ИТМО

Факультет программной инженерии и компьютерной техники

Базы данных

Лабораторная работа №4

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Содержание отчета:

1. Текст задания;
2. Описание предметной области;
3. DDL-скрипты, часть DML-скриптов;
4. Выводы по работе;

1. Текст задания:

Реализовать разработанную в рамках лабораторной работы №3 даталогическую модель в реляционной СУБД PostgreSQL.

Заполнить созданные таблицы данными.

Обеспечить целостность данных при помощи средств языка DDL.

В рамках лабораторной работы должны быть разработаны скрипты для создания/удаления требуемых объектов базы данных, заполнения/удаления содержимого созданных таблиц.

2. Описание предметной области:

Шахматный турнир по круговой системе, проводящийся в соответствии с регламентом ФИДЕ.

3. DDL-скрипты, часть DML-скриптов:

```
/* create */
create table role(
    id integer primary key,
    name varchar(30) not null unique,
    description text not null
);

create table tournament(
    id integer primary key,
    name varchar(200) not null,
    description text not null,
```

```
    start_date date not null
);

create table person(
    id integer primary key,
    name varchar(30) not null,
    surname varchar(30) not null,
    age integer not null,
    has_accepted boolean,
    role_id integer not null,
    foreign key (role_id) references role(id) on delete cascade
);

create table invite(
    id integer primary key,
    competition_info text not null,
    send_date date not null,
    date_to_response date not null,
    org_id integer not null,
    player_id integer not null,
    tournament_id integer not null,
    foreign key (org_id) references person(id) on delete cascade,
    foreign key (player_id) references person(id) on delete cascade,
    foreign key (tournament_id) references tournament(id) on delete cascade
);

create table response(
    id integer primary key,
    answer text not null,
    send_date date not null,
```

```
    org_id integer not null,
    player_id integer not null,
    tournament_id integer not null,
    foreign key (org_id) references person(id) on delete cascade,
    foreign key (player_id) references person(id) on delete cascade,
    foreign key (tournament_id) references tournament(id) on delete cascade
);

create table entrance_fee(
    id integer primary key,
    money integer not null check (money=300),
    org_id integer not null,
    player_id integer not null,
    tournament_id integer not null,
    foreign key (org_id) references person(id) on delete cascade,
    foreign key (player_id) references person(id) on delete cascade,
    foreign key (tournament_id) references tournament(id) on delete cascade
);

create table draw(
    id integer primary key,
    draw_number integer not null check ( draw_number>=1 and draw_number<=8
),
    player_id integer not null,
    arb_id integer not null,
    tournament_id integer not null,
    foreign key (arb_id) references person(id) on delete cascade,
    foreign key (player_id) references person(id) on delete cascade,
    foreign key (tournament_id) references tournament(id) on delete cascade
);
```

```
create table score(
    id integer primary key,
    score decimal not null default 0,
    player_id integer not null,
    tournament_id integer not null,
    foreign key (player_id) references person(id) on delete cascade,
    foreign key (tournament_id) references tournament(id) on delete cascade
);

create table inventory(
    id integer primary key,
    name varchar(30) not null,
    description text not null,
    staff_id integer not null,
    foreign key (staff_id) references person(id) on delete cascade
);

create table game(
    id integer primary key,
    player1_id integer not null,
    player2_id integer not null,
    arb_id integer not null,
    tournament_id integer not null,
    result integer not null check ( result>=0 and result<=2 ),
    tour integer not null,
    start_date date not null,
    foreign key (arb_id) references person(id) on delete cascade,
    foreign key (player1_id) references person(id) on delete cascade,
    foreign key (player2_id) references person(id) on delete cascade,
```

```
    foreign key (tournament_id) references tournament(id) on delete cascade
);

create table tournament_person(
    tournament_id integer references tournament on delete cascade,
    person_id integer references person on delete cascade,
    primary key (tournament_id, person_id)
);

create table game_staff(
    game_id integer references game on delete cascade,
    staff_id integer references person on delete cascade,
    primary key (game_id, staff_id)
);

create table game_inventory(
    game_id integer references game on delete cascade,
    inventory_id integer references inventory on delete cascade,
    primary key (game_id, inventory_id)
);

create table tournament_inventory(
    tournament_id integer references tournament on delete cascade,
    inventory_id integer references inventory on delete cascade,
    primary key (tournament_id, inventory_id)
);

/* fill */
insert into role(id, name, description) VALUES
                                (1, 'Player', 'Person, who plays the games'),
```

```
                    (2, 'Organizator', 'Person, who organize games and
tournaments'),
                    (3, 'Arbitr', 'Person, who observe games and conduct
draws'),
                    (4, 'Staff', 'Person, who is responsible for inventory');

insert into tournament(id, name, description, start_date) VALUES
                    (1, 'First tournament', 'Dedicated to Queen Elizabeth 2',
'2020-09-01'),
                    (2, 'Second tournament', 'Dedicated to Queen Elizabeth
3', '2021-09-01'),
                    (3, 'Third tournament', 'Dedicated to Queen Elizabeth
4', '2022-09-01'),
                    (4, 'Fourth tournament', 'Dedicated to Queen Elizabeth
5', '2023-09-01'),
                    (5, 'Fifth tournament', 'Dedicated to Queen Elizabeth 6',
'2024-09-01');
……..

/* drop */
drop table role cascade;
drop table tournament cascade;
drop table person cascade;
drop table invite cascade;
drop table response cascade;
drop table entrance_fee cascade;
drop table draw cascade;
drop table score cascade;
drop table inventory cascade;
drop table game cascade;
drop table tournament_person cascade;
drop table game_inventory cascade;
```

```
drop table game_staff cascade;
drop table tournament_inventory cascade;

/* clear */
truncate table role cascade;
truncate table tournament cascade;
truncate table person cascade;
truncate table tournament_person cascade;
truncate table invite cascade;
truncate table response cascade;
truncate table draw cascade;
truncate table entrance_fee cascade;
truncate table score cascade;
truncate table inventory cascade;
truncate table tournament_inventory cascade;
truncate table game cascade;
truncate table game_staff cascade;
truncate table game_inventory cascade;
```

4. Выводы по работе:

Выполняя данную лабораторную работу, я реализовал БД по выбранной мной предметной области, а также заполнить её тестовыми данными.