

Тема 23

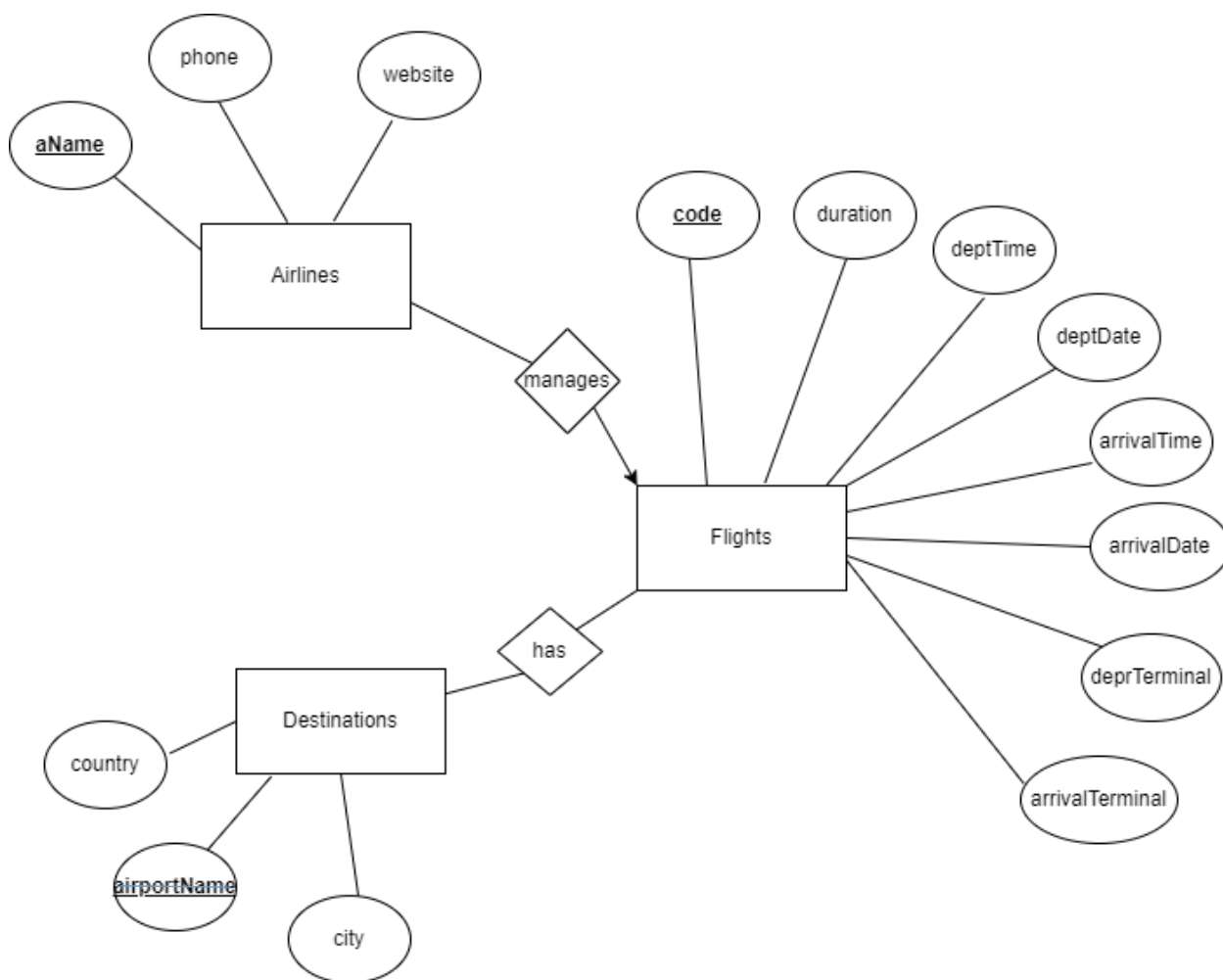
Проект по база от данни за самолетно разписание

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1. Описание на множествата същности

- Полети – код, продължителност, час-заминаване, дата-заминаване, час-пристигане, дата-пристигане, терминал, авиокомпания, летище-заминаване, летище-пристигане
- Авиокомпаниии – име, телефон, уебсайт;
- Дестинации – летище, държава, град

