DigitalOcean Server Setup With Custom Domain Name

Web Server Design | CS 431/531 Fall 2019
Old Dominion University
Department of Computer Science
Kritika Garg, kgarg001@odu.edu

1. Set up DigitalOcean Server

Access to the AWS cloud, free training, and collaboration resources

Benefit Student Developer Pack members receive up to $110 in bonus AWS credits for a total of $75-$150.

Microsoft Azure is an ever-expanding set of cloud services to help you build, manage, and deploy applications.

Benefit Level up your ideas by learning cloud computing skills and get a $100 credit with your free Azure for Students account—no credit card required.

Domain names, web hosting, and websites. Unicorns and rainbows come standard with our customer support.

Benefit One free domain name and free Advanced Security (SSL, privacy protection, and more).

Set up your server

DigitalOcean

Simple cloud hosting, built for developers

Benefit $50 in platform credit for new users.

namecheap

Affordable registration, hosting, and domain management

Benefit 1 year domain name registration on the .me TLD.

Benefit 1 year SSL certificate.

Bootstrap Studio

Bootstrap Studio is a powerful desktop app for creating responsive websites using the Bootstrap framework.

Benefit A free license for Bootstrap Studio while you are a student.

JETBRAINS

Professional desktop IDEs: IntelliJ IDEA, PyCharm, and more.

Benefit A free subscription for students, to be renewed annually.

Frontend **Masters**

Advance your skills with in-depth JavaScript, Node.js & front-end engineering courses.

Benefit Free 6-months access to all courses and workshops.

termius

SSH client that works on desktop and mobile. Termius securely syncs data across all your devices.

Benefit Free access to the Premium plan while you're a student.

GitHub Education Bundle : https://education.github.com/pack

DigitalOcean: https://cloud.digitalocean.com/registrations/new

① Connect Google ② Set up Billing ③ Project Goals

Set up Billing

In order to use DigitalOcean you have to add a payment method to your account. You can learn more about how billing works in our billing docs page.

SELECT A PAYMENT METHOD TYPE

● **Credit or Debit Card** Use a credit or debit card to pay with automatic payments enabled	○ **Paypal** Prepay your bill by making incremental Paypal payments

Your card will not be charged until you start using paid services on DigitalOcean. You may see a temporary authorization hold on your card; which your bank should release soon.

💳 Card number	MM / YY CVC

Cardholder name	*

PAYMENT ADDRESS

This is the address that is specifically associated with your payment method.

United States	✓ ⌄

Street Name

🔒 Save Card

* Required

Enter your billing details.

You can use GitHub Education Bundle to set up your server for free.

Welcome, kritikagarg!

To begin, let's create a new project. Projects help you organize your resources by environment, workload, client - however you or your team like to work.

Note: You can change the name, redefine the purpose, and move resources between projects as your needs change.

Create your first project

Name cannot be blank

Enter project name *

What is your project for?

This information will help us improve the projects experience, based on what you're building.

Select purpose * ⌄

Tell us which tools and technologies you plan to use on DigitalOcean

CONFIGURATION MANAGEMENT

A Ansible	Chef	Docker	Kubernetes
Puppet			

DEPLOYMENT

PROJECTS

kritikagarg

+ New Project

MANAGE

DISCOVER

ACCOUNT

Q Search by resource name or IP (Ctrl+B)

Create ∨

Create new projects and organize your resources to suit your workflow. Learn more

Build your first project

Get Started with a Droplet

Create something new

Learn more

Create ⌄

PROJECTS ⌃

👤 kritikagarg

+ New Project

MANAGE ⌄

DISCOVER ⌄

ACCOUNT ⌄

Q Search by resource name or IP (Ctrl+B)

Choose an image ?

Distributions   Container distributions   Marketplace   Custom images

Ubuntu	FreeBSD	Fedora	Debian	CentOS
18.04.3 (LTS) x64 ⌄	Select version ⌄	Select version ⌄	Select version ⌄	Select version ⌄

Choose a plan

Help me choose ↗

STARTER	PERFORMANCE		
Standard	**General Purpose**	**CPU-Optimized**	**Memory-Optimized** NEW

Standard virtual machines with a mix of memory and compute resources. Best for small projects that can handle variable levels of CPU

kritikagarg

+ New Project

Search by resource name or IP (Ctrl+B)

Create ˅

USAGE
$0.00

Choose a plan

Help me choose ⬈

STARTER	PERFORMANCE		
Standard	General Purpose	CPU-Optimized	Memory-Optimized **NEW**

Standard virtual machines with a mix of memory and compute resources. Best for small projects that can handle variable levels of CPU performance, like blogs, web apps and dev/test environments.

