

# Lecture 6

## SQL. Subqueries

# Tasks (Simple SQL)

- 1) Calculate number of different cities in Customers. Do not calculate NULL-values;
- 2) Get minimal amount of order for every customer;
- 3) Get customers which name begins on letter G. Get them in alphabetical order

# Subquery

In SQL we can put one SQL query into another.

External query — main query that contain other queries.

Internal query — query which was included into external query.

# Example

```
SELECT * FROM Orders WHERE snum = ( SELECT snum  
    FROM Salespeople WHERE sname = 'Motika');
```

# Example

```
SELECT * FROM Orders WHERE amt > ( SELECT AVG  
(amt) FROM Orders WHERE odate = 10/04/2005 );
```

# Output data

Internal query can return 1 value or many rows with many values.  
In previous examples we were using queries returning 1 value.

To use many rows in answer we have to understand the meaning of SQL processing.

For multiply rows with single column we can use **IN**.  
For multiply rows with many columns we can use **EXISTS**.

# Correlated subquery

We can use values from external query in internal query. Such complex query are called correlated.

```
SELECT p.product_name FROM product p
WHERE p.product_id = (SELECT o.product_id FROM
order_items o WHERE o.product_id = p.product_id);
```

# ANY, SOME, ALL

```
SELECT * FROM Salespeople WHERE city = ANY  
  (SELECT city FROM Customers );
```

```
SELECT * FROM Salespeople WHERE city IN ( SELECT  
  city FROM Customers );
```

```
SELECT * FROM Customers WHERE rating > ANY  
( SELECT rating FROM Customers WHERE city = Rome  
  );
```

```
SELECT * FROM Customers WHERE rating > ALL  
( SELECT rating FROM Customers WHERE city =
```



# Union

```
SELECT snum, sname  
FROM Salespeople  
WHERE city = 'London'
```

```
UNION
```

```
SELECT cnum, cname  
FROM Customers
```

```
ORDER BY 1
```

# Tasks

- 1) Get orders with names of saler and customer
- 2) Calculate saler's commission for every order
- 3) Get pairs of salers which are living in same city
- 4) Get name and city of customers with same rating as Hoffman.  
Use subquery to find out cnum of Hoffman.
- 5) Get pair of saler and customers which are living in same city.  
But they should not have orders with each other.