100 DAYS OF SQL

Day 6 – SQL query for finding the nth highest value of a column in the table

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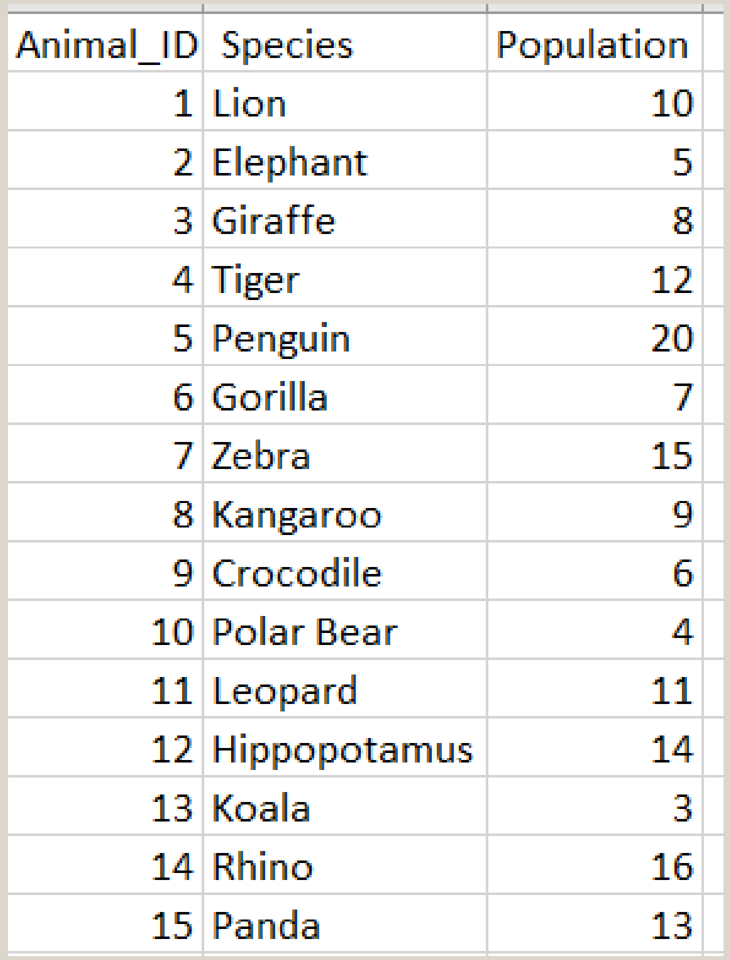
Question: Consider a zoo's AnimalPopulation table, which records the population of various animal species. The table schema includes Animal_ID, Species, and Population columns. Given the sample data provided below, write SQL queries to:

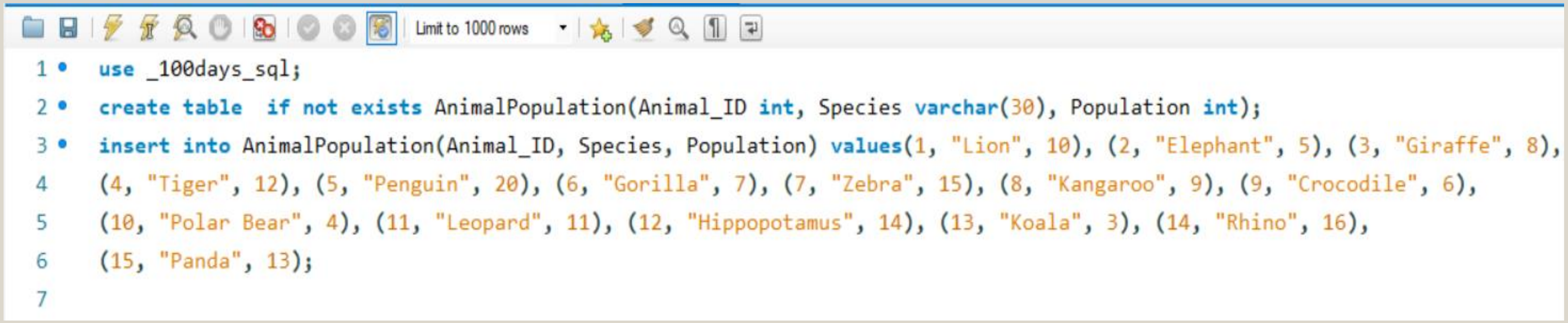
1. Find the species with the second-highest population among all animal species.
2. Find the species with the fourth highest population among all animal species.

