На рисунке представлена упрощённая модель данных сервиса по доставке продуктов:



С помощью средств SQL:

Найдите самый популярный товар в сервисе (тот, который попал в заказы клиентов наибольшее количество раз).

Найдите день, в который количество выполненных доставок в сервисе было максимальным за всё время работы сервиса.

Найдите день, в который количество выполненных доставок в сервисе было минимальным за всё время работы сервиса.

Посчитайте среднее время сессии пользователей в приложении в зависимости от используемого устройства в минутах.

Найдите максимальное количество различных товаров, добавленных в один заказ.

Подготовьте статистику по количеству незавершённых доставок по месяцам, начиная с 2022 года.

Подготовьте статистику по количеству заказов в разрезе метода оплаты по годам за всё время работы сервиса.

Найдите топ-10 клиентов, совершивших наибольшее количество заказов за всё время работы сервиса.

Найдите самые популярные категории товаров (product\_group\_name) среди пользователей различных возрастных групп:

18–30 лет;

30–45 лет;

45–60 лет;

60+ лет.

Найдите товар, который клиенты чаще всего заказывают совместно с [товаром X].  
1)[**SELECT**](https://dev.mysql.com/doc/refman/8.0/en/select.html) op.product\_id, pr.product\_name, [**HYPERLINK "https://dev.mysql.com/doc/refman/8.0/en/group-by-functions.html#function\_count"COUNT**](https://dev.mysql.com/doc/refman/8.0/en/group-by-functions.html#function_count)(op.product\_id) **AS** product\_count

**FROM** [HYPERLINK "https://dsintrodb.skillbox.cc/?server=db&username=student&db=skillbox&table=orders\_product"orders\_product](https://dsintrodb.skillbox.cc/?server=db&username=student&db=skillbox&table=orders_product) **AS** op

[**JOIN** HYPERLINK "https://dsintrodb.skillbox.cc/?server=db&username=student&db=skillbox&table=products" HYPERLINK "https://dsintrodb.skillbox.cc/?server=db&username=student&db=skillbox&table=products"products](https://dev.mysql.com/doc/refman/8.0/en/join.html) **AS** pr **ON** op.product\_id = pr.product\_id

**GROUP** **BY** op.product\_id, pr.product\_name

**ORDER** **BY** product\_count **DESC**

**LIMIT** 1;

2)[**SELECT**](https://dev.mysql.com/doc/refman/8.0/en/select.html) delivery\_dt, [**HYPERLINK "https://dev.mysql.com/doc/refman/8.0/en/group-by-functions.html#function\_count"COUNT**](https://dev.mysql.com/doc/refman/8.0/en/group-by-functions.html#function_count)(delivery\_dt) **AS** delivery\_count

**FROM** [HYPERLINK "https://dsintrodb.skillbox.cc/?server=db&username=student&db=skillbox&table=info"info](https://dsintrodb.skillbox.cc/?server=db&username=student&db=skillbox&table=info)

**WHERE** is\_completed\_flg = 'True'

**GROUP** **BY** delivery\_dt

**ORDER** **BY** delivery\_count **DESC**

**3)**[**SELECT**](https://dev.mysql.com/doc/refman/8.0/en/select.html) **delivery\_dt,** [**COUNT**](https://dev.mysql.com/doc/refman/8.0/en/group-by-functions.html#function_count)**(delivery\_dt) AS delivery\_count**

**FROM** [**HYPERLINK "https://dsintrodb.skillbox.cc/?server=db&username=student&db=skillbox&table=info"info**](https://dsintrodb.skillbox.cc/?server=db&username=student&db=skillbox&table=info)

**WHERE is\_completed\_flg = 'False'**

**GROUP BY delivery\_dt**

**ORDER BY delivery\_count**

**LIMIT 1;**

**4)** [**SELECT**](https://dev.mysql.com/doc/refman/8.0/en/select.html) **DISTINCT device\_name,**

[**AVG**](https://dev.mysql.com/doc/refman/8.0/en/group-by-functions.html#function_avg)**(**[**TIMESTAMPDIFF**](https://dev.mysql.com/doc/refman/8.0/en/date-and-time-functions.html#function_timestampdiff)**(MINUTE, start\_dttm, finish\_dttm)) OVER (PARTITION BY device\_name) as avg\_session\_duration**

**FROM** [**HYPERLINK "https://dsintrodb.skillbox.cc/?server=db&username=student&db=skillbox&table=app\_sess"app\_sess**](https://dsintrodb.skillbox.cc/?server=db&username=student&db=skillbox&table=app_sess)**;**

