

A full-page background image of an NFL game. In the foreground, a New York Giants player in a blue jersey with the number 21 is jumping high to catch a football. A Dallas Cowboys player in a white jersey with the number 80 is tackling him from below. The background shows a large stadium filled with spectators. Various advertisements are visible on the stadium walls, including "etLife", "MetLife", and "Verizon". A scoreboard in the top left corner shows "14:54 [40]".

# NFL Database

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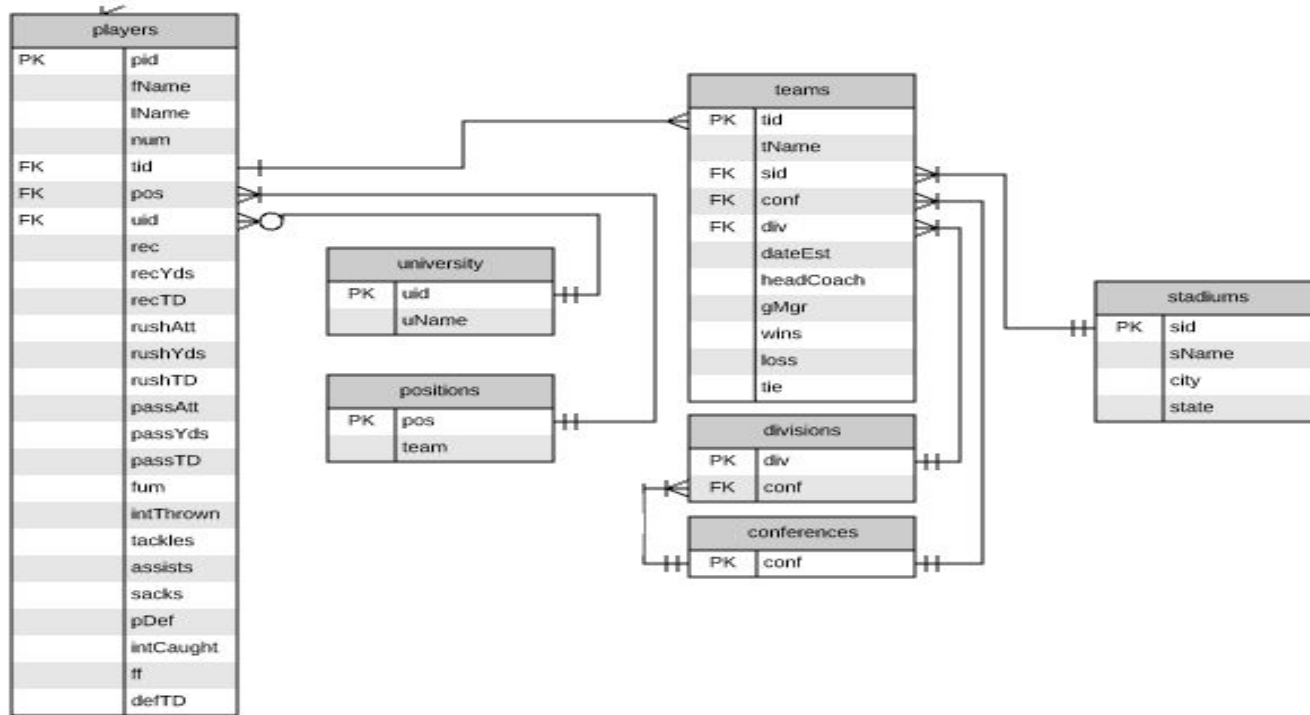
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# Summary

This database is a collection of stats and other information from 2016 regarding the National Football League. It isn't completely finished (see implementation notes), however this beta implementation will give you an idea of what you could do once the database is in full effect.

# E/R Diagram



# Conferences Table

Allows you to see the conferences in the NFL

```
create table conferences (  
    conf          text not null unique,  
    primary key (conf)  
);
```

	conf text
1	AFC
2	NFC

# Divisions Table

Stores the divisions in the NFL and their respective conferences.

```
create table divisions(  
  
    div          text not null unique,  
  
    conf         text not null references conferences(conf) ,  
  
    primary key(div)  
  
);
```

	div text	conf text
1	AFCN	AFC
2	AFCS	AFC
3	AFCE	AFC
4	AFCW	AFC
5	NFCN	NFC
6	NFCS	NFC
7	NFCE	NFC

# Stadiums Table

Stores the home stadiums of each NFL team and their locations.

```
create table stadiums(  
  
    sid            serial,  
  
    sName         text not null,  
  
    city          text not null,  
  
    state         text not null,  
  
    primary key (sid)  
  
);
```

Data Output					Explain	Messages	History
	sid integer	sname text	city text	state text			
1	1	Arrowhead Stadium	Kansas City	Missouri			
2	2	AT&T Stadium	Arlington	Texas			
3	3	Bank of America Stadium	Charlotte	North Carolina			
4	4	CenturyLink Field	Seattle	Washington			
5	5	EverBank Field	Jacksonville	Florida			
6	6	FedEx Field	Landover	Maryland			
7	7	FirstEnergy Stadium	Cleveland	Ohio			

# Teams Table

Contains 32 NFL teams and displays some basic information about them.