$ **5**/mo	$ **10**/mo	$ **15**/mo	$ **15**/mo	$ **15**/mo	$ **20**/mo
$0.007/hour	$0.015/hour	$0.022/hour	$0.022/hour	$0.022/hour	$0.030/hour
1 GB / 1 CPU	2 GB / 1 CPU	3 GB / 1 CPU	2 GB / 2 CPUs	1 GB / 3 CPUs	4 GB / 2 CPUs
25 GB SSD disk	50 GB SSD disk	60 GB SSD disk	60 GB SSD disk	60 GB SSD disk	80 GB SSD disk
1000 GB transfer	2 TB transfer	3 TB transfer	3 TB transfer	3 TB transfer	4 TB transfer

→

● ○ ○

Show all plans

Each Droplet adds more data transfer to your account.

PROJECTS ︿

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+ New Project

MANAGE ︾

DISCOVER ︾

ACCOUNT ︾

Search by resource name or IP (Ctrl+B)

Create ⌄

USAGE
$0.00

Choose a datacenter region

New York	San Francisco	Amsterdam	Singapore	London	Frankfurt
1 2 3	1 2	2 3	1	1	1

Toronto	Bangalore
1	1

Select additional options ?

☐ Private networking   ☐ IPv6   ☐ User data   ☐ Monitoring

Create ⌄

USAGE
$0.00

PROJECTS ⌄

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+ New Project

MANAGE ⌄

DISCOVER ⌄

ACCOUNT ⌄

Finalize and create

How many Droplets?

Deploy multiple Droplets with the same
configuration.

| — | 1 Droplet | + |

Add tags

Use tags to organize and relate resources. Tags may contain letters, numbers, colons, dashes, and underscores.

Type tags here

Select Project

Assign Droplets to a project

🔷 kritikagarg

Choose a hostname

Give your Droplets an identifying name you will remember them by. Your Droplet name can only
contain alphanumeric characters, dashes, and periods.

ubuntu-s-18

Create ∨

PROJECTS ∧

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+ New Project

MANAGE ∨

DISCOVER ∨

ACCOUNT ∨

Add tags

Use tags to organize and relate resources. Tags may contain letters, numbers, colons, dashes, and underscores.

Type tags here

Select Project

Assign Droplets to a project

kritikagarg

Add backups

Enable backups   RECOMMENDED $8.00/mo

A system-level backup is taken once a week, and each backup is retained for 4 weeks.   20% of the Droplet price

Create Droplet

Your New Droplet: ubuntu-s18 Inbox ×

DigitalOcean <support@support.digitalocean.com>   12:10 PM (8 hours ago)   ☆   ↩   ⋮
to me ▾

Your new Droplet is all set to go! You can access it using the following credentials:

Droplet Name: ubuntu-s18
IP Address: 192.81.211.229
Username: root
Password: 77e225872259dbbe22ec7a4fa6

For security reasons, you will be required to change this Droplet's root password when you login. You should choose a strong password that will be easy for you to remember, but hard for a computer to guess. You might try creating an alpha-numerical phrase from a memorable sentence (e.g. "I won my first spelling bee at age 7," might become "Iwm#1sbaa7"). Random strings of common words, such as "Mousetrap Sandwich Hospital Anecdote," tend to work well, too.

As an added security measure, we also strongly recommend adding an SSH key to your account. You can do that here: https://cloud.digitalocean.com/settings/security?i=e32b0a

Once added, you can select your SSH key and use it when creating future Droplets. This eliminates the need for root passwords altogether, and makes your Droplets much less vulnerable to attack.

