🚀 Architecture & Deployment

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Unix Permissions

This exercise illustrates how you can restrict access to files and directories using Unix permissions.

> 🛠️   Connect to your virtual server with SSH for this exercise.

Cloud server exercise ⌃

Parts of this exercise happen on the cloud server you should have created for this course. Log in and make sure you are connected to the internet to see your server's details.

Log in

📜 Legend

Parts of this exercise are annotated with the following icons:

❗   A task you MUST perform to complete the exercise

? An optional step that you may perform to make sure that everything is working correctly, or to set up additional tools that are not required but can help you

🏁 The end of the exercise

🏛 The architecture of the software you ran or deployed during this exercise.

💥 Troubleshooting tips: how to fix common problems you might encounter

❗ Setup

Create a new `alice` user:

```
$> sudo useradd --create-home --shell /bin/bash alice
```

> 💎 **Tip**
>
> You can also use the equivalent short versions of these options:
>
> ```
> $> sudo useradd -m -s /bin/bash alice
> ```

Make sure other users can access and list the contents of `alice`'s home directory:

```
$> sudo chmod o+rx /home/alice
```

❗ The exercise

- Create a file named `file.txt` in `alice`'s home directory that is readable by `alice` but not by you.

- Create a directory named `for_alice` in the system's temporary directory (`/tmp`). The `alice` user must be able to traverse this directory, but not list its contents or

create new files in it.

- The directory must contain a `readable.txt` file that `alice` can read from, but not write to.

- The directory must contain a `writable.txt` file that `alice` can read from and write to.

❓ Optional: check if it works

You should not be able to read the file in `alice`'s home directory:

```
$> cat /home/alice/file.txt
cat: /home/alice/file.txt: Permission denied
```

Temporarily log in as `alice` (using your administrative privileges and the `su` command, as in **s**witch **u**ser):

```
$> sudo su --login alice
```

> 💎 **Tip**
>
> When you are done, you can go back to being you with the `exit` command. Your command line prompt should remind you who you are. When in doubt, use the `whoami` command.

> 🗾 **More information**
>
> The `--login` option can also be abbreviated to `-l` or even simply `-` (yes, the people who designed Unix were lazy enough that they did not even want to type one more letter).

You should be able to read the file in the home directory:

```
$> cat /home/alice/file.txt
```

You should not be able to list the `for_alice` directory:

```
$> ls /tmp/for_alice
ls: cannot open directory '/tmp/for_alice/': Permission denied
```

You should not be able to create a file in the `for_alice` directory:

```
$> echo Hello > /tmp/for_alice/file.txt
-bash: /tmp/for_alice/file.txt: Permission denied
```

You should be able to read the `readable.txt` file in the `for_alice` directory:

```
$> cat /tmp/for_alice/readable.txt
```

You should not be able to modify the `readable.txt` file in the `for_alice` directory:

```
$> echo "Hello, I'm Alice" >> /tmp/for_alice/readable.txt
-bash: /tmp/for_alice/readable.txt: Permission denied
```

You should be able to write to and read from the `writable.txt` file in the `for_alice` directory:

```
$> echo "Hello, I'm Alice" >> /tmp/for_alice/writable.txt
```

```
$> cat /tmp/for_alice/writable.txt
Hello, I'm Alice
```

📚 **More information**

As a reminder, in Bash, `>>` means to redirect the standard output of a command into a file and to append to the end of that file. If you wanted to overwrite the whole contents of the file, you could use `>` instead.

🏁 What have I done?

You have learned to open or restrict access to files in a Unix system by judicious use of the `chown` and `chmod` commands to change ownership and/or permissions.

You have also practiced using some of the other Unix file-related commands you have learned about so far.

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