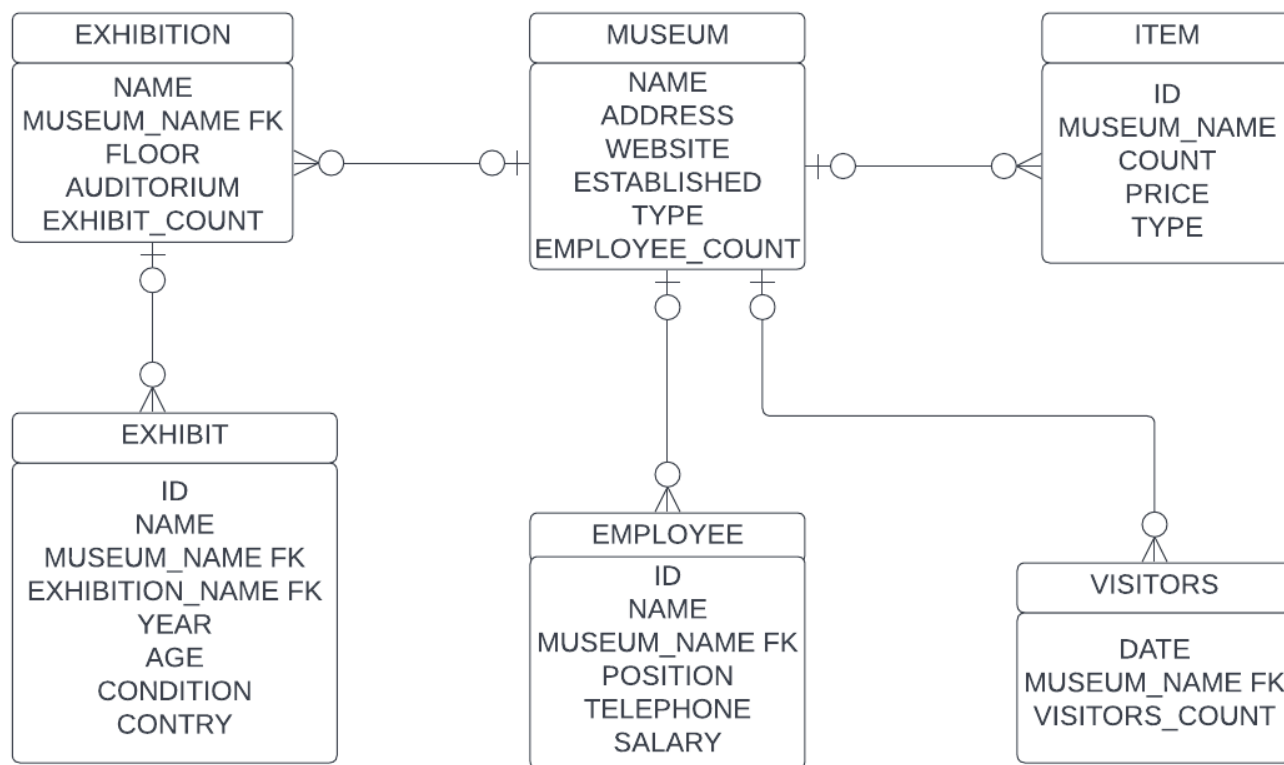
The background of the slide features a close-up of a glowing incandescent light bulb. The bulb's filament is visible and emits a warm, yellow light. Overlaid on the image is a faint, light blue circuit board pattern with various lines and circular nodes. A dark, semi-transparent rectangular box is positioned in the center, containing the title text in white.

КУРСОВ ПРОЕКТ БАЗИ ДАННИ МУЗЕЙ

СХЕМАТА НА РЕЛАЦИИТЕ НА БАЗА ОТ ДАННИ ЗА МУЗЕЙ



**Таблица
MUSEUM**

NAME - име,
първичен ключ

ADDRESS -
адрес

WEBSITE -
уебсайт

ESTABLISHED -
година на
основаване

TYPE - вид

EMPLOYEE_CO
UNT - брой на
персонала

**Таблица EXHIBITION
- NAME и
MUSEUM_NAME
образуват първичен
ключ**

NAME - име

MUSEUM_NAME - име
на музея, външен
ключ към
NAME.MUSEUM

FLOOR - етаж

AUDITORIUM - зала

EXHIBIT_COUNT -
брой на експонатите

Таблица EXHIBIT

ID -
идентификационен
номер, първичен
ключ

NAME - име

MUSEUM_NAME -
име на музея,
външен ключ към
NAME.MUSEUM

EXHIBITION_NAME -
име на изложбата,
външен ключ към
NAME.EXHIBITION

AGE - епоха ('BC'-
преди христа, 'AC'-
след христа)

