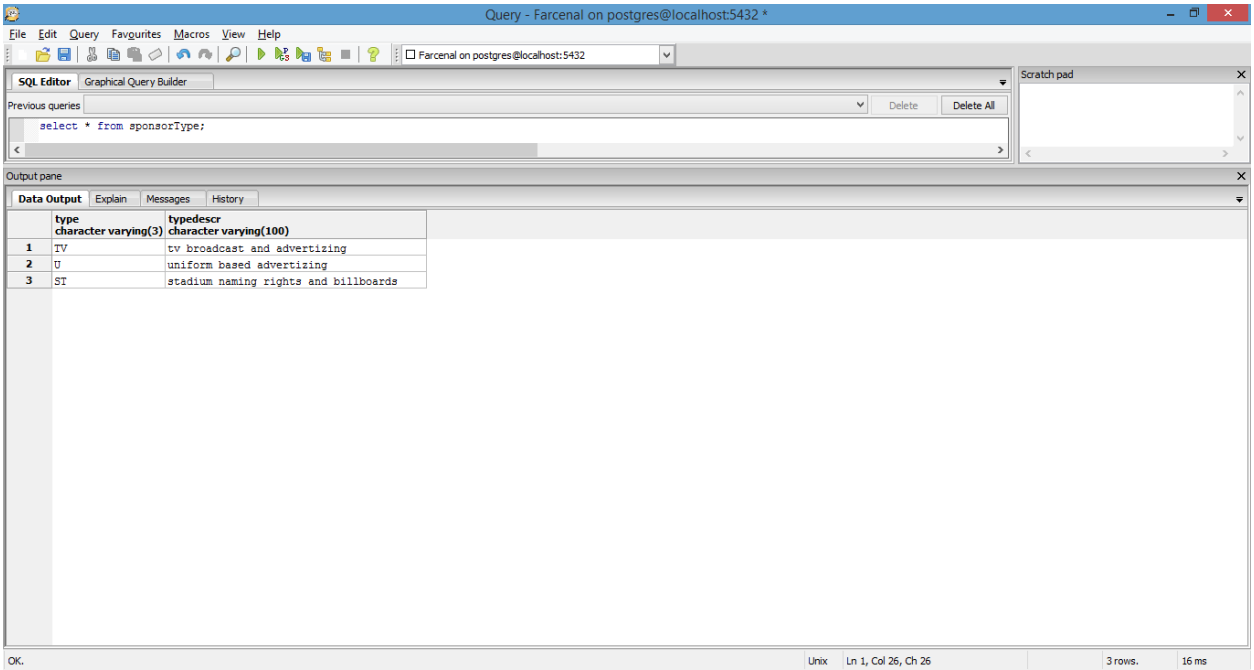
Functional dependencies

Type -> typeDescr

Table create statement

```
CREATE TABLE sponsorType (
       type          varchar(3) PRIMARY KEY,
       typeDescr     varchar(100) NOT NULL
);
```

Sample data



Wages table

Purpose: breakdown of a particular employee's wage into sub-components making up the full wages for a particular year. Will also let the viewer determine whether an employee is being given performance based bonuses for a year and if so, the performances that this is based on.

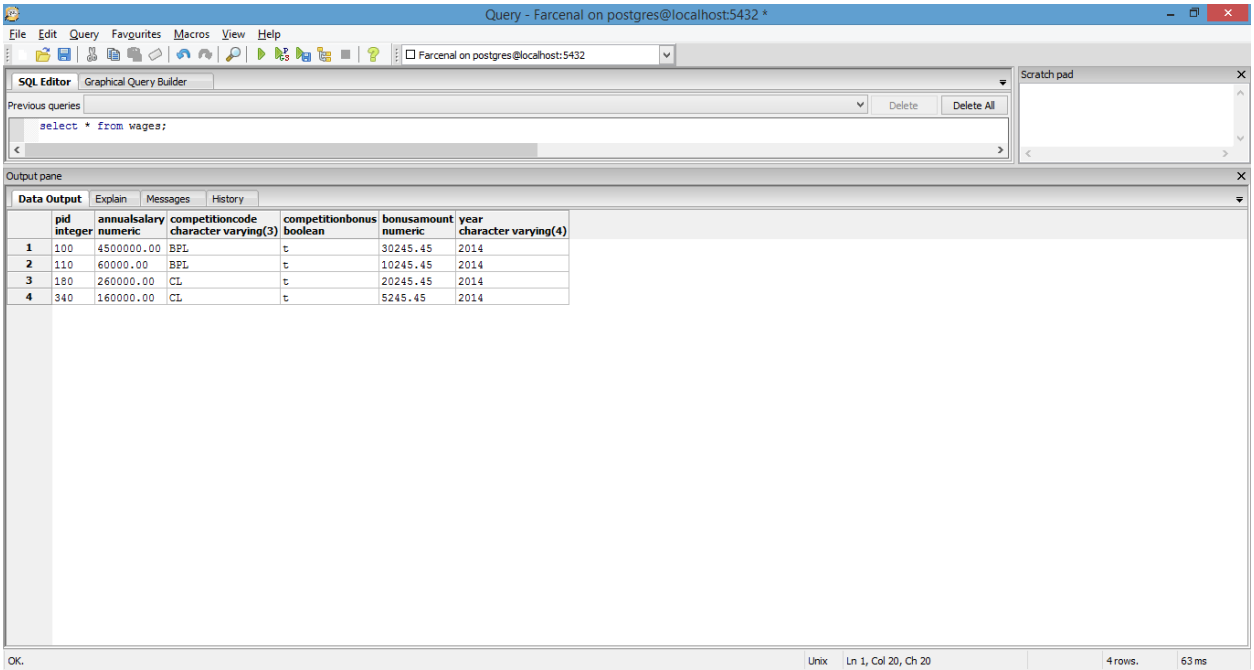
Functional dependencies

PID -> annualSalary, competitionCode, competitionBonus, bonusAmount

Table create statement

```
CREATE TABLE wages (
       PID           integer NOT NULL,
       annualSalary  decimal NOT NULL,
       competitionCode      varchar(3),
       competitionBonus boolean,
       bonusAmount   decimal,
       year          varchar(4) NOT NULL
);
```

Sample data



	pid integer	annualsalary numeric	competitioncode character varying(3)	competitionbonus boolean	bonusamount numeric	year character varying(4)
1	100	4500000.00	BPL	t	30245.45	2014
2	110	60000.00	BPL	t	10245.45	2014
3	180	260000.00	CL	t	20245.45	2014
4	340	160000.00	CL	t	5245.45	2014

Competitions table

Purpose: Details about each club based competition the club has entered.

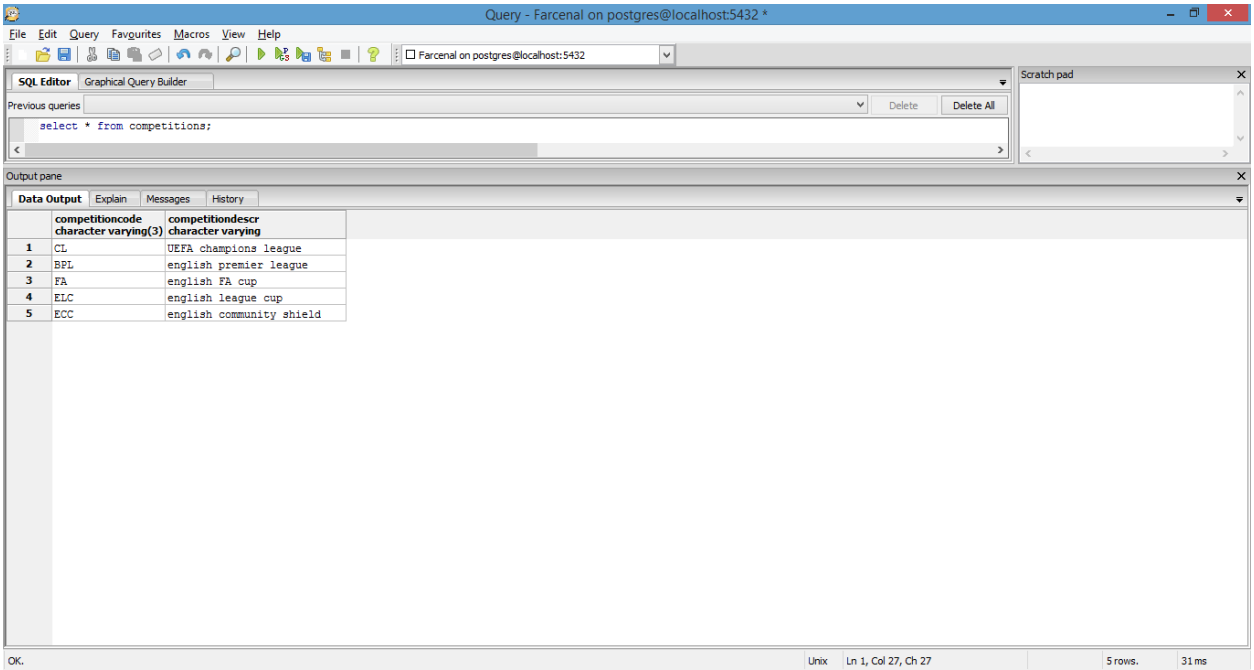
Functional dependencies

competitionCode -> competitionDescr

Table create statement

```
CREATE TABLE competitions (
       competitionCode      varchar(3) PRIMARY KEY,
       competitionDescr varchar NOT NULL
);
```

Sample data



internationalCompetitions table

Purpose: Details about non club based i.e. international competitions that the club's players may be participating in.