Data Output Explain Messages History											
	tid integer	tname text	sid integer	conf text	div text	yearest integer	headcoach text	gmgr text	wins integer	loss integer	tie integer
1	1	Baltimore Ravens	18	AFC	AFCN	1996	John Harbaugh	Ozzie Newsome	7	5	0
2	2	Pittsburgh Steelers	12	AFC	AFCN	1933	Mike Tomlin	Kevin Colbert	7	5	0
3	3	Cincinnati Bengals	25	AFC	AFCN	1968	Marvin Lewis	Mike Brown	4	7	1
4	4	Cleveland Browns	7	AFC	AFCN	1946	Hue Jackson	Sashi Brown	0	12	0
5	5	Houston Texans	23	AFC	AFCN	2002	Bill O'Brien	Rick Smith	6	6	0
6	6	Indianapolis Colts	17	AFC	AFCN	1953	Chuck Pagano	Ryan Grigson	6	6	0
7	7	Tennessee Titans	22	AFC	AFCN	1960	Mike Mularkey	Jon Robinson	6	6	0



# Teams Table

```
create table teams (  
  
    tid                serial,  
  
    tName              text not null,  
  
    sid                int not null references stadiums(sid),  
  
    conf               text not null references conferences(conf),  
  
    div                text not null references divisions(div),  
  
    yearEst            int not null,  
  
    headCoach          text not null,  
  
    gMgr               text not null,  
  
    wins               int not null,  
  
    loss               int not null,  
  
    tie                int not null,  
  
    primary key (tid)  
  
);
```

# University Table

Contains the universities that NFL players have graduated from in the past.

```
create table university(  
  
    uid            serial,  
  
    uName          text not null,  
  
    primary key (uid)  
  
);
```

Data Output			Explain	Messages	History
	uid integer	uname text			
1	1	California			
2	2	Central Michigan			
3	3	Cincinnati			
4	4	Clemson			
5	5	Coastal Carolina			
6	6	Connecticut			
7	7	Alabama			

# Positions Table

Contains the different types of positions in American Football.

```
create table positions(  
  
    pos            text not  
null unique,  
  
    team          text not null,  
  
    primary key (pos)  
  
);
```

	pos text	team text
1	QB	offense
2	WR	offense
3	TE	offense
4	RB	offense
5	FB	offense
6	OT	offense
7	OG	offense

# Players Table

Contains various information about NFL players that are in the league this year.

```
create table players(  
  
    pid            serial,  
  
    fName         text not null,  
  
    lName         text not null,  
  
    num           int not null,  
  
    tid           int not null references teams(tid) ,  
  
    pos           text not null references  
positions(pos) ,  
  
    uid           int references university(uid) ,
```

```
    rec           int,  
  
    recYds        int,  
  
    recTD         int,  
  
    rushAtt       int,  
  
    rushYds       int,  
  
    rushTD        int,  
  
    passAtt       int,  
  
    passYds       int,  
  
    passTD        int,  
  
    fum           int,  
  
    intThrown     int,  
  
    tackles       int,  
  
    assists       int,  
  
    sacks         float(2) ,  
  
    pDef          int,  
  
    intCaught     int,  
  
    ff            int,  
  
    defTD         int,  
  
    primary key  
    (pid)  
);
```

# Players Table

Data Output	Explain	Messages	History																						
	pid integer	fname text	lname text	num integer	tid integer	pos text	uid integer	rec integer	recyds integer	rectd integer	rushatt integer	rushyds integer	rushtd integer	passatt integer	passyds integer	passtd integer	fum integer	inthrown integer	tackles integer	assists integer	sacks real	pdef integer	intcaught integer	ff integer	deftd integer
1	1	Matt	Ryan	2	21	QB	14				21	116		443	3613	27	2	7							
2	2	Drew	Brees	9	23	QB					9	26	2	514	3746	30	3	10							
3	3	Dak	Prescott	4	25	QB	29				35	234	5	375	2874	19	5	2							
4	4	Derek	Carr	4	13	QB					17	69		468	3316	24	3	5							
5	5	Eli	Manning	10	26	QB	38				19	-7		452	3097	22	5	12							
6	6	Ezekiel	Elliott	21	25	RB	36	28	322	1	263	1285	12				4								
7	7	Demarco	Murray	29	7	RB	37	45	3096	3	229	1043	8				3								