YEAR - датира от

CONDITION -
състояние (от 1 до
5; 1-много добро,
5-много лошо)

COUNTRY -
държава

YEAR - датира от

Таблица **EMPLOYEE**

ID -
идентификационен
номер, първичен ключ

NAME - име

MUSEUM_NAME - име
на музея, външен
ключ към
NAME.MUSEUM

POSITION - длъжност

TELEPHONE -
телефонен номер

SALARY - месечна
заплата

Таблицата **VISITORS** -
DATE и
MUSEUM_NAME
образуват първичен
ключ

DATE - месец и година

MUSEUM_NAME - име
на музея, външен
ключ към
NAME.MUSEUM

VISITORS_COUNT -
брой на посетителите
за месеца

Таблица **EMPLOYEE**

ID -
идентификационен
номер, първичен
ключ

NAME - име

MUSEUM_NAME -
име на музея,
външен ключ към
NAME.MUSEUM

POSITION -
длъжност

TELEPHONE -
телефонен номер

SALARY - месечна
заплата

ДЕМОНСТРАЦИЯ НА НЯКОИ ЗАЯВКИ, КОИТО СМЕ ПОЛЗВАЛИ



Създаване на схемите
и релациите



Добавяне на съдържание



Примери с подзаявки



Примери с групиране и
агрегация



Примери с прости и
две и повече заявки



Примери със съединения



Примери с
ограничения



Примери с тригери


```

IF EXISTS (SELECT * FROM sysdatabases WHERE name= 'museum' )
DROP DATABASE museum
GO

```

```

CREATE DATABASE museum
GO
USE museum
GO

```

----- Tables -----

```

CREATE TABLE MUSEUM (
    NAME VARCHAR(100) NOT NULL ,
    ADDRESS VARCHAR(100) NOT NULL ,
    WEBSITE VARCHAR(50) NOT NULL ,
    ESTABLISHED INT NOT NULL ,
    TYPE VARCHAR(20) NOT NULL ,
    EMPLOYEE INT
);

```

```

CREATE TABLE EXHIBITION (
    NAME VARCHAR(100) NOT NULL ,
    MUSEUM_NAME VARCHAR(100) NOT NULL ,
    FLOOR INT ,
    AUDITORIUM VARCHAR(4) NOT NULL ,
    EXHIBIT COUNT INT

```

----- Constraints -----

```

ALTER TABLE MUSEUM ADD CONSTRAINT PK_MUSEUM PRIMARY KEY(NAME);
ALTER TABLE EXHIBITION ADD CONSTRAINT PK_EXHIBITION PRIMARY KEY(NAME, MUSEUM_NAME);
ALTER TABLE EXHIBITION ADD CONSTRAINT FK_EXHIBITION FOREIGN KEY(MUSEUM_NAME) REFERENCES MUSEUM(NAME);
ALTER TABLE EXHIBIT ADD CONSTRAINT PK_EXHIBIT PRIMARY KEY(ID);
ALTER TABLE EXHIBIT ADD CONSTRAINT FK_EXHIBIT_EXHIBITION FOREIGN KEY(EXHIBITION_NAME, MUSEUM_NAME) REF

```

```

ALTER TABLE EMPLOYEE ADD CONSTRAINT PK_EMPLOYEE PRIMARY KEY(ID);
ALTER TABLE EMPLOYEE ADD CONSTRAINT FK_EMPLOYEE FOREIGN KEY(MUSEUM_NAME) REFERENCES MUSEUM(NAME);
ALTER TABLE ITEM ADD CONSTRAINT PK_ITEM PRIMARY KEY(ID, MUSEUM_NAME);
ALTER TABLE ITEM ADD CONSTRAINT FK_ITEM FOREIGN KEY(MUSEUM_NAME) REFERENCES MUSEUM(NAME);
ALTER TABLE VISITORS ADD CONSTRAINT PK_VISITORS PRIMARY KEY(DATE, MUSEUM_NAME);
ALTER TABLE VISITORS ADD CONSTRAINT FK_VISITORS FOREIGN KEY(MUSEUM_NAME) REFERENCES MUSEUM(NAME);

