



Assignments > Assignment 1

Assignment 1

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Instructions

2420 assignment 1 Fall 2024

learning objectives

By completing this assignment, students will gain practical experience with:

- Creating and managing a remote server with a cloud service provider.
- Using the web console or the command line (`doctl`) to create and manage a remote server.
- Understanding the role of cloud-init for configuring Droplets.
- Using SSH to connect to a remote server and manage it securely.
- Generating and managing SSH keys for authentication.
- Applying best practices for security and access control in cloud environments.

Students will also develop skills in writing clear and informative technical documentation, which is essential for collaboration and knowledge sharing in the field of system administration.

general information

You are going to create a tutorial using markdown and hosted on GitHub or GitLab that takes a user through the steps of creating a remote server using DigitalOcean.

- create ssh keys and add them to your DigitalOcean account
- Add a custom Arch Linux image
- Create a droplet running Arch Linux
- connect to your droplet from your local machine using SSH

The tutorial should provide information on each stage so that a reader is not only able to complete the tasks but understands what they are doing and why. For example the reader should know what SSH keys are and why you are using them instead of password authentication.

Roughly aim the tutorial at the skill level and technical understanding of a 2nd term CIT student in week 1.

You don't have to include instructions on creating a DigitalOcean account. Assume that the reader can create an account without assistance.

Your tutorial should guide the reader through the stages in a clear and concise manor. Include images where appropriate to aide the reader.

The tutorial should also demonstrate your understanding of the material. This provides you with opportunity to not just complete a task, but to demonstrate that you understand the content.

This assignment has three possible levels, pick 1 of the levels and work towards that. Levels 1 and 2 were covered in class. Level 3 requires that you learn how to use `doctl` on your own.

Level overview:

- Level 1 (Max grade 60%):

- Create SSH keys on your local machine.
- Add a custom Arch Linux image using the web console
- Create a new Droplet running Arch Linux using the DigitalOcean web console.
- Connect to your server using your SSH keys.

- Level 2 (Max grade 85%):

- Create SSH keys on your local machine.
- Add a custom Arch Linux image using the web console
- Create a Droplet running Arch Linux using the DigitalOcean web console.
- Use a cloud-init configuration file to automate initial setup tasks (e.g., user creation).
- Connect to your server using your SSH keys.

- Level 3 (Max grade 100%) This one is significantly more difficult than 1 and 2:

- Create SSH keys on your local machine
- Create a Droplet running Arch Linux using the `doctl` command-line tool.
- Use `doctl` and cloud-init for every stage of setting up an Arch Linux droplet

instructions details

cloud-init (level 2 and 3)

Use a cloud-init configuration file to:

- create a new regular user
- install some initial packages
- add a public ssh key to the authorized_keys file in your new users home directory
- disable root access via ssh

markdown

Use clear correct markdown. Use markdown for links, images, footnotes...

Any code or commands should be in code blocks, so that they can be easily copied by a reader.

You can either test your markdown directly in GitHub/GitLab or using a third party markdown preview utility from your editor. I recommend just testing in GitHub or GitLab.

Git

Make regular thoughtful commits. e.g. If you add an image, make a commit with a clear commit message.

citations and external resources

I am not going to impose a specific style guide for this assignment. Pick one and stick to it. APA is a good choice.

Any facts, or words and images that are not your own should be referenced from an appropriate source. Official documentation, peer-reviewed academic material such as a textbook. Random blogs, ChatGPT, wikipedia and stackoverflow are <https://www.markdownguide.org/>) **not** good sources.

level 3 only

Install and configure `doctl` in an existing droplet and use it to create a new droplet. The `doctl` command line tool is in the Arch package repositories, so you can install it with Pacman.

Your tutorial should include instructions on installing and configuring `doctl`.

submission instructions

Submit a link to a public GitHub or GitLab repository using the D2L dropbox.

Your tutorial should be in the README.md file on your remote repository. Include an "assets" directory for images or any other files needed.

grading rubric

Section	absent	poor	satisfactory	good	excellent
Tutorial clarity	0%	5%	14%	20%	25%
Tutorial completeness	0%	5%	14%	20%	25%
Markdown correctness	0%	1%	3%	4%	5%
Git components	0%	1%	3%	4%	5%
Resources and citations	0%	5%	8%	12%	15%
Demonstrating understanding of topic	0%	5%	14%	20%	25%

late penalties

Late assignments will be deducted 10% per day, up to 4 days late. After 4 days the assignment will receive a 0.

resources

markdown:

- [markdown tutorial](https://www.markdownguide.org/)

cloud-init:

- [cloud-init docs](https://docs.cloud-init.io/en/latest/index.html)

- [how to perform initial server configuration with cloud-init]

(https://www.digitalocean.com/community/tutorials/how-to-use-cloud-config-for-your-initial-server-setup)

Submit

Cancel

Due on Sep 29, 2024 11:59 PM

Available on Sep 20, 2024 3:30 PM. Access restricted before availability starts.

Available until Oct 3, 2024 11:59 PM. Access restricted after availability ends.