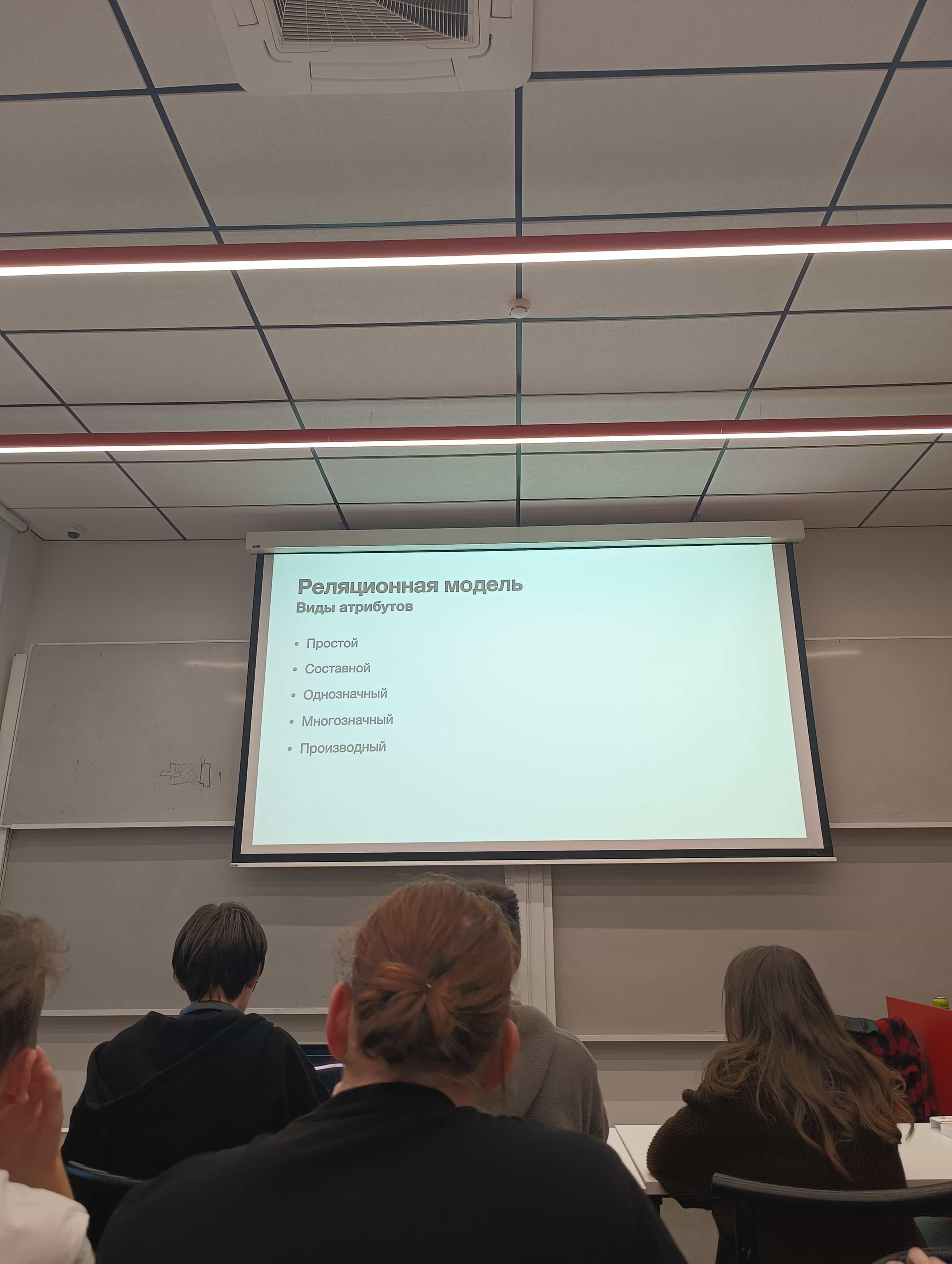
