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Дисциплина: «Базы данных»

Лабораторная работа № 1

«Реализация SQL-запросов для создания схемы базы данных»

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Работа выполнялась с использованием СУБД PostgreSQL. Была создана база данных с названием «footballClub». Далее был написан скрипт для создания таблиц, установления ограничений и связей между таблицами:

```
CREATE TABLE sportsmen
(
        ID SERIAL CONSTRAINT sportsmen_Id PRIMARY KEY,
        fname CHARACTER VARYING(30) CONSTRAINT fname_nn NOT NULL,
        sname CHARACTER VARYING(30) CONSTRAINT sname_nn NOT NULL,
        amplua CHARACTER VARYING(30) CONSTRAINT amplua_nn NOT NULL,
        birthday DATE CONSTRAINT birthday_nn NOT NULL,
        nationality CHARACTER VARYING(30) CONSTRAINT nationality_nn NOT NULL
);

CREATE TABLE individual_achievments
(
        ID SERIAL CONSTRAINT individual_achievments_id PRIMARY KEY,
        sportsmen_id INTEGER,
        aname CHARACTER VARYING(30) CONSTRAINT aname_nn NOT NULL,
        FOREIGN KEY (sportsmen_id) REFERENCES sportsmen (Id)
);

CREATE TABLE trainer
(
        ID SERIAL CONSTRAINT trainer_id PRIMARY KEY,
        fname CHARACTER VARYING(30) CONSTRAINT fname_nn NOT NULL,
        sname CHARACTER VARYING(30) CONSTRAINT sname_nn NOT NULL,
        birthday DATE CONSTRAINT birthday_nn NOT NULL,
        nationality CHARACTER VARYING(30) CONSTRAINT nationality_nn NOT NULL,
        main_ahchievment CHARACTER VARYING(30) CONSTRAINT
main_ahchievment_nn NOT NULL
);

CREATE TABLE team
(
        ID SERIAL CONSTRAINT team_id PRIMARY KEY,
        sportsmen_id INTEGER,
        trainer_id INTEGER,
        tname CHARACTER VARYING(30) CONSTRAINT tname_nn NOT NULL,
        FOREIGN KEY (sportsmen_id) REFERENCES sportsmen (Id),
        FOREIGN KEY (trainer_id) REFERENCES trainer (Id)
);

CREATE TABLE club
(
        ID SERIAL CONSTRAINT club_id PRIMARY KEY,
        team_id INTEGER,
        cname CHARACTER VARYING(30) CONSTRAINT cname_nn NOT NULL,
        country CHARACTER VARYING(30) CONSTRAINT country_nn NOT NULL,
        FOREIGN KEY (team_id) REFERENCES team (Id)
);
```

```
CREATE TABLE match_result
(
        ID SERIAL CONSTRAINT match_result_id PRIMARY KEY,
        team_id INTEGER,
        competitor CHARACTER VARYING(30) CONSTRAINT competitor_nn NOT NULL,
        mresult CHARACTER VARYING CONSTRAINT mresult_nn NOT NULL,
        seson CHARACTER VARYING(30) CONSTRAINT seson_nn NOT NULL,
        league CHARACTER VARYING(30) CONSTRAINT league_nn NOT NULL,
        FOREIGN KEY (team_Id) REFERENCES team (Id)
);


CREATE TABLE club_owner
(
        ID SERIAL CONSTRAINT club_owner_id PRIMARY KEY,
        club_id INTEGER,
        fname CHARACTER VARYING(30) CONSTRAINT fname_nn NOT NULL,
        sname CHARACTER VARYING(30) CONSTRAINT sname_nn NOT NULL,
        birthday DATE CONSTRAINT birthday_nn NOT NULL,
        nationality CHARACTER VARYING(30) CONSTRAINT nationality_nn NOT NULL,
        FOREIGN KEY (club_Id) REFERENCES club (Id)
);

CREATE TABLE stadium
(
        ID SERIAL CONSTRAINT stadium_id PRIMARY KEY,
        team_id INTEGER,
        sname CHARACTER VARYING(30) CONSTRAINT sname_nn NOT NULL,
        capacity INTEGER,
        foundation_date DATE CONSTRAINT foundation_date_nn NOT NULL,
        FOREIGN KEY (team_Id) REFERENCES team (Id)
)
```
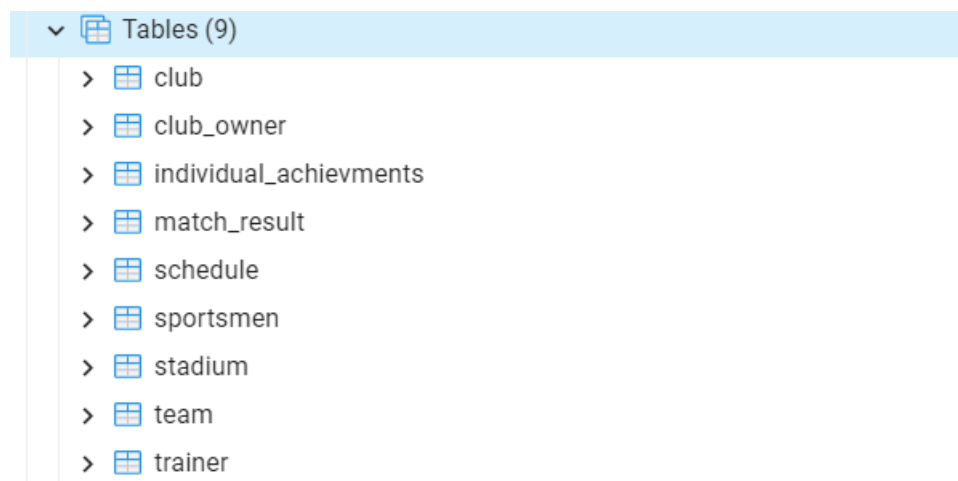
После применения скрипта средствами СУБД была построена база данных, которая представлена ниже.

