Product Analyst assignment

Part 1

Please answer the following questions in writing:

1) Imagine that you need to create a dashboard for the Zoosk Product team.
   Which metrics would you include there and why?

2) We constantly A/B test new registration funnel in our SilverSingles brand, where users answer various questions about their personality and a potential partner they are looking for. Later this data is used in our matchmaking algorithm.
   How would you measure the success of the test and which metrics would you use?

Part 2

Please, see the following DWH diagram of an e-commerce platform.

During a user's lifecycle, before as well as after registering on the platform, any visits of platform webpages are tracked (if possible).

In the `informations` table the total amount of page visits is stored (`info_page_visits`) for the respective timestamp of the visit and the respective used device (phone, tablet, desktop, etc.).

At the moment the user registers on the platform, a row is created in the `users` table. Additionally, in case the user visited the platform

users

user_ID integer
user_city text
user_gender text
user_registration_timestamp timestamp

sales

sale_ID integer
sale_user_ID integer
sale_timestamp timestamp
sale_type text

activities

activity_user_ID integer
activity_device_ID text
activity_timestamp timestamp
activity_is_last boolean

devices

device_ID text
device_name text

payments

pay_sale_ID integer
pay_timestamp timestamp
pay_amount numeric

informations

info_device_ID text
info_timestamp timestamp
info_page_visits integer

before, rows are created in the `activities` table for all of the user's previous visits with the respective device_ID and timestamp of the visit (`activity_timestamp` = `info_timestamp`). After the registration any user activity on the platform is also stored in the `activities` table. The `activity_is_last` field is updated accordingly and always true for only one row per user in this table.

When the registered user buys something on the platform, this creates a row in the `sales` table and when the item is paid, a row in the `payments` table.

The relations between tables are defined by the names, e. g. `sales.sale_user_ID` refers to `users.user_ID`. A user does not need to have any activities or sales.

For the SQL queries, please choose any SQL dialect you prefer.
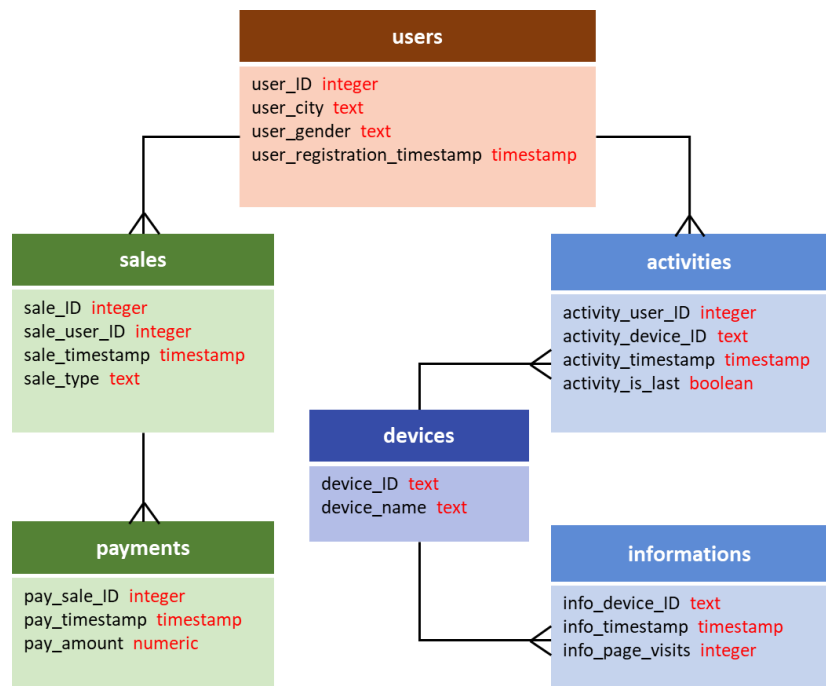
1) Please write the SQL SELECT query for the result described in a) and answer the questions in b). Please ignore users here, who are not registered.
   a) The number of daily active users per device
   b) What kind of issue could occur, when using this result for further analysis, e.g. for calculating the total number of daily active users? How would you adjust the query to fix it?

2) Please write the SQL SELECT queries for the following results:
   a) The total `pay_amount` per city for sales in 2019
   b) The number of users, for whom the last activity was done with `device_name` = "phone", but who have also at least one additional activity with another device
   c) Per day in 2019 the number of page visits and registrations

3) Please write the SQL SELECT queries for the following results:
   a) Per registration date and last device the number of users and the number of sales done by users within 3 days after the registration.
   b) Per visit day in 2019 the number of page visits and registrations
      Explain in writing: What would be measured with 2 c) and what with this result?