## Why does chmod +w not give write permission to other(o)

When I run chmod +w filename it doesn't give write permission to other, it just gives write permission to user and group.

After executing this command

chmod +w testfile.txt

running ls -l testfile.txt prints

-rw-rw-r-- 1 ravi ravi 20 Mar 10 18:09 testfile.txt

but in case of +r and +x it works properly.

I don't want to use chmod ugo+w filename.

**Your specific situation**

In your specific situation, we can guess that your current umask is 002 (this is a common default value) and this explains your surprise.

In that specific situation where umask value is 002 (all numbers octal).

* +r means ugo+r because 002 & 444 is 000, which lets all bits to be set
* +x means ugo+x because 002 & 111 is 000, which lets all bits to be set
* but +w means ugo+w because 002 & 222 is 002, which prevents the "o" bit to be set.

**Other examples**

* With umask 022, +w would mean u+w.
* With umask 007, +rwx would mean ug+rwx.
* With umask 077, +rwx would mean u+rwx.

**What would have matched your expectations**

When you change umask to 000, by executing

umask 000

in your terminal, then

chmod +w file

will set permissions to ugo+w.

**Side note**

As suggested by ilkkachu, note that umask 000 doesn't mean that everybody can read and write all your files.

But umask 000 means everyone that has some kind of access to any user account on your machine (which may include programs running server services ofc) can read and write all the files you make with that mask active and don't change (if the containing chain of directories up to the root also allows them).

## sudo

sudo as another user with their login shell environment

$ whoami

admin

$ sudo -S -u otheruser whoami

otheruser

$ sudo -S -u otheruser /bin/bash -l -c 'echo $HOME'

/home/admin

**Why isn't $HOME being set to /home/otheruser?**

To invoke a login shell using sudo just use -i. When command is not specified you'll get a login shell prompt, otherwise you'll get the output of your command.

Example (login shell):

sudo -i

Example (with a specified user):

sudo -i -u user

Example (print user's $HOME):

sudo -i -u user echo \$HOME