5) [**SELECT** HYPERLINK "https://dev.mysql.com/doc/refman/8.0/en/group-by-functions.html#function\_count"  **HYPERLINK "https://dev.mysql.com/doc/refman/8.0/en/group-by-functions.html#function\_count"COUNT**](https://dev.mysql.com/doc/refman/8.0/en/select.html)(**DISTINCT** product\_id) **AS** unique\_values\_count,

order\_id

**FROM** [HYPERLINK "https://dsintrodb.skillbox.cc/?server=db&username=student&db=skillbox&table=orders\_product"orders\_product](https://dsintrodb.skillbox.cc/?server=db&username=student&db=skillbox&table=orders_product)

**GROUP** **BY** order\_id

**ORDER** **BY** unique\_values\_count **DESC**

**LIMIT** 1

6) [**SELECT** HYPERLINK "https://dev.mysql.com/doc/refman/8.0/en/date-and-time-functions.html#function\_extract"  **HYPERLINK "https://dev.mysql.com/doc/refman/8.0/en/date-and-time-functions.html#function\_extract"EXTRACT**](https://dev.mysql.com/doc/refman/8.0/en/select.html)(MONTH **FROM** delivery\_dt) **AS** month,

[**EXTRACT**](https://dev.mysql.com/doc/refman/8.0/en/date-and-time-functions.html#function_extract)([**YEAR**](https://dev.mysql.com/doc/refman/8.0/en/date-and-time-type-syntax.html) **FROM** delivery\_dt) **AS** [**HYPERLINK "https://dev.mysql.com/doc/refman/8.0/en/date-and-time-type-syntax.html"year**](https://dev.mysql.com/doc/refman/8.0/en/date-and-time-type-syntax.html),

[**COUNT**](https://dev.mysql.com/doc/refman/8.0/en/group-by-functions.html#function_count)(delivery\_dt) **AS** delivery\_count

**FROM** [HYPERLINK "https://dsintrodb.skillbox.cc/?server=db&username=student&db=skillbox&table=info"info](https://dsintrodb.skillbox.cc/?server=db&username=student&db=skillbox&table=info)

**WHERE** is\_completed\_flg = 'False' [**HYPERLINK "https://dev.mysql.com/doc/refman/8.0/en/logical-operators.html#operator\_and"AND** HYPERLINK "https://dev.mysql.com/doc/refman/8.0/en/date-and-time-functions.html#function\_extract"  **HYPERLINK "https://dev.mysql.com/doc/refman/8.0/en/date-and-time-functions.html#function\_extract"EXTRACT**](https://dev.mysql.com/doc/refman/8.0/en/logical-operators.html#operator_and)([**YEAR**](https://dev.mysql.com/doc/refman/8.0/en/date-and-time-type-syntax.html) **FROM** delivery\_dt) >= 2022

**GROUP** **BY** month, [**HYPERLINK "https://dev.mysql.com/doc/refman/8.0/en/date-and-time-type-syntax.html"year**](https://dev.mysql.com/doc/refman/8.0/en/date-and-time-type-syntax.html)

**ORDER** **BY** [**HYPERLINK "https://dev.mysql.com/doc/refman/8.0/en/date-and-time-type-syntax.html"year**](https://dev.mysql.com/doc/refman/8.0/en/date-and-time-type-syntax.html), [**HYPERLINK "https://dev.mysql.com/doc/refman/8.0/en/date-and-time-functions.html#function\_month"month**](https://dev.mysql.com/doc/refman/8.0/en/date-and-time-functions.html#function_month)

с помощью оконной функции

**SELECT DISTINCT**

**EXTRACT(MONTH FROM delivery\_dt) AS month,**

**EXTRACT(YEAR FROM delivery\_dt) AS year,**

**COUNT(delivery\_dt) OVER (PARTITION BY EXTRACT(YEAR FROM delivery\_dt), EXTRACT(MONTH FROM delivery\_dt)) AS delivery\_count**

**FROM**

**info**

**WHERE**

**is\_completed\_flg = 'False' AND EXTRACT(YEAR FROM delivery\_dt) >= 2022**

**ORDER BY**

**month, year;**

**7)**[**SELECT**](https://dev.mysql.com/doc/refman/8.0/en/select.html) **payment\_method,**

[**HYPERLINK "https://dev.mysql.com/doc/refman/8.0/en/date-and-time-functions.html#function\_extract"EXTRACT**](https://dev.mysql.com/doc/refman/8.0/en/date-and-time-functions.html#function_extract)**(**[**YEAR**](https://dev.mysql.com/doc/refman/8.0/en/date-and-time-type-syntax.html) **FROM order\_dt) AS** [**HYPERLINK "https://dev.mysql.com/doc/refman/8.0/en/date-and-time-type-syntax.html"year**](https://dev.mysql.com/doc/refman/8.0/en/date-and-time-type-syntax.html)**,**

