

SQL to find a Jira user's group memberships, including nested groups

Question

A Jira user belongs to a set of groups:

Full name	Username	Login details	Group name	Applications	Directory	Actions
 Jeff Turner	jturner jeff@redradishtech.com	Count: 5171 Last: 8 minutes ago	atlassian-administrators Change (SNC) confluence-administrators confluence-users crowd-administrators jabber-all jira-administrators jira-admins jira-users posix-jumphost-it Show less	Jira Software	Crowd Server	Edit ...

How do we find that list of groups for user 'jturner' using SQL (Postgres)?

Answer

With this SQL:

```
WITH RECURSIVE members AS (  
  SELECT lower_parent_name  
    ,lower_child_name  
  FROM cwd_membership  
 WHERE child_name='jturner'  
 UNION  
  select m.lower_parent_name  
    ,m.lower_child_name  
  FROM cwd_membership m  
 INNER JOIN members ON members.lower_parent_name=m.lower_child_name  
) SELECT DISTINCT lower_parent_name from members;
```

What's going on?

The headache here is **nested groups**.

You may know that group membership info is stored in the `cwd_membership` table. The following query would return all group memberships of a user if there weren't any nested groups:

```
jira=> select * from cwd_membership where child_name='jturner' ;  
  
 id parent_id child_id membership_type group_type parent_name lower_parent_name child_name  
lower_child_name directory_id  
  
 68581  19488  18636  GROUP_USER      Change (SNC) change (snc) jturner jturner 10000  
 69381  19259  18636  GROUP_USER      confluence-administrators confluence-administrators jturner jturner  
10000  
 70007  19821  18636  GROUP_USER      crowd-administrators crowd-administrators jturner jturner 10000  
 72833  18720  18636  GROUP_USER      jabber-all jabber-all jturner jturner 10000  
 73448  19900  18636  GROUP_USER      jira-administrators jira-administrators jturner jturner 10000  
 78561  19838  18636  GROUP_USER      posix-jumphost-it posix-jumphost-it jturner jturner 10000  
 86486  19052  18636  GROUP_USER      atlassian-administrators atlassian-administrators jturner jturner 10000  
  
( 7 rows)
```

But in this case there are nested groups (from LDAP), and our query hasn't returned the full set.

In `cwd_membership` a nested group is represented as a `cwd_membership` row with a `membership_type` of `GROUP_GROUP`. For instance, `jira-administrators` is a sub group of `jira-admins`:

```
jira=> select * from cwd_membership where membership_type='GROUP_GROUP' and lower_child_name='jira-administrators';
```

id	parent_id	child_id	membership_type	group_type	parent_name	lower_parent_name	child_name	lower_child_name	directory_id
73472	18511	19900	GROUP_GROUP	jira-admins	jira-admins	jira-administrators	jira-administrators	jira-administrators	10000

```
(1 row)
```

Membership of a sub-group (jira-administrators) implies membership of the parent (jira-admins).

We could find all parent groups of our groups with this query:

```
jira=> select
lower_parent_name
from cwd_membership
where membership_type='GROUP_GROUP' and lower_child_name IN (
select lower_parent_name from cwd_membership where lower_child_name='jturner'
);
```

lower_parent_name
confluence-administrators
jira-users
confluence-users
jira-admins

```
(4 rows)
```

but what about groups-of-groups?

Enter Postgres [recursive queries](#). I won't provide a tutorial. It may help to see the parent/child relationships of every result:

```
jira=> WITH RECURSIVE members AS
( SELECT lower_parent_name ,lower_child_name
FROM cwd_membership
WHERE child_name='jturner' UNION
select m.lower_parent_name ,m.lower_child_name FROM cwd_membership m INNER JOIN members ON members.
lower_parent_name=m.lower_child_name
)
SELECT DISTINCT lower_parent_name, lower_child_name from members;
```

lower_parent_name	lower_child_name
jira-users	jabber-all
crowd-administrators	jturner
jira-administrators	jturner
confluence-administrators	atlassian-administrators
jabber-all	jturner
atlassian-administrators	jturner
confluence-users	jabber-all
change (snc)	jturner
posix-jumphost-it	jturner
confluence-administrators	jturner
jira-admins	jira-administrators

```
(11 rows)
```