Show Species and population in result



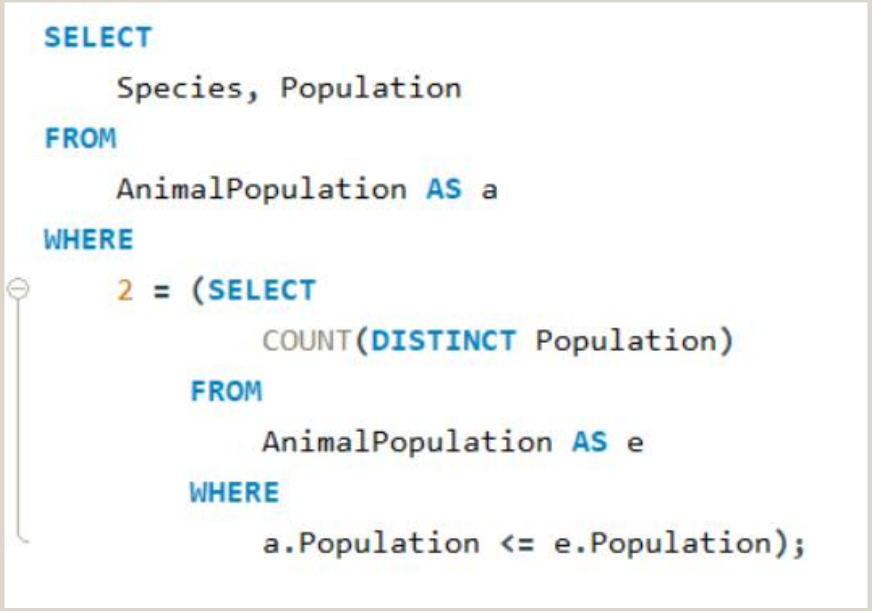
Animal_ID	Species	Population
1	Lion	10
2	Elephant	5
3	Giraffe	8
4	Tiger	12
5	Penguin	20
6	Gorilla	7
7	Zebra	15
8	Kangaroo	9
9	Crocodile	6
10	Polar Bear	4
11	Leopard	11
12	Hippopotamus	14
13	Koala	3
14	Rhino	16
15	Panda	13

Creation of table and Insertion of records


Limit to 1000 rows

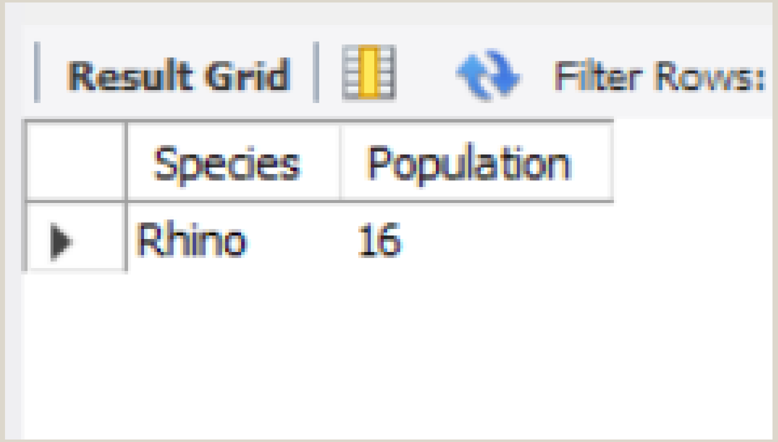
```sql
use _100days_sql;
create table  if not exists AnimalPopulation(Animal_ID int, Species varchar(30), Population int);
insert into AnimalPopulation(Animal_ID, Species, Population) values(1, "Lion", 10), (2, "Elephant", 5), (3, "Giraffe", 8),
(4, "Tiger", 12), (5, "Penguin", 20), (6, "Gorilla", 7), (7, "Zebra", 15), (8, "Kangaroo", 9), (9, "Crocodile", 6),
(10, "Polar Bear", 4), (11, "Leopard", 11), (12, "Hippopotamus", 14), (13, "Koala", 3), (14, "Rhino", 16),
(15, "Panda", 13);
```

