CSCB738 Проект: Бази от данни и SQL

Любен Вълчанов F96093

Разработка – Електронен Домоуправител

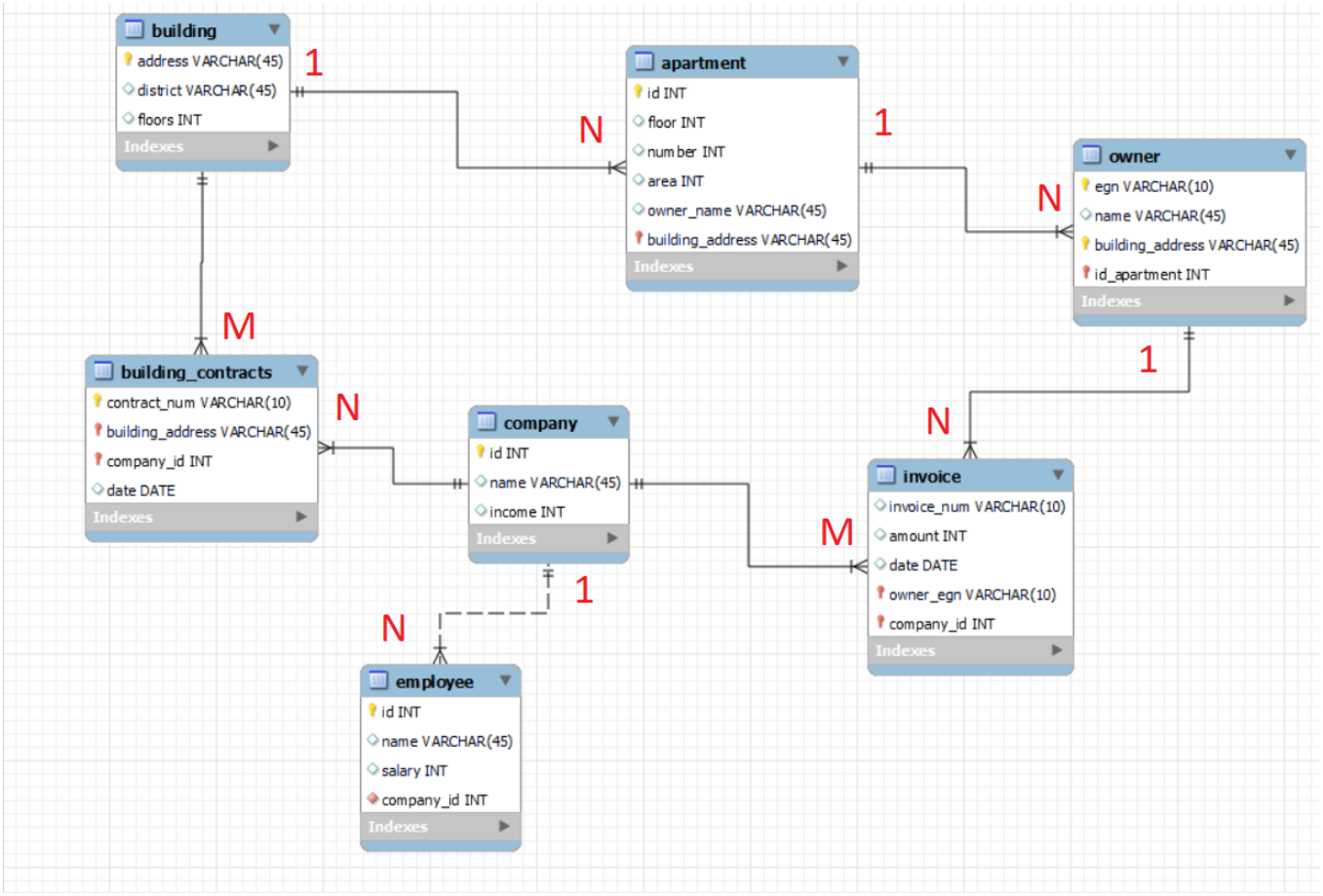
Идеята за тази база данни ми дойде, докато правех проекта по CSCB525 Приложно програмиране с Java. Там таблицата нямаше M:N релации, затова я промених, за да влезе в изискванията за този курс.

Тази база данни е предназначена за използване от фирми за професионално домашно почистване. В нея се съхраняват списъци с фирми и техните служители, сгради с апартаментите в тях, договори на компании със сгради, собственик за всеки апартамент, и фактури(или сметки) за извършени дейности – между компания и собственик на апартамент.

Недостатък може би е, че апартаментите не са свързани директно с договорите за почистване, а в същото време има фактури между собственик на апартамент и компания.

