Project Laboratory in Database Programming
Task List No. 2

In solving the following tasks, you should use the following mechanisms as needed: joining relations, subqueries, Oracle SQL functions, and grouping.

Task 17. Display the nicknames, mouse allocations, and band names for cats operating in the POLE area who have a mouse allocation greater than 50. Take into account that some cats have the right to hunt on the entire "territory" managed by the clan. Do not use subqueries.

```
POLUJE W POLU   PRZYDZIAL MYSZY  BANDA
--------------- ---------------- --------------------
TYGRYS                   103     SZEFOSTWO
LYSY                      72     CZARNI RYCERZE
PLACEK                    67     CZARNI RYCERZE
SZYBKA                    65     CZARNI RYCERZE
RURA                      56     CZARNI RYCERZE
```

Task 18. Display the names and joining dates of cats who joined the clan before the cat named 'JACEK', without using subqueries. Sort the results in descending order by the joining date.

```
IMIE            POLUJE OD
--------------- ----------
MELA            2008-11-01
KSAWERY         2008-07-12
BELA            2008-02-01
PUNIA           2008-01-01
PUCEK           2006-10-15
RUDA            2006-09-17
BOLEK           2006-08-15
ZUZIA           2006-07-21
KOREK           2004-03-16
CHYTRY          2002-05-05
MRUCZEK         2002-01-01
```

Task 19. For cats holding the positions of KOT and MILUSIA, display the names of all their superiors in hierarchical order. Solve the task in three ways:

a. using only joing,
b. using a tree structure, the CONNECT_BY_ROOT operator, and pivot tables
c. using a tree structure, the `SYS_CONNECT_BY_PATH` function, and the `CONNECT_BY_ROOT` operator.

Result for a. and b.

```
Imie           Funkcja        Szef 1          Szef 2          Szef 3
---------- --- ---------- --- ---------- --- ---------- --- ---------
LUCEK      |   KOT        |   PUNIA      |   KOREK      |   MRUCZEK
MICKA      |   MILUSIA    |   MRUCZEK    |              |
RUDA       |   MILUSIA    |   MRUCZEK    |              |
SONIA      |   MILUSIA    |   KOREK      |   MRUCZEK    |
BELA       |   MILUSIA    |   BOLEK      |   MRUCZEK    |
DUDEK      |   KOT        |   PUCEK      |   MRUCZEK    |
LATKA      |   KOT        |   PUCEK      |   MRUCZEK    |
```

Result for c.

```
Imie           Funkcja    Imiona kolejnych szefów
---------- --- ---------- ----------------------------------------
SONIA       |  MILUSIA     | KOREK         | MRUCZEK       |
MICKA       |  MILUSIA     | MRUCZEK       |
LUCEK       |  KOT         | PUNIA         | KOREK         | MRUCZEK
BELA        |  MILUSIA     | BOLEK         | MRUCZEK       |
DUDEK       |  KOT         | PUCEK         | MRUCZEK       |
LATKA       |  KOT         | PUCEK         | MRUCZEK       |
RUDA        |  MILUSIA     | MRUCZEK       |
```

Task 20. Display the names of all female cats that participated in incidents after January 1, 2007. Additionally, display the names of the bands to which the cats belong, the names of their enemies along with the level of hostility, and the date of the incident.

```
Imie kotki      Nazwa bandy          Imie wroga      Ocena wroga Data inc.
--------------- -------------------- --------------- ----------- ----------
BELA            CZARNI RYCERZE       DZIKI BILL               10 2008-12-12
BELA            CZARNI RYCERZE       KAZIO                    10 2009-01-07
LATKA           LACIACI MYSLIWI      SWAWOLNY DYZIO            7 2011-07-14
MELA            LACIACI MYSLIWI      KAZIO                    10 2009-02-07
PUNIA           BIALI LOWCY          BUREK                     4 2010-12-14
RUDA            SZEFOSTWO            CHYTRUSEK                 5 2007-03-07
SONIA           BIALI LOWCY          SMUKLA                    1 2010-11-19
```

Task 21. Determine how many cats in each band have enemies.

```
Nazwa bandy          Koty z wrogami
-------------------- --------------
SZEFOSTWO                         3
BIALI LOWCY                       3
CZARNI RYCERZE                    5
LACIACI MYSLIWI                   4
```