Functional dependencies

tournamentCode, year -> tournamentDesr, countryCode

Table create statement

```
CREATE TABLE internationalCompetitions (
       tournamentCode       varchar(3) NOT NULL,
       tournamentDescr      varchar(100) NOT NULL,
       countryCode   varchar(3) NOT NULL,
       year          varchar(4) NOT NULL
);
```

scoutDetails table

Purpose: What position(s) is a scout looking to recruit for, and where is he/she doing their recruitment ?

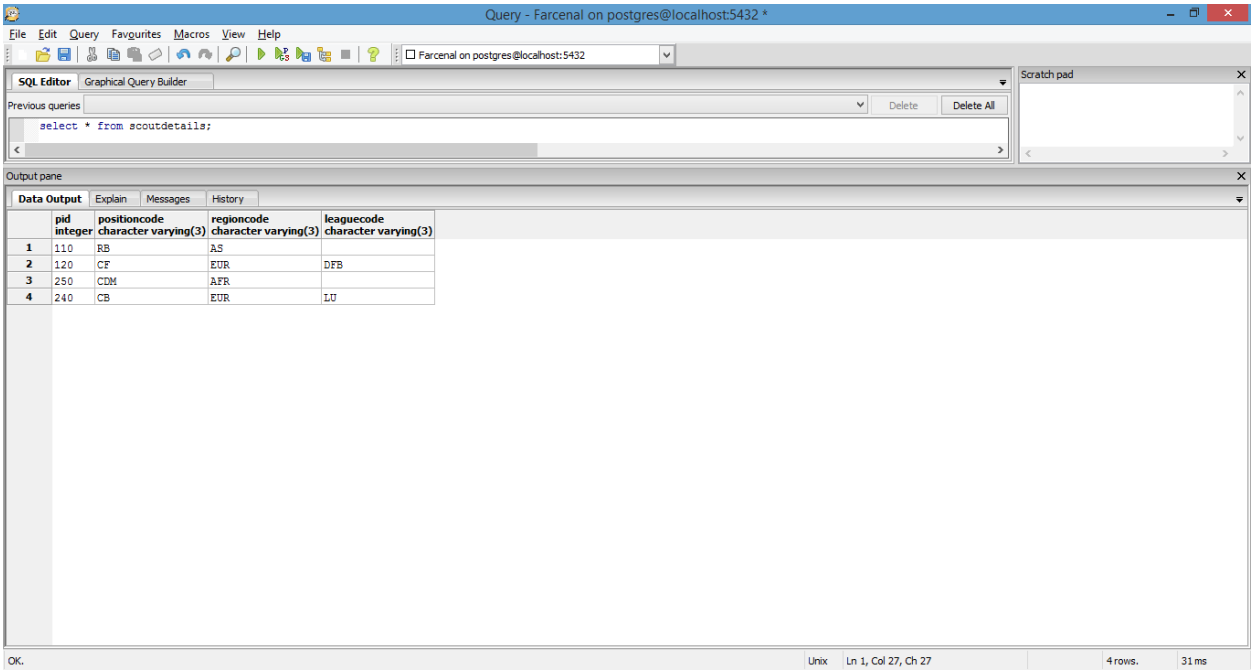
Functional dependencies

PID -> positionCode, regionCode, leagueCode

Table create statement

```
CREATE TABLE scoutDetails (
       PID           integer NOT NULL,
       positionCode  varchar(3) NOT NULL,
       regionCode    varchar(3) NOT NULL,
       leagueCode    varchar(3),
       constraint positionCode CHECK (positionCode = 'CF' OR positionCode = 'RB' OR
positionCode = 'LB' or positionCode = 'CB' or positionCode = 'CDM' or positionCode =
'CAM' or positionCode = 'CM')
);
```

Sample data



Region table

Purpose: Detailed information on the regions that a scout may recruit from

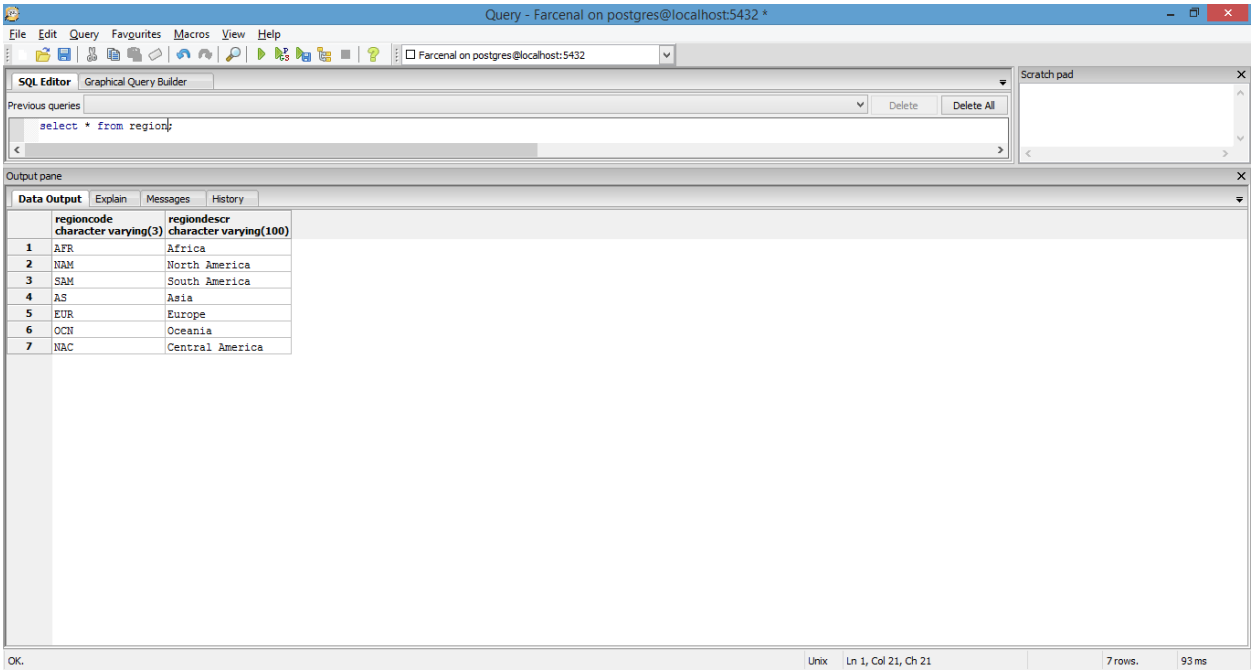
Functional dependencies

regionCode -> regionDescr

Table create statement

```
CREATE TABLE region (
       regionCode    varchar(3) PRIMARY KEY,
       regionDescr   varchar(100) NOT NULL
);
```

Sample data



Leagues table

Purpose: Detailed information about the leagues that the club plays in/a scout may recruit from.

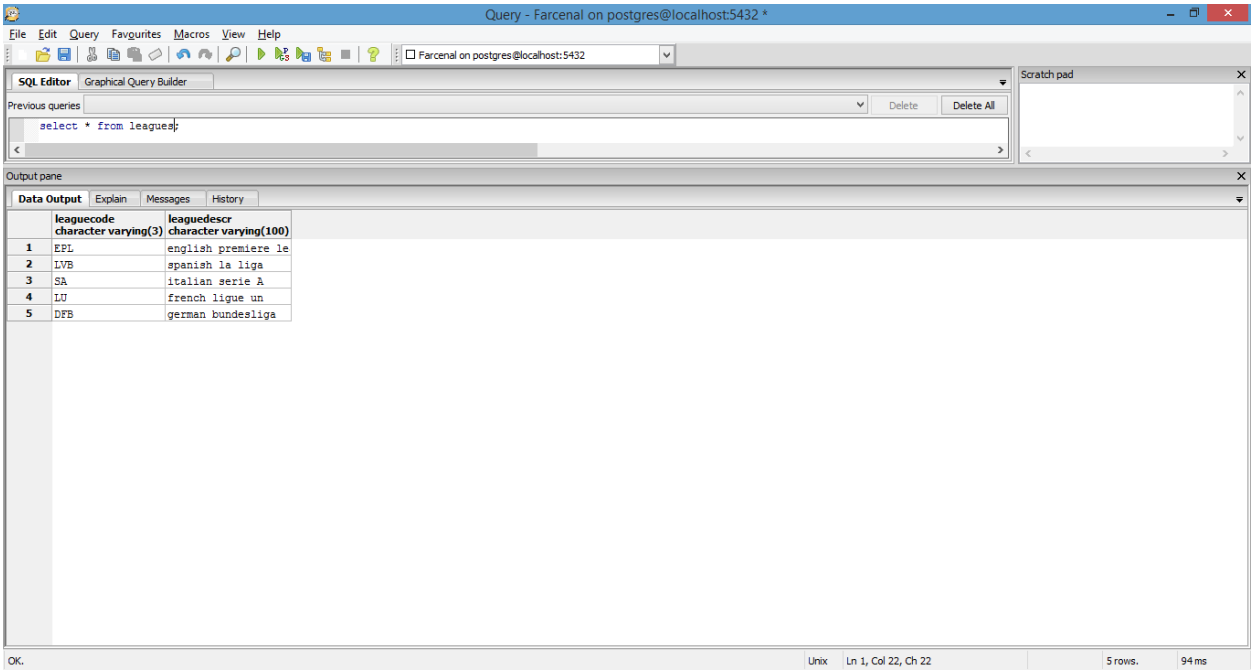
Functional dependencies

leagueCode -> leagueDescr

Table create statement

```
CREATE TABLE leagues (
       leagueCode    varchar(3) PRIMARY KEY,
       leagueDescr   varchar(100) NOT NULL
);
```

Sample data



Positions table

Purpose: Description of each of the positions a player at the club would play under. Can also be used to perform queries while scouting. **Example:** I need 3 strikers because all of my first-team strikers are injured.

