grp — Unix Group Database

Purpose: Read group data from Unix group database.

The `grp` module can be used to read information about Unix groups from the group database (usually `/etc/group`). The read-only interface returns tuple-like objects with named attributes for the standard fields of a group record.

Index	Attribute	Meaning
0	gr_name	Name
1	gr_passwd	Password, if any (encrypted)
2	gr_gid	Numerical id (integer)
3	gr_mem	Names of group members

The name and password values are both strings, the GID is an integer, and the members are reported as a list of strings.

Querying All Groups

This example prints a report of all of the “real” groups on a system, including their members (where “real” is defined as having a name not starting with “_”). To load the entire password database, use `getgrall()`.

```
# grp_getgrall.py

import grp
import textwrap

# Load all of the user data, sorted by username
all_groups = grp.getgrall()
interesting_groups = {
    g.gr_name: g
    for g in all_groups
    if not g.gr_name.startswith('_')
}
print(len(interesting_groups.keys()))

# Find the longest length for a few fields
name_length = max(len(k) for k in interesting_groups) + 1
gid_length = max(len(str(u.gr_gid))
                 for u in interesting_groups.values()) + 1

# Set the members field width to avoid table columns
# wrapping
members_width = 19

# Print report headers
fmt = ' '.join(['{:<{name_length}}',
                '{:{gid_length}}',
                '{:<{members_width}}',
                ])
print(fmt.format('Name',
                 'GID',
                 'Members',
                 name_length=name_length,
                 gid_length=gid_length,
                 members_width=members_width))
print('-' * name_length,
      '-' * gid_length,
      '-' * members_width)

# Print the data
prefix = ' ' * (name_length + gid_length + 2)
```

```
for name, g in sorted(interesting_groups.items()):
    # Format members to start in the column on the same line but
    # wrap as needed with an indent sufficient to put the
    # subsequent lines in the members column. The two indent
    # prefixes need to be the same to compute the wrap properly,
    # but the first should not be printed so strip it.
    members = textwrap.fill(
        ', '.join(g.gr_mem),
        initial_indent=prefix,
        subsequent_indent=prefix,
        width=members_width + len(prefix),
    ).strip()
    print(fmt.format(g.gr_name,
                     g.gr_gid,
                     members,
                     name_length=name_length,
                     gid_length=gid_length,
                     members_width=members_width))
```

The return value is a list with an undefined order, so it needs to be sorted before printing the report.

```
$ python3 grp_getgrall.py

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Name                            GID         Members
------------------------------ ----------- ------------------
accessibility                           90
admin                                   80 root
authedusers                             50
bin                                      7
certusers                               29 root, _jabber,
                                            _postfix, _cyrus,
                                            _calendar, _dovecot
com.apple.access_disabled              396
com.apple.access_ftp                   395
com.apple.access_screensharing         398
com.apple.access_sessionkey            397
com.apple.access_ssh                   399
com.apple.sharepoint.group.1           701 dhellmann
consoleusers                            53
daemon                                   1 root
dialer                                  68
everyone                                12
group                                   16
interactusers                           51
kmem                                     2 root
localaccounts                           61
mail                                     6 _teamsserver
netaccounts                             62
netusers                                52
network                                 69
nobody                          4294967294
nogroup                                 -1
operator                                 5 root
owner                                   10
procmod                                  9 root
procview                                 8 root
staff                                   20 root
sys                                      3 root
tty                                      4 root
utmp                                    45
wheel                                    0 root
```

Group Memberships for a User

Another common task might be to print a list of all the groups for a given user:

```
# grp_groups_for_user.py

import grp
```

```
username = 'dhellmann'
group_names = set(
    g.gr_name
    for g in grp.getgrall()
    if username in g.gr_mem
)
print(username, 'belongs to:', ', '.join(sorted(group_names)))
```

The set of unique group names is sorted before they are printed.

```
$ python3 grp_groups_for_user.py

dhellmann belongs to: _appserveradm, _appserverusr, _lpadmin, ad
min, com.apple.sharepoint.group.1
```

Finding a Group By Name

As with pwd, it is also possible to query for information about a specific group, either by name or numeric id.

```
# grp_getgrnam.py
```

```
import grp

name = 'admin'
info = grp.getgrnam(name)
print('Name    :', info.gr_name)
print('GID     :', info.gr_gid)
print('Password:', info.gr_passwd)
print('Members :', ', '.join(info.gr_mem))
```

The `admin` group has two members:

```
$ python3 grp_getgrnam.py

Name    : admin
GID     : 80
Password: *
Members : root, dhellmann
```

Finding a Group by ID

To identify the group running the current process, combine `getgrgid()` with `os.getgid()`.

```
# grp_getgrgid_process.py

import grp
import os

gid = os.getgid()
group_info = grp.getgrgid(gid)
print('Currently running with GID={} name={}'.format(
    gid, group_info.gr_name))
```

```
$ python3 grp_getgrgid_process.py

Currently running with GID=20 name=staff
```

And to get the group name based on the permissions on a file, look up the group returned by `os.stat()`.

```
# grp_getgrgid_fileowner.py

import grp
import os

filename = 'grp_getgrgid_fileowner.py'
```

```
stat_info = os.stat(filename)
owner = grp.getgrgid(stat_info.st_gid).gr_name

print('{} is owned by {} ({})'.format(
    filename, owner, stat_info.st_gid))
```

The file status record includes ownership and permission data for the file or directory.

```
$ python3 grp_getgrgid_fileowner.py

grp_getgrgid_fileowner.py is owned by staff (20)
```

See also

- Standard library documentation for grp
- pwd – Read user data from the password database.
- spwd – Read user data from the shadow password database.
- os – Operating system interfaces.

pwd — Unix Password Database

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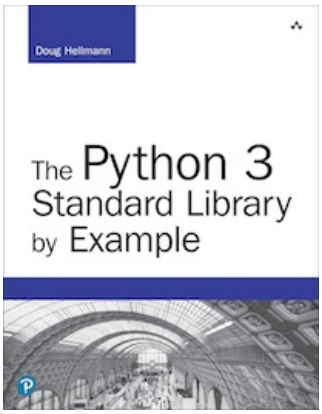

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The output from all the example programs from PyMOTW-3 has been generated with Python 3.7.1, unless otherwise noted. Some of the features described here may not be available in earlier versions of Python.

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