```

```

CREATE INDEX IDX_EXHIBIT
ON EXHIBIT (MUSEUM_NAME, EXHIBITION_NAME);

```

```

CREATE INDEX IDX_EMPLOYEE
ON EMPLOYEE (POSITION);

```

MUSEUM

СЪЗДАВАНЕ НА СХЕМИТЕ И РЕЛАЦИИТЕ И ДОБАВЯНЕ НА ОГРАНИЧЕНИЯ

ДОБАВЯНЕ НА СЪДЪРЖАНИЕ

```
museum (1).sql - L...1BRV44K\deivi (60)  X
--
-- MUSEUM
--
INSERT INTO MUSEUM
VALUES ('Louvre', 'Musee du Louvre, 75001 Paris', 'www.louvre.fr', 1793, 'art, historic', 2200);
INSERT INTO MUSEUM
VALUES ('British Museum', 'Great Russell Street, London', 'www.britishmuseum.org', 1753, 'art, historic', 1000);
INSERT INTO MUSEUM
VALUES ('Metropolitan Museum of Art', '1000 Fifth Avenue New York', 'www.metmuseum.org', 1870, 'art', 1600);
INSERT INTO MUSEUM
VALUES ('Hermitage Museum', '34 Palace Embankment, Dvortsovy Municipal Okrug, Central District, Saint Petersburg', 'www.hermitagemuseum.org', 1764, 'ar

----- EXHIBITION -----
--
-- EXHIBITION
--
INSERT INTO EXHIBITION
VALUES ('Egyptian antiquities', 'Louvre', 0, '102B', 50000)
INSERT INTO EXHIBITION
VALUES ('Greek, Etruscan, and Roman', 'Louvre', 1, '65C', 40000)
INSERT INTO EXHIBITION
VALUES ('Painting', 'Louvre', 2, '306A', 6000)
INSERT INTO EXHIBITION
VALUES ('Islamic art', 'Louvre', 0, '72B', 7500)

--
-- EXHIBITION
--
INSERT INTO EXHIBITION
VALUES ('Department of Egypt and Sudan', 'British Museum', 3, '50', 100000)
INSERT INTO EXHIBITION
VALUES ('Department of Greece and Rome', 'British Museum', 1, '4', 100000)
INSERT INTO EXHIBITION
VALUES ('Department of Prints and Drawings', 'British Museum', 3, '50', 50000)

--
-- EXHIBITION
--
INSERT INTO EXHIBITION
VALUES ('Arts of Africa, Oceania, and the Americas', 'Metropolitan Museum of Art', 1, '96A', 11000)
VALUES ('Arts of Africa, Oceania, and the Americas', 'Metropolitan Museum of Art', 1, '96A', 11000)
--
-- EXHIBITION
--
INSERT INTO EXHIBITION
```

ПРИМЕРИ С ПРОСТИ И ДВЕ И ПОВЕЧЕ ЗАЯВКИ

```
--3.7. Show the name of the exhiitions, museums in which the name of exhibition is Russian art and the number of visitors is bigger than 500
select distinct ex. NAME, m.Name
from MUSEUM m, VISITORS v, EXHIBITION ex
where ex.MUSEUM_NAME=m.NAME and m.NAME=v.MUSEUM_NAME and ex.NAME='Russian art' and v.VISITORS_COUNT>500

--3.8. Show directors of the museums without audio guide but with the best condition of exhibits
select em.NAME, em.MUSEUM_NAME
from EMPLOYEE em, EXHIBIT e
where em.position='Director' and e.MUSEUM_NAME=em.MUSEUM_NAME and e.CONDITION=1
except
select em.Name, em.MUSEUM_NAME
from EMPLOYEE em, ITEM i
where i.MUSEUM_NAME=em.MUSEUM_NAME and i.TYPE='audio guide'
order by 2

--3.9. Show the directors of the museums with at least 2 exhibitions with the same exhibit count
select em.salary, em.NAME
from MUSEUM m, EXHIBITION ex1, EXHIBITION ex2, EMPLOYEE em
where ex1.exhibit_count=ex2.exhibit_count and ex1.NAME!=ex2.NAME and ex1.MUSEUM_NAME=m.NAME and ex2.MUSEUM_NAME=m.NAME and m.NAME=em.MUSEUM_

--3.10. Show the websites of all museums in New York and all museums with the salary of employees = 8960
select m.website
from MUSEUM m, EMPLOYEE em
where m.NAME=em.MUSEUM_NAME and em.SALARY=8960
union
select m.website
from MUSEUM m
where m.ADDRESS like '%New York%'
```