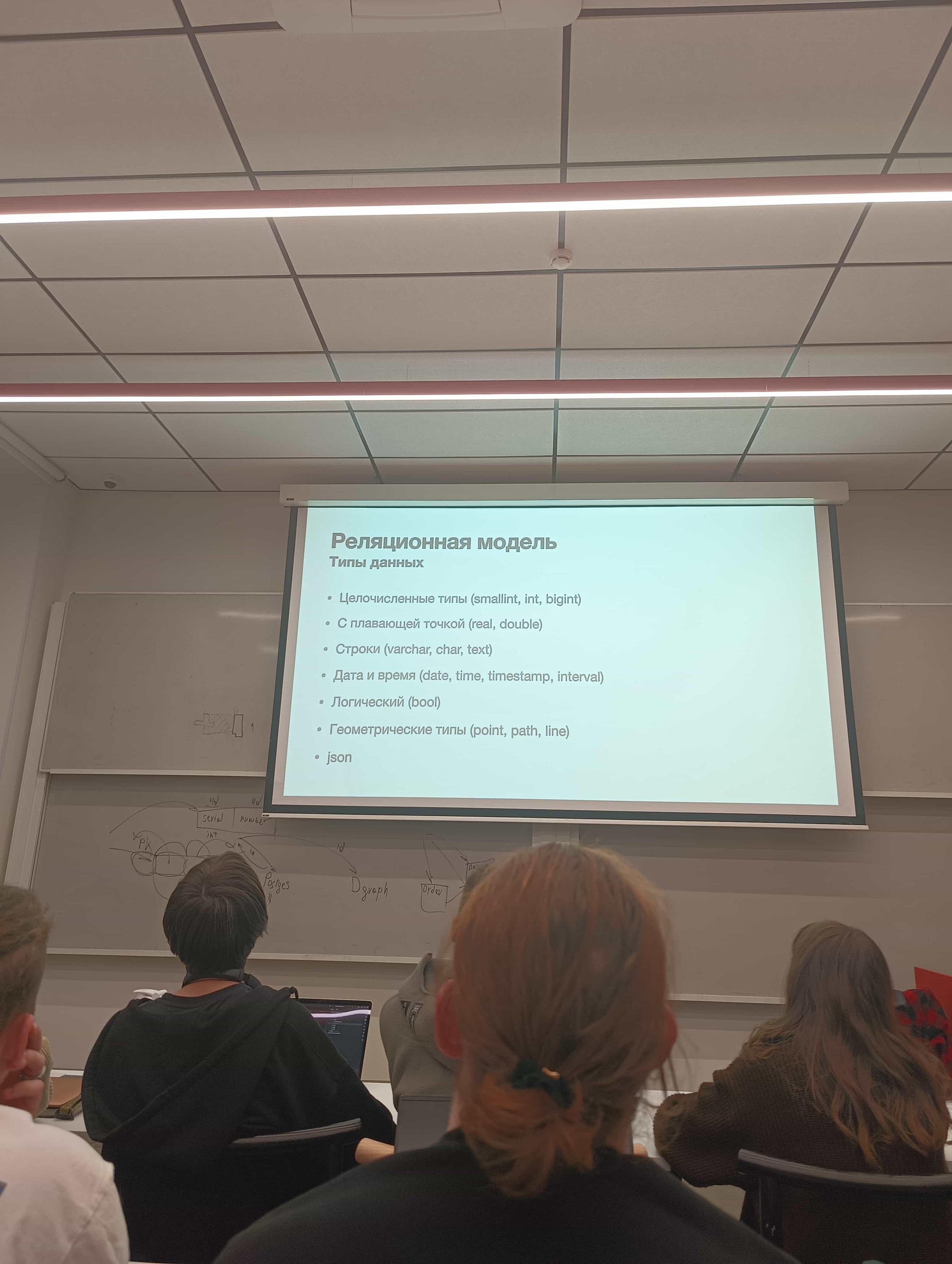
Реляционная модель

