Exercise 2 Report

Gruppe 16

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1 SQL commands to create the schema

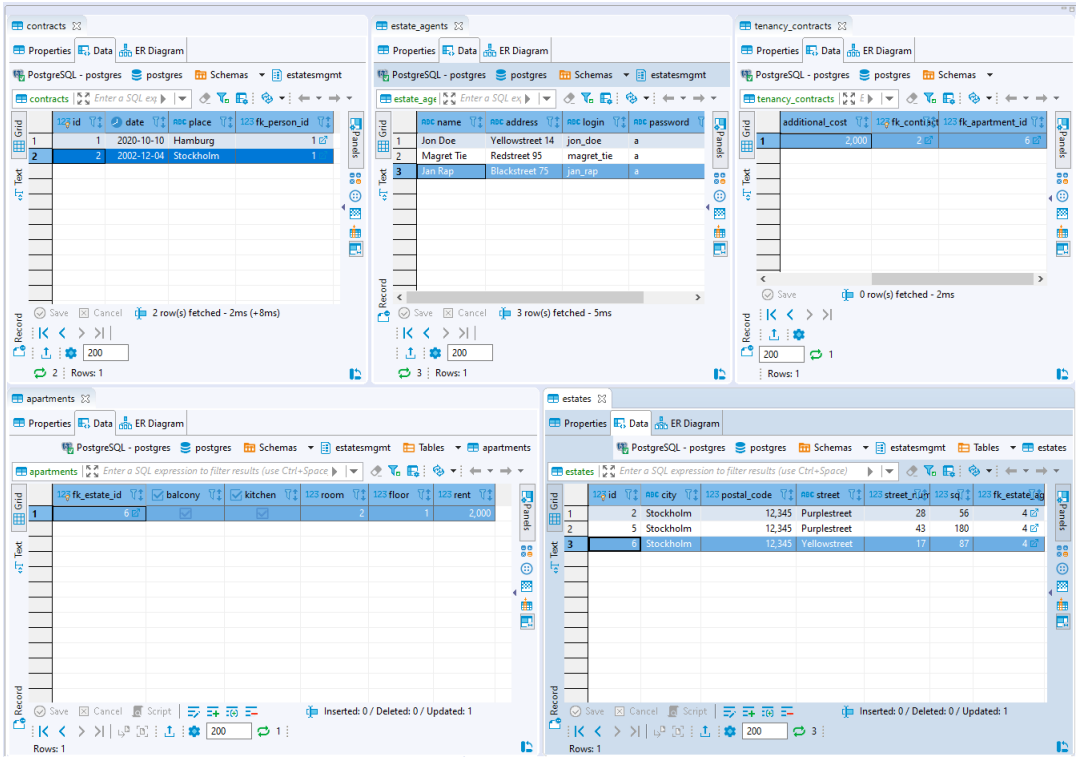
```
CREATE SCHEMA estatesmgmt AUTHORIZATION root;

CREATE TABLE estatesmgmt.apartments (
fk_estate_id int4 NOT NULL,
balcony bool NOT NULL DEFAULT false,
kitchen bool NOT NULL DEFAULT false,
room int4 NOT NULL,
floor int4 NOT NULL,
rent float4 NOT NULL,
CONSTRAINT apartment_pk
    PRIMARY KEY (fk_estate_id),
CONSTRAINT fk_estates
    FOREIGN KEY (fk_estate_id)
    REFERENCES estatesmgmt.estates(id)
    ON UPDATE CASCADE
    ON DELETE CASCADE
);

CREATE TABLE estatesmgmt.contracts (
id serial NOT NULL,
"date" date NOT NULL,
place varchar NOT NULL,
fk_person_id int4 NOT NULL,
CONSTRAINT contract_pk
    PRIMARY KEY (id),
CONSTRAINT contracts_fk
    FOREIGN KEY (fk_person_id) REFERENCES estatesmgmt.persons(id)
);
```

```
CREATE TABLE estatesmgmt.estate_agents (
name varchar NOT NULL,
address varchar NOT NULL,
login varchar NOT NULL,
"password" varchar NOT NULL,
id serial NOT NULL,
CONSTRAINT estate_agent_pk
    PRIMARY KEY (id),
CONSTRAINT estate_agent_un
    UNIQUE (login)
);

CREATE TABLE estatesmgmt.estates (
id serial NOT NULL,
city varchar NOT NULL,
postal_code int4 NOT NULL,
street varchar NOT NULL,
street_number int4 NOT NULL,
square_area int4 NOT NULL,
fk_estate_agent_id int4 NOT NULL,
CONSTRAINT estate_pk
    PRIMARY KEY (id),
CONSTRAINT fk_estate_agents
    FOREIGN KEY (fk_estate_agent_id)
    REFERENCES estatesmgmt.estate_agents(id)
);

CREATE TABLE estatesmgmt.houses (
number_of_floors int4 NOT NULL,
price float4 NOT NULL,
garden bool NOT NULL DEFAULT false,
fk_estate_id int4 NOT NULL,
CONSTRAINT house_pk
    PRIMARY KEY (fk_estate_id),
CONSTRAINT fk_estates
    FOREIGN KEY (fk_estate_id)
    REFERENCES estatesmgmt.estates(id)
    ON UPDATE CASCADE
    ON DELETE CASCADE
);

CREATE TABLE estatesmgmt.persons (
id serial NOT NULL,
first_name varchar NOT NULL,
```

```
last_name varchar NOT NULL,
address varchar NOT NULL,
CONSTRAINT person_pk PRIMARY KEY (id)
);

CREATE TABLE estatesmgmt.purchase_contracts (
number_of_installment int4 NOT NULL DEFAULT 1,
interest_rate float4 NULL,
fk_contract_id int4 NOT NULL,
fk_house_id int4 NOT NULL,
CONSTRAINT purchase_contract_pk
    PRIMARY KEY (fk_contract_id),
CONSTRAINT fk_houses