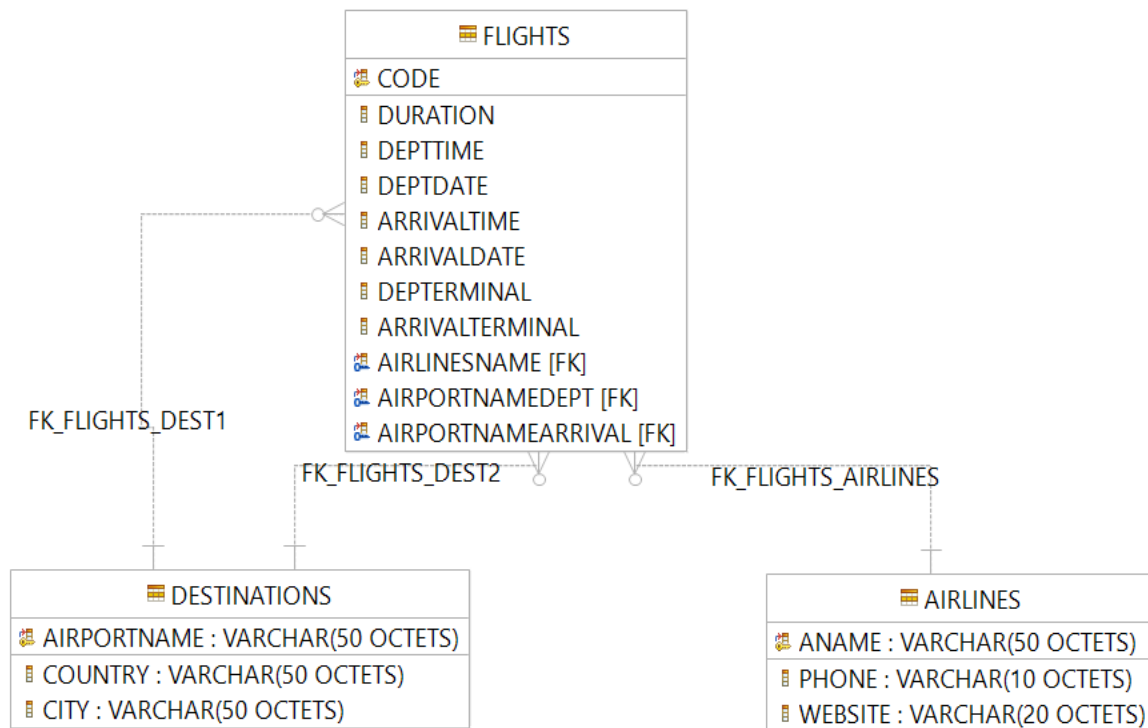
2. E\R диаграма на модела на БД (Картинка на диаграмата);



3. Преобразуване от E\R модел към релационен модел

- Airlines (name, phone website)
- Flights (code, duration, dTime, dDate, aDate, dTerminal, aTerminal, **airPortNameDestination**, **airportNameArrival**, **airlinesName**)
- Destinations (airportName, country, city)

4. Картинка на релационния модел от Data Studio

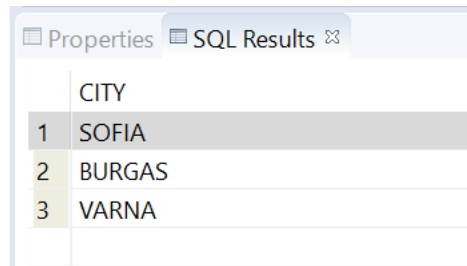


5. Описание на функциите

```
CREATE FUNCTION DESTINATION_NAMES(v_country varchar(50))
RETURNS TABLE (
    CITY VARCHAR(50)
)
RETURN
SELECT CITY
FROM DESTINATIONS
WHERE COUNTRY = v_country;

SELECT *
FROM TABLE (FN71981.DESTINATION_NAMES('BULGARIA'));
```