1) Second highest (First way – Correlated Subquery)



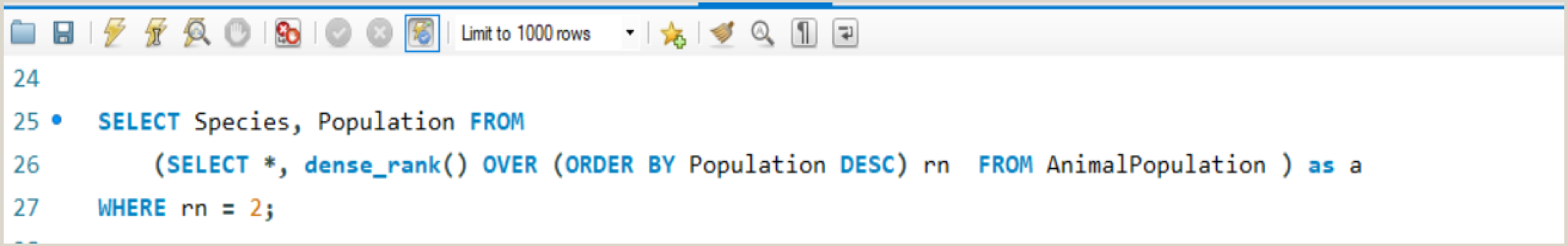
```sql
SELECT
    Species, Population
FROM
    AnimalPopulation AS a
WHERE
    2 = (SELECT
            COUNT(DISTINCT Population)
        FROM
            AnimalPopulation AS e
        WHERE
            a.Population <= e.Population);
```

Output:



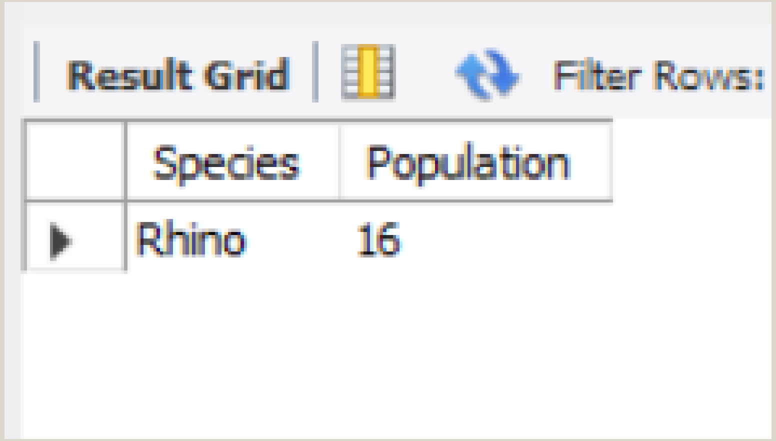
Species	Population
Rhino	16

1) Second highest (Second way – Using DENSE_RANK)