Разработих базата, заредих я с данни и написах заявките на локално инсталиран MySQL Workbench.

Атрибутите на всяка таблица се виждат на схемата по-долу, затова няма да ги пиша тук.



По-горната таблица е EER(Enhanced Entity-Relationship) и смятам, че служи едновременно като ER – показваща таблиците и връзките между тях и като Релационна схема – защото се виждат имената на таблиците, типове и имена на полета, първични ключове, чужди ключове и др.

SQL заявки:

Ще включвам снимки на екран само за по интересните заявки, по-простите е ясно какво показват.

1. Общ брой обслужвани апартаменти:
   SELECT COUNT(*)
   FROM house_manager.apartment

2. Всички жилищни сгради от определен квартал:
```
SELECT *
FROM house_manager.building
WHERE district = "Lyulin";
```

3. Компании с доход над средния:
```
SELECT *
FROM house_manager.company
WHERE income > (
        SELECT AVG(income)
        FROM house_manager.company
)
```

4. Компании съдържащи ‘ Hub ’
```
SELECT *
FROM house_manager.company
WHERE name LIKE ('% Hub %')
```

5. Всички апартаменти с площ над средната
```
SELECT *
FROM house_manager.apartment
WHERE area > (
        SELECT AVG(area)
        FROM house_manager.apartment
)
```

```
1 •  SELECT *
2    FROM house_manager.apartment
3    WHERE area > (
4        SELECT AVG(area)
5        FROM house_manager.apartment
6    )
```

Result Grid | Filter Rows: | Edit: | Export/I

id	floor	number	area	owner_name	building_address
3	10	1	140	Dimitar Savov	Manush Voyvoda 33
4	1	3	120	Lyudmil Valov	Gotse Delchev 85
5	4	2	90	Violeta Chergarska	Gotse Delchev 85
10	4	5	110	Nencho Atanasov	Simeon Radev 157
12	12	1	100	Pavlina Yaneva	Haydushka Gora 10
13	2	2	90	Radoslava Zheleva	Tsar Boris III 56
16	5	3	110	Veselin Dobrev	Oborishte 21
NULL	NULL	NULL	NULL	NULL	NULL

6. Брой на апартаменти по квартали(атрибутът квартал е достъпен в таблицата Сграда, а не в Апартамент!)

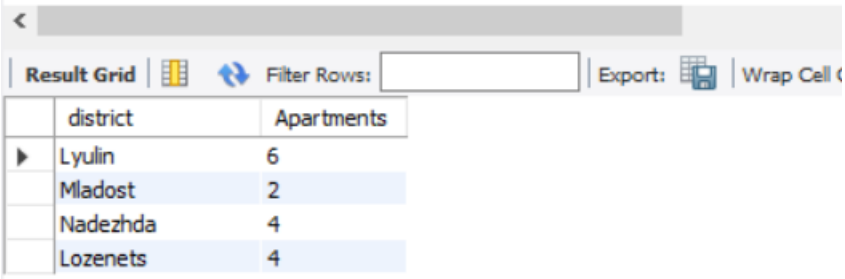
```
SELECT
        house_manager.building.district,
        COUNT(*) AS Apartments
FROM house_manager.building
JOIN house_manager.apartment

ON

        house_manager.building.address =
                house_manager.apartment.building_address

GROUP BY house_manager.building.district
```

```
1  SELECT
2      house_manager.building.district,
3      COUNT(*) AS Apartments
4  FROM house_manager.building
5  JOIN house_manager.apartment ON
6
7      house_manager.building.address =
8          house_manager.apartment.building_address
9
10 GROUP BY house_manager.building.district
```



district	Apartments
Lyulin	6
Mladost	2
Nadezhda	4
Lozenets	4

7. Собственик на апартамент, адрес на сграда, площ на апартамент

```
SELECT
        house_manager.owner.name,
    house_manager.owner.building_address,
    house_manager.apartment.area
FROM house_manager.owner

INNER JOIN house_manager.apartment ON
        house_manager.owner.id_apartment =
            house_manager.apartment.id
```

```
1 •  SELECT
2        house_manager.owner.name,
3        house_manager.owner.building_address,
4        house_manager.apartment.area
5    FROM house_manager.owner
6
7    INNER JOIN house_manager.apartment ON
8        house_manager.owner.id_apartment =
9            house_manager.apartment.id
10
```