Атрибут

- У каждого атрибута должно быть уникальное имя в пределах своей таблицы
- В каждом кортеже содержится значение атрибута, которое принадлежит домену атрибута.

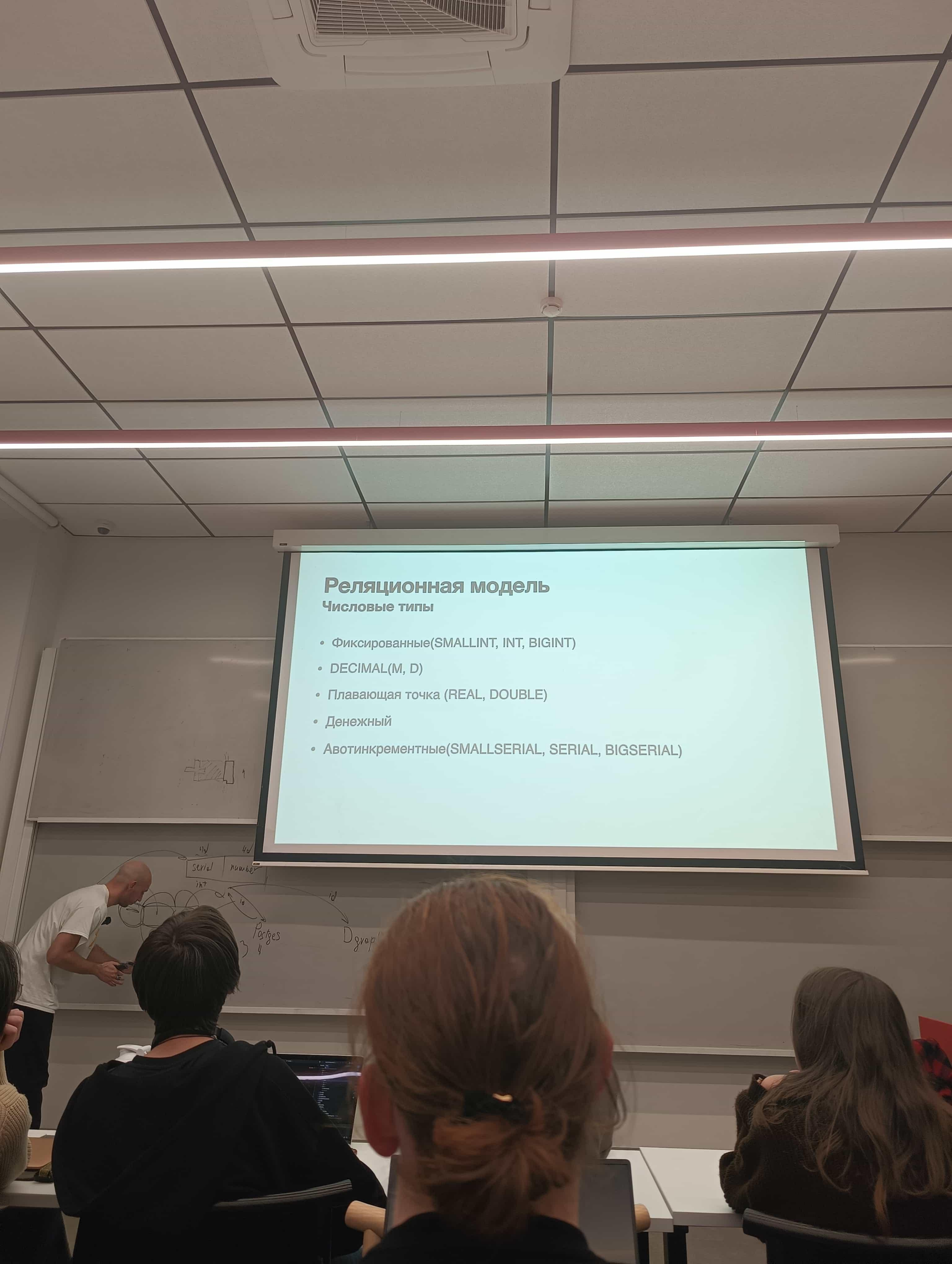

Реляционная модель
Виды атрибутов
Простой
Составной
Однозначный
Многозначный
Производный

