

Permissions

Adapted from materials by Dr. Carrier



Permissions

Who can access your files?

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We break things into categories:

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Who?

- Owner (you)
- Group
- Others (everyone!)

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What can they do?

- Read
- Write
- Execute

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How many yes/no
options do we have?

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What can they do?

- Read
- Write
- Execute

Viewing permissions

How do we see what files we have?

```
ls
```

ls has an extra flag to tell us more about files:

```
ls -l
```

```
-rw-rw-r--  1 ferguaus ferguaus    118 Sep  6 10:06 test_2.cpp
```


Breaking it down


```
-rw-rw-r-- 1 ferguaus ferguaus 118 Sep  6 10:06 test_2.cpp
```

```
-rw-rw-r-- 1
```

Breaking it down

```
-rw-rw-r-- 1 ferguaus ferguaus 118 Sep 6 10:06 test_2.cpp
```

```
-rw-rw-r-- 1
```



What type of
file is this?

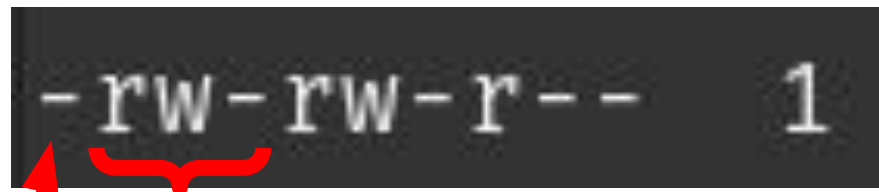
d = directory

l = link

Breaking it down

```
-rw-rw-r-- 1 ferguaus ferguaus 118 Sep 6 10:06 test_2.cpp
```

```
-rw-rw-r-- 1
```



What type of
file is this?

d = directory

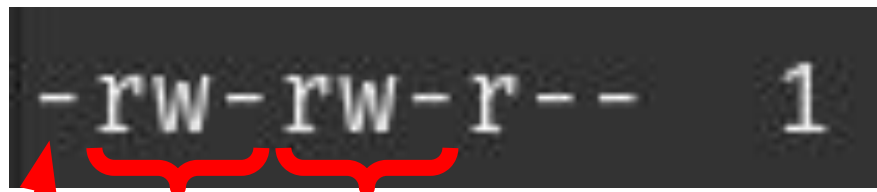
l = link

Owner
permissions

Breaking it down

```
-rw-rw-r-- 1 ferguaus ferguaus 118 Sep 6 10:06 test_2.cpp
```

```
-rw-rw-r-- 1
```



What type of
file is this?

d = directory

l = link

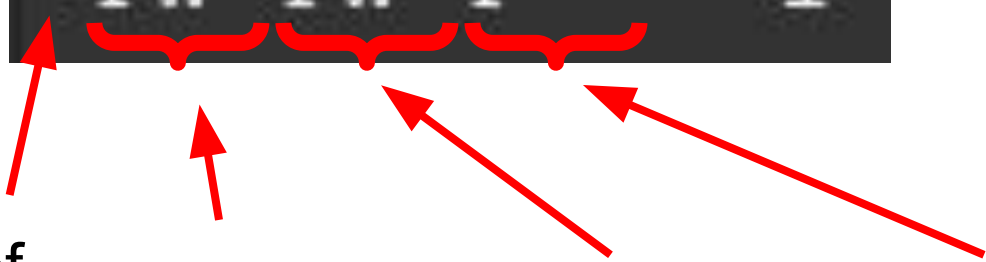
Owner
permissions

Group
permissions

Breaking it down

```
-rw-rw-r-- 1 ferguaus ferguaus 118 Sep 6 10:06 test_2.cpp
```

```
-rw-rw-r-- 1
```



What type of
file is this?

d = directory

l = link

Owner
permissions

Group
permissions

Other
permissions

Breaking it down

```
-rw-rw-r-- 1 ferguaus ferguaus 118 Sep 6 10:06 test_2.cpp
```

```
-rw-rw-r-- 1
```

