## 1. Task No 1. Access settings

```
create user ivan with password 'ivan1';
create user sophie with password 'sophie1';
create user kirill with password 'kirill1';
grant planadmin to ivan;
grant planmanager to sophie;
grant planmanager to kirill;
grant select on all tables in schema public to planadmin;
grant select on all tables in schema public to planmanager;
grant select, update, insert, delete on plan_data to planadmin;
grant select, update, insert, delete on plan_data to planmanager;
grant select, update, insert, delete on plan_status to planadmin;
grant select, update on plan_status to planmanager;
grant select, update, insert, delete on country_managers to planadmin;
grant select on country_managers to planmanager;
grant select, update on v_plan_edit to planmanager;
grant select on v_plan to planmanager;
insert into country_managers (username, country) values ('sophie', 'US');
insert into country_managers (username, country) values ('sophie', 'CA');
insert into country_managers (username, country) values ('kirill', 'FR');
insert into country_managers (username, country) values ('kirill', 'GB');
insert into country_managers (username, country) values ('kirill', 'DE');
insert into country_managers (username, country) values ('kirill', 'AU');
메를 username 🏋 메를 country 🏋
  1
     sophie
                US
  2
                CA
     sophie
  3
     kirill
                FR
  4
     kirill
                GB
                DE
     kirill
  5
  6
     kirill
                ΑU
```

2. Task  $\mathbb{N} \mbox{\scriptsize 2}.$  product 2 & country 2 materialized views

```
--task 2--
    create materialized view product2 as
    select p3.productcategoryid as pcid, p1.productid as productcid,
    p3.name as pcname, p1.name as pname
    from product p1 join productsubcategory p2 using (productsubcategoryid)
    join productcategory p3 using(productcategoryid);
    create materialized view country2 as
    select distinct ad.countryregioncode
    from customer as c
    join customeraddress ca using(customerid)
    join address ad using(addressid)
    where ca.addresstype = 'Main Office';
    --permission to managers and administrators
    grant select on product2 to planadmin;
    grant select on country2 to planadmin;
    grant select on product2 to planmanager;
    grant select on country2 to planmanager;
3. Task №3. Loading data into the company table.
    --task 3--
    insert into company (cname, countrycode, city)
    select distinct c.companyname as cname, ad.countryregioncode, ad.city
    from customer c join customeraddress ca using(customerid)
    join address ad using(addressid)
    where ca.addresstype = 'Main Office';
4. Task №4. Company classification
    insert into company_abc (cid, salestotal, cls, year) select cid, sale_company as salestotal, case when srt <= sa then 'A' when srt <= sb then 'B' else 'C' end as cls,
    year
from (select *, sum(ratings.sale_company)over(partition by year order by year desc rows between unbounded preceding and current row) as SRT
from
(select c.id as cid, sum(sales.subtotal) as sale_company,extract(year from sales.orderdate) as year
    from salesorderheader sales
    Join customer cus using(customerid)
join customer cus using(customerid)
join company c on cus.companyname = c.cname
where extract(year from sales.orderdate) = 2012 or extract (year from sales.orderdate) = 2013
    group by c.id, extract(year from sales.orderdate)
order by year desc, sale_company desc
    ratings)
    join (select sum(salestotal.subtotal) as totalsales, extract(year from salestotal.orderdate) as year,
    sum(salestotal.subtotal)*0.8 as sa, sum(salestotal.subtotal)*0.95 st
from salesorderheader salestotal
    join customer cus using (customerid)
join company c on cus.companyname = c.cname
where extract(year from salestotal.orderdate) = 2012 or extract(year from salestotal.orderdate) = 2013
    group by extract(year from salestotal.orderdate) order by extract(year from salestotal.orderdate) desc) total using (year))total order by cid;
```

|    | ¹2₫ cid | T: | 123 salestotal 🏋 | ABC CIS TI | ¹2₫ year 📆 |
|----|---------|----|------------------|------------|------------|
| 1  |         | 1  | 249.54           | С          | 2,013      |
| 2  |         | 2  | 190,732.7335     | Α          | 2,012      |
| 3  |         | 2  | 68,243.9474      | В          | 2,013      |
| 4  |         | 3  | 34,995.753       | В          | 2,012      |
| 5  |         | 3  | 3,975.4005       | С          | 2,013      |
| 6  |         | 4  | 42,309.3031      | В          | 2,013      |
| 7  |         | 6  | 42,746.2971      | В          | 2,013      |
| 8  |         | 7  | 113,497.0245     | Α          | 2,013      |
| 9  |         | 8  | 14,021.208       | С          | 2,013      |
| 10 |         | 9  | 6,591.8124       | С          | 2,012      |
| 11 |         | 9  | 98.886           | С          | 2,013      |
| 12 |         | 10 | 2,854.0183       | С          | 2,012      |
| 13 |         | 10 | 21,911.193       | С          | 2,013      |
| 14 |         | 11 | 11,295.7189      | С          | 2,012      |
| 15 |         | 12 | 3,288.918        | С          | 2,013      |
| 16 |         | 13 | 256,319.6209     | Α          | 2,013      |
| 17 |         | 13 | 278,173.4175     | Α          | 2,012      |
| 18 |         | 15 | 106,723.1923     | Α          | 2,013      |
| 19 |         | 16 | 25,106.9619      | В          | 2,013      |
| 20 |         | 17 | 8,429.364        | С          | 2,013      |
| 21 |         | 19 | 10,655.43        | С          | 2,013      |