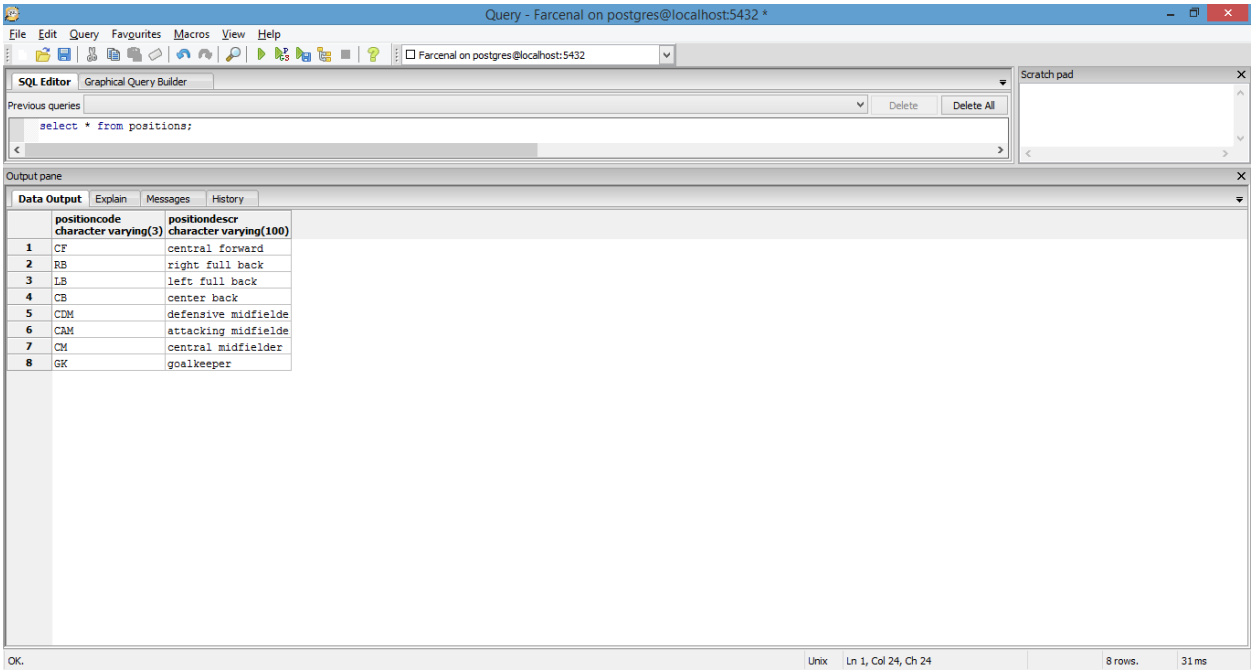
Functional dependencies

positionCode -> positionDescr

Table create statement

```
CREATE TABLE positions (
       positionCode  varchar(3) PRIMARY KEY,
       positionDescr varchar(100) NOT NULL,
       constraint positionCode CHECK (positionCode = 'CF' OR positionCode = 'RB' OR
positionCode = 'LB' or positionCode = 'CB' or positionCode = 'CDM' or positionCode =
'CAM' or positionCode = 'CM' or positionCode = 'GK')
);
```

Sample data



	positioncode character varying(3)	positiondescr character varying(100)
1	CF	central forward
2	RB	right full back
3	LB	left full back
4	CB	center back
5	CDM	defensive midfielde
6	CAM	attacking midfielde
7	CM	central midfielder
8	GK	goalkeeper

scoutingHistory table

Purpose: To evaluate scouting successes or failures. **Example:** How many players did we scout this year and out of those how many worked out and won trophies for the club? Of those that won trophies, where did we recruit them from?

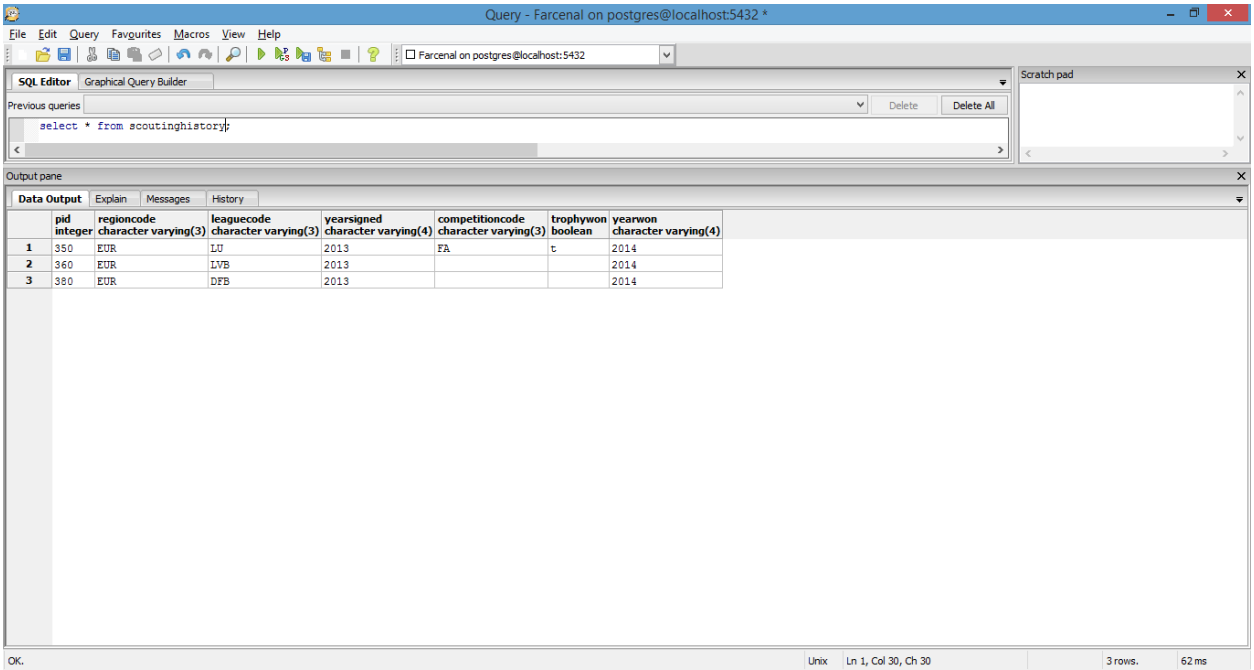
Functional dependencies

PID, regionCode, leagueCode, yearSigned, competitionCode, trophyWon, yearWon ->

Table create statement

```
CREATE TABLE scoutingHistory (
       PID            integer NOT NULL,
       regionCode     varchar(3),
       leagueCode     varchar(3),
       yearSigned     varchar(4) NOT NULL,
       competitionCode      varchar(3),
       trophyWon      boolean,
       yearWon              varchar(4)
);
```

Sample data



seasonObjectives table

Purpose: For a given season, what are our aims? Can be used to evaluate a manager's performance or determine whether he/she should be given a performance based bonus.