Number of links

Owner
permissions

Group
permissions

Other
permissions

What type of
file is this?
d = directory
l = link

Breaking it down

```
-rw-rw-r-- 1 ferguaus ferguaus 118 Sep 6 10:06 test_2.cpp
```

```
-rw-rw-r-- 1
```

Number of links

Owner
permissions

Group
permissions

Other
permissions

What type of
file is this?
d = directory
l = link

```
ferguaus ferguaus
```

Owner

Breaking it down

```
-rw-rw-r-- 1 ferguaus ferguaus 118 Sep 6 10:06 test_2.cpp
```

```
-rw-rw-r-- 1
```

Number of links

Owner
permissions

Group
permissions

Other
permissions

What type of
file is this?

d = directory

1 = link

```
ferguaus ferguaus
```

Owner

Group

Breaking it down

```
-rw-rw-r-- 1 ferguaus ferguaus 118 Sep 6 10:06 test_2.cpp
```

```
-rw-rw-r-- 1
```

Number of links

Owner permissions Group permissions Other permissions

What type of file is this?
d = directory
l = link

```
ferguaus ferguaus
```

```
118 Sep 6 10:06 test_2.cpp
```

Owner Group File size

Breaking it down

```
-rw-rw-r-- 1 ferguaus ferguaus 118 Sep 6 10:06 test_2.cpp
```

```
-rw-rw-r-- 1
```

Number of links

Owner
permissions

Group
permissions

Other
permissions

What type of
file is this?

d = directory

l = link

```
ferguaus ferguaus
```

Owner

Group

File size

Modified
date+time

```
118 Sep 6 10:06 test_2.cpp
```

Breaking it down

```
-rw-rw-r-- 1 ferguaus ferguaus 118 Sep 6 10:06 test_2.cpp
```

```
-rw-rw-r-- 1
```

Number of links

Owner permissions Group permissions Other permissions

What type of file is this?
d = directory
l = link

```
ferguaus ferguaus
```

```
118 Sep 6 10:06 test_2.cpp
```

Owner Group File size Modified date+time Filename

Examples

What do each of these mean?

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`rxwxrwxr-x`

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`rxwxrwxr-x`

`rw-r-----`

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`rxwxrx-r-x`

`rw-r-----`

`-----rw-`

Changing permissions

New command: chmod (**CH**ange **MODe**)

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Usage 1: chmod (who)(op)(perms) file

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New command: chmod (**CH**ange **MODe**)

Usage 1: chmod (who)(op)(perms) file

```
chmod u+r file
```

```
chmod o+rw file
```

Who: owner (u), group (g), other (o), all (a)

Changing permissions

New command: chmod (**CH**ange **MODe**)

Usage 1: chmod (who)(op)(perms) file

```
chmod u+r file
```

```
chmod o+rw file
```

Who: owner (u), group (g), other (o), all (a)

Perms: read (r), write (w), execute (x)

Changing permissions

New command: chmod (**CH**ange **MODe**)

Usage 2: `chmod ### file`

Where each # is a number in $[0, 7]$

Take each possible permission:

- 4 = read
- 2 = write
- 1 = execute

And sum them up for owner, group, other

Examples

What is the number code for each of these?

`rw-rwxr-x` `775`

`rw-r-----`

`-----rw-`

- 4 = read
- 2 = write
- 1 = execute

Examples

What is the number code for each of these?

`rw-rwxr-x` `775`

`rw-r-----`

`-----rw-`

- 4 = read
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Examples

What is the number code for each of these?

`rw-rwxr-x` `775`

`rw-r-----` `640`

`-----rw-`

- 4 = read
- 2 = write
- 1 = execute

Examples

What is the number code for each of these?

`rxwxrwxr-x` 775

`rw-r-----` 640

`-----rwx-` 006

- 4 = read
- 2 = write
- 1 = execute