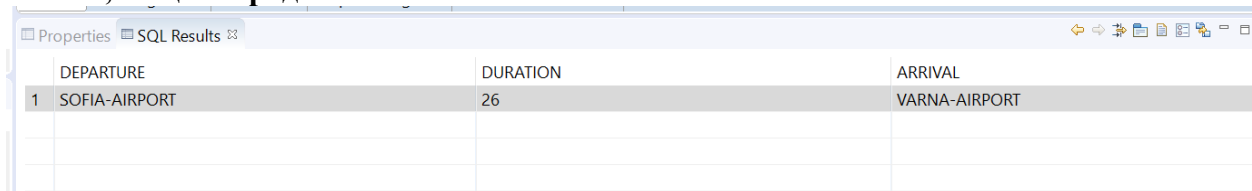
Информация за градовете, до които има полети в съответната държава



	CITY
1	SOFIA
2	BURGAS
3	VARNA

```
CREATE FUNCTION FLIGHT_INFO(V_FLIGHT_CODE VARCHAR(50))
RETURNS TABLE(
    DEPARTURE VARCHAR(50),
    DURATION INTEGER,
    ARRIVAL VARCHAR(50)
)
RETURN
SELECT AIRPORTNAMEDEPT, DURATION, AIRPORTNAMEARRIVAL
FROM FLIGHTS
WHERE CODE = V_FLIGHT_CODE;
SELECT *
FROM TABLE (FN71981.FLIGHT_INFO('FB973'));
```

Спрямо кодът на полета дава информация за мястото на тръгване и пристигане на полета, също и продължителността



	DEPARTURE	DURATION	ARRIVAL
1	SOFIA-AIRPORT	26	VARNA-AIRPORT

6. Описание на тригерите

```
CREATE TRIGGER CHECK_FLIGHT_DATE
BEFORE INSERT ON FN71981.FLIGHTS
REFERENCING NEW AS N
FOR EACH ROW
WHEN (N.ARRIVALDATE > N.DEPTDATE)
SET N.ARRIVALDATE = '2022-01-01';
```

Преди добавяна не ред в таблицата, проверява дали датата на полета е преди датата на пристигане, ако не е вярно задаваме подразбираща се стойност 01.01.2022 за дата на полета.

7. Описание на изгледите

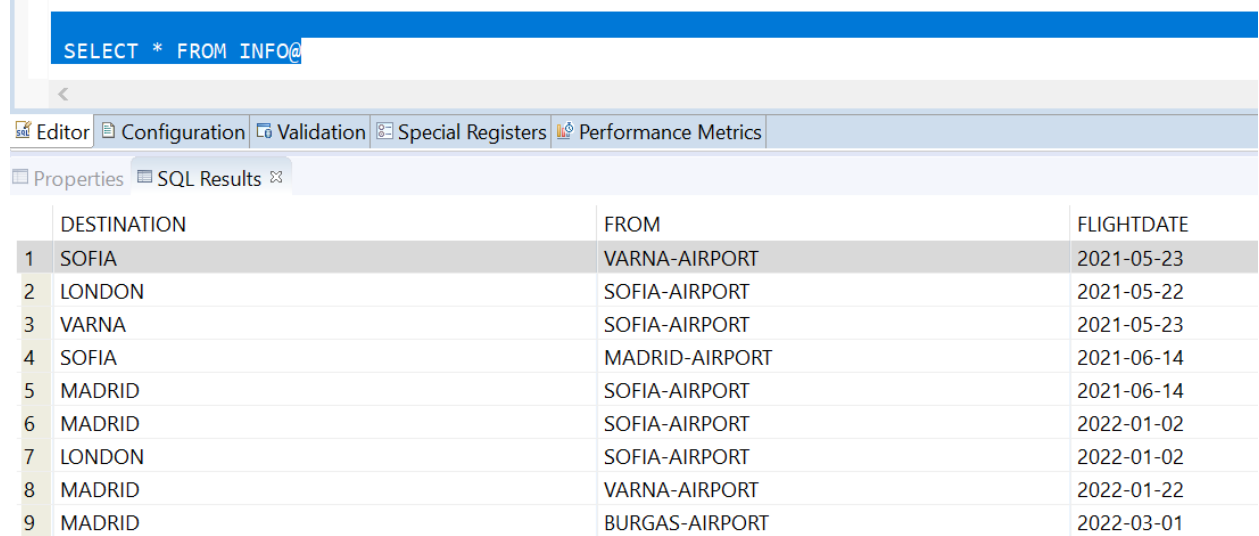
```
CREATE VIEW INFO(DESTINATION, FROM, FLIGHTDATE)
AS
SELECT D.CITY, F.AIRPORTNAMEDEPT, F.DEPTDATE
```

```
FROM DESTINATIONS D, FLIGHTS F
WHERE F.AIRPORTNAMEARRIVAL = D.AIRPORTNAME;
```

```
SELECT * FROM INFO;
```

```
SELECT DESTINATION AS DESTINATION, FROM AS AIRPORT, FLIGHTDATE AS DATE
FROM INFO;
```