# 5. Task $\mathbb{N}^5$ . Finding quarterly sales amount by company, and product category

```
insert into company_sales (cid, salesamt, year, quarter_yr, qr, categoryid, ccls) select c.id as tid, sum(sd.linetotal) as salesamount, extract(year from sh.orderdate) as year, extract(quarter from sh.orderdate) as quarter_yr, to_char(sh.orderdate ::date, 'YYYY.Q') as qr, p2.pcid as categoryid, c_abc.cls from salesorderdetail sd join salesorderdeates sh using(salesorderid) join customer cu using (customerid) join company c on cu.companyname = c.cname join product2 p2 using(productid) join company c on cabc.cid = c.id and c_abc.year = extract(year from sh.orderdate) where extract(year from sh.orderdate) = 2012 or extract(year from sh.orderdate) = 2013 group by c.id, extract(year from sh.orderdate), qr, categoryid, c_abc.cls;
```

## 6. Task №6. Initial data preparation

[]

```
order by countryregioncode, productcategoryid""", (year, quarter, quarter))
con.commit()
# #step5: copy version n
cur.execute("""insert into plan_data(versionid, country, quarterid, pcid, salesamt)
select 'P' versionid, p.country, p.quarterid, p.pcid, p.salesamt from plan_data p""")
con.commit()
```

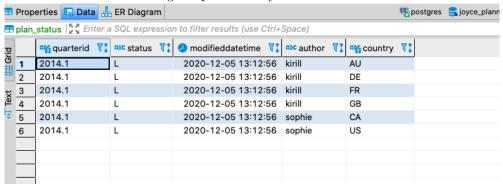
start\_planning(2014, 1, 'ivan', 'ivan1')

|   |                 |               |                                  | .,,      |              |
|---|-----------------|---------------|----------------------------------|----------|--------------|
|   | ଲ୍ଗ୍ର quarterid | ABC status T‡ | modifieddatetime  \$\tag{\tau}\$ | author 🏋 | 略 country 『‡ |
| 1 | 2014.1          | R             | 2020-12-05 08:34:52              | ivan     | AU           |
| 2 | 2014.1          | R             | 2020-12-05 08:34:52              | ivan     | CA           |
| 3 | 2014.1          | R             | 2020-12-05 08:34:52              | ivan     | DE           |
| 4 | 2014.1          | R             | 2020-12-05 08:34:52              | ivan     | FR           |
| 5 | 2014.1          | R             | 2020-12-05 08:34:52              | ivan     | GB           |
| 6 | 2014.1          | R             | 2020-12-05 08:34:52              | ivan     | US           |
|   |                 |               |                                  |          |              |
|   |                 |               |                                  |          |              |
|   |                 |               |                                  |          |              |
|   |                 |               |                                  |          |              |

