chmod command in Linu

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In Unix-like operating systems, the **chmod** c
The name is an abbreviation of **change mode**

Syntax :

```
chmod [reference][operator][mode] file...
```

The references are used to distinguish the users to whom the permissions apply i.e. they are list of letters that specifies whom to give permissions. The references are represented by one or more of the following letters:

```
Reference   Class     Description
u           owner     file's owner

g           group     users who are members of
                      the file's group

o           others    users who are neither the
                      file's owner nor members of
                      the file's group

a           all      All three of the above, same as ugo
```

The operator is used to specify how the modes of a file should be adjusted. The following operators are accepted:

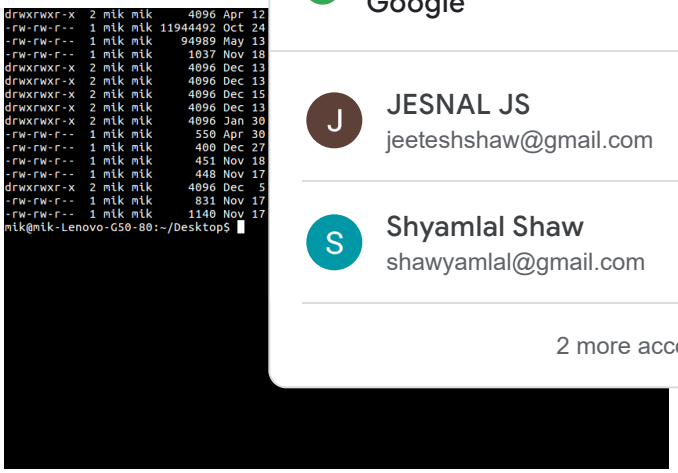
```
Operator  Description
+         Adds the specified modes to the
          specified classes

-         Removes the specified modes from
          the specified classes
```

Note : Putting blank space(s) around operat

The modes indicate which permissions are to be granted or removed from the specified classes. There are three basic modes which correspond to the basic permissions:

```
r       Permission to read the file.
w       Permission to write (or delete) the file.
x       Permission to execute the file, or, in
        the case of a directory, search it.
```

Types of permissions which we will be changing using chmod command :
In linux terminal, to see all the permissions to different files, type ls -l command which lists the files in the working directory in long format. The figure below shows an example to use ls -l and its output :



Let us take a look at above figure. To make things easy to understand some columns and rows are eliminated and extra spaces are added to the permissions column to make it easier to read as shown below:

```
- rw- rw- r--  mik  mik    assgn1_client.c
- rw- rw- r--  mik  mik    assgn1_server.c
d rwx rwx r-x  mik  mik    EXAM
- rw- rw- r--  mik  mik    raw.c
- rwx r-x r-x  mik  mik    header.sh
... so on...
```

- The very first column represents the type of the file i.e. is it a normal file or a directory where d represents a directory and - represents a normal file.
- The first set three letters after the file type tell what the Owner of the file, have permissions to do. For example: In assgn1_client.c, has owner's permission as rw-, which means the owner mik can only read(r) and write(w) the file but cannot execute(x).
- Note: The 3rd and 4th columns represents the name of the owner of the file and the group to which the owner belongs respectively.
- The next three letters after the user's permission are the group's permissions.
  For example: header.sh has group permissions as r-x, which means Other people in the mik group can not write(w) the header.sh script but can only read(r) or execute(x) it.
- Note that when a directory has the x set, this takes the special meaning of "permitted to search this directory".
- The last three letters in the permissions column tell us what the "others" may do. The general practice is to protect the files from external access so that others can't write any

Now, let us see how chmod command can be

Example 1 :

Let's change the assgn1_client.c permission

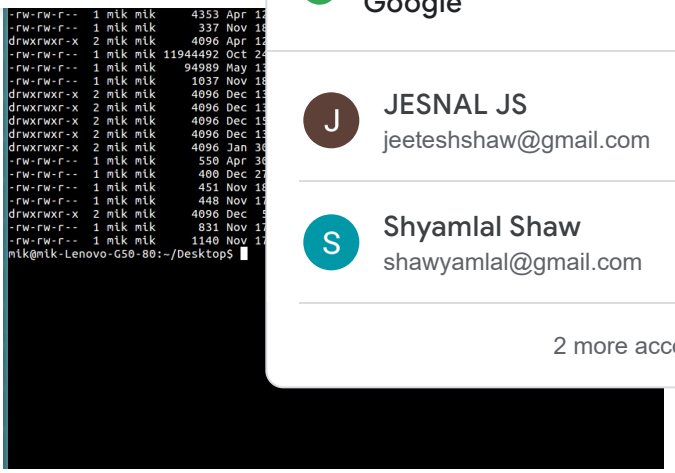
only read it.

```
BEFORE: -rw-rw-r--  mik  mik  assgn1

COMMAND: chmod u=r assgn1_client.c

AFTER: -r--rw-r--  mik   mik   assgn1_client.c
```