Дава информация за града, до който ще се пътува, от къде(летище) ще се пътува и датата на полета.



The screenshot shows a SQL IDE interface. At the top, a blue bar contains the query: `SELECT * FROM INFO;`. Below the query bar, there are tabs for 'Editor', 'Configuration', 'Validation', 'Special Registers', and 'Performance Metrics'. Under the 'Properties' tab, the 'SQL Results' section displays a table with 9 rows of data.

	DESTINATION	FROM	FLIGHTDATE
1	SOFIA	VARNA-AIRPORT	2021-05-23
2	LONDON	SOFIA-AIRPORT	2021-05-22
3	VARNA	SOFIA-AIRPORT	2021-05-23
4	SOFIA	MADRID-AIRPORT	2021-06-14
5	MADRID	SOFIA-AIRPORT	2021-06-14
6	MADRID	SOFIA-AIRPORT	2022-01-02
7	LONDON	SOFIA-AIRPORT	2022-01-02
8	MADRID	VARNA-AIRPORT	2022-01-22
9	MADRID	BURGAS-AIRPORT	2022-03-01

```
CREATE VIEW INFO2(FROM,TO,DURATION, AIRLINES)
AS
SELECT D.CITY,F.AIRPORTNAMEARRIVAL, F.DURATION, A.ANAME
FROM DESTINATIONS D, FLIGHTS F, AIRLINES A
WHERE F.AIRPORTNAMEDEPT = D.AIRPORTNAME
AND F.AIRLINESNAME = A.ANAME;
```

```
SELECT * FROM INFO2;
```

Дава информация за полета като град на потегляне, летище на пристигане, продължителност и с коя авиокомпания е полетът.

SELECT * FROM INFO2@				
Editor Configuration Validation Special Registers Performance Metrics				
Properties SQL Results				
	FROM	TO	DURATION	AIRLINES
1	VARNA	SOFIA-AIRPORT	40	BULGARIA-AIR
2	SOFIA	HEATHROW-AIRPORT	70	WIZZ-AIR
3	SOFIA	VARNA-AIRPORT	26	BULGARIA-AIR
4	MADRID	SOFIA-AIRPORT	215	RYANAIR
5	SOFIA	MADRID-AIRPORT	215	RYANAIR
6	SOFIA	MADRID-AIRPORT	50	EASYJET
7	SOFIA	HEATHROW-AIRPORT	60	WIZZ-AIR
8	VARNA	MADRID-AIRPORT	120	WIZZ-AIR
9	BURGAS	MADRID-AIRPORT	90	WIZZ-AIR

8. Описание на процедурите

```

CREATE PROCEDURE FLIGHT_INFORMATION(in v_airportname varchar(50))
RESULT SETS 1
LANGUAGE SQL
P1: BEGIN
    DECLARE C1 CURSOR WITH RETURN FOR
        SELECT AIRPORTNAMEDEPT, DURATION, AIRPORTNAMEARRIVAL
        FROM FLIGHTS
        WHERE AIRPORTNAMEDEPT = v_airportname;
    OPEN C1;
END P1;

```

Дава информация за дадено летище, до къде има полети и каква е продължителността.

