



5

International Call Percentage (Verizon)

QUESTION

A phone call is considered an international call when the person calling is in a different country than the person receiving the call.

What percentage of phone calls are international? Round the result to 1 decimal.

Assumption:

- The `caller_id` in `phone_info` table refers to both the caller and receiver.

`phone_calls` Table:

Column Name	Type
caller_id	integer
receiver_id	integer
call_time	timestamp

`phone_calls` Example Input:

caller_id	receiver_id	call_time
1	2	2022-07-04 10:13:49
1	5	2022-08-21 23:54:56

5	1	2022-05-13 17:24:06
5	6	2022-03-18 12:11:49

phone_info Table:

Column Name	Type
caller_id	integer
country_id	integer
network	integer
phone_number	string

phone_info Example Input:

caller_id	country_id	network	phone_number
1	US	Verizon	+1-212-897-1964
2	US	Verizon	+1-703-346-9529
3	US	Verizon	+1-650-828-4774
4	US	Verizon	+1-415-224-6663
5	IN	Vodafone	+91 7503-907302
6	IN	Vodafone	+91 2287-664895

Step 1: Identify the problem of the case

OUTPUT form:

Column Name	Type
international_calls_pct	medical

Step 2 : Analyze and solve problems

To identify whether or whether a call is international, we require the `country_id` of both the caller and the receiver. This is accomplished by connecting `phone_info` twice, once for the caller and once for the recipient.

```

SELECT phone_calls.caller_id, caller_infor.country_id caller_country
, phone_calls.receiver_id, reciever_infor.country_id reciever_infor_country
FROM phone_calls
JOIN phone_info caller_infor
    ON phone_calls.caller_id = caller_infor.caller_id
JOIN phone_info reciever_infor
    ON phone_calls.receiver_id = reciever_infor.caller_id

```

We may begin the computation after we have all of the relevant information. To accomplish so, we require two metrics: total number of calls and international calls. COUNT(*) makes calculating the total number of calls simple.

For international phone numbers, we may utilize the WHERE statement to determine whether the caller's country differs from the recipient's country.

```
WITH tbl AS (SELECT phone_calls.caller_id, caller_infor.country_id caller_country
             , phone_calls.receiver_id, reciever_infor.country_id reciever_infor_country
      FROM phone_calls
     JOIN phone_info caller_infor
       ON phone_calls.caller_id = caller_infor.caller_id
    JOIN phone_info reciever_infor
       ON phone_calls.receiver_id = reciever_infor.caller_id),
cate_tbl AS (SELECT COUNT(*) FILTER (WHERE caller_country != reciever_infor_country) inter_calls
             , COUNT(*) total_calls
      FROM tbl)
```

Finally, we compute the fraction of foreign calls. Divide the total number of international calls by the number of international calls.

However, due to integer division, this value must be multiplied by 100.0 (rather than 100). To illustrate, because both values are integers, the outcome would likewise be an integer, with the decimals removed.

Finally, round the value to one decimal place.

```
WITH tbl AS (SELECT phone_calls.caller_id, caller_infor.country_id caller_country
             , phone_calls.receiver_id, reciever_infor.country_id reciever_infor_country
      FROM phone_calls
     JOIN phone_info caller_infor
       ON phone_calls.caller_id = caller_infor.caller_id
    JOIN phone_info reciever_infor
       ON phone_calls.receiver_id = reciever_infor.caller_id),
cate_tbl AS (SELECT COUNT(*) FILTER (WHERE caller_country != reciever_infor_country) inter_calls
             , COUNT(*) total_calls
      FROM tbl)

SELECT ROUND(100.0*inter_calls/total_calls,1) international_calls_pct
FROM cate_tbl
```

OUTPUT:

international_calls_pct

54.5

OTHER SOLUTION:

#1

```
SELECT
    ROUND(
        100.0 * SUM(CASE
            WHEN caller.country_id <> receiver.country_id THEN 1 ELSE NULL END)
        /COUNT(*), 1) AS international_call_pct
FROM phone_calls AS calls
LEFT JOIN phone_info AS caller
    ON calls.caller_id = caller.caller_id
LEFT JOIN phone_info AS receiver
    ON calls.receiver_id = receiver.caller_id;
```

#2

```
SELECT
    ROUND(
        100.0 * COUNT(*) FILTER (
            WHERE caller.country_id <> receiver.country_id)
        / COUNT(*), 1) AS international_calls_pct
FROM phone_calls AS calls
LEFT JOIN phone_info AS caller
    ON calls.caller_id = caller.caller_id
LEFT JOIN phone_info AS receiver
    ON calls.receiver_id = receiver.caller_id;
```

#3

```
WITH international_calls AS (
SELECT
    caller.caller_id,
    caller.country_id,
    receiver.caller_id,
    receiver.country_id
FROM phone_calls AS calls
LEFT JOIN phone_info AS caller
    ON calls.caller_id = caller.caller_id
LEFT JOIN phone_info AS receiver
    ON calls.receiver_id = receiver.caller_id
WHERE caller.country_id <> receiver.country_id
)
```

```
SELECT
    ROUND(
        100.0 * COUNT(*)
    / (SELECT COUNT(*) FROM phone_calls),1) AS international_call_pct
FROM international_calls;
```