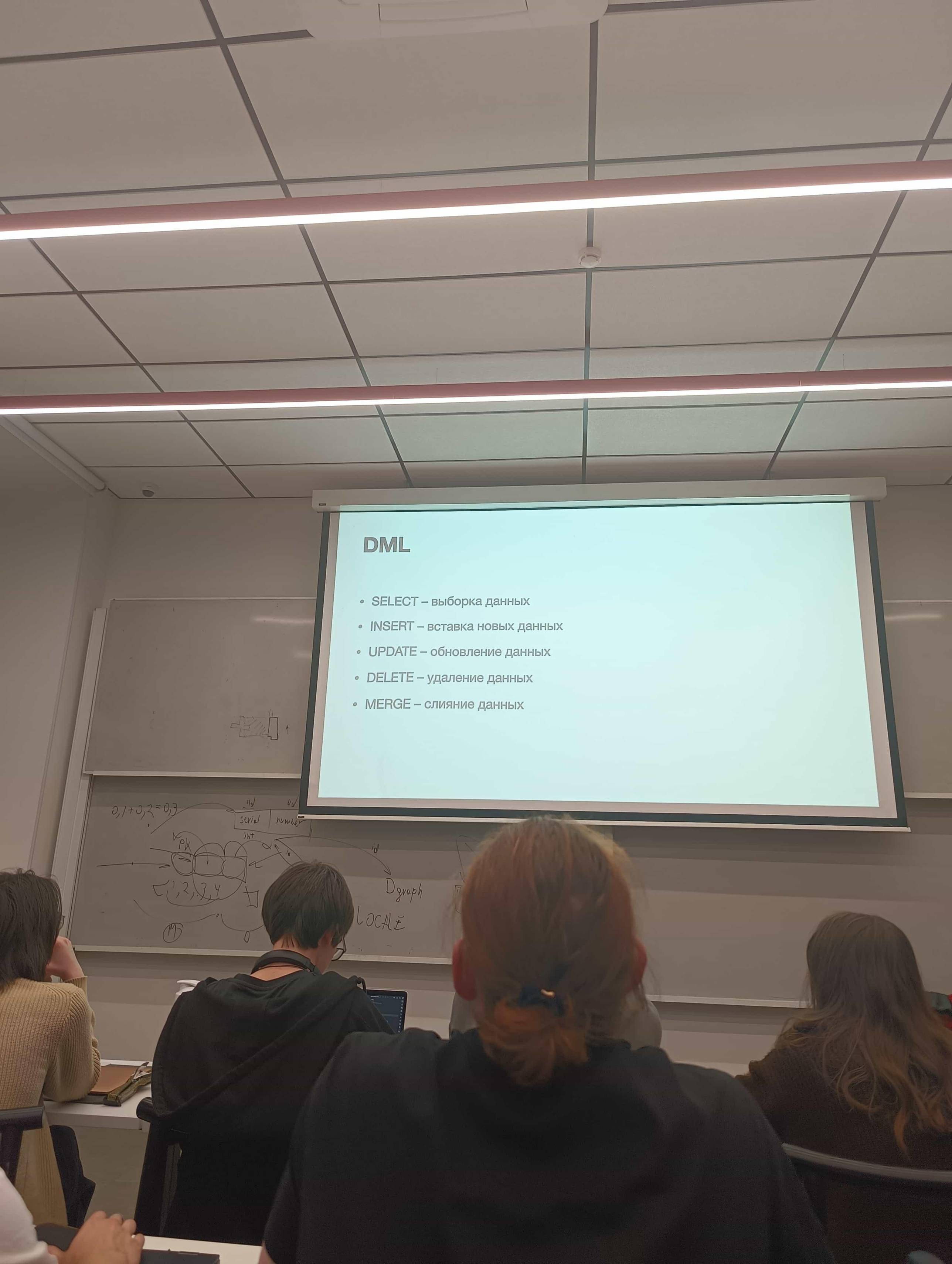

Реляционная модель
Типы данных
• Целочисленные типы (smallint, int, bigint)
• С плавающей точкой (real, double)
• Строки (varchar, char, text)
• Дата и время (date, time, timestamp, interval)
• Логический (bool)
• Геометрические типы (point, path, line)
• json

