

Лабораторная работа №6. Обработка данных и визуализация.

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1. Найти производителей, делающих ноутбуки и ПК, но не принтеры (используя **EXIST**).

QueryQuery History

```
1 SELECT maker,
2 ('Alexandr_Shupletsov' || 'time: ' || CURRENT_TIMESTAMP) AS "student_with_time"
3 FROM product AS pc_maker
4 WHERE type = 'PC'
5
6 AND EXISTS
7
8 (SELECT maker
9 FROM product
10 WHERE type = 'Laptop' AND pc_maker.maker = maker)
11
12 AND NOT EXISTS
13
14 (SELECT maker
15 FROM product
16 WHERE type = 'Printer' AND pc_maker.maker = maker)
```

Total rows: 1 of 1Query complete 00:00:00.339Ln 2, Col 34

Data outputMessagesNotifications

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| | maker character varying (10) 🔒 | student_with_time text 🔒 |
|---|-----------------------------------|--|
| 1 | B | Alexandr_Shupletsovtime: 2022-11-09 12:28:43.443241+03 |

Total rows: 1 of 1Query complete 00:00:00.339Ln 2, Col 34

2. С помощью оператора EXIST найдите производителя ПК и модель, чья цена + 50\$ ниже средней цены ноутбука, а ram и скорость больше в 1.5 и 1.2 раза соответственно.

```

18 SELECT maker, model,
19 ('Alexandr_Shupletsov' || 'time: ' || CURRENT_TIMESTAMP) AS "student_with_time"
20 FROM product AS first_pr
21 WHERE
22
23 EXISTS
24
25 (SELECT pr.maker, pr.model
26 FROM product pr, pc
27 WHERE (pc.price + 50) < (SELECT AVG (price) FROM laptop)
28 AND pc.ram > (SELECT AVG (ram) FROM laptop) * 1.5
29 AND pc.speed > (SELECT AVG (speed) FROM laptop) * 1.2 AND first_pr.model = pc.model)

```

Data output Messages Notifications



| | maker character varying (10) | model [PK] character varying (50) | student_with_time text |
|---|---------------------------------|--------------------------------------|--|
| 1 | A | 1233 | Alexandr_Shupletsovtime: 2022-11-09 12:40:59.281689... |
| 2 | B | 1121 | Alexandr_Shupletsovtime: 2022-11-09 12:40:59.281689... |

Total rows: 2 of 2 Query complete 00:00:00.493

Ln 29, Col 87

3. а) Найдите среднюю скорость и с помощью UNION ALL выведите 3 колонки “product_type” “product_model”, и “avg_speed” по всем моделям для ПК и ноутбуков.

```

31 SELECT pr.type AS "product_type", pr.model AS "product_model", AVG (pc.speed) AS "avg_speed",
32 ('Alexandr_Shupletsov' || 'time: ' || CURRENT_TIMESTAMP) AS "student_with_time"
33 FROM product pr JOIN pc USING (model)
34 GROUP BY pr.type, pr.model
35
36 UNION ALL
37
38 SELECT pr.type, pr.model, AVG (lp.speed),
39 ('Alexandr_Shupletsov' || 'time: ' || CURRENT_TIMESTAMP) AS "student_with_time"
40 FROM product pr JOIN laptop lp USING (model)
41 GROUP BY pr.type, pr.model

```

Data output Messages Notifications



| | product_type character varying (50) | product_model character varying (50) | avg_speed numeric | student_with_time text |
|---|--|---|----------------------|---|
| 1 | PC | 1260 | 500.0000000000000000 | Alexandr_Shupletsov time: 2022-11-09 12:54:15.327953+03 |
| 2 | PC | 1233 | 737.5000000000000000 | Alexandr_Shupletsov time: 2022-11-09 12:54:15.327953+03 |
| 3 | PC | 1121 | 650.0000000000000000 | Alexandr_Shupletsov time: 2022-11-09 12:54:15.327953+03 |
| 4 | PC | 1232 | 475.0000000000000000 | Alexandr_Shupletsov time: 2022-11-09 12:54:15.327953+03 |
| 5 | Laptop | 1752 | 750.0000000000000000 | Alexandr_Shupletsov time: 2022-11-09 12:54:15.327953+03 |
| 6 | Laptop | 1321 | 500.0000000000000000 | Alexandr_Shupletsov time: 2022-11-09 12:54:15.327953+03 |
| 7 | Laptop | 1750 | 750.0000000000000000 | Alexandr_Shupletsov time: 2022-11-09 12:54:15.327953+03 |
| 8 | Laptop | 1298 | 466.6666666666666667 | Alexandr_Shupletsov time: 2022-11-09 12:54:15.327953+03 |

Total rows: 8 of 8 Query complete 00:00:00.171

Ln 41, Col 29

б) Оберните запрос из пункта а: вывести производителя, модель, скорость, тип, и среднюю скорость из подзапроса пункта а) тех ПК и ноутбуков, чья скорость выше.

```
43 SELECT pr.maker, pc_lp.product_model, pr.speed, pc_lp.product_type, pc_lp.avg_speed,
44 ('Alexandr_Shupletsov' || ' time: ' || CURRENT_TIMESTAMP) AS "student_with_time"
45 FROM (SELECT maker, model, speed
46 FROM product
47 JOIN (SELECT model, speed
48 FROM pc
49 UNION ALL
50 SELECT model, speed FROM laptop) nka USING (model)) pr
51 JOIN (SELECT pr.type AS "product_type", pr.model AS "product_model", AVG (pc.speed) AS "avg_speed"
52 FROM product pr JOIN pc USING (model)
53 GROUP BY pr.type, pr.model
54 UNION ALL
55 SELECT pr.type, pr.model, AVG (lp.speed)
56 FROM product pr JOIN laptop lp USING (model)
57 GROUP BY pr.type, pr.model) pc_lp ON (pc_lp.product_model = pr.model)
58 WHERE pr.speed > pc_lp.avg_speed
```

Data output Messages Notifications

| | maker character varying (10) | product_model character varying (50) | speed smallint | product_type character varying (50) | avg_speed numeric | student_with_time text |
|---|---------------------------------|---|-------------------|--|----------------------------|---|
| 1 | A | 1232 | 500 | PC | 475.0000000000000000000000 | Alexandr_Shupletsov time: 2022-11-09 13:04:58.801059+03 |
| 2 | A | 1233 | 900 | PC | 737.5000000000000000000000 | Alexandr_Shupletsov time: 2022-11-09 13:04:58.801059+03 |
| 3 | A | 1233 | 800 | PC | 737.5000000000000000000000 | Alexandr_Shupletsov time: 2022-11-09 13:04:58.801059+03 |
| 4 | B | 1121 | 750 | PC | 650.0000000000000000000000 | Alexandr_Shupletsov time: 2022-11-09 13:04:58.801059+03 |
| 5 | A | 1233 | 750 | PC | 737.5000000000000000000000 | Alexandr_Shupletsov time: 2022-11-09 13:04:58.801059+03 |
| 6 | A | 1232 | 500 | PC | 475.0000000000000000000000 | Alexandr_Shupletsov time: 2022-11-09 13:04:58.801059+03 |
| 7 | A | 1298 | 600 | Laptop | 466.6666666666666666666667 | Alexandr_Shupletsov time: 2022-11-09 13:04:58.801059+03 |

Total rows: 7 of 7 Query complete 00:00:00.204

Ln 50, Col 41