Results		Messages	
NAME		Name	
1	Russian art	Hermitage Museum	

NAME		MUSEUM_NAME	
1	Mikhail Piotrovsky	Hermitage Museum	

salary		NAME	
1	17480	Max Hollein	
2	17480	Max Hollein	
3	18660	Hartwig Fischer	
4	18660	Hartwig Fischer	

website	
1	www.metmuseum.org

1	www.hermitage.ru
	metmuseum.org

ПРИМЕРИ С ПОДЗАЯВКИ

--4 Subqueries|

--1

```
SELECT M.NAME Museum, M.ESTABLISHED Established, M.ADDRESS Address
FROM MUSEUM M
WHERE NAME = (SELECT E.MUSEUM_NAME
               FROM EXHIBIT E
               WHERE E.NAME = '"Mona Lisa" by Leonardo da Vinci');
```

--2

```
SELECT M.NAME Name, M.WEBSITE, M.EMPLOYEE
FROM MUSEUM M
WHERE M.ESTABLISHED < ANY(SELECT E.YEAR
                           FROM EXHIBIT E
                           WHERE E.MUSEUM_NAME = 'Louvre');
```

--3

```
SELECT *
FROM EXHIBITION E
WHERE E.NAME = (SELECT EX.EXHIBITION_NAME
                FROM EXHIBIT EX
                WHERE EX.YEAR = 1300);
```

--4

```
SELECT *
FROM EXHIBIT E
WHERE E.MUSEUM_NAME = (SELECT M.NAME
                       FROM MUSEUM M
                       WHERE M.NAME = 'Metropolitan Museum of Art');
```

Museum		Established	Address
1	Louvre	1793	Musee du Louvre, 75001 Paris

Name	WEBSITE	EMPLOYEE
1 British Museum	www.britishmuseum.org	1000
2 Hermitage Museum	www.britishmuseum.org	444
3 Louvre	www.louvre.fr	2200
4 Metropolitan Museum of Art	www.metmuseum.org	1600

NAME	MUSEUM_NAME	FLOOR	AUDITORIUM	EXHIBIT_COUNT
1 Islamic art	Louvre	0	72B	7500

ID	NAME	MUSEUM_NAME	EXHIBITION_NAME	YEAR	AGE	CONDITION	COUNTRY
1	27 Benin ivory mask	Metropolitan Museum of Art	Arts of Africa, Oceania, and the Americas	1500	AD	2	Nigeria
2	28 Lord Neminatha	Metropolitan Museum of Art	Asian art	600	AD	2	India
3	29 Bronze Chola Statue of Nataraja	Metropolitan Museum of Art	Asian art	1000	AD	1	India
4	30 Vishnu	Metropolitan Museum of Art	Asian art	950	AD	2	India
5	31 Celestial dancer (Apsara)	Metropolitan Museum of Art	Asian art	1100	AD	4	India
6	32 Robe ? la fran?aise	Metropolitan Museum of Art	Costume Institute	1740	AD	3	France
7	33 A Givenchy dragon gown	Metropolitan Museum of Art	Costume Institute	2015	AD	1	France
8	34 Rainbow cape by Christopher ...	Metropolitan Museum of Art	Costume Institute	2019	AD	1	Britain

ПРИМЕРИ СЪС СЪЕДИНЕНИЯ

5.3. Show the count of visitors if it is bigger than the number of audio guides in the museum

```
select v.VISITORS_COUNT, v.MUSEUM_NAME, i.PRICE, i.COUNT
from VISITORS v
    inner join item i
    on v.VISITORS_COUNT>=i.COUNT and i.MUSEUM_NAME=v.MUSEUM_NAME and i.TYPE='audio guide'
order by 3, 4
```

--5.4. Show the name, website and type of the museums which is not historic are established before 1880, the count of exhibits is less than 5000

```
select distinct t1.NAME, t1.WEBSITE, t1.TYPE
from (select m.NAME, m.ESTABLISHED, m.WEBSITE, m.TYPE
    from EXHIBITION ex cross join MUSEUM m
    where ex.EXHIBIT_COUNT>=5000 and ex.MUSEUM_NAME=m.NAME
    )t1
    inner join(select m.ESTABLISHED
        from MUSEUM m
        where m.ESTABLISHED<=1880) t2
    on t1.ESTABLISHED=t2.ESTABLISHED
where t1.TYPE='art'
order by 1
```

