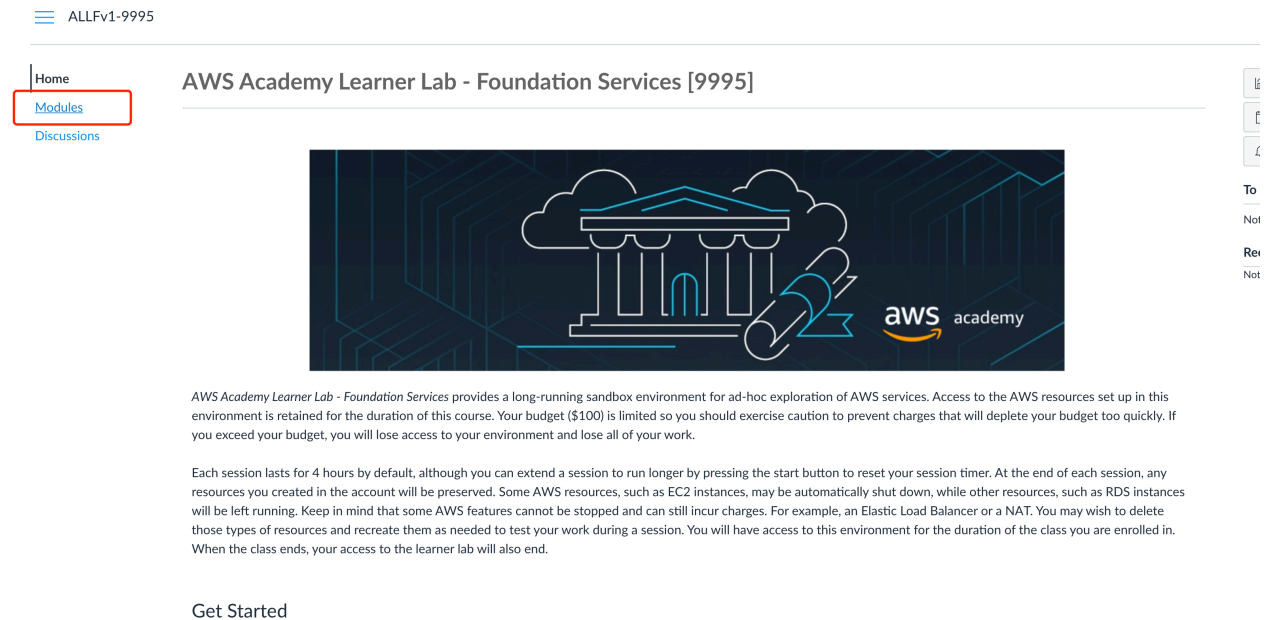


Setting up Souffle in AWS Academy


1. Go to <https://awsacademy.instructure.com/courses/9995/>
2. Click on Modules



ALLFv1-9995

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Discussions

AWS Academy Learner Lab - Foundation Services [9995]