Result Grid | Filter Rows: | Export:

name	building_address	area
Boyko Manev	Svoboda 17	70
Ilko Penchev	Svoboda 17	50
Dimitar Savov	Manush Voyvoda 33	140
Lyudmil Valov	Gotse Delchev 85	120
Violeta Chergarska	Gotse Delchev 85	90
Malina Karapetrova	Gotse Delchev 85	60
Ralitsa Yankova	Iskar 33	45
Viktor Atanasov	Iskar 33	60
Bogomil Boychev	Simeon Radev 157	80
Nencho Atanasov	Simeon Radev 157	110
Orlin Paskalev	Opalchenska 121	80
Pavlina Yaneva	Haydushka Gora 10	100
Radoslava Zheleva	Tsar Boris III 56	90
Georgi Glavchev	Tsar Boris III 56	70
Hristo Bakalov	Oborishte 21	60
Veselin Dobrev	Oborishte 21	110

8. Втората най-висока заплата на служител(изключвайки първата)

```
SELECT
   MAX(house_manager.employee.salary)
FROM house_manager.employee
WHERE house_manager.employee.salary NOT IN
(
      SELECT MAX(house_manager.employee.salary)
      FROM house_manager.employee
)
```

```
SELECT
    MAX(house_manager.employee.salary)
    FROM house_manager.employee
WHERE house_manager.employee.salary NOT IN
(
    SELECT MAX(house_manager.employee.salary)
    FROM house_manager.employee
)
```

Result Grid | Filter Rows: | Export: | Wrap

MAX(house_manager.employee.salary)
2800

9. Фирма, служител, заплата

```
SELECT
        house_manager.company.name,
        house_manager.employee.name,
    house_manager.employee.salary
FROM house_manager.company

INNER JOIN house_manager.employee

ON house_manager.company.id =
        house_manager.employee.company_id
```

```
1 •  SELECT
2        house_manager.company.name,
3        house_manager.employee.name,
4        house_manager.employee.salary
5    FROM house_manager.company
6
7    INNER JOIN house_manager.employee
8
9    ON house_manager.company.id =
10       house_manager.employee.company_id
```

Result Grid | Filter Rows: | Export:

name	name	salary
Pure Glow	Ivan Petrov	2000
Pure Glow	Maria Ivanova	1500
Pure Glow	Stanimir Petkov	1200
The Hasty Cleaners	Petar Karaivanov	1500
The Hasty Cleaners	Ilko savov	1200
The Hasty Cleaners	Phuong Bao Duy	1200
The Dust Wipers	Dragan Tonchev	2100
The Dust Wipers	Matey Dobrev	2000
The Dust Wipers	Chavdar Zhelyaz...	1800
Sparkle Pro	Zhivko Vasilev	2800
Sparkle Pro	Anna Kirilova	2500
Sparkle Pro	Bozhidar Dimitrov	3000
Scrub Hub Services	Manush Zhelev	2000
Scrub Hub Services	Denitsa Koleva	2500
Scrub Hub Services	Iva Hristova	2100

10. Разходи на всяка компания за заплати на служители

```
SELECT
        house_manager.company.name,
    SUM(house_manager.employee.salary)
FROM house_manager.company

INNER JOIN house_manager.employee
        ON house_manager.company.id =
                house_manager.employee.company_id

GROUP BY house_manager.company.name
```

```
SELECT
    house_manager.company.name,
    SUM(house_manager.employee.salary)
FROM house_manager.company

INNER JOIN house_manager.employee
    ON house_manager.company.id =
        house_manager.employee.company_id

GROUP BY house_manager.company.name
```

Result Grid | Filter Rows: | Export:

name	SUM(house_manager.employee.salary)
Pure Glow	4700
The Hasty Cleaners	3900
The Dust Wipers	5900
Sparkle Pro	8300
Scrub Hub Services	6600

11. Сума от фактурите за всяка дата преди ‚2026-05-14‘

```
SELECT
    house_manager.invoice.date,
    SUM(house_manager.invoice.amount) AS Sum
FROM house_manager.invoice
WHERE house_manager.invoice.date < '2026-05-14'

GROUP BY
        house_manager.invoice.date

ORDER BY Sum
```

```sql
SELECT
    house_manager.invoice.date,
    SUM(house_manager.invoice.amount) AS Sum
FROM house_manager.invoice
WHERE house_manager.invoice.date < '2026-05-14'

GROUP BY
        house_manager.invoice.date

ORDER BY Sum
```

Result Grid | Filter Rows: | Export: | Wrap Cell

date	Sum
2026-05-02	90
2026-05-01	100
2026-05-08	120
2026-05-12	160
2026-05-07	180
2026-05-13	220
2026-05-06	380
2026-05-04	400