	user_id character varying	user_ip character varying	device_info character varying	log_date date	login_status integer
1	7e1a059f35a5df52...	94.247.128.145	python-requests/2.31.0	2024-05-08	1
2	6d42ad6e9d561cd...	176.64.6.91	Mozilla/5.0 (Linux; Android 10;...	2023-10-02	1
3	dd266c3ff3742991...	10.16.90.85	Mozilla/5.0 (Windows NT 10.0;...	2023-10-09	1
4	6d52769c6dc810f...	85.117.100.186	Mozilla/5.0 (Linux; Android 10;...	2023-10-04	1
5	6d52769c6dc810f...	85.117.100.186	Mozilla/5.0 (Linux; Android 10;...	2023-10-03	1
6	78b740a73611f02...	145.255.165.103	Mozilla/5.0 (iPhone; CPU iPho...	2023-10-05	1

```sql
ALTER TABLE LOGIN_LOGS
ADD COLUMN device_type TEXT,
ADD COLUMN ip_group TEXT;

UPDATE LOGIN_LOGS
SET device_type = CASE
    WHEN user_agent LIKE '%Android%' THEN 'Android'
    WHEN user_agent LIKE '%iPhone%' THEN 'iPhone'
    WHEN user_agent LIKE '%iPad%' THEN 'iPad'
    WHEN user_agent LIKE '%Windows NT%' THEN 'Windows PC'
    WHEN user_agent LIKE '%Macintosh%' THEN 'Mac'
    WHEN user_agent LIKE '%Linux%' THEN 'Linux PC'
    ELSE 'Other'
END;

UPDATE LOGIN_LOGS
SET ip_group = SUBSTRING_INDEX(ip_address, '.', 1);
```

	user_id character varying	user_ip character varying	device_info character varying	log_date date	login_status integer	device_type character varying (50)	ip_group integer
1	7e1a059f35a5df52...	94.247.128.145	python-requests/2.31.0	2024-05-08	1	Other	94
2	6d42ad6e9d561cd...	176.64.6.91	Mozilla/5.0 (Linux; Android 10;...	2023-10-02	1	Android	176
3	dd266c3ff3742991...	10.16.90.85	Mozilla/5.0 (Windows NT 10.0;...	2023-10-09	1	Windows PC	10
4	6d52769c6dc810f...	85.117.100.186	Mozilla/5.0 (Linux; Android 10;...	2023-10-04	1	Android	85
5	6d52769c6dc810f...	85.117.100.186	Mozilla/5.0 (Linux; Android 10;...	2023-10-03	1	Android	85
6	78b740a73611f02...	145.255.165.103	Mozilla/5.0 (iPhone; CPU iPho...	2023-10-05	1	iPhone	145

```sql
-- Users count
SELECT
    COUNT(DISTINCT user_id)
FROM LOGIN_LOGS
```

	count bigint
1	18122

```sql
-- Every user attempt , success/failure
SELECT
    user_id,
    COUNT(*) AS count_u,
    COUNT(CASE WHEN login_status = 1 THEN 1 END) AS log_true_count,
    COUNT(CASE WHEN login_status = 0 THEN 1 END) AS log_false_count
FROM LOGIN_LOGS
GROUP BY user_id
ORDER BY count_u DESC
LIMIT 10;
```

	user_id character varying	count_u bigint	log_true_count bigint	log_false_count bigint
1	ab10c88510a1e5dbdb5952d66dc983944c900302d3bcc0b52ff5662929fd2…	4181	4181	0
2	a2bb5645370677cf8f8937681bb06e3a892207ada9488a737f90abd331121…	3343	3342	1
3	8529b2ce42e6b45e5e5b0841e0e6342398d27bf61239cac310e0697170e73…	1858	1855	3
4	ea229aa816f1fb1f4378ef514512c278203223a70a5943d1e4379ee2952328…	1233	1231	2
5	815fdae2943c8e29cd2f565ebeac4280be738db37eb5c9cc57489090084d6…	1233	1232	1
6	f83ef83bb2223ac17cfeae628e03d555cb59aa200d1525a0a6386d690964b…	1201	1201	0

```sql
-- Ip_group unique device count
SELECT
    ip_group , COUNT(DISTINCT user_ip) as count_ip
FROM LOGIN_LOGS
GROUP BY ip_group
ORDER BY count_ip DESC
LIMIT 10
```