Happy Coding,
Team DigitalOcean

Email containing public I.P. and temporary password

2. Run a service(echo-server) on the cloud.

kritika@kritika-E6430: ~

File Edit View Search Terminal Help

(base) kritika@kritika-E6430:~$ ssh root@192.81.211.229

In terminal,

ssh root@\<public IP address\>

to access your new ubuntu server

File Edit View Search Terminal Help

(base) kritika@kritika-E6430:~$ ssh root@192.81.211.229
The authenticity of host '192.81.211.229 (192.81.211.229)' can't be established.
ECDSA key fingerprint is SHA256:m/mBbhe4TG2j14YJoN2cV486/t5XPdI/nSOQ8a7eTQg.
Are you sure you want to continue connecting (yes/no): yes

```
*********************************************************************

Welcome to DigitalOcean's One-Click Docker Droplet.
To keep this Droplet secure, the UFW firewall is enabled.
All ports are BLOCKED except 22 (SSH), 2375 (Docker) and 2376 (Docker).

* The Docker One-Click Quickstart guide is available at:
  https://do.co/docker1804#start

* You can SSH to this Droplet in a terminal as root: ssh root@165.227.196.193

* Docker is installed and configured per Docker's recommendations:
  https://docs.docker.com/install/linux/docker-ce/ubuntu/

* Docker Compose is installed and configured per Docker's recommendations:
  https://docs.docker.com/compose/install/#install-compose

For help and more information, visit http://do.co/docker1804

*********************************************************************

To delete this message of the day: rm -rf /etc/update-motd.d/99-one-click

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

Changing password for root.
(current) UNIX password:
Enter new UNIX password:
Retype new UNIX password:
```

Create new password ←

File Edit View Search Terminal Help

root@ubuntu-s18:~# nano echoserver.py

File Edit View Search Terminal Help

GNU nano 2.9.3   echoserver.py

```python
#!/usr/bin/env python3
import sys
import socket

HOST= '0.0.0.0'
PORT= 80

if len(sys.argv) > 1:
    HOST = sys.argv[1]
if len(sys.argv) > 2:
    PORT = int(sys.argv[2])

with socket.socket(socket.AF_INET, socket.SOCK_STREAM) as s:
        s.setsockopt(socket.SOL_SOCKET, socket.SO_REUSEADDR, 1)
        s.bind((HOST,PORT))
        s.listen()
        print("Listening on " + HOST + ":" + str(PORT))

        while True:
                client_host,client_port = s.accept()
                with client_host:
                        print('Connected by', client_port)
                        while True:
                                msg=client_host.recv(1024)
                                if not msg:
                                        break
                                client_host.sendall(msg)
```

Paste your echo server code here!

                                    [Read 27 lines]
^G Get Help   ^O Write Out   ^W Where Is   ^K Cut Text   ^J Justify   ^C Cur Pos   M-U Undo   M-A Mark Text   M-] To Bracket
^X Exit   ^R Read File   ^\ Replace   ^U Uncut Text   ^T To Linter   ^ Go To Line   M-E Redo   M-6 Copy Text   M-W WhereIs Next
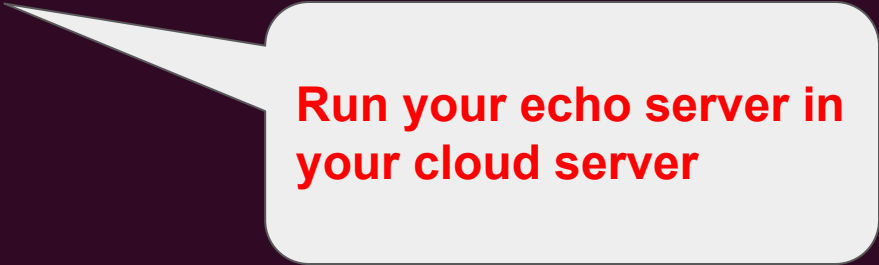
```
root@ubuntu-s18: ~

File Edit View Search Terminal Help
root@ubuntu-s18:~# nano echoserver.py
root@ubuntu-s18:~# ls -lr
total 4
-rwxr-xr-x 1 root root 587 Sep 16 20:06 echoserver.py
root@ubuntu-s18:~#
root@ubuntu-s18:~#
root@ubuntu-s18:~# chmod +x echoserver.py
root@ubuntu-s18:~#
root@ubuntu-s18:~# ./echoserver.py
Listening on 0.0.0.0:80
```

3. Set up a Domain Name

Set up your domain name

Microsoft Azure

Microsoft Azure is an ever-expanding set of cloud services to help you build, manage, and deploy applications.

Details Level up your ideas by learning cloud computing skills and get a $100 credit with your free Azure for Students account—no credit card required.

Request your offer code to get access

⊙ Help available at Microsoft support

namecheap

Affordable registration, hosting, and domain management

Details 1 year domain name registration on the .me TLD.

Get access by connecting your GitHub account on Namecheap

Details 1 year SSL certificate.

Use your offer code on the Namecheap website

Your code:
5E79BC142E*224D24B32

⊙ Help available at Namecheap support

name.com

Domain names, web hosting, and websites. Unicorns and rainbows come standard with our customer support.