    FOREIGN KEY (fk_house_id)
    REFERENCES estatesmgmt.houses(fk_estate_id),
CONSTRAINT purchase_contract_fk
    FOREIGN KEY (fk_contract_id)
    REFERENCES estatesmgmt.contracts(id)
    ON DELETE CASCADE
);

CREATE TABLE estatesmgmt.rents (
apartment_id int4 NOT NULL,
person_id int4 NOT NULL,
tenancy_contract_id int4 NOT NULL,
CONSTRAINT rents_apartment_1 UNIQUE (apartment_id),
CONSTRAINT rents_contract_1 UNIQUE (tenancy_contract_id),
CONSTRAINT rents_pk
    PRIMARY KEY (apartment_id, person_id, tenancy_contract_id),
CONSTRAINT rents_fk_apartment
    FOREIGN KEY (apartment_id)
    REFERENCES estatesmgmt.apartments(fk_estate_id),
CONSTRAINT rents_fk_contract
    FOREIGN KEY (tenancy_contract_id)
    REFERENCES estatesmgmt.tenancy_contracts(fk_contract_id),
CONSTRAINT rents_fk_person
    FOREIGN KEY (person_id)
    REFERENCES estatesmgmt.persons(id)
);

CREATE TABLE estatesmgmt.tenancy_contracts (
start_date date NOT NULL DEFAULT CURRENT_DATE,
duration interval NOT NULL,
additional_cost float4 NOT NULL DEFAULT 0,
```

```
    fk_contract_id  int4 NOT NULL,
    fk_apartment_id  int4 NOT NULL,
CONSTRAINT tenancy_contract_pk
        PRIMARY KEY (fk_contract_id),
CONSTRAINT fk_apartment_id
        FOREIGN KEY (fk_apartment_id)
        REFERENCES estatesmgmt.apartments(fk_estate_id),
CONSTRAINT tenancy_contract_fk
        FOREIGN KEY (fk_contract_id)
        REFERENCES estatesmgmt.contracts(id)
        ON DELETE CASCADE
);
```

2 Create an apartment, an estate agent and a tenancy contract with your java application. Validate that they are in the database.



3 Create a contract with a non-existing estate. Does it work? Why/Why not?

It doesn't work, because it violates the `NOT NULL` property of `fk_estate_id` and the foreign key of `contracts` that requires an existing estate.

4 Which inheritance model did you choose and why?

We chose the vertical inheritance model because modifying a base class will be easier, as it won't required to modify any of the subclasses. Subclasses only contain the fields they add to the base class.

5 Create an apartment, and let your application crash between inserting the estate information and inserting the apartment information. What is the effect on your database state?

Only the estate entry is created, but it has neither a house nor an apartment entry.