Tables (9)
- club
- club_owner
- individual_achievments
- match_result
- schedule
- sportsmen
- stadium
- team
- trainer

Затем заполним БД данными.

INSERT INTO individual_achievments (sportsmen_id, aname)
VALUES
(1, '4 Times get Golden Ball'),
(2, '4 Times get Golden Ball'),
(3, 'Top 10 Young Player in World'),
(4, 'Russian Capitan 2010-2o16'),
(5, 'Main GK of Russia Top 2 2020'),
(6, 'DF, nomimated on Golden Ball')

INSERT INTO trainer (fname, sname, birthday, nationality, main_ahchievment)
VALUES
('Andrei', 'Ostapenko', '16.04.1982', 'England', 'League Champions(1999)'),
('Andres', 'Iniesta', '20.02.1977', 'Spain', 'Chinese tournament(1980)'),
('Stanislav', 'Cherchesov', '02.09.1963', 'Russia', 'Top2 Sbornaya Rossii(2020)'),
('Valeriy', 'Karpin', '12.02.1975', 'Russia', 'Sbornaya Rossii'),
('Endrew', 'Donaruma', '11.02.1978', 'Portugal', 'Sbornaya Rossii'),
('Konstantin', 'Pleshev', '09.01.1981', 'Belarus', 'Olimpics winner 2002')

INSERT INTO club (team_id, cname, country)
VALUES
(1, 'Premier League', 'England'),
(2, 'La league', 'Spain'),
(3, 'French Football league', 'France'),
(4, 'RussPremier League', 'Russia'),
(5, 'RussPremier League', 'Russia'),
(6, 'Belarus League', 'Belarus')

INSERT INTO team (sportsmen_id, trainer_id, tname)
VALUES
(1, 1, 'Manchester city'),
(2, 5, 'Barcelona'),
(3, 2, 'Paris Saint Germain'),
(4, 4, 'Spartak'),
(5, 3, 'Dinamo'),
(6, 6, 'Bate')

INSERT INTO club_owner (club_id, fname, sname, birthday, nationality)
VALUES
(6, 'Mansur ibn Zaid', 'Al Nahaiyan', '29.04.1967', 'UAE'),
(7, 'Joan', 'La Porte', '20.09.1955', 'Spain'),
(8, 'Nasser', 'Ganim Al-Xhelafi', '12.11.1973', 'Katar'),
(9, 'Leonid Arnoldovich', 'Fedun', '05.04.1956', 'Russia'),
(10, 'Leontiy Leonidovich', 'Karanin', '12.12.1977', 'Russia'),
(11, 'Anatoliy Fedorovich', 'Kapskiy', '19.02.1966', 'Belarus')

INSERT INTO stadium (team_id, sname, capacity, foundation_date)
VALUES
(1, 'Old Trafford', 76000, '10.09.1910'),
(2, 'Camp Nou', 99354, '24.09.1957'),
(3, 'Parc des Princes', 49691, '01.09.1897'),

(4, 'Otkritie Bank Arena', 45360, '05.09.2014'),
(5, 'VTB Arena', 33000, '19.09.1928'),
(6, 'Borisov Arena', 13121, '03.05.2014')

INSERT INTO match_result (team_id, competitor, mresult, seson, league)
VALUES
(1, 'Manchester United', 'WIN', '22', 'Champions League'),
(2, 'Real Madrid', 'WIN', '22', 'La League'),
(3, 'Uventus', 'LOSE', '22', 'Champions League'),
(4, 'Tor Gdansk', 'WIN', '21', 'European Championship'),
(5, 'Dynamo Kiev', 'LOSE', '22', 'European Championship'),
(6, 'Dynamo Minsk', 'WIN', '22', 'Belarusian Championship')