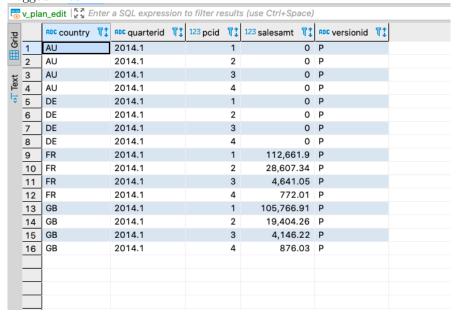
|    | a∰ versionid 🏋‡ | ANS country | T‡ ng quarterid | T: | ¹2₫ pcid | T: | 123 salesamt | ₹; |
|----|-----------------|-------------|-----------------|----|----------|----|--------------|----|
| 1  | N               | AU          | 2014.1          |    |          | 1  |              | 0  |
| 2  | N               | AU          | 2014.1          |    |          | 2  |              | 0  |
| 3  | N               | AU          | 2014.1          |    |          | 3  |              | 0  |
| 1  | N               | AU          | 2014.1          |    |          | 4  |              | 0  |
| 5  | N               | CA          | 2014.1          |    |          | 1  | 1,016,439.3  | 37 |
| 3  | N               | CA          | 2014.1          |    |          | 2  | 130,085.4    | 16 |
| 7  | N               | CA          | 2014.1          |    |          | 3  | 19,446.0     | 1  |
| }  | N               | CA          | 2014.1          |    |          | 4  | 4,066        | .3 |
| )  | N               | DE          | 2014.1          |    |          | 1  |              | 0  |
| 10 | N               | DE          | 2014.1          |    |          | 2  |              | 0  |
| 11 | N               | DE          | 2014.1          |    |          | 3  |              | 0  |
| 12 | N               | DE          | 2014.1          |    |          | 4  |              | 0  |
| 13 | N               | FR          | 2014.1          |    |          | 1  | 112,661      | .9 |
| 14 | N               | FR          | 2014.1          |    |          | 2  | 28,607.3     | 34 |
| 15 | N               | FR          | 2014.1          |    |          | 3  | 4,641.0      | )5 |
| 6  | N               | FR          | 2014.1          |    |          | 4  | 772.0        | 1  |
| 7  | N               | GB          | 2014.1          |    |          | 1  | 105,766.9    | 1  |
| 8  | N               | GB          | 2014.1          |    |          | 2  | 19,404.2     | 26 |
| 9  | N               | GB          | 2014.1          |    |          | 3  | 4,146.2      | 22 |
| 0  | N               | GB          | 2014.1          |    |          | 4  | 876.0        | )3 |
| 1  | N               | US          | 2014.1          |    |          | 1  | 4,131,941.3  | 37 |
| 2  | N               | US          | 2014.1          |    |          | 2  | 438,482.9    | 92 |
| 3  | N               | US          | 2014.1          |    |          | 3  | 56,479.2     | 27 |
| 4  | N               | US          | 2014.1          |    |          | 4  | 13,199.8     | 37 |
| 5  | Р               | AU          | 2014.1          |    |          | 1  |              | 0  |
| 26 | P               | AU          | 2014.1          |    |          | 2  |              | 0  |
| 27 | P               | AU          | 2014.1          |    |          | 3  |              | 0  |
| 28 | Р               | AU          | 2014.1          |    |          | 4  |              | 0  |
| 29 | Р               | CA          | 2014.1          |    |          | 1  | 1,016,439.3  | 37 |
| 30 | Р               | CA          | 2014.1          |    |          | 2  | 130,085.4    | 16 |
| 1  | Р               | CA          | 2014.1          |    |          | 3  | 19,446.0     | 1  |
| 2  | Р               | CA          | 2014.1          |    |          | 4  | 4,066        | .3 |
| 33 | Р               | DE          | 2014.1          |    |          | 1  |              | 0  |
| 34 | Р               | DE          | 2014.1          |    |          | 2  |              | 0  |
| 35 | Р               | DE          | 2014.1          |    |          | 3  |              | 0  |
| 36 | Р               | DE          | 2014.1          |    |          | 4  |              | 0  |

# 7. Task $\mathbb{N}$ . Changing the plan data

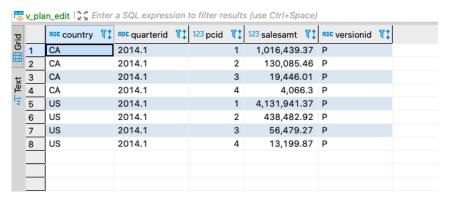
(a) Screenshots before increasing the plan sales by 30%.



i. Logged in as Kirill

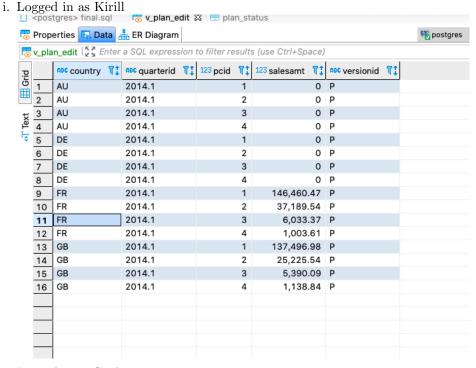


ii. Logged in as Sophie

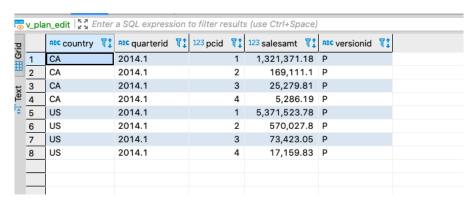


(b) Screenshots after increasing the plan sales by 30%.