Details One free domain name and free Advanced Security (SSL, privacy protection, and more).

Get access by connecting your GitHub account on Name.com

⊙ Help available at Name.com support

GitHub Education Bundle : https://education.github.com/pack

namecheap *for* EDUCATION

Get Live Support   FAQ

Claim your free domain

Namecheap is giving university students a free bundle
to kickstart their online presence

| kritikagarg | .me ▾ | find |

PLUS | Bonuses from these great folks

GitHub   EXPOSURE

Websites for you and your projects, hosted right on GitHub.   Exposure gives you a beautiful website for your photo stories.

                                           OR

✓ +1 year pages setup   ✓ +1 year photo website

NameCheap: https://www.namecheap.com/

namecheap *for* EDUCATION

kritikagarg

For a limited time, .me domains are **free** for students

kritikagarg.me   FREE   ADD

.io, .tech, .com, .website are heavily discounted

kritikagarg.io $32.88 $24.88   ADD

kritikagarg.tech $45.88 $0.48   ADD

kritikagarg.com   Taken

kritikagarg.website $19.88 $0.48   ADD

Your Domains

Your cart is empty

Complete order

namecheap *for* EDUCATION

🛒 **Your Domains**

Q   kritikagarg

For a limited time, .me domains are **free** for students

kritikagarg.me   FREE   ×

❌ **kritikagarg.me**
1 year registration   FREE

Subtotal $0.00

Complete order

.io, .tech, .com, .website are heavily discounted

kritikagarg.io	$32.88	$24.88	ADD
kritikagarg.tech	$45.88	$0.48	ADD
kritikagarg.com Taken			
kritikagarg.website	$19.88	$0.48	ADD

https://nc.me/order

Summary

| You are registering **kritikagarg.me** | for **FREE** |

🔧 **Choose a free option**

🔘 GitHub Pages ⓘ **FREE**
⚪ Exposure ⓘ **FREE**

Which domain should receive the free option?

| kritikagarg.me ⇕ |

✉️ **Student email**

Currently we are only offering free .me domains and a discounted rate on other TLD's to select universities in the US, UK, Canada and Australia. Enter your student email address here. We'll check your eligibility and email you additional instructions.

If you are a part of the GitHub student program please use your primary GitHub email on the checkout form, instead of your student email address. You may learn more about the GitHub Student Developer Pack here.

| kgarg001@odu.edu |

Finish Up

namecheap *for* EDUCATION

Login or create a new Namecheap account

Login   REGISTER

All fields are required

KritikaGarg

·········

Log In

Sending request to nc.me...

Confirm Order #314558

Order summary	
kritikagarg.me	
1 year registration	FREE
Subtotal	$0.00

Confirm Order

Congratulations!

Your GitHub account was successfully setup. You can expect some delay
before your GitHub Pages website is fully working.

🛒 ▾   USD ▾   🔍

namecheap

Domains   **Hosting**   **WordPress**   **Apps**   NEW   **Security**   UPDATE   **Transfer to Us**   TRY ME   **How To**   **Account**

Take care of business with .BIZ for only $8.48 →

Search for your domain name

Get your .IO domain for just $25.88. Lowest market price! →

SEARCH DOMAIN   ▾   Go big with your next domain   **Beast Mode**   🔍

🏠 Get Started with a .com domain →

Namecheap for   **Individuals**   **Business**   **Resellers**

Buy a domain name and create your website today

SUPPORT ▼   SIGN IN ▼   SIGN UP

kritikagarg

••••••••

Sign In

Forgot your password?

Domains   Hosting   WordPress   Apps ^NEW   Security ^UPDATE   Transfer to Us ^TRY ME   How To   Account

Take care of business with .BIZ for only $8.48 →

arch for your domain name

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Buy a domain name and create your website today

namecheap   **Domains**   **Hosting**   **WordPress**   **Apps** [NEW]   **Security** [UPDATE]   **Transfer to Us** [TRY ME]   **How To**   **Account**

🎛 **Dashboard**

🕐 **Expiring / Expired**

🏠 **Domain List**

📦 **Product List**

❖ **Apps**

⚙ **Profile**

Hello Kritika Garg
Last logged in on Sep 16, 2019, 09:13 PM (EST)

💰 **Account Balance**
$0.00 Top-up

🔏 **Two Factor Authentication**
OFF Manage

Recently Active in Your Account

All	Products		Expiration	
🔶 **kritikagarg.me** 🏷+ ADD CATEGORY	🏠	⌄	Sep 12, 2020 Domain	MANAGE

View all domains

Q&A

Go back to your digitalocean account to add domain

You need to update your nameservers with your domain registrar for the records below to take effect.   Learn how to do that

Create new record

A   AAAA   CNAME   MX   TXT   NS   SRV   CAA

Use @ to create the record at the root of the domain or enter a hostname to create it elsewhere. A records are for IPv4 addresses only and tell a request where your domain should direct to.