CALL FN71981.FLIGHT_INFORMATION('VARNA-AIRPORT')@			
Editor Configuration Validation Special Registers Performance Metrics			
Properties SQL Results			
	AIRPORTNAMEDEPT	DURATION	AIRPORTNAMEARRIVAL
1	VARNA-AIRPORT	40	SOFIA-AIRPORT
2	VARNA-AIRPORT	120	MADRID-AIRPORT

CALL FN71981.FLIGHT_INFORMATION('SOFIA-AIRPORT')@			
Editor Configuration Validation Special Registers Performance Metrics			
Properties SQL Results			
	AIRPORTNAMEDEPT	DURATION	AIRPORTNAMEARRIVAL
1	SOFIA-AIRPORT	70	HEATHROW-AIRPORT
2	SOFIA-AIRPORT	26	VARNA-AIRPORT
3	SOFIA-AIRPORT	215	MADRID-AIRPORT
4	SOFIA-AIRPORT	50	MADRID-AIRPORT
5	SOFIA-AIRPORT	60	HEATHROW-AIRPORT

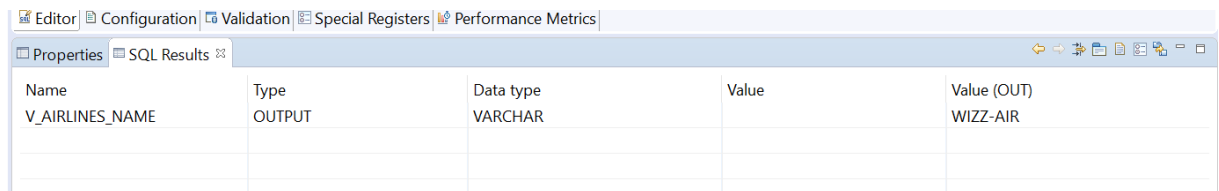
```

CREATE OR REPLACE PROCEDURE MOST_COMMON_AIRLINE(OUT v_airlines_name VARCHAR(50))
BEGIN
    DECLARE more_than_one_row CONDITION FOR SQLSTATE '21000';
    DECLARE CONTINUE HANDLER FOR more_than_one_row
    INSERT INTO WARNING_MSG(MSG) VALUES ('More than one row exist');
    CALL DBMS_OUTPUT.PUT_LINE('More than one row exist');

    SELECT AIRLINESNAME INTO v_airlines_name
    FROM FLIGHTS
    GROUP BY AIRLINESNAME
    ORDER BY COUNT(*) DESC
    FETCH FIRST 1 ROW ONLY;
END;

```

Най-често срещаната авиокомпания.



Name	Type	Data type	Value	Value (OUT)
V_AIRLINES_NAME	OUTPUT	VARCHAR		WIZZ-AIR

```

CREATE OR REPLACE PROCEDURE HOW_MANY_AIRPORTS_HAVE_COUNTRIES(IN
v_country_name VARCHAR(50), OUT v_cnt_airports INT)
BEGIN
    DECLARE cnt INT DEFAULT 0;
    DECLARE table_row ANCHOR ROW FN71981.DESTINATIONS;
    DECLARE end_table INT DEFAULT 0;

    DECLARE not_found CONDITION FOR SQLSTATE '02000';

    DECLARE C1 CURSOR FOR
    SELECT * FROM DESTINATIONS
    WHERE COUNTRY = v_country_name;

    DECLARE CONTINUE HANDLER FOR not_found
    SET end_table = 1;

    OPEN C1;
    FETCH C1 INTO table_row;

    WHILE end_table = 0 DO
    SET cnt = cnt + 1;
    FETCH C1 INTO table_row;
    END WHILE;

    SET v_cnt_airports = cnt; END;

```

Броят на летищата в конкретна държава.

Editor Configuration Validation Special Registers Performance Metrics				
Properties SQL Results				
Name	Type	Data type	Value	Value (OUT)
V_COUNTRY_NAME	INPUT	VARCHAR	BULGARIA	
V_CNT_AIRPORTS	OUTPUT	INTEGER		3
Editor Configuration Validation Special Registers Performance Metrics				
Properties SQL Results				
Name	Type	Data type	Value	Value (OUT)
V_COUNTRY_NAME	INPUT	VARCHAR	ENGLAND	
V_CNT_AIRPORTS	OUTPUT	INTEGER		1