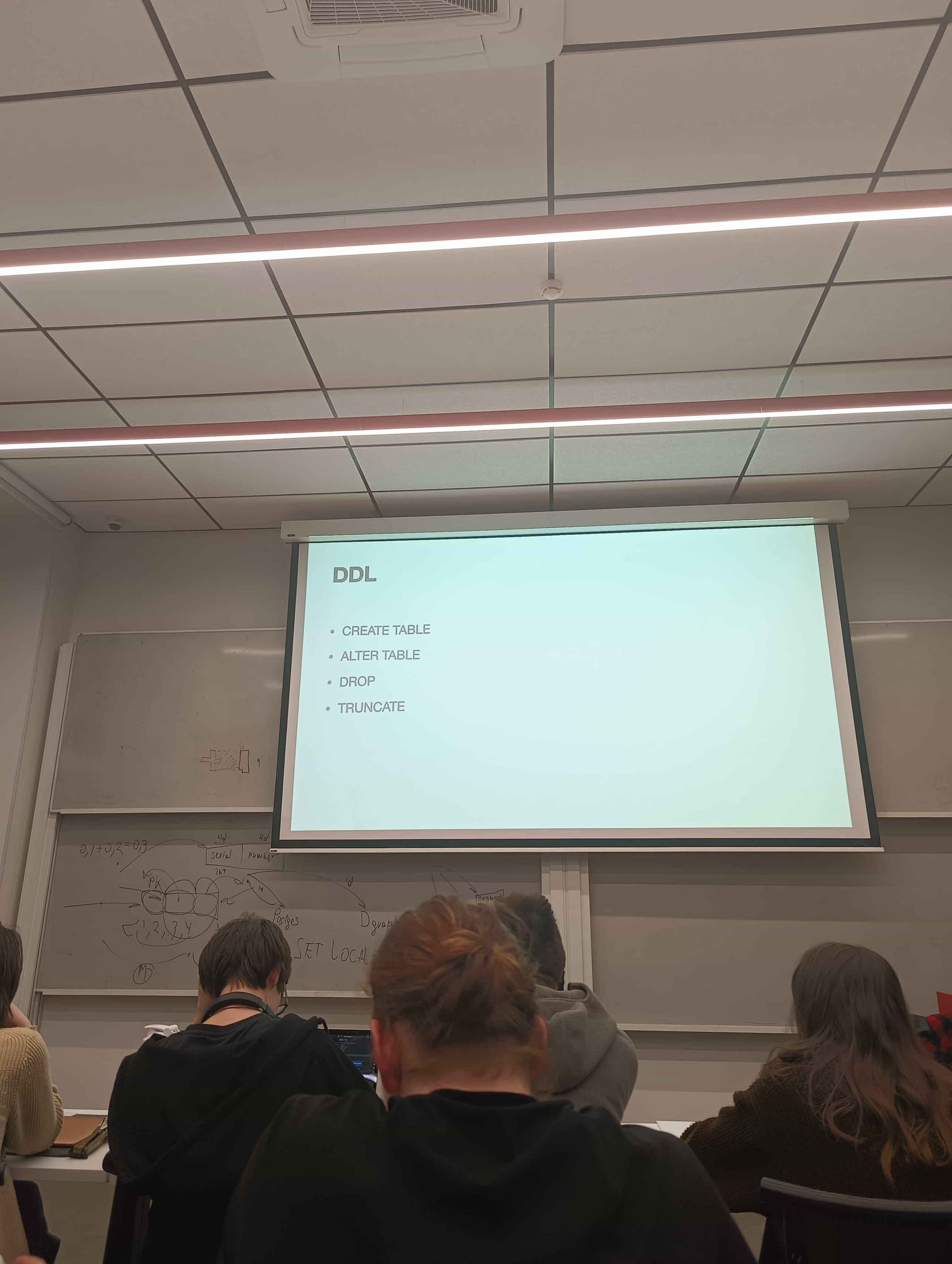
Реляционная модель

Null

- SELECT 1 = NULL вернет NULL
- 1 <> NULL вернет NULL
- SELECT 1 IS NULL вернет 0
- NULL is NULL вернет 1