Task 22. Find the cats (along with the positions they hold) that have more than one enemy.

```
Funkcja    Pseudonim kota  Liczba wrogow
---------- --------------- -------------
DZIELCZY   BOLEK                       2
SZEFUNIO   TYGRYS                      2
MILUSIA    LASKA                       2
```

Task 23. Display the names of cats that receive a "mouse" bonus along with their total annual mouse consumption. Additionally, if their annual mouse allocation exceeds 864, display the text 'powyzej 864'; if it is equal to 864, display '864'; and if it is less than 864, display 'ponizej 864'. Sort the results in descending order by the annual mouse allocation. Use the UNION operator for the solution.

```
IMIE            DAWKA ROCZNA    DAWKA
--------------- ------------ --------------
MRUCZEK                1632    powyzej 864
BOLEK                  1116    powyzej 864
KOREK                  1056    powyzej 864
MICKA                   864            864
RUDA                    768    ponizej 864
SONIA                   660    ponizej 864
BELA                    624    ponizej 864
```

Task 24. Find the bands that do not have any members. Display their numbers, names, and operating areas. Solve the task in two ways: without using subqueries and set operators, and by using set operators.

```
NR BANDY  NAZWA                TEREN
--------- -------------------- ---------------
        5 ROCKERSI             ZAGRODA
```

Task 25. Find the cats whose mouse allocation is not less than three times the highest mouse allocation among all MILUSIA operating in SAD. Do not use the MAX function

```
IMIE       FUNKCJA    PRZYDZIAL MYSZY
---------- ---------- ---------------
KOREK      BANDZIOR                75
MRUCZEK    SZEFUNIO               103
```

Task 26. Find the positions (excluding SZEFUNIO) associated with the highest and lowest average total mouse allocation. Do not use set operators (UNION, INTERSECT, MINUS).

```
Funkcja    Srednio najw. i najm. myszy
---------- ---------------------------
KOT                                 41
BANDZIOR                            91
```

Task 27. Find the cats occupying the top **n** positions based on the total number of mice consumed (cats with the same consumption share the same position!). Solve the task in four ways:

a. using a correlated subquery,
b. using the ROWNUM pseudocolumn
c. using a self-join between the Kocury table and itself.
d. using analytical functions.

```
Proszę podać wartość dla n: 6

PSEUDO               ZJADA
--------------- ----------
TYGRYS                  136
LYSY                     93
ZOMBI                    88
LOLA                     72
PLACEK                   67
SZYBKA                   65
RAFA                     65

7 wierszy zostało wybranych.
```

Task 28. Determine the years for which the number of entries into the pack is closest (both from above and from below) to the average number of entries for all years (average of the values representing the number of entries in each year). Do not use views.

```
ROK              LICZBA WSTAPIEN
---------------- ---------------
2009                           2
2010                           2
2011                           2
2002                           2
Srednia                2.5714286
2006                           4
```

Task 29. For male cats (gender male), for which the total mouse allocation does not exceed the average in their band, determine the following data: name, total mouse consumption, band number, average total consumption in the band. Do not use views (perspectives). Solve the task in three ways:

a. Using a join but without subqueries
b. Using a join and a single subquery in the FROM clause.
c. Without joins and with two subqueries: in the SELECT and WHERE clauses.

IMIE	ZJADA	NR BANDY	SREDNIA BANDY
DUDEK	40	4	49.40
LUCEK	43	3	61.75
BARI	56	2	66.60
CHYTRY	50	1	80.50

Task 30. Generate a list of cats with the highest and lowest tenure in their bands marked. Use set operators.