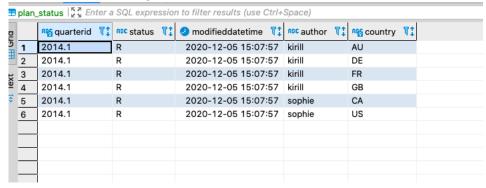
--increase sales amount by 30%-update v\_plan\_edit
set salesamt = salesamt\*1.3;



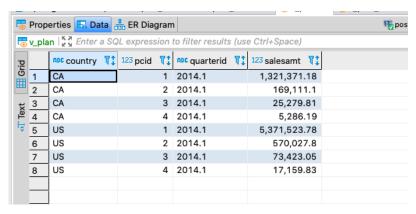
ii. Logged in as Sophie



## (c) Screenshot after running remove\_lock function



### 8. Task №8. Plan data approval



### 9. Task №9. Data preparation for plan-fact analysis in Q1 2014

```
create materialized view mv_plan_fact_2014_q1 as
select t.* from country2 cross join productategory p3
left join(select plan.quarterid, plan.country, plan.categoryname, plan.salesamt - actual.salesamt as dev,
case when plan.salesamt = 0 then '-infinity' else ((plan.salesamt-actual.salesamt)/plan.salesamt:float)*100 end as dev_perc
from(select pd.quarterid, pd.country country, pc.name categoryname, pd.salesamt salesamt from plan_data pd
join productcategory pc on pc.productcategoryid = pd.pcid
where pd.versionid = 'P'and pd.quarterid = '2014.1')plan
join (select distinct c.countrycode country, p2.pcname pcname, p2.pcid, to_char(sh.orderdate::date, 'YYYY.Q')*as quarterid,
sum(sd.linetotal)*over(partition by c.countrycode, p2.pcid, extract(quarter from sh.orderdate)) as salesamt
from salesorderdetail sd
join salesorderdetail sd
join customer cu using(customerid)
join company c on cu.companyame = c.cname
join product2 p2 using(productid)
join company,abc ca
on ca.cid = c.id and ca.year = 2013
where to_char(sh.orderdate::date, 'YYYY.Q') = '2014.1' and ca.cls < 'C')*actual
on plan.country = actual.country and plan.categoryname = actual.pcname)t
on country2.countryregioncode = t.country and p3."name" = t.categoryname;
```

| trl+click to op | en SQL console puntry | RBC categoryname | 123 dev         | 123 dev_perc <b>1</b> |
|-----------------|-----------------------|------------------|-----------------|-----------------------|
| 2014.1          | AU                    | Bikes            | -313,362.19     | B -Infinity           |
| 2014.1          | AU                    | Components       | -27,649.5       | 6 -Infinity           |
| 2014.1          | AU                    | Clothing         | -5,364.08097    | 6 -Infinity           |
| 2014.1          | AU                    | Accessories      | -2,994.5        | 4 -Infinity           |
| 2014.1          | CA                    | Bikes            | 372,186.51115   | 5 28.1666890264       |
| 2014.1          | CA                    | Components       | -13,469.13659   | -7.9646673648         |
| 2014.1          | CA                    | Clothing         | -11,304.08815   | 6 -44.7158746684      |
| 2014.1          | CA                    | Accessories      | -11,598.855     | 1 -219.4180515645     |
| 2014.1          | DE                    | Bikes            | -384,604.89940  | B -Infinity           |
| 0 2014.1        | DE                    | Components       | -50,266.43      | 4 -Infinity           |
| 1 2014.1        | DE                    | Clothing         | -14,808.72171   | 7 -Infinity           |
| 2 2014.1        | DE                    | Accessories      | -7,742.52265    | 6 -Infinity           |
| 2014.1          | FR                    | Bikes            | -432,115.87264  | 4 -295.0392502796     |
| 4 2014.1        | FR                    | Components       | -91,511.49      | 2 -246.0678244474     |
| 2014.1          | FR                    | Clothing         | -10,705.62533   | 4 -177.4402255124     |
| 6 2014.1        | FR                    | Accessories      | -8,053.63290    | 8 -802.4663871424     |
| 7 2014.1        | GB                    | Bikes            | -363,033.44053  | 2 -264.0301194484     |
| 8 2014.1        | GB                    | Components       | -53,209.31      | 6 -210.934299127      |
| 2014.1          | GB                    | Clothing         | -9,255.79376    | 3 -171.7187239545     |
| 0 2014.1        | GB                    | Accessories      | -6,091.48672    | 3 -534.8852097749     |
| 1 2014.1        | US                    | Bikes            | 1,586,310.94221 | 9 29.5318611103       |
| 2 2014.1        | US                    | Components       | -1,323.63308    | -0.2322050061         |
| 2014.1          | US                    | Clothing         | -23,284.87609   | 1 -31.7133054143      |
| 4 2014.1        | US                    | Accessories      | -21,572.1170    | 4 -125.7128831696     |
|                 |                       |                  |                 |                       |
|                 |                       |                  |                 |                       |
|                 |                       |                  |                 |                       |
|                 |                       |                  |                 |                       |