**Проект “Моделирование изменения балансов студентов”**

with first\_payments as (

select

user\_id

,date\_trunc('day', min(transaction\_datetime)) as first\_payment\_date

from skyeng\_db.payments

where status\_name = 'success'

group by user\_id

),

all\_dates as (

select distinct date\_trunc ('day', class\_start\_datetime) as dt

from skyeng\_db.classes

where date\_trunc ('day', class\_start\_datetime) between '2016-01-01 00:00'and '2016-12-31'

),

all\_dates\_by\_user as (

select user\_id, dt

from first\_payments

join all\_dates on dt >= first\_payment\_date

),

payments\_by\_dates as (

select

user\_id

, date\_trunc('day', transaction\_datetime) as payment\_date

, sum (classes) as transaction\_balance\_change

from skyeng\_db.payments

where status\_name = 'success'

group by user\_id, payment\_date

),

payments\_by\_dates\_cumsum as (

select

ad.user\_id

, dt

, coalesce (transaction\_balance\_change,0) as transaction\_balance\_change

, sum (coalesce (transaction\_balance\_change,0)) over (partition by ad.user\_id order by dt) as transaction\_balance\_change\_cs

from all\_dates\_by\_user ad

left join payments\_by\_dates pd

on ad.user\_id = pd.user\_id

and payment\_date = dt

),

classes\_by\_dates as (

select

user\_id

, date\_trunc('day', class\_status\_datetime) as class\_date

, -count (\*) as classes

from skyeng\_db.classes

where class\_status in ('success', 'failed\_by\_student')

and class\_type != 'trial'

group by user\_id, class\_date

),

classes\_by\_dates\_cumsum as (

select

adu.user\_id

, dt

, coalesce (classes, 0) as classes

, sum (coalesce (classes,0)) over (partition by adu.user\_id order by dt) as classes\_cs

from all\_dates\_by\_user adu

left join classes\_by\_dates cd

on adu.user\_id = cd.user\_id

and dt = class\_date

),

balances as (

select

pdcum.user\_id

, pdcum.dt

, transaction\_balance\_change

, transaction\_balance\_change\_cs

, classes

, classes\_cs

, (cdcum.classes\_cs + pdcum.transaction\_balance\_change\_cs) as balance

from payments\_by\_dates\_cumsum pdcum

full join classes\_by\_dates\_cumsum cdcum

on pdcum.user\_id = cdcum.user\_id

and pdcum.dt = cdcum.dt

order by pdcum.user\_id

, pdcum.dt

)

-- select \*

-- from balances

-- order by balance

-- limit 1000

select dt,

sum(transaction\_balance\_change) as total\_transaction\_balance\_change,

sum(transaction\_balance\_change\_cs) as total\_transaction\_balance\_change\_cs,

sum(classes) as total\_classes,

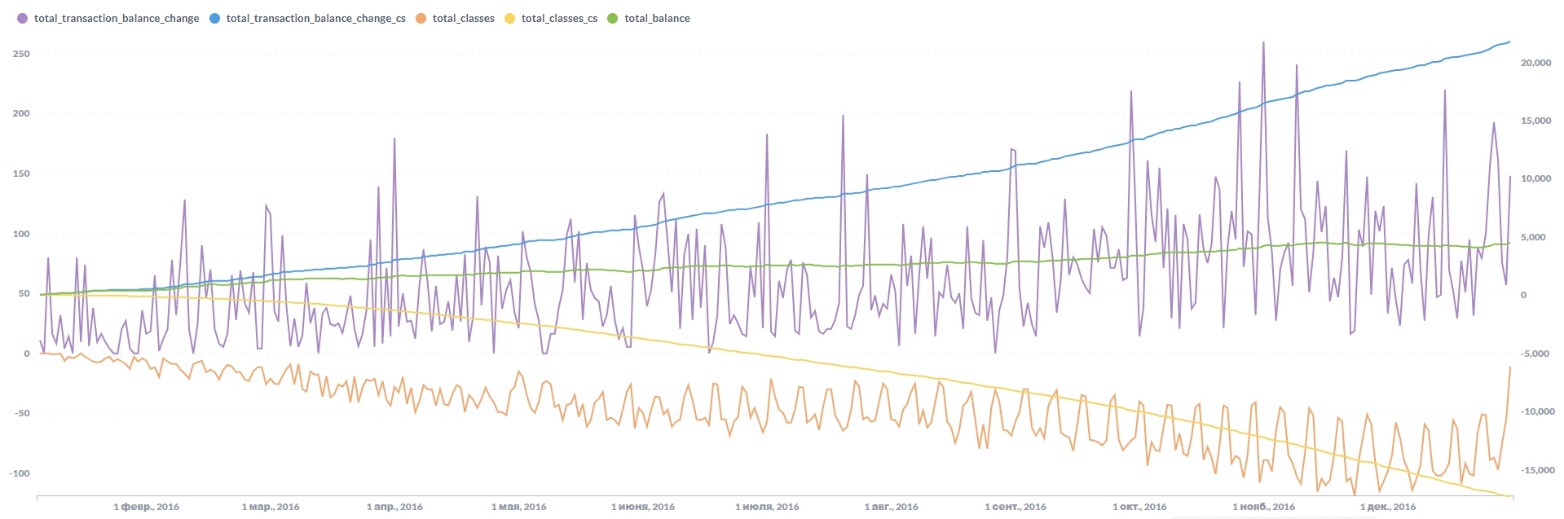
sum(classes\_cs) as total\_classes\_cs,

sum(balance) as total\_balance

from balances

group by dt

order by dt



**ВЫВОДЫ**

Вопросы к дата-инженерам и владельцам таблицы payments:

Выявлено 142 примера отрицательного баланса из первых 1000 строк, т.е. некоторые ученики получали уроков больше, чем оплатили.

Нужно обратить на это внимание, даже если позже они докупали уроки, выходя в плюс. Возможны ошибки в системе начисления/списания уроков.

По итогу на 31.12.2016 на балансе остаётся большое количество уроков (= 4 533). Сложно сказать, связано ли это с организационными проблемами в самой школе или с планированием самих учеников, возможно стоит провести опрос. Также можно наблюдать более активную покупку уроков с сентября и до конца года.