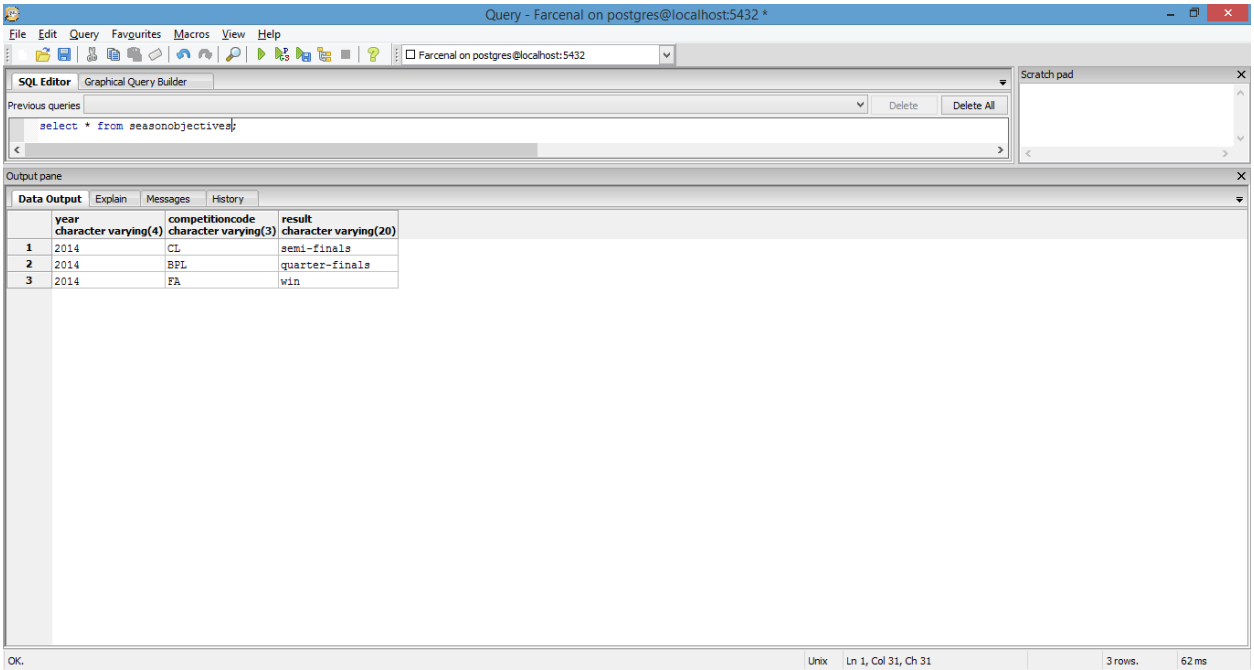
Functional dependencies

Year -> competitionCode, result

Table create statement

```
CREATE TABLE seasonObjectives (
       year          varchar(4) NOT NULL,
       competitionCode      varchar(3) NOT NULL,
       result        varchar(20) NOT NULL
       constraint result CHECK (result = 'win' OR result = 'semi-finals' OR result =
'quarter-finals' OR result = 'round of 16')
);
```

Sample data



injuryDetails table

Purpose: Determine details and length of injury for various players in the squad.

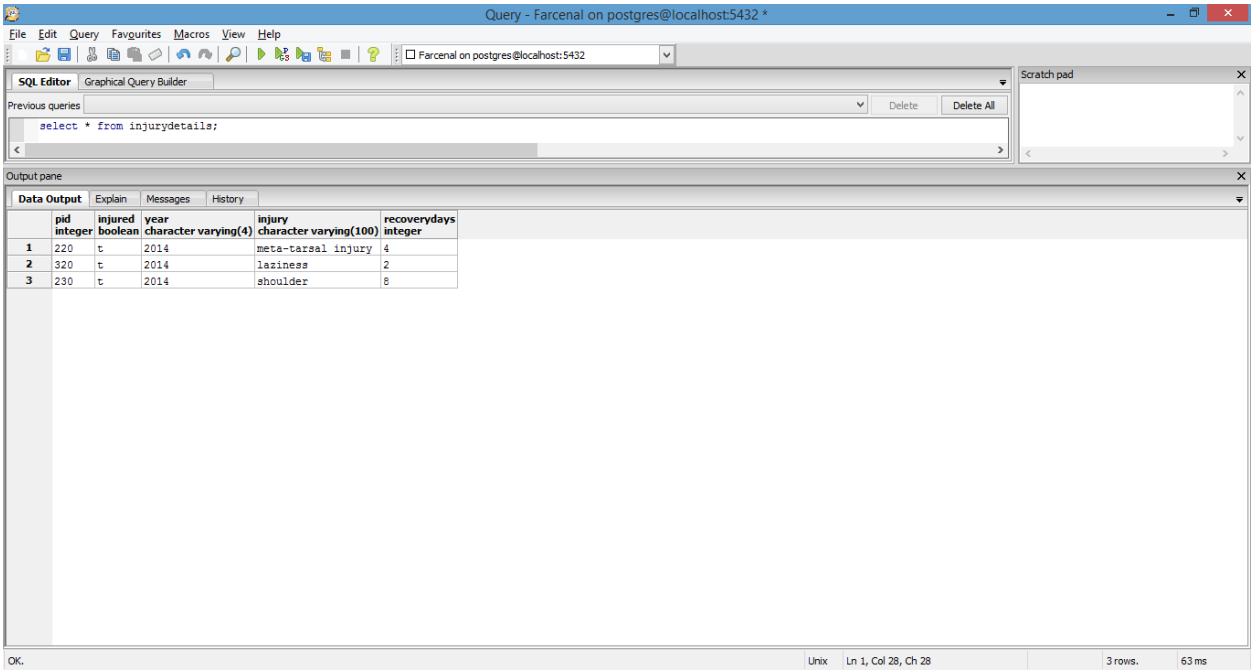
Functional dependencies

PID -> injured, year, injury, recoveryDays

Table create statement

```
CREATE TABLE injuryDetails (
       PID           integer NOT NULL,
       injured              boolean,
       year          varchar(4),
       injury        varchar(100),
       recoveryDays  integer
);
```

Sample data



Specialty table

Purpose: Details about the specialty of each of the doctors on staff.

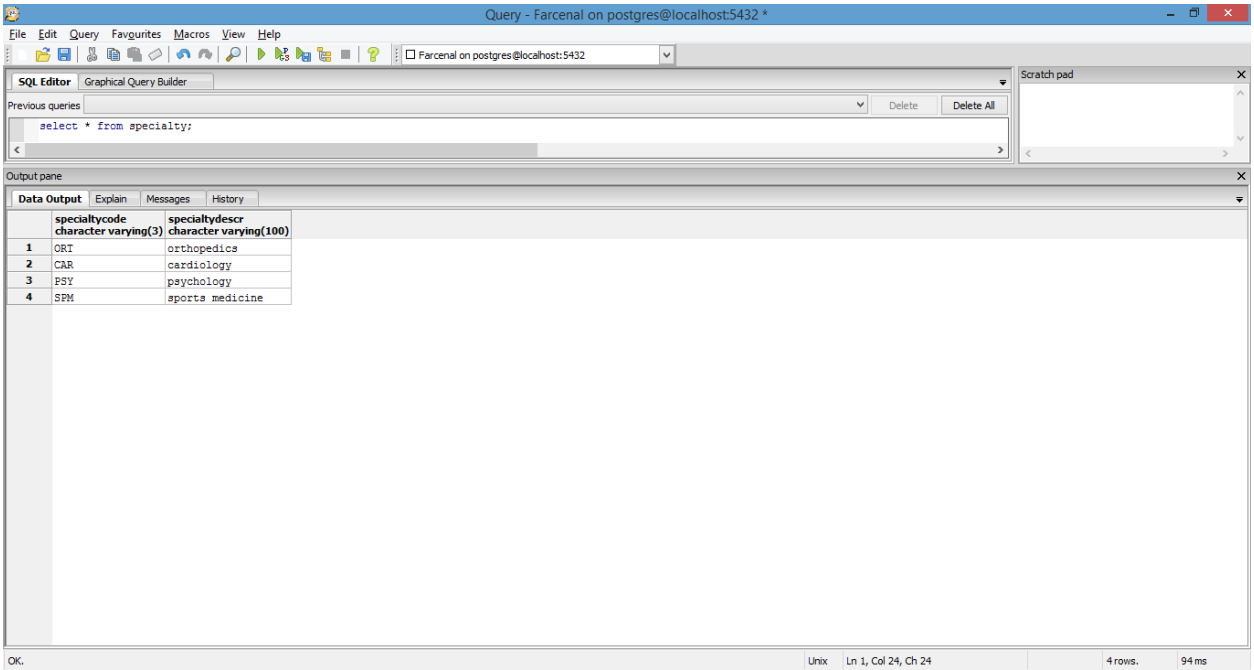
Functional dependencies

specialtyCode -> specialtyDescr

Table create statement

```
CREATE TABLE specialty (
       specialtyCode varchar(3) PRIMARY KEY,
       specialtyDescr       varchar(100) NOT NULL
);
```

Sample data



signonMedicals table

Purpose: Gives information on whether certain scouted players passed their medical screening or not prior to signing for the club.