INSERT INTO schedule (team_id, trainer_id, sday)
VALUES
(1, 1, '05.07.2022'),
(2, 2, '25.06.2022'),
(3, 3, '30.06.2022'),
(4, 4, '30.06.2022'),
(5, 5, '10.08.2022'),
(6, 6, '21.07.2022')

Таблица sportsmen.

id [PK] integer	fname character varying (30)	sname character varying (30)	amplua character varying (30)	birthday date	nationality character varying (30)
1	1 Cristiano	Ronaldo	FW	1989-10-15	Portugal
2	2 Lionell	Messi	RFA	1990-10-12	Argentina
3	3 Khillian	Mbappe	FW	2000-05-21	France
4	4 Andrei	Kerzhakov	FW	1980-01-03	Russia
5	5 Igor	Akinfeev	GK	1975-09-30	Russia
6	6 Sergio	Ramos	CD	1979-05-25	Spain

Таблица individual-achievments.

id [PK] integer	sportsmen_id integer	aname character varying (30)
1	1	1 4 Times get Golden Ball
2	2	2 4 Times get Golden Ball
3	3	3 Top 10 Young Player in World
4	4	4 Russian Capitan 2010-2o16
5	5	5 Main GK of Russia Top 2 2020
6	6	6 DF, nomimated on Golden Ball

Таблица trainer.

id [PK] integer	fname character varying (30)	sname character varying (30)	birthday date	nationality character varying (30)	main_ahchievment character varying (30)
1	Andrei	Ostapenko	1982-04-16	England	League Champions(1999)
2	Andres	Iniesta	1977-02-20	Spain	Chinese tournament(1980)
3	Stanislav	Cherchesov	1963-09-02	Russia	Top2 Sbornaya Rossii(2020)
4	Valeriy	Karpin	1975-02-12	Russia	Sbornaya Rossii
5	Endrew	Donaruma	1978-02-11	Portugal	Sbornaya Rossii
6	Konstantin	Pleshev	1981-01-09	Belarus	Olimpics winner 2002

Таблица team.

id [PK] integer	sportsmen_id integer	trainer_id integer	tname character varying (30)
1	1	1	Manchester city
2	2	5	Barcelona
3	3	2	Paris Saint Germain
4	4	4	Spartak
5	5	3	Dinamo
6	6	6	Bate

Таблица club.

id [PK] integer	team_id integer	cname character varying (30)	country character varying (30)
1	6	Premier League	England
2	7	La league	Spain
3	8	French Football league	France
4	9	RussPremier League	Russia
5	10	RussPremier League	Russia
6	11	Belarus League	Belarus

Таблица club-owner.

| id [PK] integer	club_id integer	fname character varying (30)	sname character varying (30)	birthday date	nationality character varying (30)
1	6	Mansur ibn Zaid	Al Nahaiyan	1967-04-29	UAE
2	7	Joan	La Porte	1955-09-20	Spain
3	8	Nasser	Ganim Al-Xhelafi	1973-11-12	Katar
4	9	Leonid Arnoldovich	Fedun	1956-04-05	Russia
5	10	Leontiy Leonidovich	Karanin	1977-12-12	Russia
6	11	Anatoliy Fedorovich	Kapskiy	1966-02-19	Belarus

Таблица stadium.

	id [PK] integer	team_id integer	sname character varying (30)	capacity integer	foundation_date date
1	1	1	Old Trafford	76000	1910-09-10
2	2	2	Camp Nou	99354	1957-09-24
3	3	3	Parc des Princes	49691	1897-09-01
4	4	4	Otkritie Bank Arena	45360	2014-09-05
5	5	5	VTB Arena	33000	1928-09-19
6	6	6	Borisov Arena	13121	2014-05-03

Таблица match-results.

	id [PK] integer	team_id integer	competitor character varying (30)	mresult character varying	seson character varying (30)	league character varying (30)
1	1	1	Manchester United	WIN	22	Champions League
2	2	2	Real Madrid	WIN	22	La League
3	3	3	Uventus	LOSE	22	Champions League
4	4	4	Tor Gdansk	WIN	21	European Championship
5	5	5	Dynamo Kiev	LOSE	22	European Championship
6	6	6	Dynamo Minsk	WIN	22	Belarusian Championship

Таблица schedule.

	id [PK] integer	team_id integer	trainer_id integer	sday date
1	1	1	1	2022-07-05
2	2	2	2	2022-06-25
3	3	3	3	2022-06-30
4	4	4	4	2022-06-30
5	5	5	5	2022-08-10
6	6	6	6	2022-07-21