--5.5. Show the age and condition which are the same in at least 2 of the exhibitits

```
select distinct e1.AGE, e1.CONDITION
from EXHIBIT e1
    join EXHIBIT e2 on e1.AGE=e2.AGE
        and e1.CONDITION=e2.CONDITION
        and e1.ID!=e2.ID
```

Results Messages

	VISITORS_COUNT	MUSEUM_NAME	PRICE	COUNT
1	833951	Louvre	5	10000
2	860881	Louvre	5	10000
3	810784	Louvre	5	10000
4	856321	Louvre	5	10000
5	875221	Louvre	5	10000
6	583147	Metropolitan Mu...	5	12000
7	503987	Metropolitan Mu...	5	12000
8	489698	Metropolitan Mu...	5	12000

	NAME	WEBSITE	TYPE
1	Hermitage Museum	www.britishmuseum.org	art
2	Metropolitan Museum of Art	www.metmuseum.org	art

	AGE	CONDITION
1	AD	1
2	AD	2
3	AD	3
4	AD	4
5	BC	2
6	BC	3
7	BC	4
8	BC	5

ПРИМЕРИ С ГРУПИРАНЕ И АГРЕГАЦИЯ

```
--3
select m.NAME
from EXHIBIT e
join MUSEUM m on m.NAME = e.MUSEUM_NAME
where e.YEAR > 395 and e.YEAR < 1453
group by m.NAME
having count(e.NAME) >= 5

--4
select m.name, count(i.PRICE) as NumOfProducts, SUM(i.PRICE) as SumOfAllProducts
from ITEM i
join MUSEUM m on i.MUSEUM_NAME = m.NAME
group by m.NAME

--5 à
select e.COUNTRY
from EXHIBIT e
join MUSEUM m on m.NAME = e.MUSEUM_NAME
group by e.COUNTRY
having count(m.NAME) > 5

--6
select e.NAME
from EXHIBITION e join (select m.NAME
                        from MUSEUM m JOIN VISITORS v on m.NAME = MUSEUM_NAME
                        group by m.NAME
                        having SUM(v.VISITORS_COUNT) > 3000000) m
on m.NAME = e.MUSEUM_NAME
group by e.NAME
```

Results Messages

NAME	
1	British Museum
2	Louvre

	name	NumOfProducts	SumOfAllProducts
1	British Museum	4	50
2	Hermitage Museum	4	33
3	Louvre	4	31
4	Metropolitan Museum of Art	3	37

COUNTRY	
1	Ancient Egypt
2	Ancient Greece
3	France
4	Russia

NAME	
1	Egyptian antiquities
2	Greek, Etruscan, and Roman
3	Islamic art
4	Painting

ПРИМЕРИ С ТРИГЕРИ

Trigger_check_data...BRV44K\deivi (52)

```
if exists (select 1
           from sys.objects
           where type = 'TR'
                 and name = 'check_data')
    drop trigger check_data;
GO

CREATE TRIGGER check_data ON EXHIBIT FOR UPDATE AS
BEGIN
    declare @new_condition as INT;
    select @new_condition = CONDITION from inserted;

    declare @new_age as char(2);
    select @new_age = AGE from inserted;

    declare @new_year as INT;
    select @new_year = YEAR from inserted;

    if (@new_condition < 1 or @new_condition > 5)
    begin
        print 'New condition is out of range (1-5)!';
        Rollback;
    end;

    if (@new_age != 'AD' and @new_age != 'BC')
    begin
        print 'New age is incorrect! There are two correct values: AD or BC';
        Rollback;
    end;

    if (@new_year > 2022 and @new_age = 'AD')
    begin
        print 'New year is incorrect!';
        Rollback;
    end;
END;
```

Задача	Фак. №
1. Създаване на схемите и релациите	62594
2. Добавяне на съдържание	62594
3. Примерни прости заявки и заявки върху две и повече релации	62568
4. Примери с подзаявки	62585
5. Примери със съединения	62568
6. Примери с групиране и агрегация	62564
7. Примери с ограничения	62568
8. Примери с изгледи и индекси	62594
9. Примери с тригери	62564
10. Подготовка на презентацията	62585

ИЗГОТВИЛИ

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