

WITH first_payments AS

```
(SELECT user_id,DATE_TRUNC('day' , MIN (transaction_datetime)) first_payment_date
FROM skyeng_db.payments
WHERE status_name ='success'
GROUP BY user_id
ORDER BY 1),
```

all_dates AS

```
(SELECT DISTINCT DATE_TRUNC ('day' , class_start_datetime) dt
FROM skyeng_db.classes
WHERE DATE_TRUNC('year' , class_start_datetime) = '2016-01-01'
),
```

all_dates_by_user AS

```
( SELECT fp.user_id, ad.dt
FROM first_payments fp JOIN all_dates ad ON  ad.dt>=fp.first_payment_date
ORDER BY 1,2
),
```

payments_by_dates AS

```
(SELECT user_id, DATE_TRUNC ('day' , transaction_datetime) payment_date, SUM (classes)
transaction_balance_change
FROM skyeng_db.payments
WHERE status_name = 'success'
GROUP BY (user_id, DATE_TRUNC ('day' , transaction_datetime))
ORDER BY (user_id, DATE_TRUNC ('day' , transaction_datetime))
),
```

payments_by_dates_1 AS

```
(SELECT db_1.user_id, db_1.dt, (CASE WHEN transaction_balance_change IS NOT NULL THEN
transaction_balance_change ELSE 0 END) transaction_balance_change
FROM all_dates_by_user db_1
LEFT JOIN payments_by_dates db_2 ON db_1.user_id=db_2.user_id AND
db_1.dt=db_2.payment_date
),
```

payments_by_dates_cumsum AS

```
(SELECT user_id, dt, transaction_balance_change,
```

```

SUM(transaction_balance_change) OVER (PARTITION BY user_id ORDER BY dt )
transaction_balance_change_cs
FROM payments_by_dates_1
),
classes_by_dates AS
(SELECT user_id, DATE_TRUNC('day' , class_start_datetime) class_date, COUNT (id_class)*-1 classes
FROM skyeng_db.classes
WHERE class_type != 'trial'
AND class_status IN ('success' , 'failed_by_student')
GROUP BY (user_id, DATE_TRUNC('day' , class_start_datetime))
),
classes_by_dates_1 AS
(SELECT db_1.user_id, db_1.dt, (CASE WHEN classes IS NOT NULL THEN classes ELSE 0 END) classes
FROM all_dates_by_user db_1
LEFT JOIN classes_by_dates cb ON db_1.user_id=cb.user_id AND db_1.dt=cb.class_date
),
classes_by_dates_cumsum AS
(SELECT user_id, dt, classes,
SUM(classes) OVER (PARTITION BY user_id ORDER BY dt ) classes_cs
FROM classes_by_dates_1
),
balances AS
( SELECT pdcs.user_id, pdcs.dt, pdcs.transaction_balance_change,
pdcs.transaction_balance_change_cs,
cdcs.classes, cdcs.classes_cs, cdcs.classes_cs + pdcs.transaction_balance_change_cs balance
FROM payments_by_dates_cumsum pdcs JOIN classes_by_dates_cumsum cdcs ON pdcs.user_id =
cdcs.user_id AND pdcs.dt = cdcs.dt
)
SELECT *
FROM balances
ORDER BY 1, 2
LIMIT 1000

```