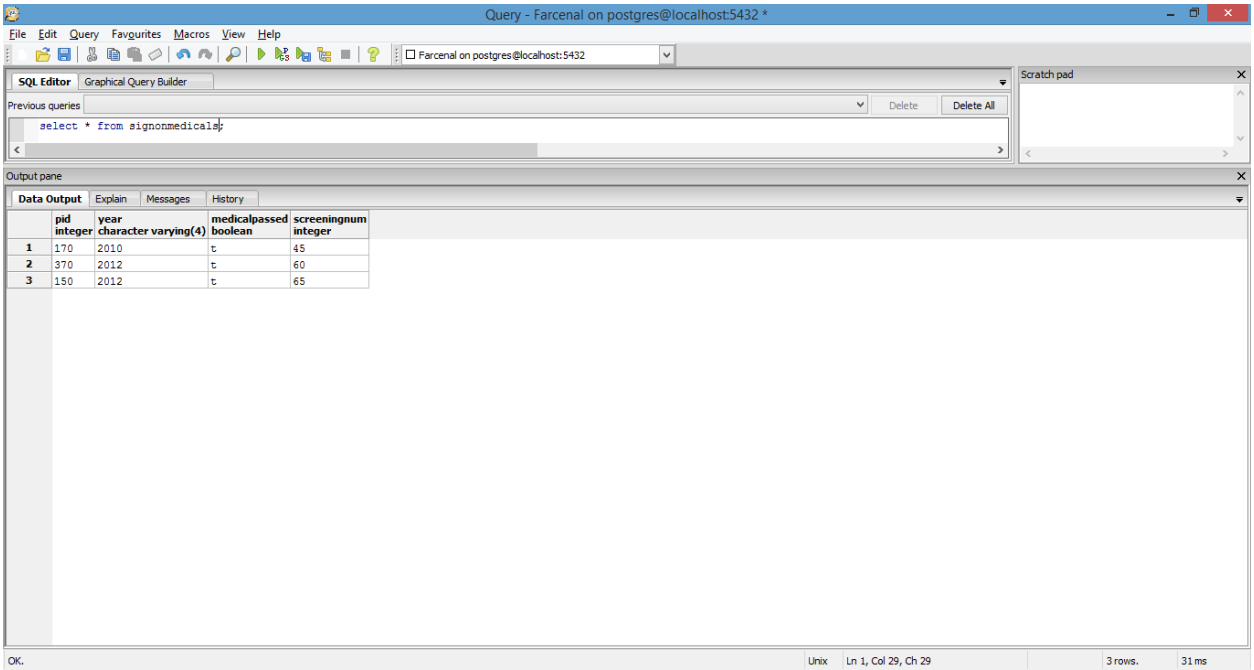
Functional dependencies

PID -> year, medicalPassed, screeningNum

Table create statement

```
CREATE TABLE signonMedicals (
       PID           integer NOT NULL,
       year          varchar(4) NOT NULL,
       medicalPassed boolean NOT NULL,
       screeningNum  integer NOT NULL
);
```

Sample data



Screening table

Purpose: Gives details about each screening listed in the table above

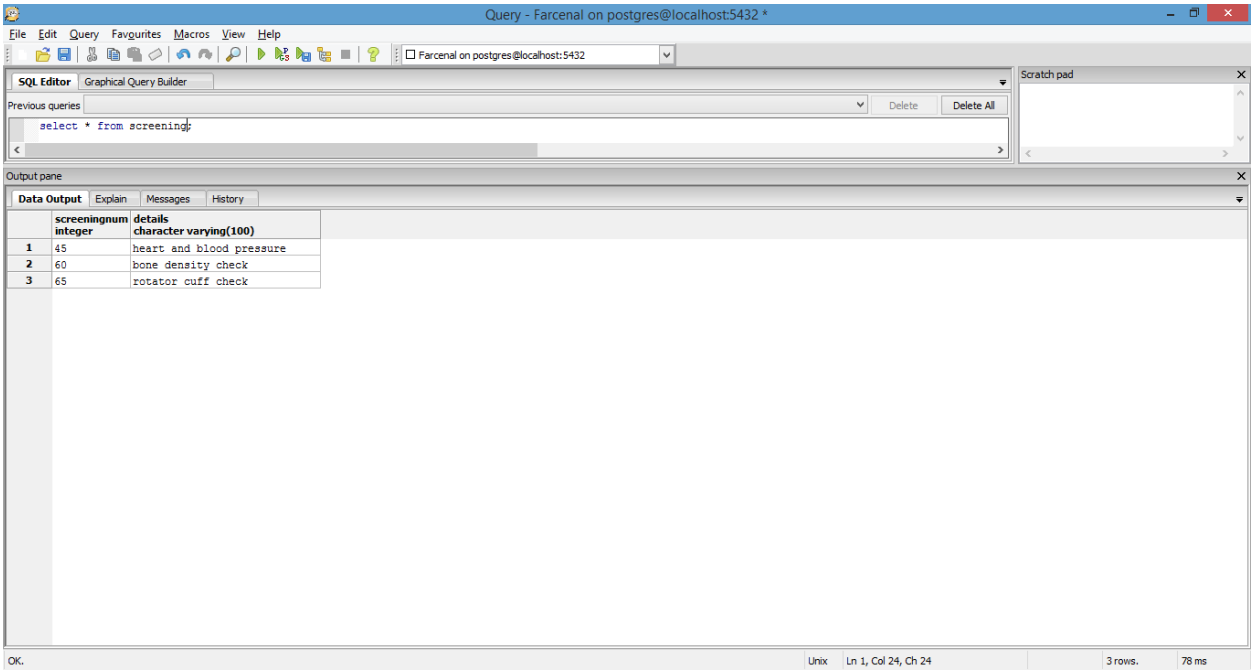
Functional dependencies

screeningNum -> details

Table create statement

```
CREATE TABLE screening (
       screeningNum  integer PRIMARY KEY,
       details               varchar(100)
);
```

Sample data



playerStats table

Purpose: Snapshot of all statistics related to each player on the squad in a given season. Including disciplinary records, and goals scored per competition entered by the club in a given year.

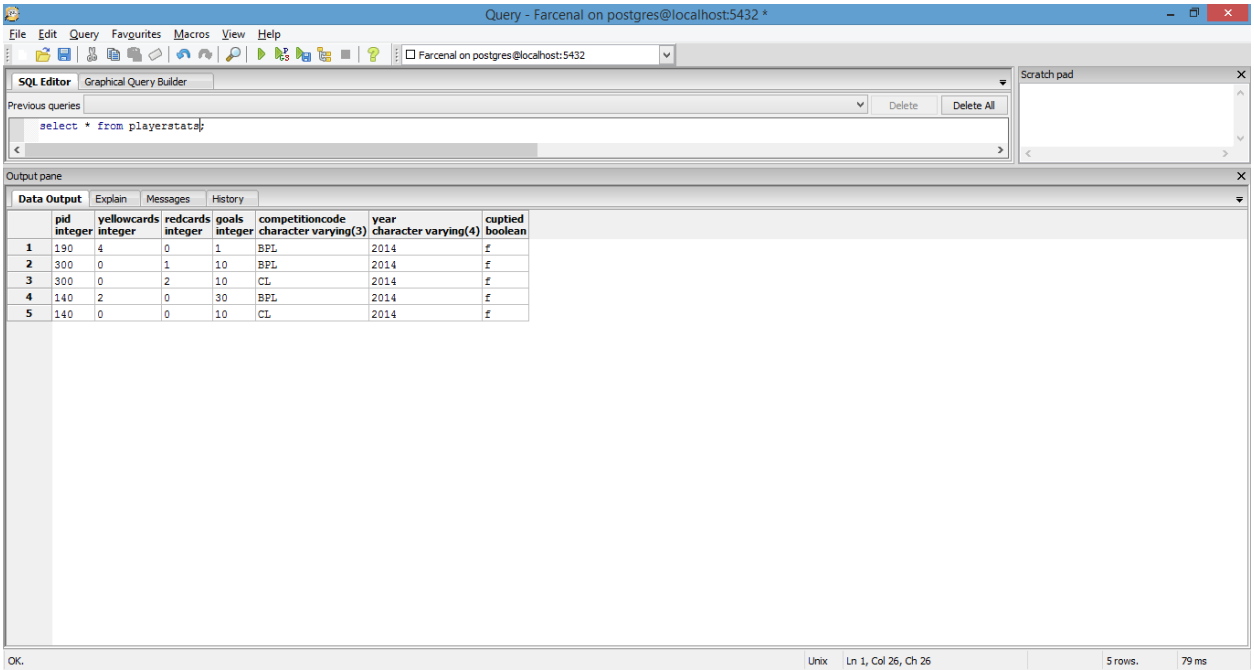
Functional dependencies

PID -> yellowCards, redCards, goals, competitionCode, year, cupTied

Table create statement

```
CREATE TABLE playerStats (
       PID            integer NOT NULL,
       yellowCards    integer,
       redCards       integer,
       goals          integer,
       competitionCode      varchar(3),
       year           varchar(4),
       cupTied              boolean
);
```

Sample data



	pid integer	yellowcards integer	redcards integer	goals integer	competitioncode character varying(3)	year character varying(4)	cuptied boolean
1	190	4	0	1	BPL	2014	f
2	300	0	1	10	BPL	2014	f
3	300	0	2	10	CL	2014	f
4	140	2	0	30	BPL	2014	f
5	140	0	0	10	CL	2014	f

cupTied table

Purpose: Helps determine whether a player is “cup tied” for a particular competition entered by the club. This will help the manager determine whether that player can be put on the roster. Usually this involves players that have been taken by the club “on loan” for a season from a competing club. They are generally not allowed to play their “parent club”.

