Product Analyst Assignment

Part 1

1) Imagine that you need to create a dashboard for the Zoosk Product team.

Which metrics would you include there and why?

I would divide metrics into three groups:

1. Customer Metrics
2. Sales Metrics
3. Marketing Metrics

Customer Metrics:

- Active Users - Active users should be measured Daily, Weekly, or Monthly over corresponding periods. These numbers can help determine the impact of key points, including new marketing channels, sales approaches, and product improvements.
- Customer Retention Rate - shows the product's ability to maintain a long-term relationship with customers.
- Customer Lifetime Value(LTV) - Indicator of the total profit that the company receives from the client over the period of their cooperation. Period to check after 30 days
- Churn - Indicates the lost customers over a period of time, does not need to take new users into account.

Sales Metrics:

- The conversion rate of users to costumers - It is important to know the number of our users are ready to pay for the product
- The average revenue per account -tracking this helps us better plan in the long and short term. It helps determine the preferences of certain groups of costumers
- Customer acquisition cost - the total amount of marketing efforts to attract customers. In order to correctly calculate this figure, it is necessary to add the costs of marketing, sales, and advertising for a certain period of time, and then divide the result by the number of new customers to calculate the full impact of a marketing campaign.
- Recurring revenue monthly or annually - this metric for better results can be split into smaller groups of different types of users

Marketing Metrics:

- Signups - Increasing the signups should be one of the main goals of marketing also tracking the completions of profiles should give us more insights on new users and their future actions on the platform.
- Unique platform visitors - With it we can measure the effectiveness of all marketing campaigns and actions. Also, we need to look into engagement indicators such as average time on site, the average number of page visits, repeat visits, etc.

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?

SilverSingles site uses a very extensive questionnaire. The success of the A/B test I would measure by final registration and an increase in the number of purchases. Besides, our main goal, I would take close look into three additional metrics such as bounce rate, exit rate, and engagement metrics, especially during the registration funnel.

Bounce rate - people who land and leave from the page, we want to intrigue and retain every visitor.

Exit rate - measure people who explore the site and questionnaire further, but leaving at a certain page.

Engagement metrics - people who push true with the registration process and fulfill the majority of questions.

Part 2

<u>Queries for part 2 are written and tried in PostgreSQL database</u>

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

```
select count(activity_user_id), activity_timestamp::date, device_name
from public.activities as ac
join public.users as us
on ac.activity_user_id=us.user_id
join public.devices as de
on ac.activity_device_id=de.device_id
group by activity_timestamp::date, device_name ;
```

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?

The result shows us the false number of daily active users because it shows active users per device and users can be active on multiple devices. We can adjust the query by inserting where clause activity_is_last=true and removing device_name from the group by.

```
select count(activity_user_id), activity_timestamp::date
from public.activities as ac
join public.users as us
on ac.activity_user_id=us.user_id
join public.devices as de
on ac.activity_device_id=de.device_id
where activity_is_last=true
group by activity_timestamp::date ;
```

2) Please write the SQL SELECT queries for the following results:
a) The total pay_amount per city for sales in 2019

```
select sum(pay_amount), user_city
from public.users as us
join public.sales as sa
on us.user_id=sa.sale_user_id
join public.payments as py
on sa.sale_id=py.pay_sale_id
where sale_timestamp>='2019-01-01' and sale_timestamp<'2020-01-01'
group by user_city ;
```

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

```
select count(activity_user_id) as "number of users"
from public.activities as ac
join public.devices as dev
on ac.activity_device_id=dev.device_id
where ac.activity_is_last=true and dev.device_name='phone'
and activity_user_id in (select activity_user_id
from public.activities
join public.devices
on public.activities.activity_device_id=public.devices.device_id
where public.devices.device_name != 'phone')
group by activity_user_id, device_id ;
```

c) Per day in 2019 the number of page visits and registrations

```
select datum."Day of 2019", coalesce(visits."num of reg users",0) "num of reg users",
coalesce(visits."page visits",0) "page visits"
from
(select date_trunc('day', dd):: date as "Day of 2019"
from generate_series
      ( '2019-01-01'::timestamp
      , '2019-12-31'::timestamp
      , '1 day'::interval) dd) datum
left join
(select info_timestamp::date as "visits day of 2019", count(user_id) as "num of reg users",
sum(info_page_visits) as "page visits"
from public.users as us
join public.activities as ac
on us.user_id=ac.activity_user_id
join public.devices as dev
on ac.activity_device_id=dev.device_id
join public.informations as ifo
on dev.device_id=info_device_id
where info_timestamp > '2018-12-31' and info_timestamp < '2020-01-01' and
ac.activity_timestamp=ifo.info_timestamp
group by info_timestamp::date) visits
on datum."Day of 2019"=visits."visits day of 2019" ;
```

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.

```
select count(user_id) as "num of users", count(sale_id) as "num of sales", user_registration_timestamp,
activity_device_id
from public.users as us
join public.sales as sal
on us.user_id=sal.sale_id
join public.activities as ac
on us.user_id=ac.activity_user_id
where activity_is_last=true and sale_timestamp <= user_registration_timestamp + interval '72 hours'
and sale_timestamp>user_registration_timestamp
group by user_registration_timestamp, activity_device_id ;
```

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?

```
select info_timestamp::date as "visits day of 2019", count(user_id) as "num of reg users",
sum(info_page_visits) as "page visits"
from public.users as us
join public.activities as ac
on us.user_id=ac.activity_user_id
join public.devices as dev
on ac.activity_device_id=dev.device_id
join public.informations as ifo
on dev.device_id=info_device_id
where info_timestamp > '2018-12-31' and info_timestamp < '2020-01-01' and
ac.activity_timestamp=ifo.info_timestamp
group by info_timestamp::date ;
```

With query from task 2. c) we measure the number of page visits and the number of registered users for every day of the year 2019, even if for that day we had zero page visits or zero registered users.

And with this query "Per visit day in 2019" we measure the number of page visits and the number of registered users only on days that had page visits during the year 2019. , if there were zero page visits, that day was not taken into the account.