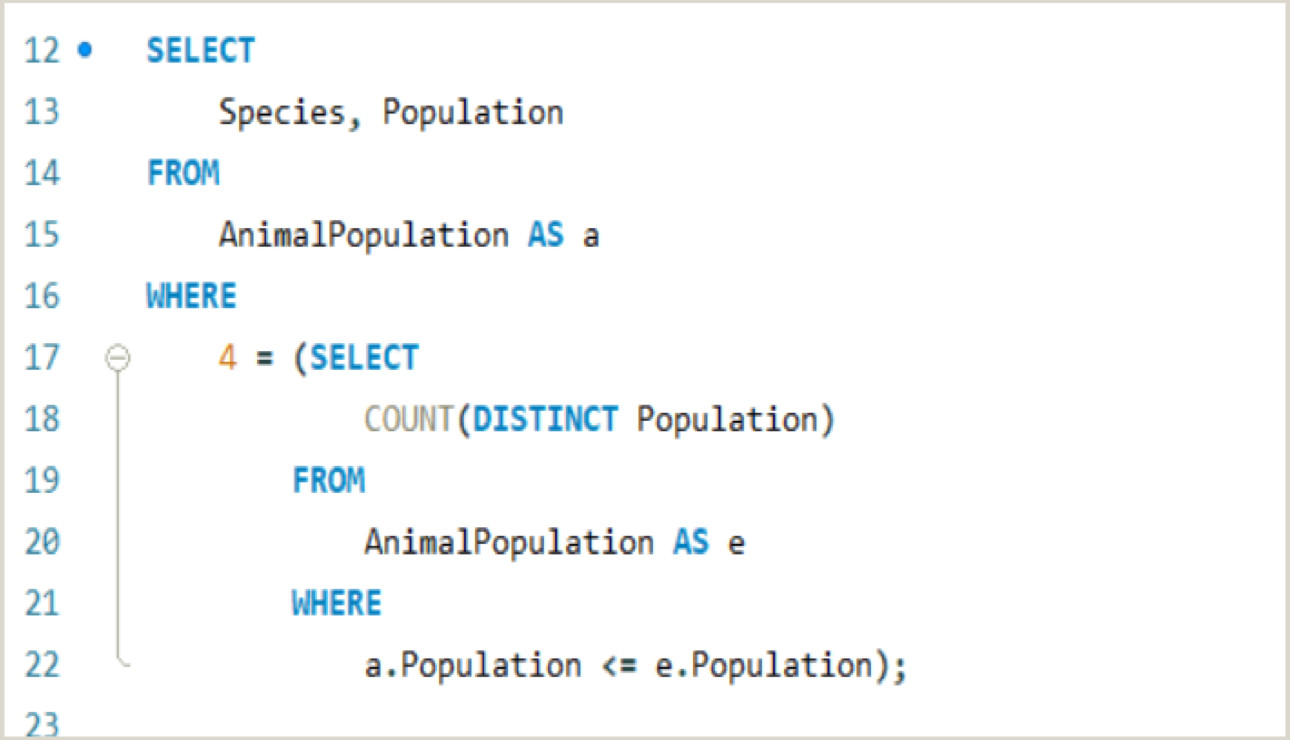
```
SELECT Species, Population FROM
    (SELECT *, dense_rank() OVER (ORDER BY Population DESC) rn  FROM AnimalPopulation ) as a
WHERE rn = 2;
```

Output:

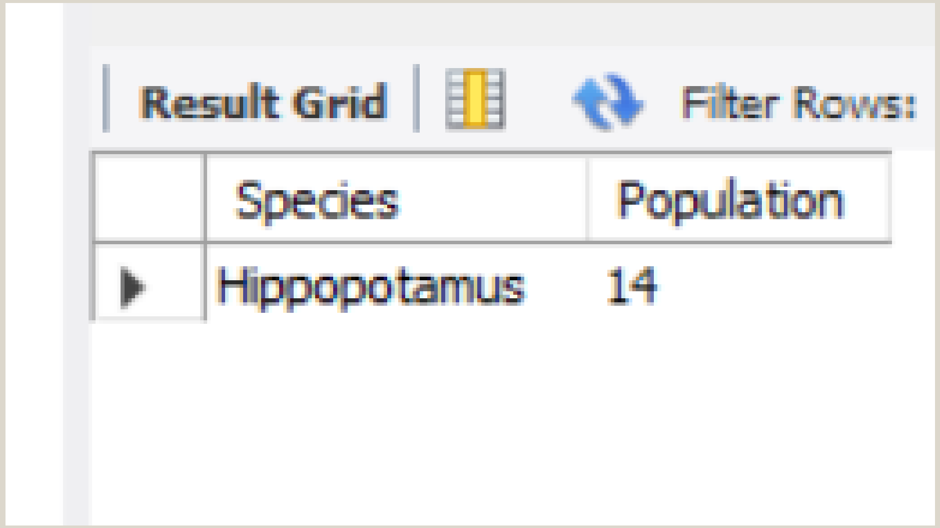


Species	Population
Rhino	16

1) **Fourth highest (First way – Correlated Subquery)** **Output:**

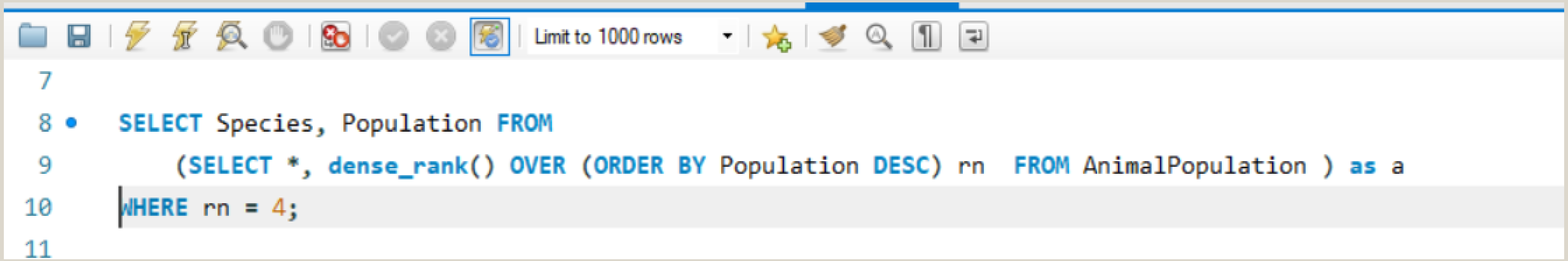


```
SELECT
    Species, Population
FROM
    AnimalPopulation AS a
WHERE
    4 = (SELECT
            COUNT(DISTINCT Population)
        FROM
            AnimalPopulation AS e
        WHERE
            a.Population <= e.Population);
```



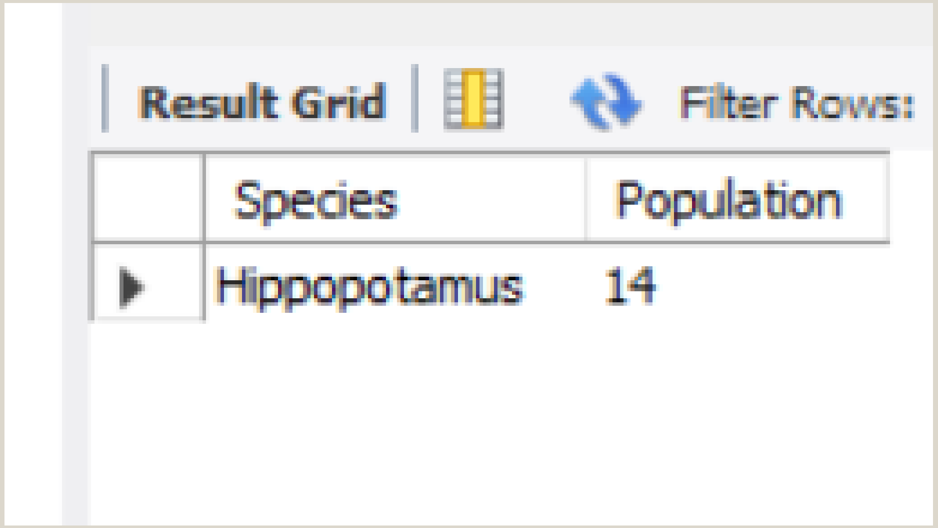
Species	Population
Hippopotamus	14

1) **Fourth highest (Second way – Using DENSE_RANK)**



```sql
SELECT Species, Population FROM
    (SELECT *, dense_rank() OVER (ORDER BY Population DESC) rn  FROM AnimalPopulation ) as a
WHERE rn = 4;
```

Output:



Species	Population
Hippopotamus	14

For nth highest Queries can be written as follows:

```
1) SELECT Species, Population FROM
      (SELECT *, dense_rank() OVER (ORDER BY Population DESC) rn
              FROM AnimalPopulation ) a WHERE rn = n;



2) SELECT  Species, Population FROM  AnimalPopulation a
      WHERE    n = (SELECT  COUNT(DISTINCT Population)  FROM    AnimalPopulation  e
                          WHERE a.Population <= e.Population);
```