Реляционная модель
Числовые типы
Фиксированные(SMALLINT, INT, BIGINT)
DECIMAL(M, D)
Плавающая точка (REAL, DOUBLE)
Денежный
Авотинкрементные(SMALLSERIAL, SERIAL, BIGSERIAL)


DML
SELECT – выборка данных
INSERT – вставка новых данных
UPDATE – обновление данных
DELETE – удаление данных
MERGE – слияние данных


DDL
CREATE TABLE
ALTER TABLE
DROP
TRUNCATE

SELECT

Кусочек документации PostgreSQL 16

```
[ WITH [ RECURSIVE ] with_query [, ...] ]
SELECT [ ALL | DISTINCT [ ON ( expression [, ...] ) ] ]
    [ * | expression [ [ AS ] output_name ] [, ...] ]
    [ FROM from_item [, ...] ]
    [ WHERE condition ]
    [ GROUP BY [ ALL | DISTINCT ] grouping_element [, ...] ]
    [ HAVING condition ]
    [ WINDOW window_name AS ( window_definition ) [, ...] ]
    [ { UNION | INTERSECT | EXCEPT } [ ALL | DISTINCT ] select ]
    [ ORDER BY expression [ ASC | DESC | USING operator ] [ NULLS
 { FIRST | LAST } ] [, ...] ]
    [ LIMIT { count | ALL } ]
    [ OFFSET start [ ROW | ROWS ] ]
    [ FETCH { FIRST | NEXT } [ count ] { ROW | ROWS } { ONLY | WITH
TIES } ]
    [ FOR { UPDATE | NO KEY UPDATE | SHARE | KEY SHARE }
[ OF table_name [, ...] ] [ NOWAIT | SKIP LOCKED ] [...] ]
```