[**HYPERLINK "https://dev.mysql.com/doc/refman/8.0/en/group-by-functions.html#function\_count"COUNT**](https://dev.mysql.com/doc/refman/8.0/en/group-by-functions.html#function_count)**(order\_id) AS order\_count**

**FROM** [**HYPERLINK "https://dsintrodb.skillbox.cc/?server=db&username=student&db=skillbox&table=orders"orders**](https://dsintrodb.skillbox.cc/?server=db&username=student&db=skillbox&table=orders)

**GROUP BY payment\_method,** [**HYPERLINK "https://dev.mysql.com/doc/refman/8.0/en/date-and-time-functions.html#function\_extract"EXTRACT**](https://dev.mysql.com/doc/refman/8.0/en/date-and-time-functions.html#function_extract)**(**[**YEAR**](https://dev.mysql.com/doc/refman/8.0/en/date-and-time-type-syntax.html) **FROM order\_dt)**

**ORDER BY payment\_method;**

**8)** [**SELECT HYPERLINK "https://dev.mysql.com/doc/refman/8.0/en/group-by-functions.html#function\_count" HYPERLINK "https://dev.mysql.com/doc/refman/8.0/en/group-by-functions.html#function\_count"COUNT**](https://dev.mysql.com/doc/refman/8.0/en/select.html)**(customer\_id) AS count\_orders,**

**customer\_id**

**FROM** [**HYPERLINK "https://dsintrodb.skillbox.cc/?server=db&username=student&db=skillbox&table=orders"orders**](https://dsintrodb.skillbox.cc/?server=db&username=student&db=skillbox&table=orders)

**GROUP BY customer\_id**

**ORDER BY count\_orders DESC**

**LIMIT 10**

**9)**[**SELECT**](https://dev.mysql.com/doc/refman/8.0/en/select.html) **pr.product\_group\_name,** [**HYPERLINK "https://dev.mysql.com/doc/refman/8.0/en/group-by-functions.html#function\_count"COUNT**](https://dev.mysql.com/doc/refman/8.0/en/group-by-functions.html#function_count)**(op.order\_id) AS product\_count**

**FROM** [**HYPERLINK "https://dsintrodb.skillbox.cc/?server=db&username=student&db=skillbox&table=orders\_product"orders\_product**](https://dsintrodb.skillbox.cc/?server=db&username=student&db=skillbox&table=orders_product) **AS op**

[**JOIN HYPERLINK "https://dsintrodb.skillbox.cc/?server=db&username=student&db=skillbox&table=products" HYPERLINK "https://dsintrodb.skillbox.cc/?server=db&username=student&db=skillbox&table=products"products**](https://dev.mysql.com/doc/refman/8.0/en/join.html) **AS pr ON op.product\_id = pr.product\_id**

[**JOIN HYPERLINK "https://dsintrodb.skillbox.cc/?server=db&username=student&db=skillbox&table=orders" HYPERLINK "https://dsintrodb.skillbox.cc/?server=db&username=student&db=skillbox&table=orders"orders**](https://dev.mysql.com/doc/refman/8.0/en/join.html) **AS ord ON op.order\_id = ord.order\_id**

[**JOIN HYPERLINK "https://dsintrodb.skillbox.cc/?server=db&username=student&db=skillbox&table=customers" HYPERLINK "https://dsintrodb.skillbox.cc/?server=db&username=student&db=skillbox&table=customers"customers**](https://dev.mysql.com/doc/refman/8.0/en/join.html) **AS cust ON ord.customer\_id = cust.customer\_id**

**WHERE (2023 -** [**HYPERLINK "https://dev.mysql.com/doc/refman/8.0/en/string-functions.html#function\_substring-index"SUBSTRING\_INDEX**](https://dev.mysql.com/doc/refman/8.0/en/string-functions.html#function_substring-index)**(cust.birth\_dt, '.', -1))** [**HYPERLINK "https://dev.mysql.com/doc/refman/8.0/en/comparison-operators.html#function\_between"BETWEEN**](https://dev.mysql.com/doc/refman/8.0/en/comparison-operators.html#function_between) **18** [**HYPERLINK "https://dev.mysql.com/doc/refman/8.0/en/logical-operators.html#operator\_and"AND**](https://dev.mysql.com/doc/refman/8.0/en/logical-operators.html#operator_and) **34**