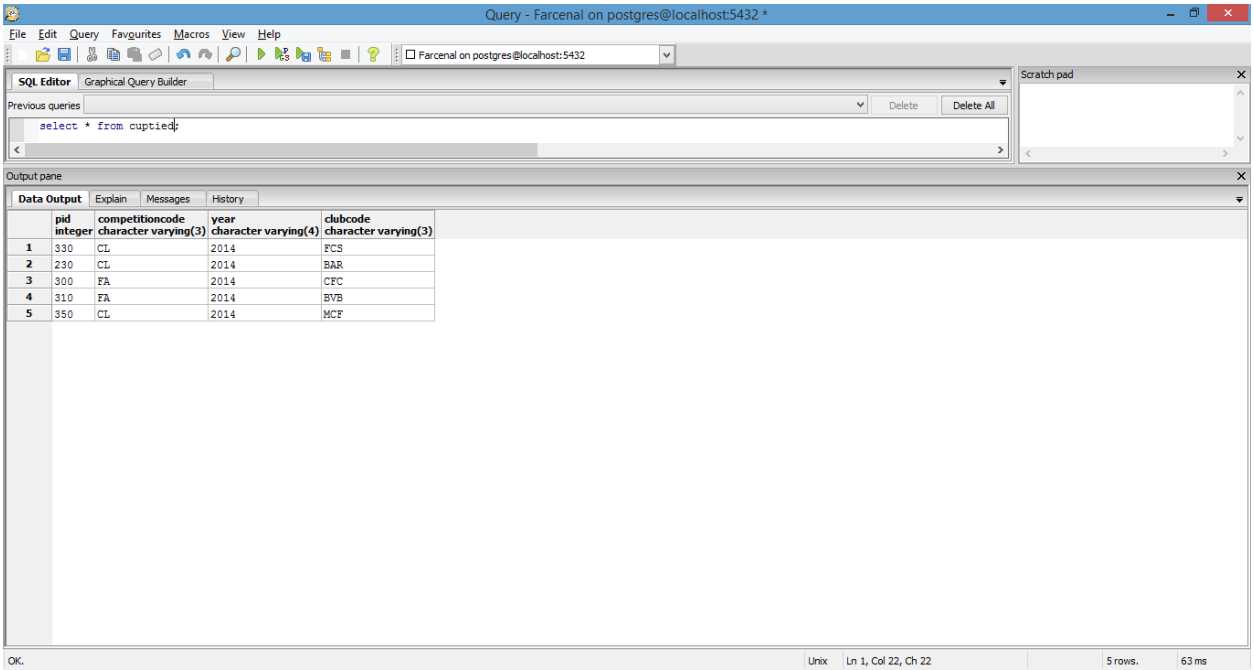
Functional dependencies

PID -> competitionCode, year, clubCode

Table create statement

```
CREATE TABLE cupTied (
       PID            integer NOT NULL,
       competitionCode      varchar(3) NOT NULL,
       year           varchar(4) NOT NULL,
       clubCode       varchar(3) NOT NULL
);
```

Sample data



Clubs table

Purpose: Stores information on competing clubs. Generally used to populate information in the table above.

Functional dependencies

clubCode -> clubDescr

Table create statement

```
CREATE TABLE clubs (
       clubCode      varchar(3) PRIMARY KEY,
       clubDescr     varchar(100) NOT NULL
);
```

Sample data

Query - Farcenal on postgres@localhost:5432 *

File Edit Query Favourites Macros View Help

Farcenal on postgres@localhost:5432

SQL Editor | Graphical Query Builder

Previous queries | Delete | Delete All

```
select * from clubs;
```

Scratch pad

Output pane

Data Output | Explain | Messages | History

	pid integer	competitioncode character varying(3)	year character varying(4)	clubcode character varying(3)
1	330	CL	2014	FCS
2	230	CL	2014	BAR
3	300	FA	2014	CFC
4	310	FA	2014	BVB
5	350	CL	2014	MCF

OK. | Unix | Ln 1, Col 20, Ch 20 | 5 rows. | 63 ms

Views

PlayersByPosition

Purpose: Returns listing of every player in the club (including first team, reserve team and youth team) along with a detailed description of the position they play in.

Code

```
CREATE VIEW PlayersByPosition AS
       SELECT p.fname,
              p.lname,
              p.mi,
              p.age,
              pos.positiondescr
       FROM players pl
       INNER JOIN people p on
              pl.pid = p.pid
       INNER JOIN positions pos on
              pl.positioncode = pos.positioncode
```

PlayersByCountry

Purpose: As mentioned under the table create scripts above, the club can have employees from several nations. This view was created with the purpose of determining which nationality each employee is from in case HR needs a report on this or for work permit purposes.

Code

```
CREATE VIEW PlayersByCountry AS
       SELECT p.fname,
              p.lname,
              p.mi,
              p.age,
              p.countrycode,
              c.countryName
       FROM players pl
       INNER JOIN people p on
              pl.pid = p.pid
       INNER JOIN countries c on
              p.countryCode = c.countryCode
```

PlayersByInjury

Purpose: Can be used while generating injury reports for the manager by the medical team.

Code

```
CREATE VIEW PlayersByInjury AS
       SELECT p.fname,
              p.lname,
              p.mi,
              p.age,
              pl.positioncode,
              i.injury,
              i.recoveryDays
       FROM players pl
       INNER JOIN people p on
              pl.pid = p.pid
       INNER JOIN injuryDetails i on
              pl.pid = i.pid
       WHERE i.injured = true
```

SponsorDetails

Purpose: Easy way to represent summary information related to sponsors and related sponsorships

Code

```
CREATE VIEW SponsorDetails AS
       SELECT s.sponsordescr,
              s.sponsornetworth,
              sp.year,
              sp.amount,
              sp.type
       FROM sponsors s
       INNER JOIN sponsorships sp on
              s.sponsorcode = sp.sponsorcode
```

WageDetails

Purpose: Easy way to represent summary information related to employee wages if a payroll report needs to be generated.

Code

```
CREATE VIEW WageDetails AS
       SELECT p.fname,
              p.mi,
              p.lname,
              p.etid,
              w.annualsalary,
```

```
        c.competitiondescr,
        w.competitionbonus,
        w.bonusamount,
        w.year
FROM wages w
INNER JOIN people p on
        w.pid = p.pid
INNER JOIN competitions c on
        w.competitionCode = c.competitionCode
```

PlayersInInternationalTournaments

Purpose: Club players can come from several nations. Due to this, their national teams may call them up for duty either during or in between seasons. Managers will like to monitor this information in case a club player picks up an injury while on national duty.

Code

```
CREATE VIEW PlayersInInternationalTournaments AS
        SELECT p.fname,
        p.mi,
        p.lname,
        ic.tournamentdescr,
        ic.year
FROM people p
INNER JOIN players pl on
        p.pid = pl.pid
INNER JOIN internationalcompetitions ic on
        p.countryCode = ic.countryCode
```

EmployeeDetails

Purpose: Information on the type of employee each person is.

Code

```
CREATE VIEW EmployeeDetails AS
        SELECT p.fname,
        p.mi,
        p.lname,
        et.etdescr
FROM people p
INNER JOIN employeeType et on
        p.etid = et.etid
```

Reports

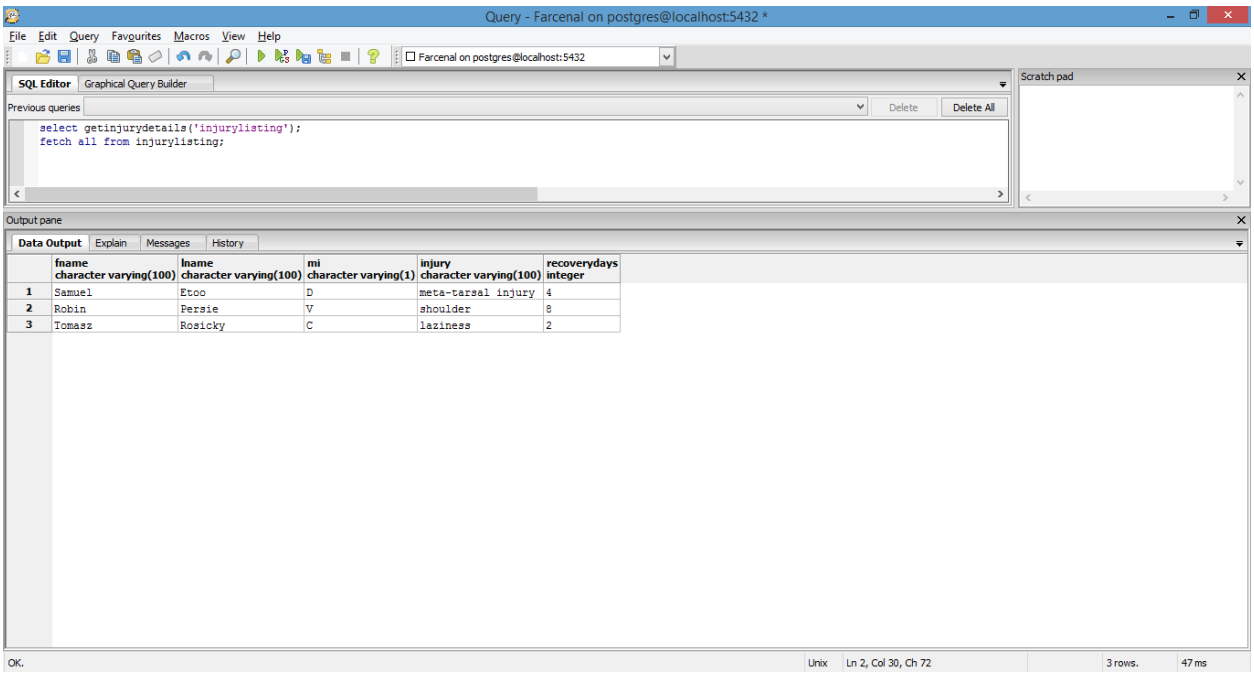
GetInjuryListing

Purpose: To aid the manager in making team selections.

