In this part of the interview we'd like to see how you'd write SQL to answer some questions about Wave's business. Take a look at the PostgreSQL schema below, which is a slightly-simplified glimpse of some tables from our actual PostgeSQL schema. It includes everything you'll need to answer the questions.

For each question, please write a SQL query that would answer it (you can assume a relatively recent version of PostgreSQL, although the exact version shouldn't matter). And if you'd like, feel free to also include any notes or comments you have about the question if it would help us understand your thought process!

1. How many users does Wave have?
2. How many transfers have been sent in the currency CFA? A transfer in Wave is when a user (denoted by their user id in the u_id column) sends money from their Wave account (often to another Wave user, but the recipient might also be a mobile number that hasn't signed up for an account yet, or the sender of the transfer could be making a bill payment, or a few other possibilities; the `kind` column stores which possibility).
3. How many different users have sent a transfer in CFA?
4. How many agent_transactions did we have in the months of 2018 (broken down by month)? An agent transaction (often abbreviated atx) is when someone deposits or withdraws money from a Wave agent, and an agent is a person or business that is contracted to facilitate transactions for users. The most important of these are cash-in and cash-out (i.e. loading value into the mobile money system, and then converting it back out again). A typical example: a Wave user deposits some cash into their Wave account with their local agent (an agent transaction), then transfers that money to another Wave user, who in turn withdraws it via another agent transaction at their own local agent.
5. Over the course of the last week, how many Wave agents were "net depositors" vs. "net withdrawers"? A net depositor is an agent who received more deposit volume than withdrawal volume over some given time frame (and vice versa for a net withdrawer). Whether an agent transaction is a deposit or a withdrawal is determined by the sign of its amount: a *negative* amount is a deposit, and a *positive* amount is a withdrawal; zero amounts aren't allowed.
6. Build an "atx volume city summary" table: find the volume of agent transactions created in the last week, grouped by city. You can determine the city where the agent transaction took place from the agent's city field.
7. Now separate the atx volume by country as well (so your columns should be country, city, volume).
8. Build a "send volume by country and kind" table: find the total volume of transfers (by send_amount_scalar) sent in the past week, grouped by country and transfer kind. There are a few different kinds of Wave transfers, e.g. a 'P2P' transfer between a Wave user and a mobile number, or a payment from a Wave user to a merchant. The country a transfer was sent from isn't stored on the transfers table itself, but rather on the wallet

table's ledger_location field (and each transfer has a source_wallet_id). Your columns should be country, transfer kind, and volume.

9. Then add columns for transaction count and number of unique senders (still broken down by country and transfer kind).
10. Finally, which wallets have sent more than 10,000,000 CFA in transfers in the last month (as identified by the source_wallet_id column on the transfers table), and how much did they send?

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-- A simplified version of some of the tables in our postgres db
schema.
-- Don't worry if you don't need to use all of the columns!

CREATE TABLE users (
u_id integer PRIMARY KEY,
name text NOT NULL,
mobile text NOT NULL,
wallet_id integer NOT NULL,
when_created timestamp without time zone NOT NULL
-- more stuff :)
);

CREATE TABLE transfers (
transfer_id integer PRIMARY KEY,
u_id integer NOT NULL,
source_wallet_id integer NOT NULL,
dest_wallet_id integer NOT NULL,
send_amount_currency text NOT NULL,
send_amount_scalar numeric NOT NULL,
receive_amount_currency text NOT NULL,
receive_amount_scalar numeric NOT NULL,
kind text NOT NULL,
dest_mobile text,
dest_merchant_id integer,
when_created timestamp without time zone NOT NULL
-- more stuff :)
);

CREATE TABLE agents (
agent_id integer PRIMARY KEY,
```

```
name text,
country text NOT NULL,
region text,
city text,
subcity text,
when_created timestamp without time zone NOT NULL
-- more stuff :)
);


CREATE TABLE agent_transactions (
atx_id integer PRIMARY KEY,
u_id integer NOT NULL,
agent_id integer NOT NULL,
amount numeric NOT NULL,
fee_amount_scalar numeric NOT NULL,
when_created timestamp without time zone NOT NULL
-- more stuff :)
);

CREATE TABLE wallets (
wallet_id integer PRIMARY KEY,
currency text NOT NULL,
ledger_location text NOT NULL,
when_created timestamp without time zone NOT NULL
-- more stuff :)
);
```