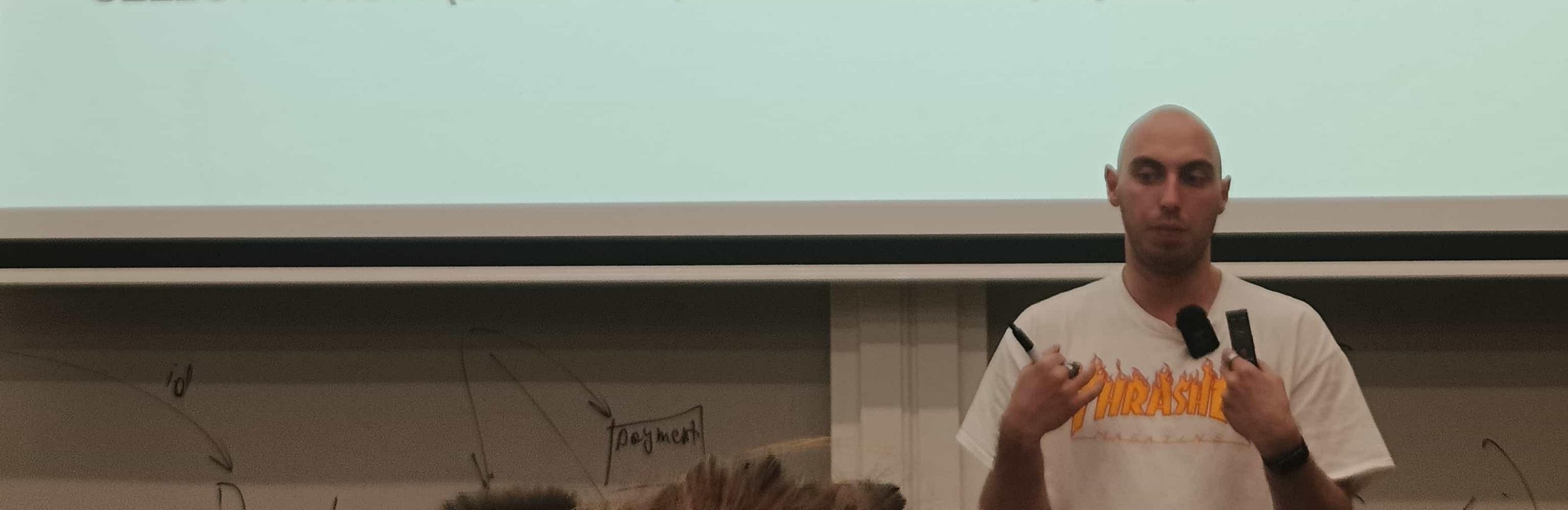
FROM

Выбор таблицы

```
SELECT *
FROM SCHEMA.TABLE
```

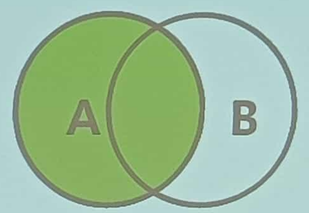
```
SELECT {a1, a2}
FROM SCHEMA.TABLE
```

```
SELECT * FROM (SELECT id, name FROM employees) AS emp_sub;
```

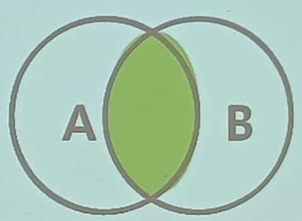


JOIN
Объединение

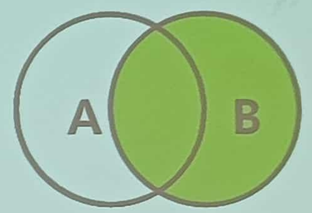
SQL JOIN



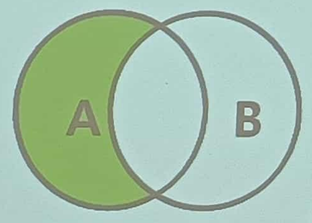
SELECT * FROM TableA A
LEFT JOIN TableB B
ON A.key = B.key;



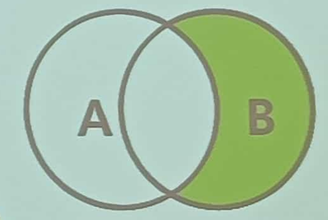
SELECT * FROM TableA A INNER JOIN TableB B ON A.key = B.key;



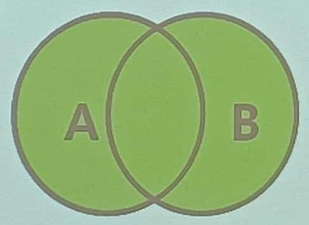
SELECT * FROM TableA A
RIGHT JOIN TableB B
ON A.key = B.key;



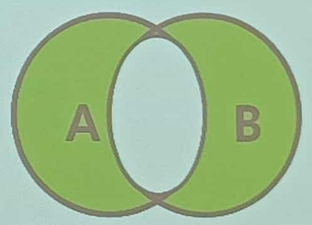
SELECT * FROM TableA A
LEFT JOIN TableB B
ON A.key = B.key
WHERE B.Key IS NULL;



SELECT * FROM TableA A
RIGHT JOIN TableB B
ON A.key = B.key
WHERE A.Key IS NULL;



SELECT * FROM TableA A LEFT JOIN TableB B
UNION
SELECT * FROM TableA A RIGHT JOIN TableB B



SELECT * FROM TableA A LEFT JOIN TableB B
UNION
SELECT * FROM TableA A RIGHT JOIN TableB B
WHERE A.key IS NULL OR B.key IS NULL