Code

```
select getinjurydetails('injurylisting');
fetch all from injurylisting;
```

Sample



GetWorkPermitListing

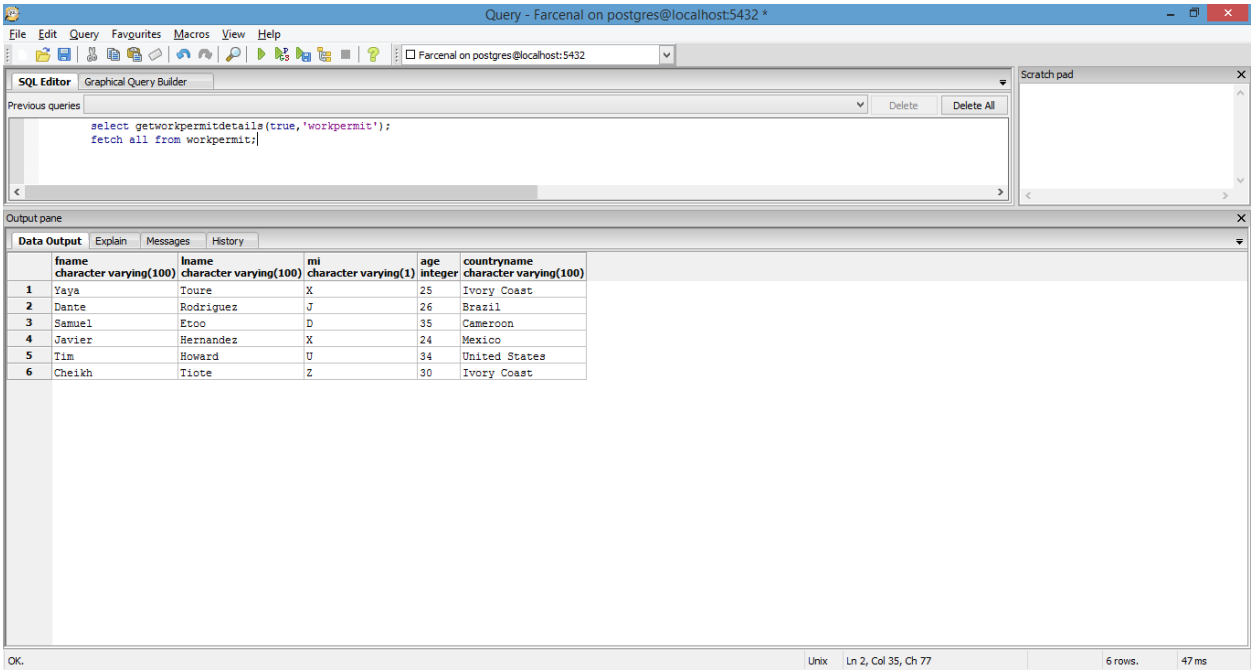
Purpose: To aid the manager or human resources.

Code

```
--need work permit
select getworkpermitdetails(true,'workpermit');
fetch all from workpermit;

--don't need work permit
select getworkpermitdetails(false,'workpermit');
fetch all from workpermit;
```

Sample



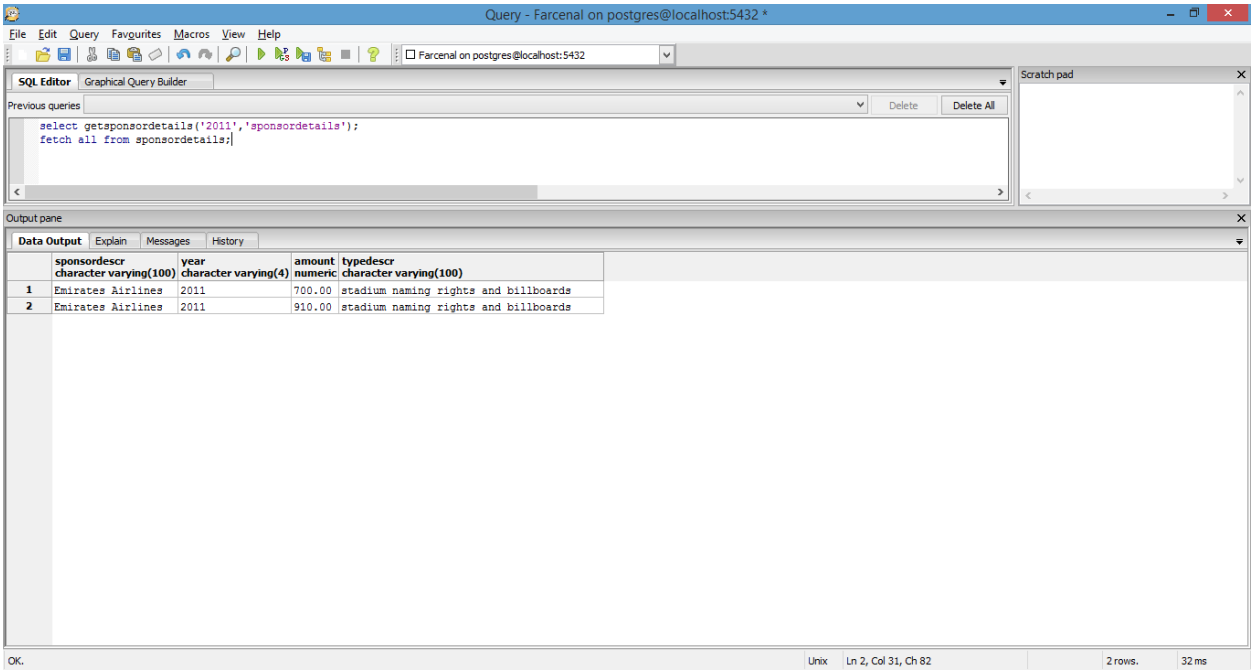
GetSponsorDetails

Purpose: To provide management, finance department and owners a snapshot of club sponsorship information.

Code

```
select getsponsordetails('2011','sponsordetails');
fetch all from sponsordetails;
```

Sample



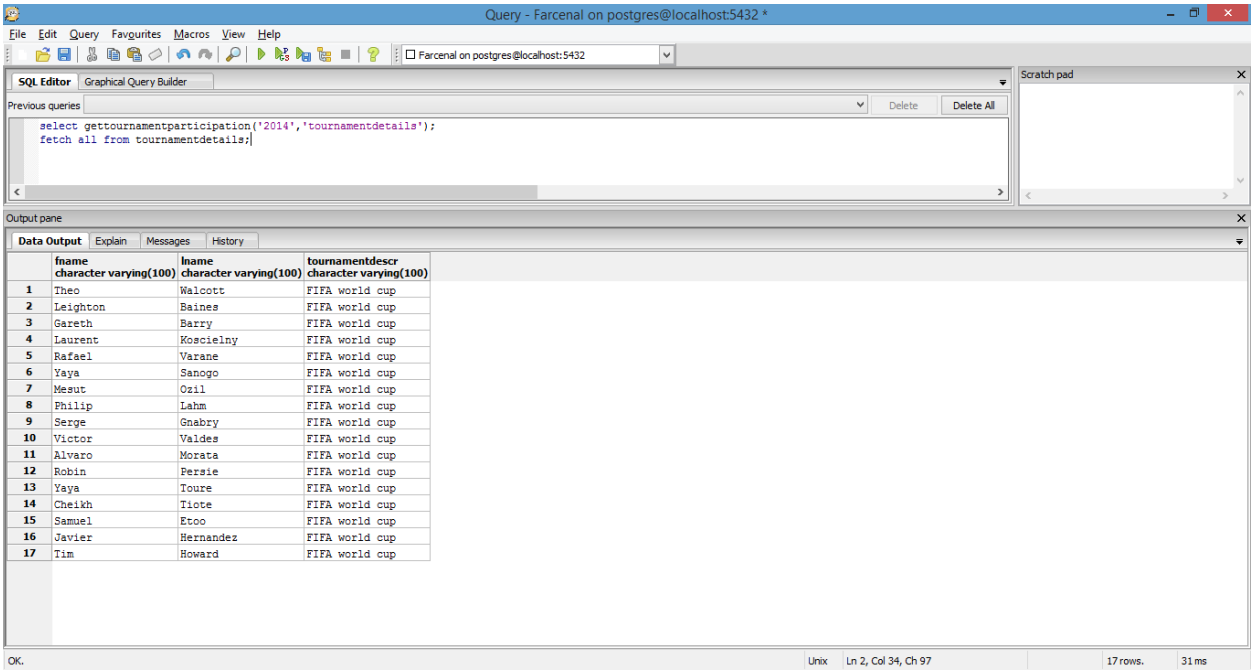
TournamentParticipation

Purpose: To aid the manager in making team selections based on whether or not some of his players will be away at the tournament(s) in question.