HOSTNAME	WILL DIRECT TO	TTL (SECONDS)	
Enter @ or hostname *	Select resource or enter custom IP	Enter TTL 3600 ✓	Create Record

DNS records

Type	Hostname	Value	TTL (seconds)	
A	kritikagarg.me	directs to 192.81.211.229	3600	More ⌄
NS	kritikagarg.me	directs to ns1.digitalocean.com.	1800	More ⌄
NS	kritikagarg.me	directs to ns2.digitalocean.com.	1800	More ⌄
NS	kritikagarg.me	directs to ns3.digitalocean.com.	1800	More ⌄

Sidebar

PROJECTS

🔹 kritikagarg

+ New Project

MANAGE

Droplets
Kubernetes
Volumes
Databases
Spaces
Images
Networking
Monitoring
API

DISCOVER

Marketplace

ACCOUNT

Profile
Billing
Security
Referrals

Search by resource name or IP (Ctrl+B)

Create ⌄

File Edit View Search Terminal Help

```
(base) kritika@kritika-E6430:~$ ssh root@kritikagarg.me
The authenticity of host 'kritikagarg.me (192.81.211.229)' can't be established.
ECDSA key fingerprint is SHA256:m/mBbhe4TG2j14YJoN2cV486/t5XPdI/nSOQ8a7eTQg.
Are you sure you want to continue connecting (yes/no)? yes
```

```
File Edit View Search Terminal Help
(base) kritika@kritika-E6430:~$ ssh root@kritikagarg.me
The authenticity of host 'kritikagarg.me (192.81.211.229)' can't be established.
ECDSA key fingerprint is SHA256:m/mBbhe4TG2j14YJoN2cV486/t5XPdI/nSOQ8a7eTQg.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added 'kritikagarg.me' (ECDSA) to the list of known hosts.
root@kritikagarg.me's password: []
```

```
File  Edit  View  Search  Terminal  Help
(base) kritika@kritika-E6430:~$ ssh root@kritikagarg.me
The authenticity of host 'kritikagarg.me (192.81.211.229)' can't be established.
ECDSA key fingerprint is SHA256:m/mBbhe4TG2j14YJoN2cV486/t5XPdI/nSOQ8a7eTQg.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added 'kritikagarg.me' (ECDSA) to the list of known hosts.
root@kritikagarg.me's password:
Welcome to Ubuntu 18.04.3 LTS (GNU/Linux 4.15.0-58-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/advantage

  System information as of Tue Sep 17 01:30:08 UTC 2019

  System load:  0.0               Processes:            87
  Usage of /:   4.0% of 24.06GB   Users logged in:      1
  Memory usage: 14%               IP address for eth0: 192.81.211.229
  Swap usage:   0%

0 packages can be updated.
0 updates are security updates.


Last login: Tue Sep 17 01:27:40 2019 from 172.56.3.139
root@ubuntu-s18:~# 
```

```
(base) kritika@kritika-E6430:~$ ssh root@kritikagarg.me
The authenticity of host 'kritikagarg.me (192.81.211.229)' can't be established.
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0 packages can be updated.
0 updates are security updates.


Last login: Tue Sep 17 01:27:40 2019 from 172.56.3.139
root@ubuntu-s18:~# ./echoserver.py
Listening on 0.0.0.0:80
```

Run your echo server

```
File Edit View Search Terminal Help
(base) kritika@kritika-E6430:~$ ssh root@kritikagarg.me
The authenticity of host 'kritikagarg.me (192.81.211.229)' can't be established.
ECDSA key fingerprint is SHA256:m/mBbhe4TG2j14YJoN2cV486/t5XPdI/nSOQ8a7eTQg.
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   Memory usage: 14%                IP address for eth0: 192.81.211.229
   Swap usage:   0%

0 packages can be updated.
0 updates are security updates.


Last login: Tue Sep 17 01:27:40 2019 from 172.56.3.139
root@ubuntu-s18:~# ./echoserver.py
Listening on 0.0.0.0:80
Connected by ('172.56.3.139', 28516)
```