**GROUP BY pr.product\_group\_name**

**ORDER BY product\_count DESC**

**с помощью оконной**

[**SELECT**](https://dev.mysql.com/doc/refman/8.0/en/select.html)

**pr.product\_group\_name,**

[**HYPERLINK "https://dev.mysql.com/doc/refman/8.0/en/group-by-functions.html#function\_count"COUNT**](https://dev.mysql.com/doc/refman/8.0/en/group-by-functions.html#function_count)**(op.order\_id) AS product\_count**

**FROM**

[**HYPERLINK "https://dsintrodb.skillbox.cc/?server=db&username=student&db=skillbox&table=orders\_product"orders\_product**](https://dsintrodb.skillbox.cc/?server=db&username=student&db=skillbox&table=orders_product) **AS op**

[**JOIN**](https://dev.mysql.com/doc/refman/8.0/en/join.html)

[**HYPERLINK "https://dsintrodb.skillbox.cc/?server=db&username=student&db=skillbox&table=products"products**](https://dsintrodb.skillbox.cc/?server=db&username=student&db=skillbox&table=products) **AS pr ON op.product\_id = pr.product\_id**

[**JOIN**](https://dev.mysql.com/doc/refman/8.0/en/join.html)

[**HYPERLINK "https://dsintrodb.skillbox.cc/?server=db&username=student&db=skillbox&table=orders"orders**](https://dsintrodb.skillbox.cc/?server=db&username=student&db=skillbox&table=orders) **AS ord ON op.order\_id = ord.order\_id**

[**JOIN**](https://dev.mysql.com/doc/refman/8.0/en/join.html)

[**HYPERLINK "https://dsintrodb.skillbox.cc/?server=db&username=student&db=skillbox&table=customers"customers**](https://dsintrodb.skillbox.cc/?server=db&username=student&db=skillbox&table=customers) **AS cust ON ord.customer\_id = cust.customer\_id**

**WHERE**

**(2023 -** [**HYPERLINK "https://dev.mysql.com/doc/refman/8.0/en/string-functions.html#function\_substring-index"SUBSTRING\_INDEX**](https://dev.mysql.com/doc/refman/8.0/en/string-functions.html#function_substring-index)**(cust.birth\_dt, '.', -1))** [**HYPERLINK "https://dev.mysql.com/doc/refman/8.0/en/comparison-operators.html#function\_between"BETWEEN**](https://dev.mysql.com/doc/refman/8.0/en/comparison-operators.html#function_between) **18** [**HYPERLINK "https://dev.mysql.com/doc/refman/8.0/en/logical-operators.html#operator\_and"AND**](https://dev.mysql.com/doc/refman/8.0/en/logical-operators.html#operator_and) **34**

**GROUP BY pr.product\_group\_name**

**ORDER BY product\_count DESC;**

**10)**

[**SELECT**](https://dev.mysql.com/doc/refman/8.0/en/select.html)

**op.product\_id AS related\_product\_id,**

[**HYPERLINK "https://dev.mysql.com/doc/refman/8.0/en/group-by-functions.html#function\_count"COUNT**](https://dev.mysql.com/doc/refman/8.0/en/group-by-functions.html#function_count)**(op.order\_id) AS common\_occurrences**

**FROM**

[**HYPERLINK "https://dsintrodb.skillbox.cc/?server=db&username=student&db=skillbox&table=orders\_product"orders\_product**](https://dsintrodb.skillbox.cc/?server=db&username=student&db=skillbox&table=orders_product) **AS op**

[**JOIN**](https://dev.mysql.com/doc/refman/8.0/en/join.html)

**(**[**SELECT**](https://dev.mysql.com/doc/refman/8.0/en/select.html) **order\_id FROM** [**HYPERLINK "https://dsintrodb.skillbox.cc/?server=db&username=student&db=skillbox&table=orders\_product"orders\_product**](https://dsintrodb.skillbox.cc/?server=db&username=student&db=skillbox&table=orders_product) **WHERE product\_id = 12) AS op12**

**ON**

**op.order\_id = op12.order\_id**

**WHERE**

**op.product\_id <> 12**

**GROUP BY**

**op.product\_id**

**ORDER BY**

**common\_occurrences DESC**

**LIMIT 5;**

**Товар id = 12 в данном примере**