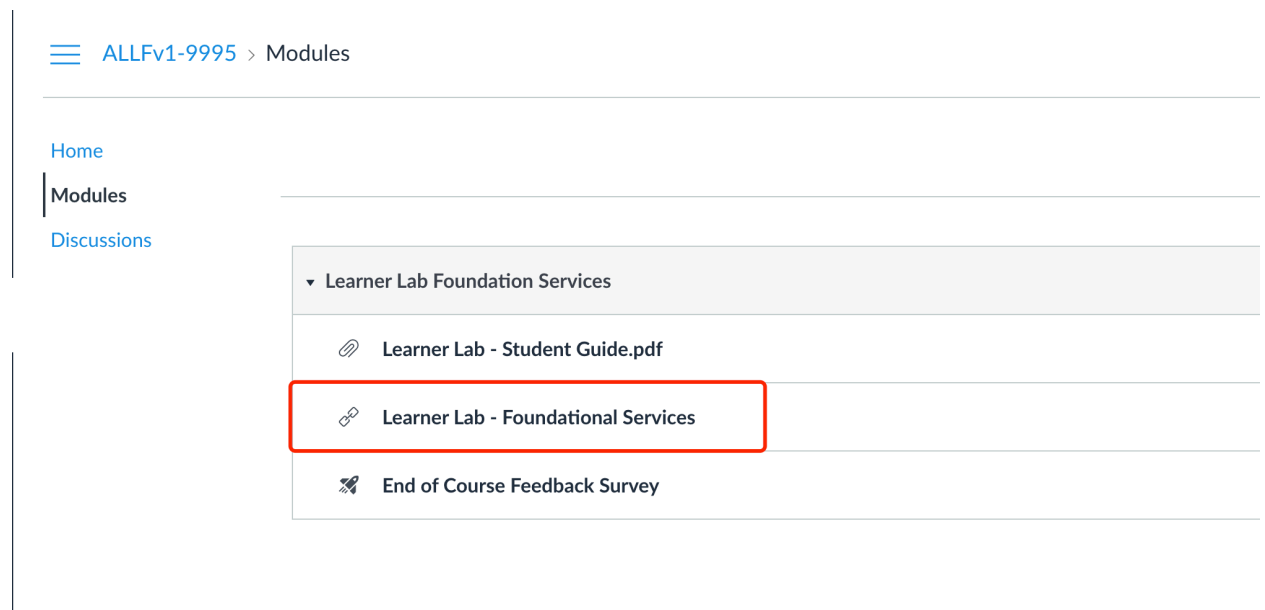


AWS Academy Learner Lab - Foundation Services provides a long-running sandbox environment for ad-hoc exploration of AWS services. Access to the AWS resources set up in this environment is retained for the duration of this course. Your budget (\$100) is limited so you should exercise caution to prevent charges that will deplete your budget too quickly. If you exceed your budget, you will lose access to your environment and lose all of your work.

Each session lasts for 4 hours by default, although you can extend a session to run longer by pressing the start button to reset your session timer. At the end of each session, any resources you created in the account will be preserved. Some AWS resources, such as EC2 instances, may be automatically shut down, while other resources, such as RDS instances will be left running. Keep in mind that some AWS features cannot be stopped and can still incur charges. For example, an Elastic Load Balancer or a NAT. You may wish to delete those types of resources and recreate them as needed to test your work during a session. You will have access to this environment for the duration of the class you are enrolled in. When the class ends, your access to the learner lab will also end.

Get Started

3. Click on Learner Lab - Foundational Services (read Learner Lab - Student Guide.pdf before doing so)



ALLFv1-9995 > Modules

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▼ Learner Lab Foundation Services

- Learner Lab - Student Guide.pdf
- Learner Lab - Foundational Services**
- End of Course Feedback Survey

4. Click on Start Lab (you can read more about the usages by clicking on Readme)

ALLFv1-9995 > Modules > Learner Lab Foundation Services > Learner Lab - Foundational Services

Used \$0 of \$100, Nov, 2021 00:00 ▶ Start Lab ■ End Lab ⓘ AWS Details ⓘ Readme ↺ Reset ✕

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```
ddd_v1_w_Pwg_L_919776@runweb41667:~$ []
```

Learner Lab - Foundational Level

- [Environment Overview](#)
- [Environment Navigation](#)
- [Access the AWS Management Console](#)
- [Region restriction](#)
- [Service usage and other restrictions](#)
- [Using the terminal in the browser](#)
- [Running AWS CLI commands](#)
- [Using the AWS SDK for Python](#)
- [Preserving your budget](#)
- [Accessing EC2 Instance\(s\)](#)
- [SSH Access to EC2 Instance\(s\)](#)
- [SSH access from Windows](#)
- [SSH access from a Mac](#)

Environment Overview

◀ Previous Next ▶

5. When the the circle on the right of AWS becomes green, your lab environment is set up.

ALLFv1-9995 > Modules > Learner Lab Foundation Services > Learner Lab - Foundational Services

Used \$0 of \$100, Nov, 2021 06:00 ▶ Start Lab ■ End Lab ⓘ AWS Deta

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Modules

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AWS ●