Before :

```
mik@mik-Lenovo-G50-80:~/Desktop$ ls -l
total 12052
-rw-rw-r--  1 mik mik   202576 May 13 09:32 afterls-l.png
-rw-rw-r--  1 mik mik     1237 May  1 16:10 assgn1_client.c
-rw-rw-r--  1 mik mik     1858 May  1 11:30 assgn1_server.c
-rw-rw-r--  1 mik mik      726 May 13 07:35 child.c
drwxrwxr-x 10 mik mik     4096 Jan  2 20:06 EXAM
-rw-rw-r--  1 mik mik      155 Nov 17 23:16 EXECVP.c~
-rw-rw-r--  1 mik mik     4353 Apr 12 08:20 id.c
-rw-rw-r--  1 mik mik      337 Nov 18 08:50 iter.c~
drwxrwxr-x  2 mik mik     4096 Apr 12 08:42 LEX(COMPILER)
-rw-rw-r--  1 mik mik 11944492 Oct 24  2016 Linux programming static library.mp4
-rw-rw-r--  1 mik mik    94989 May 13 09:31 ls-l.png
-rw-rw-r--  1 mik mik     1037 Nov 18 09:02 main.c~
drwxrwxr-x  2 mik mik     4096 Dec 13 07:00 mini project old
drwxrwxr-x  2 mik mik     4096 Dec 13 08:31 MINI_P_WITH_LIB_a
drwxrwxr-x  2 mik mik     4096 Dec 15 11:55 MINI_P_WITH_LIB_so
drwxrwxr-x  2 mik mik     4096 Dec 13 07:01 MINI_P WITHOUT LIB
drwxrwxr-x  2 mik mik     4096 Jan 30 04:42 pipe
-rw-rw-r--  1 mik mik      550 Apr 30 20:07 protent.c
-rw-rw-r--  1 mik mik      400 Dec 27 19:02 raw.c
-rw-rw-r--  1 mik mik      451 Nov 18 08:45 recur.c~
-rw-rw-r--  1 mik mik      448 Nov 17 23:38 runEXECVP.c~
drwxrwxr-x  2 mik mik     4096 Dec  5 10:44 static_lib
-rw-rw-r--  1 mik mik      831 Nov 17 21:04 thread1.c~
-rw-rw-r--  1 mik mik     1140 Nov 17 20:18 thread.c~
```

After :

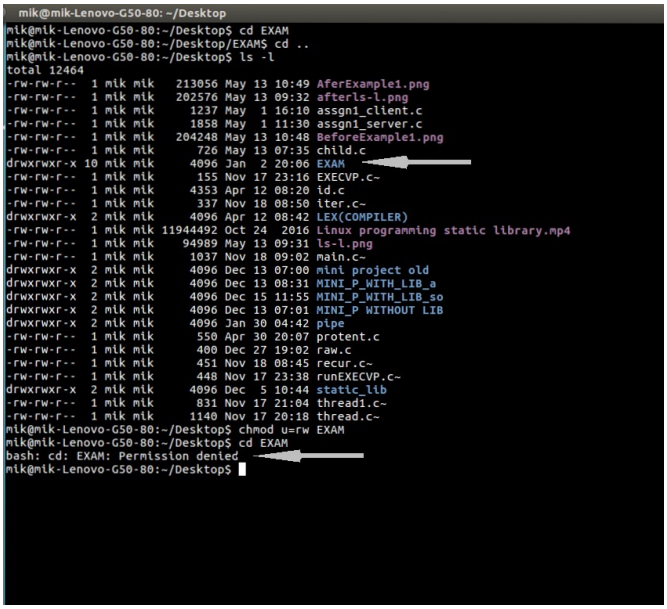


Example 2 :

Let's restrict the permission such that the user cannot search the directory EXAM.

```
BEFORE: drwxrwxr-x  mik   mik   EXAM

COMMAND: chmod u=rw EXAM

AFTER: drw-rwxr-x   mik  mik    EXAM
```

After applying the chmod u=rw EXAM command, the user (owner) cannot change the directory. If the user tries to change the directory, then it shows the message "Permission denied" as shown in the figure below :



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select command in Linux with examples
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Head command in Linux with examples
Tail command in Linux with examples
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tar command in Linux with examples
atrm command in Linux with examples
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