Relational Algebra

BS19-02. Team 5
Danis Alukaev
Denis Schegletov
Roman Soldatov

Order countries by id asc, then show the 12th to 17th rows.
```
SELECT *
FROM country
ORDER BY country_id ASC
LIMIT 6 OFFSET 11;
```
$\sigma_{country\_id >= 12 \text{ and } country\_id <= 17} (country)$

List all addresses in a city whose name starts with 'A'.
```
SELECT address
FROM address
        JOIN city ON address.city_id = city.city_id
WHERE city.city ~ '^A';
```
$\pi_{address} ([address] \bowtie_{address.city\_id = city.city\_id} [\sigma_{city.city \text{ starts with 'A'}} (city)])$

List all customers' first name, last name and the city they live in.
```
SELECT first_name, last_name, city
FROM (customer INNER JOIN address ON customer.address_id =
address.address_id) AS temp
        INNER JOIN city ON city.city_id = temp.city_id;
```
$temp \leftarrow [customer] \bowtie_{customer.address\_id = address.address\_id} [address]$

$\pi_{first\_name, last\_name, city} ([temp] \bowtie_{city.city\_id = temp.city\_id} [city])$

Find all customers with at least one payment whose amount is greater than 11 dollars.
```
SELECT customer.*
FROM payment,
     customer
WHERE amount > 11
  and payment.customer_id = customer.customer_id;
```
$\pi_{customer.*} \; \sigma_{customer.amount >11 \text{ and } payment.customer\_id = customer.customer\_id} (payment, \; customer)$

Find all duplicated first names in the customer table.
```
SELECT first_name
FROM customer
GROUP BY first_name
HAVING COUNT(first_name) > 1
```
$\pi_{first\_name}(\sigma_{COUNT(first\_name)>1}(customer))$