```
ddd_v1_w_Pwg_L_919776@runweb41667:~$ []
```

Cloud Access

AWS CLI: Show

Cloud Labs

Remaining session time: 05:59:46(360 n)
 Session started at: 2021-11-09T15:58:17
 Session to end at: 2021-11-09T21:58:17

Accumulated lab time: 04:17:00 (257 mi)

No running instance

SSH key Show Download PEM 1

AWS SSO Download URL

AWSAccountid	263
Region	us-e

6. Click on AWS. Your lab AWS console will pop up as a new tab.
7. Now we will to start an EC2 instance to install souffle.
8. Go to EC2 in your AWS console and click on Launch instances.
9. Select Community AMIs and choose Ubuntu and 64-bit (x86) and input amazon in the search bar.

aws Services Search for services, features, marketplace products, and docs [Option+S] voclabs/user1697432-donghe@cs.washington.edu @ 2632-4756-2000 N. Virginia Support

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

Step 1: Choose an Amazon Machine Image (AMI)

Cancel and Exit

32-bit (x86)
 64-bit (x86)
 64-bit (Arm)
 64-bit (Mac)

Root device type
 EBS
 Instance store

Ubuntu Server 20.04 with SQL Server 2019 Standard Edition AMI provided by Amazon.
 Root device type: ebs Virtualization type: hvm ENA Enabled: Yes 64-bit (x86)

Ubuntu_18.04-x86_64-SQL_2019_Express-2020.09.22 - ami-000245c336b590ae0
 Ubuntu Server 18.04 with SQL Server 2019 Express Edition AMI provided by Amazon
 Root device type: ebs Virtualization type: hvm ENA Enabled: Yes 64-bit (x86)

Cloud9Ubuntu-2020-08-26T15-11 - ami-0005c5caa633bdd6e
 Cloud9 Ubuntu AMI
 Root device type: ebs Virtualization type: hvm ENA Enabled: Yes 64-bit (x86)

Cloud9Ubuntu-2020-08-26T11-02 - ami-000ad61ea0c9fe58c
 Cloud9 Ubuntu AMI
 Root device type: ebs Virtualization type: hvm ENA Enabled: Yes 64-bit (x86)

Cloud9Ubuntu-2019-09-24T14-25 - ami-001261572d9ef9930
 Cloud9 Ubuntu AMI
 Root device type: ebs Virtualization type: hvm ENA Enabled: Yes 64-bit (x86)

Cloud9Ubuntu-2021-04-16T13-31 - ami-00126372e149e23d3
 Cloud9 Ubuntu AMI
 Root device type: ebs Virtualization type: hvm ENA Enabled: Yes 64-bit (x86)

Cloud9Ubuntu-2020-10-21T20-30 - ami-0024f38a673463019
 Root device type: ebs Virtualization type: hvm ENA Enabled: Yes 64-bit (x86)

Feedback English (US) © 2008 - 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved. Privacy Policy Terms of Use Cookie preferences

10. Select one of the latest Cloud9Ubuntu AMI.
11. Choose t2.large as the instance type and click on Review and Launch.

aws Services Search for services, features, marketplace products, and docs [Option+S] voclabs/user1697432-donghe@cs.washington.edu @ 2632-4756-2000 N. Virginia Support

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

Step 2: Choose an Instance Type

Amazon EC2 provides a wide selection of instance types optimized to fit different use cases. Instances are virtual servers that can run applications. They have varying combinations of CPU, memory, storage, and networking capacity, and give you the flexibility to choose the appropriate mix of resources for your applications. [Learn more](#) about instance types and how they can meet your computing needs.

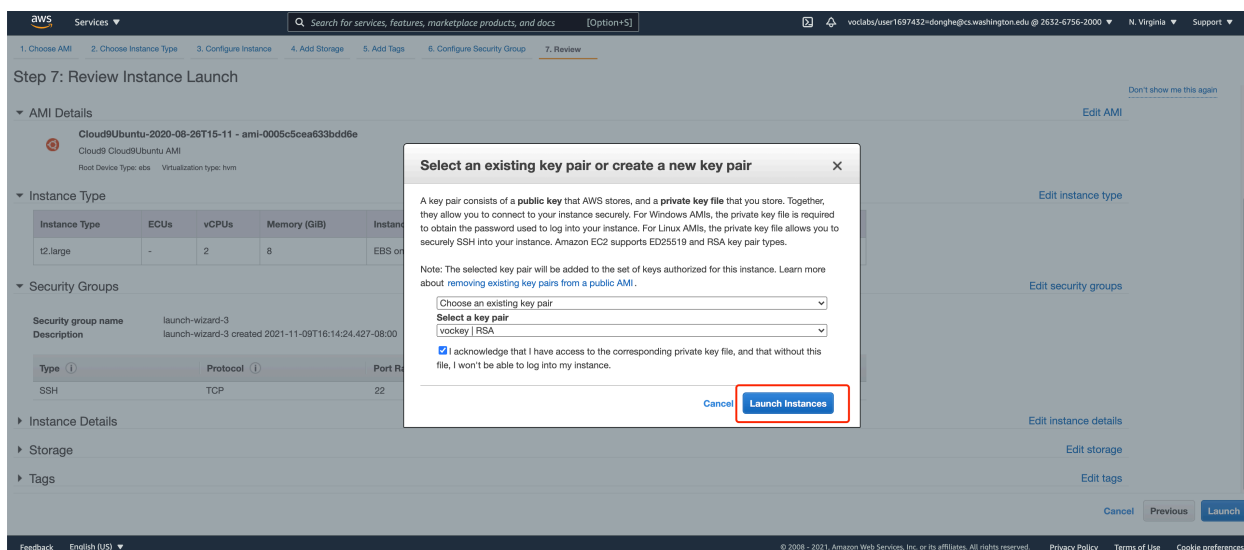
Filter by: All instance families Current generation Show/Hide Columns

Currently selected: t2.large (- ECUs, 2 vCPUs, 2.3 GHz, -, 8 GiB memory, EBS only)

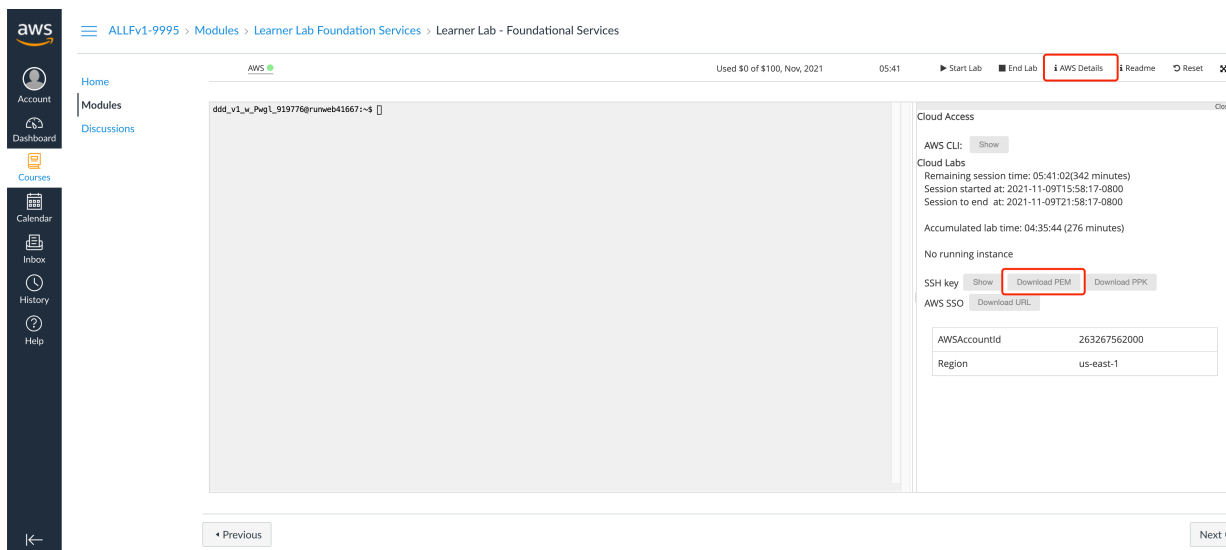