IMIE	WSTAPIL DO STADKA	
BARI	2009-09-01	<--- NAJMLODSZY STAZEM W BANDZIE CZARNI RYCERZE
BELA	2008-02-01	
BOLEK	2006-08-15	
CHYTRY	2002-05-05	
DUDEK	2011-05-15	<--- NAJMLODSZY STAZEM W BANDZIE LACIACI MYSLIWI
JACEK	2008-12-01	
KOREK	2004-03-16	<--- NAJSTARSZY STAZEM W BANDZIE BIALI LOWCY
KSAWERY	2008-07-12	
LATKA	2011-01-01	
LUCEK	2010-03-01	
MELA	2008-11-01	
MICKA	2009-10-14	<--- NAJMLODSZY STAZEM W BANDZIE SZEFOSTWO
MRUCZEK	2002-01-01	<--- NAJSTARSZY STAZEM W BANDZIE SZEFOSTWO
PUCEK	2006-10-15	<--- NAJSTARSZY STAZEM W BANDZIE LACIACI MYSLIWI
PUNIA	2008-01-01	
RUDA	2006-09-17	
SONIA	2010-11-18	<--- NAJMLODSZY STAZEM W BANDZIE BIALI LOWCY
ZUZIA	2006-07-21	<--- NAJSTARSZY STAZEM W BANDZIE CZARNI RYCERZE

Task 31. Define a view selecting the following data: the name of the band, the average, maximum, and minimum mouse allocation in the band, the total number of cats in the band, and the number of cats in the band receiving additional allocations. Using the defined view, select the following data about a cat, whose nickname is interactively provided from the keyboard: nickname, name, function, mouse allocation, minimum and maximum mouse allocation in its band, and the date of joining the pack.

View content:

NAZWA_BANDY	SRE_SPOZ	MAX_SPOZ	MIN_SPOZ	KOTY	KOTY_Z_DOD
SZEFOSTWO	50	103	22	4	3
BIALI LOWCY	49,75	75	20	4	2
CZARNI RYCERZE	56,8	72	24	5	2
LACIACI MYSLIWI	49,4	65	40	5	0

Result for nickname ‘PLACEK’:

PSEUDONIM	IMIE	FUNKCJA	ZJADA	GRANICE SPOZYCIA	LOWI OD
PLACEK	JACEK	LOWCZY	67	OD 24 DO 72	2008-12-01

Task 32. For the cats with the three longest tenures in the combined bands CZARNI RYCERZE and ŁACIACI MYŚLIWI, increase the mouse allocation by 10% of the minimum allocation in the entire pack or by 10, depending on whether the increase applies to a female or male cat. The extra mouse allocation for cats of both genders should be increased by 15% of the average extra allocation in the cat's band. Display on the screen the values before and after the increase, and then reverse the changes.

Pseudonim	Plec	Myszy przed podw.	Extra przed podw.
SZYBKA	D	65	0
LYSY	M	72	21
LASKA	D	24	28
RAFA	M	65	0
DAMA	D	51	0
MAN	M	51	0

Pseudonim	Plec	Myszy po podw.	Extra po podw.
SZYBKA	D	67	1
LYSY	M	82	22
LASKA	D	26	29
RAFA	M	75	0
DAMA	D	53	0
MAN	M	61	0

Task 33. Write a query that calculates the sums of the total mouse consumption by cats holding each function, divided by band and gender of the cats. Summarize the allocations for each function. The task should be done in two ways:

a. Using the DECODE function and SUM (or CASE and SUM),
b. Using pivot tables.

NAZWA BANDY	PLEC	ILE	SZEFUNIO	BANDZIOR	LOWCZY	LAPACZ	KOT	MILUSIA	DZIELCZY	SUMA
BIALI LOWCY	Kotka	2	0	0	61	0	0	55	0	116
	Kocor	2	0	88	0	0	43	0	0	131
CZARNI RYCERZE	Kotka	2	0	0	65	0	0	52	0	117
	Kocor	3	0	93	67	56	0	0	0	216
LACIACI MYSLIWI	Kotka	2	0	0	0	51	40	0	0	91
	Kocor	3	0	0	65	51	40	0	0	156
SZEFOSTWO	Kotka	2	0	0	0	0	0	136	0	136
	Kocor	2	136	0	0	0	0	0	50	186
Z----------	------	----	---------	---------	---------	---------	---------	---------	---------	-------
ZJADA RAZEM			136	181	258	158	123	243	50	1149

Termin oddania listy – grupa poniedziałkowa: 13.11.2023
– grupy wtorkowe: 07.11.2023

Wrocław 28.09.2023 *Zbigniew Staszak*