**Activity overview**

Previously, you focused on authorization, the concept of granting access to specific resources in a system. Another important concept in security is authentication. Authentication is the process of a user proving that they are who they say they are in the system.

When managing this, security analysts need to ensure

* not all users get access to the system,
* new users (those who are new to the organization or a group) are added to the system, and
* current users who change groups or leave the organization are deleted from the system.

In this lab activity, you’ll use the useradd, usermod, userdel, and chown commands to manage user access in the Linux Bash shell.

**Important:** You must use sudo at the beginning of all the commands you use in this lab. Adding or removing users and groups are tasks that require root (super user) privileges, and you’ll need to use sudo with the commands that are used to perform these tasks.

**Scenario**

In this scenario, a new employee with the username researcher9 joins an organization. You have to add them to the system and continue to manage their access during their time with the organization.

Here’s how you’ll do this task: **First**, you’ll add a new employee to the system and then to their primary group. **Second**, you’ll make this employee the owner of a file related to a particular project. **Third**, you’ll add the new employee to a supplementary group. **Finally**, you’ll delete the employee from the system.

***Note:****The lab starts with you logged in as user analyst, with your home directory, /home/analyst, as the current working directory.*

OK, it’s time to get ready to practice managing user access in Linux!

**Disclaimer:** For optimal performance and compatibility, it is recommended to use either **Google Chrome** or **Mozilla Firefox** browsers while accessing the labs.

**Start your lab**

Before you begin, you can review the instructions for using the Qwiklabs platform under the **Resources** tab in Coursera.

If you haven't already done so, click **Start Lab**. This brings up the terminal so that you can begin completing the tasks!

When you have completed all the tasks, refer to the **End your Lab** section that follows the tasks for information on how to end your lab.

**Task 1. Add a new user**

A new employee has joined the Research department. In this task, you must add them to the system. The username assigned to them is researcher9.

1. Write a command to add a user called researcher9 to the system.

The command to complete this step:

sudo useradd researcher9

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**Next**, you need to add the new user to the research\_team group.

1. Use the usermod command and -g option to add researcher9 to the research\_team group as their primary group.

The command to complete this step:

sudo usermod -g research\_team researcher9

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You could alternatively use the following variation of useradd when creating the user to perform both steps at once:

sudo useradd researcher9 -g research\_team

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Click **Check my progress** to verify that you have completed this task correctly.

You have completed this task and added researcher9 to the system. You have also added researcher9 to the research\_team group as their primary group.

Add a new user

Check my progress

*You have completed this task and added researcher9 to the system. You have also added researcher9 to the research\_team group as their primary group.*

**Task 2. Assign file ownership**

The new employee, researcher9, will take responsibility for project\_r. In this task, you must make them the owner of the project\_r.txt file.

The project\_r.txt file is located in the /home/researcher2/projects directory, and owned by the researcher2 user.

* Use the chown command to make researcher9 the owner of /home/researcher2/projects/project\_r.txt.

The command to complete this step:

sudo chown researcher9 /home/researcher2/projects/project\_r.txt

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Click **Check my progress** to verify that you have completed this task correctly.

You have completed this task and made researcher9 the owner of project\_r.txt.

Assign file ownership

Check my progress

*You have completed this task and made researcher9 the owner of project\_r.txt.*

**Task 3. Add the user to a secondary group**

A couple of months later, this employee's role at the organization has changed, and they are working in both the Research and the Sales departments.

In this task, you must add researcher9 to a secondary group (sales\_team). Their primary group is still research\_team.

* Use the usermod command with the -a and -G options to add researcher9 to the sales\_team group as a secondary group.

The command to complete this step:

sudo usermod -a -G sales\_team researcher9

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***Note:****Options for Linux commands are case-sensitive, so make sure you use a lowercase -a and an uppercase -G.*

Click **Check my progress** to verify that you have completed this task correctly.

You have completed this task and added researcher9 to the supplementary sales\_team group.

Add the user to a secondary group

Check my progress

*You have completed this task and added researcher9 to the supplementary sales\_team group.*

**Task 4. Delete a user**

A year later, researcher9, decided to leave the company. In this task, you must remove them from the system.

1. Run a command to delete researcher9 from the system:

sudo userdel researcher9

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This command will output the following message:

Userdel: Group researcher9 not removed because it is not the primary group of user researcher9.

This is expected.

***Note:****When you create a new user in Linux, a group with the same name as the user is automatically created and the user is the only member of that group. After removing users, it is good practice to clean up any such empty groups that may remain behind.*

1. Run the following command to delete the researcher9 group that is no longer required:

sudo groupdel researcher9

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Click **Check my progress** to verify that you have completed this task correctly.

You have completed this task and deleted researcher9 from the system.

Delete a user

Check my progress

*You have completed this task and deleted researcher9 from the system.*

**Conclusion**

Great work!

You now have practical experience in using basic Linux Bash shell commands to

* add a new user,
* add a user to a group,
* change user permissions on files, and
* delete a user.

This is an important milestone on your journey toward managing users in Linux!