	Family	Type	vCPUs	Memory (GiB)	Instance Storage (GiB)	EBS-Optimized Available	Network Performance	IPv6 Support
<input type="checkbox"/>	t2	t2.nano	1	0.5	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	t2	t2.micro	1	1	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	t2	t2.small	1	2	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	t2	t2.medium	2	4	EBS only	-	Low to Moderate	Yes
<input checked="" type="checkbox"/>	t2	t2.large	2	8	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	t2	t2.xlarge	4	16	EBS only	-	Moderate	Yes
<input type="checkbox"/>	t2	t2.2xlarge	8	32	EBS only	-	Moderate	Yes
<input type="checkbox"/>	t3	t3.nano	2	0.5	EBS only	Yes	Up to 5 Gigabit	Yes
<input type="checkbox"/>	t3	t3.micro	2	1	EBS only	Yes	Up to 5 Gigabit	Yes
<input type="checkbox"/>	t3	t3.small	2	2	EBS only	Yes	Up to 5 Gigabit	Yes

Cancel Previous **Review and Launch** Next: Configure Instance Details

12. Click on Launch.
13. By default it will select vockey | RSA as the key pair. We will stick with vockey. Click on Launch Instance.



14. To connect to your instance, you need to download the key. Go back to AWS Academy canvas page and click on AWS details and click on Download PEM (for Linux and Mac).



For Windows users, Click on download PPK instead (read more in Readme)

Accessing EC2 Instance(s)

When launching EC2 instances in the default us-east-1 Region in this environment, choose the option to use the existing key pair named **vockey** at the time of launch. Then:

- Choose the **i AWS Details** link above these instructions.
 - If you are using a Windows desktop or laptop, choose the **Download PPK** button and save the **labsuser.ppk** file. You can use this file to connect via SSH to a Linux EC2 instance or Windows EC2 instance, typically using a tool such as PuTTY.
 - If you are using a MacOS desktop or laptop, choose the **Download PEM** button and save the **labsuser.pem** file. You can use this file to connect via SSH to a Linux EC2 instance or Windows EC2 instance, typically using a terminal window.

15. In your terminal, run `chmod 400 labuser.pem` for the key file you just downloaded before connecting to your EC2 instance by SSH, e.g., `ssh -i labuser.pem ubuntu@ec2-35-170-202-157.compute-1.amazonaws.com` (replace `ec2-35-170-202-157.compute-1.amazonaws.com` with your own EC2 instance Public IPv4 DNS)

16. Download souffle 2.0.0 deb file by running,
`wget https://github.com/souffle-lang/souffle/releases/download/2.0.0/souffle_2.0.0-1_amd64.deb`

17. Then run,
`sudo apt-get install ./souffle_2.0.0-1_amd64.deb`

And proceed with the installation by typing 'Y' when asked.

If you see errors like,

E: Could not get lock /var/lib/dpkg/lock-frontent - open (11: Resource temporarily unavailable)
E: Unable to acquire the dpkg frontend lock (/var/lib/dpkg/lock-frontent), is another process using it?

Refer to <https://askubuntu.com/questions/1109982/e-could-not-get-lock-var-lib-dpkg-lock-frontent-open-11-resource-temporari>.



This may happen if

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1. 'Synaptic Package Manager' or 'Software Updater' is open.
2. Some apt command is running in Terminal.
3. Some apt process is running in background.

For above wait for the process to complete. If this does not happen run in terminal:

```
sudo killall apt apt-get
```

If none of the above works, remove the lock files. Run in terminal:

```
sudo rm /var/lib/apt/lists/lock
sudo rm /var/cache/apt/archives/lock
sudo rm /var/lib/dpkg/lock*
```

then reconfigure the packages. Run in terminal:

```
sudo dpkg --configure -a
```

and

```
sudo apt update
```

That should do the job.

Then try running again,

```
sudo apt-get install ./souffle_2.0.0-1_amd64.deb
```

18. To verify souffle is installed, try an example datalog program.

```
.decl edge(n: symbol, m: symbol)
edge("a", "b"). /* facts of edge */
edge("b", "c").
edge("c", "b").
edge("c", "d").
.decl reachable (n: symbol, m: symbol)
.output reachable // output relation reachable
reachable(x, y):- edge(x, y). // base rule
reachable(x, z):- edge(x, y), reachable(y, z). // inductive
rule
```

In the example below, we consider a directed graph, where edges define relations, and a tuple is in the transitive closure (the `reachable` relation) if it satisfies either of the two rules below.

Save the above code to a file named `example.dl` on your EC2 instance (you can do this with `vim`).

Then run,

```
souffle example.dl
```

And output file named `reachable.csv` should appear in your current directory.

Note: save your work in progress to your local machine every time after a Learner Lab. Stop your instances after use to save your budgets.