# Views

This first view is used to tell the user which team currently has the best record in the NFC.

```
create view bestRecordInNFC as

select tName, div, wins, loss, tie

from teams

where wins = (Select MAX(teams.wins) from teams) ;
```

Data Output	Explain	Messages	History			
	tname text	div text	wins integer	loss integer	tie integer	
1	Dallas Cowboys	NFCE	11	1	0	

# Views

This view shows the top three current receiving yards leaders in the NFL.

```
create view topThreeWR as
```

```
select fName,lName, rec, recYds, recTD
```

```
from players
```

```
where pos='WR'
```

```
order by recYds Desc
```

```
limit 3;
```

Data Output					
Explain					
Messages					
History					
	fName text	lName text	rec integer	recYds integer	recTD integer
1	Mike	Evans	76	1058	10
2	Antonio	Brown	88	1052	11
3	Odell	Beckham	75	1015	8

# Stored Procedures

This first stored procedure will tell you the current NFL players that are alumni from the school of your choice.

```
Create or replace function getAlumni(text) returns
Table(school Text, fname text, lname text) as
$$
declare
    schoolInQuestion ALIAS for $1;
Begin
    return QUERY
    select university.uName, players.fName, players.lName
    from university, players
    where university.uid = players.uid
    and university.uName = schoolInQuestion;
End;
$$ Language plpgsql;
```

Data Output	Explain	Messages
	<b>school text</b>	<b>fname text</b>
<b>1</b>	LSU	Jeremy Hill
<b>2</b>	LSU	Odell Beckham



# Stored Procedures

This stored procedure will return to you the roster of the team that you input.

```
Create or replace function teamRoster(text) returns
Table(lname text, fname text, pos TEXT, num Int) as
$$
declare
    team ALIAS for $1;
Begin
    return QUERY
    select players.lName, players.fName, players.pos, players.num
    from teams, players
    where teams.tid = players.tid
    and teams.tName = team
    order by players.lName asc;
End;
$$ Language plpgsql;
```

Data Output		Explain	Messages	History
	lname text	fname text	pos text	num integer
1	Beckham	Odell	WR	13
2	Collins	Landon	SS	21
3	Harrison	Damon	DT	98
4	Manning	Eli	QB	10
5	Pierre-Paul	Jason	DE	90

# Roles

There are three different roles.

Create role Admin;

Create role Commissioner;

Create role frontOffice;

# Roles

The admin is given full control of the database.

```
grant select, insert, update, delete on players to Admin;  
grant select, insert, update, delete on teams to Admin;  
grant select, insert, update, delete on divisions to Admin;  
grant select, insert, update, delete on conferences to Admin;  
grant select, insert, update, delete on positions to Admin;  
grant select, insert, update, delete on university to Admin;  
grant select, insert, update, delete on stadiums to Admin;
```

# Roles

The Commissioner is given only the ability to affect information that deals with the league as a whole, such as changing the divisions.

```
revoke all privileges on players to Commissioner;  
revoke all privileges on teams to Commissioner;  
revoke all privileges on divisions to Commissioner;  
revoke all privileges on conferences to Commissioner;  
revoke all privileges on positions to Commissioner;  
revoke all privileges on university to Commissioner;  
revoke all privileges on stadiums to Commissioner;
```

```
grant select, insert, update, delete on divisions to Commissioner;  
grant select, insert, update, delete on conferences to Commissioner;  
grant select, update on teams to Commissioner;  
grant select on players to Commissioner;
```

# Roles

frontOffice is given the ability to add or delete players in order to change their roster.

```
revoke all privileges on players to frontOffice;  
revoke all privileges on teams to frontOffice;  
revoke all privileges on divisions to frontOffice;  
revoke all privileges on conferences to frontOffice;  
revoke all privileges on positions to frontOffice;  
revoke all privileges on university to frontOffice;  
revoke all privileges on stadiums to frontOffice;  
  
grant select, insert, update, delete on players to frontOffice;  
grant select on teams to frontOffice;
```

# Implementation Notes

- There are players with a NULL value for their players.uid simply because every city has not been added yet.
- There are a lot more NFL players, Stats, and Team/Player Information that could go into the database. I did not implement these into this version as I felt the amount of information that was put in would be sufficient enough to demonstrate my main ideas. For instance, each team has a 53 man roster, a practice squad and and injured reserve that could be implemented very simply.

# Known Problems

- I originally wanted to be able to implement a “playoff picture” somehow, however I was never able to come up with the method.
- This database doesn’t have a way of tracking the offseason (free agency and the draft).
- This is only a small fraction of the data that could be added. There are many more players and statistics that could be presented in this demo.

# Future Enhancements

- Adding more stats, advanced metrics for players.
- Adding a fantasy football aspect to the database.
- Adding a Madden aspect to the database.
- Implementing schedules for each team.