	ip_group integer	count_ip bigint
1	10	13424
2	2	11813
3	37	5586
4	176	5455
5	95	5108
6	178	3773

```sql
-- Overall device counts,percentages per year from 2016 to 2024
SELECT
    EXTRACT(YEAR FROM log_date) as year_date ,
    device_type ,
    COUNT(DISTINCT device_info) as device_count,
    SUM(COUNT(DISTINCT device_info)) OVER (PARTITION BY EXTRACT(YEAR FROM log_date))
    AS total_per_year,
    ROUND(
     COUNT(DISTINCT device_info) * 100.0 / SUM(COUNT(DISTINCT device_info))
        OVER (PARTITION BY EXTRACT(YEAR FROM log_date)),2
    ) AS percent_of_year
FROM LOGIN_LOGS
GROUP BY EXTRACT(YEAR FROM log_date) , device_type
ORDER BY year_date , device_count
```

	year_date numeric	device_type character varying (50)	device_count bigint	total_per_year numeric	percent_of_year numeric
5	2016	Windows PC	38	316	12.03
6	2016	iPhone	55	316	17.41
7	2016	Android	200	316	63.29
8	2017	iPad	4	435	0.92
9	2017	Linux PC	16	435	3.68
10	2017	Mac	33	435	7.59

```sql
-- The classification of other category in devices
SELECT
    CASE
    WHEN device_info like 'python%' then 'Python_scripts'
    WHEN device_info like '%SDUPortal%' then 'SDU_app'
    ELSE 'Other'
    END as non_web_class,
    count(DISTINCT device_info) as device_count
FROM LOGIN_LOGS
WHERE device_type = 'Other'
GROUP BY non_web_class
ORDER BY device_count DESC
```

	non_web_class text	device_count bigint
1	SDU_app	46
2	Other	24
3	Python_scripts	16

```sql
-- The Device count for each ip
SELECT ip_group , COUNT(DISTINCT device_info) as ip_count
FROM LOGIN_LOGS
GROUP BY ip_group
ORDER BY ip_count DESC
LIMIT 5
```

	ip_group integer	ip_count bigint
1	10	8076
2	2	3404
3	95	2340
4	37	2015
5	85	1824

```sql
-- The device count of each user
SELECT
    user_id,
    COUNT(DISTINCT device_info) AS num_devices
FROM LOGIN_LOGS
GROUP BY user_id
ORDER BY num_devices DESC
LIMIT 10;
```

	user_id character varying	num_devices bigint
1	04e8d5d22a190ca050ded70b9a85853f55b68e7141b7ac2ea3487e008d96a...	89
2	8d0fc5a444cea34ad60a8ba4791f45b7bb967f70c5f1dcdb9bbe493dc2d509...	70
3	7f05106197a97841686c736504954540a0eb74133c23a250ec2192124f3ef...	65
4	d575ac9720337035fa1c26b95b8c5c6179b668d49e9f65410bd10676f3a55...	43
5	c0632678eece4e81c63f733bcbf837abb6bb095cbbaaaa1bbf1a95f2a7b7651f	42
6	a5ed737b4dbc4652c5c790e0bc887903a603f55b0f6ad174155a04131033b...	40

```sql
-- Failed attemtps percentage for every device
SELECT
    device_type,
    COUNT(*) AS total_attempts,
    COUNT(CASE WHEN login_status = 0 THEN 1 END) AS failed_attempts,
    ROUND(COUNT(CASE WHEN login_status = 0 THEN 1 END) * 100.0 / COUNT(*), 2) AS fail_rate_per
FROM LOGIN_LOGS
GROUP BY device_type
ORDER BY fail_rate_percent DESC;
```

	device_type character varying (50)	total_attempts bigint	failed_attempts bigint	fail_rate_percent numeric
2	Windows PC	42321	2771	6.55
3	iPad	125	8	6.40
4	iPhone	56938	2928	5.14
5	Android	33074	1285	3.89
6	Linux PC	4349	118	2.71
7	Other	48772	222	0.46

```sql
-- Most common IPs per device type
WITH ranked_ips AS (
    SELECT
        device_type,
        ip_group,
        COUNT(*) AS login_count,
        ROW_NUMBER() OVER (PARTITION BY device_type ORDER BY COUNT(*) DESC) AS rn
    FROM LOGIN_LOGS
    GROUP BY device_type, ip_group
)
SELECT
    device_type,
    ip_group,
    login_count
FROM ranked_ips
WHERE rn <= 5
ORDER BY device_type, login_count DESC;
```

	device_type character varying (50)	ip_group integer	login_count bigint
1	Android	10	9951
2	Android	78	3379
3	iPad	10	46
4	iPad	91	14
5	iPhone	10	18221
6	iPhone	2	7255