Code

```
select gettournamentparticipation('2014','tournamentdetails');
fetch all from tournamentdetails;
```

Sample



	fname character varying(100)	lname character varying(100)	tournamentdescr character varying(100)
1	Theo	Walcott	FIFA world cup
2	Leighton	Baines	FIFA world cup
3	Gareth	Barry	FIFA world cup
4	Laurent	Koscielny	FIFA world cup
5	Rafael	Varane	FIFA world cup
6	Yaya	Sanogo	FIFA world cup
7	Mesut	Ozil	FIFA world cup
8	Philip	Lahm	FIFA world cup
9	Serge	Gnabry	FIFA world cup
10	Victor	Valdes	FIFA world cup
11	Alvaro	Morata	FIFA world cup
12	Robin	Persie	FIFA world cup
13	Yaya	Toure	FIFA world cup
14	Cheikh	Tiote	FIFA world cup
15	Samuel	Etoo	FIFA world cup
16	Javier	Hernandez	FIFA world cup
17	Tim	Howard	FIFA world cup

EmployeeDetails

Purpose: To aid human resources to find details about employees of a certain category.

Code

```
select getemployeesbytype('managers','employeetypes');
fetch all from employeetypes;
```

Sample

Query - Farcenal on postgres@localhost:5432 *

File Edit Query Favourites Macros View Help

Farcenal on postgres@localhost:5432

SQL Editor | Graphical Query Builder

Previous queries | Delete | Delete All

```
select getemployeesbytype('managers','employeetypes');
fetch all from employeetypes;
```

Scratch pad

Output pane

Data Output | Explain | Messages | History

	fname character varying(100)	mi character varying(1)	lname character varying(100)
1	Arsene	W	Wenger
2	Gary	B	Neville
3	Steve	T	Bould

OK. | Unix | Ln 2, Col 30, Ch 85 | 3 rows. | 32 ms

Stored Procedures

GetInjuryDetails

Purpose: Complete listing of injured players including the injury description and recovery time needed.

```
create or replace function GetInjuryDetails(REFCURSOR) returns refcursor as
$$
declare
	injurydetails REFCURSOR	:= $1;
begin
	open injurydetails for
		select fname,
			lname,
			mi,
			injury,
			recoverydays
		from PlayersByInjury;
	return injurydetails;
end;
$$
language plpgsql;
```

GetWorkPermitDetails

Purpose: To be used by HR to determine/obtain UK work permits for employees at the club that may need it.

```
create or replace function GetWorkPermitDetails(boolean, REFCURSOR) returns refcursor as

$$
declare
	permitneeded		boolean		:= $1;
	workpermitdetails	REFCURSOR	:= $2;
begin
	open workpermitdetails for
		select pbc.fname,
			pbc.lname,
			pbc.mi,
			pbc.age,
			pbc.countryname
		from PlayersByCountry pbc
		inner join workpermit w on
			pbc.countrycode = w.countrycode
		where w.ukworkpermit = permitneeded;
	return workpermitdetails;
end;
```

```
$$
language plpgsql;
```

GetTournamentParticipation

Purpose: To determine what tournament(s) club players are involved in in a given year.

```
create or replace function GetTournamentParticipation(varchar(4), REFCURSOR) returns
refcursor as
$$
declare
	tournamentyear		varchar(4)	:= $1;
	tournamentdetails	REFCURSOR	:= $2;
begin
	open tournamentdetails for
		select pit.fname,
			pit.lname,
			pit.tournamentdescr
		from PlayersInInternationalTournaments pit
		where pit.year = tournamentyear;
	return tournamentdetails;
end;
$$
language plpgsql;
```

GetSponsorDetails

Purpose: To generate reports about sponsorship deals for the club.

```
create or replace function GetSponsorDetails(varchar(4), REFCURSOR) returns refcursor as
$$
declare
	sponsoryear		varchar(4)	:= $1;
	sponsordetails		REFCURSOR	:= $2;
begin
	open sponsordetails for
		select sd.sponsordescr,
			sd.year,
			sd.amount,
			st.typedescr
		from SponsorDetails sd
		inner join sponsorType st on
			sd.type = st.type
		where sd.year = sponsoryear;
	return sponsordetails;
end;
$$
language plpgsql;
```

GetInjuryDetailsByPos

Purpose: To determine squad selection

```
create or replace function GetInjuryDetailsByPos(varchar(3),REFCURSOR) returns refcursor
as
$$
declare
	injurypos		varchar(4)	:= $1;
	injurydetails		REFCURSOR	:= $2;
begin
	open injurydetails for
		select fname,
			lname,
			mi,
			injury,
			recoverydays
		from PlayersByInjury
		where positioncode = injurypos;
	return injurydetails;
end;
$$
language plpgsql;
```

GetEmployeesByType

Purpose: To generate employee reports

```
create or replace function GetEmployeesByType(varchar(100),REFCURSOR) returns refcursor
as
$$
declare
	etype		varchar(100)	:= $1;
	employeetype		REFCURSOR	:= $2;
begin
	open employeetype for
		select fname,
			mi,
			lname
		from EmployeeDetails
		where etdescr = etype;
	return employeetype;
end;
$$
language plpgsql;
```

Triggers

Check_PrimaryAddress()

Purpose: While inserting address information, a PID can only list one address as the “primary”. This checks for that.

```
CREATE FUNCTION check_primaryAddress() RETURNS TRIGGER AS $check_primaryAddress$
BEGIN
	IF
		EXISTS (SELECT Addr1
			FROM address
			WHERE PID = NEW.PID
				AND NEW.IsPrimary = true)
	THEN
		RAISE EXCEPTION 'Cannot have more than one address listed as primary for a
PID';
	END IF;
	RETURN NEW;
END
$check_primaryAddress$ LANGUAGE plpgsql;
```

Check_isPlayer()

Purpose: To make sure the right type of employee is being entered into the right table. **Example:** A player cannot be a doctor and therefore a PID of type player should not be inserted into the doctor table.

```
CREATE FUNCTION check_isPlayer() RETURNS TRIGGER AS $check_isPlayer$
BEGIN
	IF
		EXISTS (SELECT PID
			FROM players
			WHERE PID = NEW.PID)
	THEN
		RAISE EXCEPTION 'A player cannot assume a role other than being in the main
team, reserve team, or youth team';
	END IF;
	RETURN NEW;
END
$check_isPlayer$ LANGUAGE plpgsql;
```

Check_isDoctor()

Purpose: Very similar to above.

```
CREATE FUNCTION check_isDoctor() RETURNS TRIGGER AS $check_isDoctor$
BEGIN
	IF
		EXISTS (SELECT PID
			FROM doctors
			WHERE PID = NEW.PID)
	THEN
		RAISE EXCEPTION 'A doctor cannot be on the playing squad';
	END IF;
	RETURN NEW;
END
$check_isDoctor$ LANGUAGE plpgsql;
```

Security

Based on the current design of this system, there would be the following types of user accounts (not counting the super user/DBA)

Managers:

Would only be able to access tables, views and reports associated with the following aspects of the clubs

- Squad players
- Youth team players
- Reserve team players
- Scouting information
- Scouting history

➔ Depending on the type of responsibilities given to the manager by the owners of the club, a manager may be able to access financial and sponsorship tables, views and reports as well

Human resources:

Would only be able to access tables, views and reports associated with the following aspects of the system

- Employee types
- Whether or not employees require work permits
- Wage information

Payroll:

Would be able to see higher level wage information including whether or not employees get performance based bonuses and details pertaining to the same

Club owners:

Will be able to access all tables, views and reports within the system in order to properly manage the club. However, access will be limited to querying and reports

Medical staff:

Will be able to access health and injury related tables, views and stored procedures as well as tables, views and stored procedures related to player health history.

Implementation notes/known problems/future enhancements

This implementation was meant to be a relatively simple representation of a select few operations of a professional football club. However, given the nature of football clubs and considering the vastly complicated nature of their day to day operations, the scope of the project grew very quickly. More tables were needed (compared to the initial estimate) in order to properly represent how this form of system would work even with a small amount of sample data. A recommended enhancement would be to create a system that allows the representation of several more employee types considering that a professional club would have various types of employees other than just managers, players, coaches, and doctors. For example, nutritionists play a very important role in athletic facilities. This system could be expanded to include detailed information related to nutrition for the players and nutritionists. Another suggested enhancement would be to create more triggers, specifically those related to role checking. Right now, the existing triggers are very basic in nature and don't consider the complex relationships that could exist between employee types. For instance, a PID could potentially be a player and a coach, or a coach and a doctor (if we consider staff members like physical therapists).