

Notes for LAMP stack creation using Digital Ocean – Instructions to recreate the color app

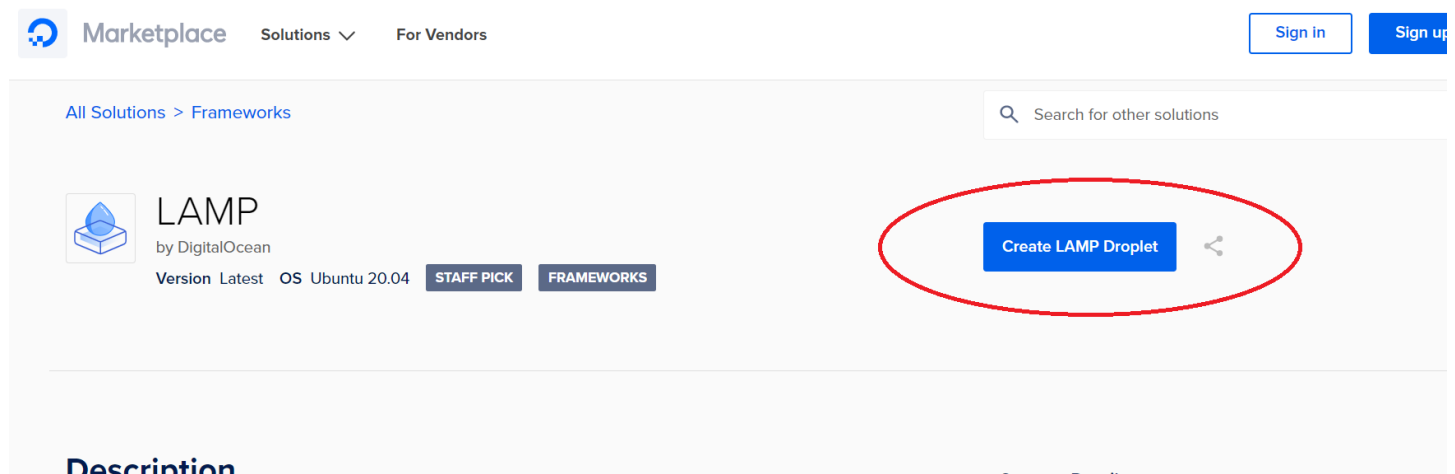
You will need a digitalocean.com account for this. I suggest being logged onto the account before you begin. You will also need to have purchased a domain. I am using COP4331-5.com since I already own it and am not using it. .xyz domains are inexpensive, so you might want to consider those.

The digital ocean hosting will cost \$6 per month, and you will need it for two months. The domain will cost something, too.

Hosting

Go to <https://marketplace.digitalocean.com/apps/lamp>

Create a LAMP Droplet



The screenshot shows the DigitalOcean Marketplace interface. At the top, there's a navigation bar with 'Marketplace', 'Solutions', and 'For Vendors'. On the right, there are 'Sign in' and 'Sign up' buttons. Below the navigation bar, there's a breadcrumb trail 'All Solutions > Frameworks' and a search bar. The main content area displays the 'LAMP' app by DigitalOcean. It includes a version selector set to 'Latest', the OS 'Ubuntu 20.04', and two badges: 'STAFF PICK' and 'FRAMEWORKS'. A blue button labeled 'Create LAMP Droplet' is prominently displayed and circled in red. To the right of the button is a share icon. Below the main content area, the 'Description' section is partially visible.

Select Ubuntu, Basic Plan, and the *Create*

The screenshot shows the DigitalOcean marketplace interface. At the top right, a green 'Create' button with a dropdown arrow is circled in red. Below it, a search bar labeled 'Search keyword' is visible. In the main content area, a card for 'LAMP on Ubuntu 20.04' is circled in red, with a 'Details' link next to it. Below this, the 'Choose a plan' section shows two categories: 'SHARED CPU' and 'DEDICATED CPU'. Under 'SHARED CPU', the 'Basic' plan is circled in red. Other plans listed include 'General Purpose', 'CPU-Optimized', 'Memory-Optimized', and 'Storage-Optimized'.

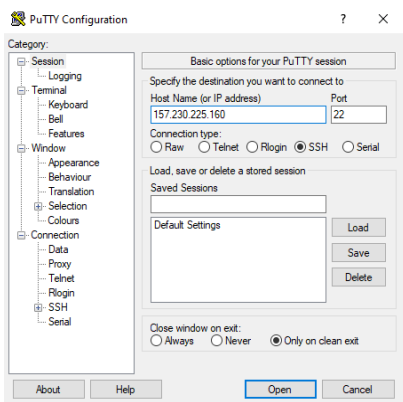
You will need to select the \$5 (now \$6) / mo plan. Also, create a root password. The droplet will then be provisioned while you wait several minutes.

Once done, click **Get started**

The screenshot shows the DigitalOcean dashboard for a user named 'todo'. The 'Resources' tab is selected. Under the 'DROPLETS (4)' section, a droplet named 'cop4331' is listed with the IP address '157.230.225.160'. The 'Get started' button next to the droplet is circled in red. Other buttons like 'Move Resources' and 'Activity' are also visible.

Install Putty in order to easily SSH in to your droplet

Run PuTTY and put in IP address



Enter user name (should be root) and password



Please note that everything you essentially need is already installed.

Navigate to the root – **cd /root**

Optional: Get your MySQL password as follows: **vi .digitalocean_password** (;q to quit vi)

The web root is in /var/www/html – Go to that directory now with **cd /var/www/html**

View the contents of the directory with **ls**

View the contents of index.html with **cat index.html** – it's a lot

Now we will edit the contents of index.html – open for editing with **vi index.html**

You can highlight and delete a block by positioning the cursor at the top of the block and pressing Shift-V, cursoring down to the end of the block and pressing d

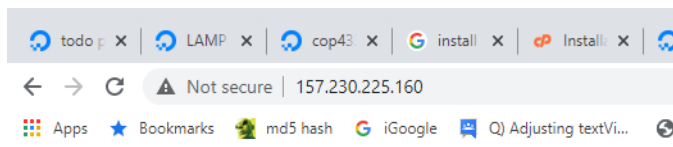
You need to <body> be in insert mode, so press the insert key

Your index.html file should look like the following:

```
<html>
  <body>
    <h1>We love COP 4331</h1>
  </body>
</html>
```

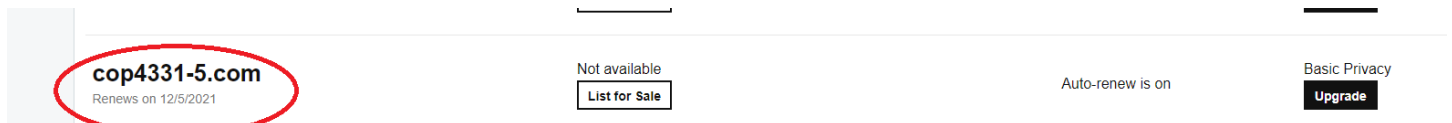
To save and quit hit the **escape key** (to get out of insert mode), type **:wq** – now verify the edit with **cat index.html**

You can access this via a web browser. Open a browser and type in your http://IP address.

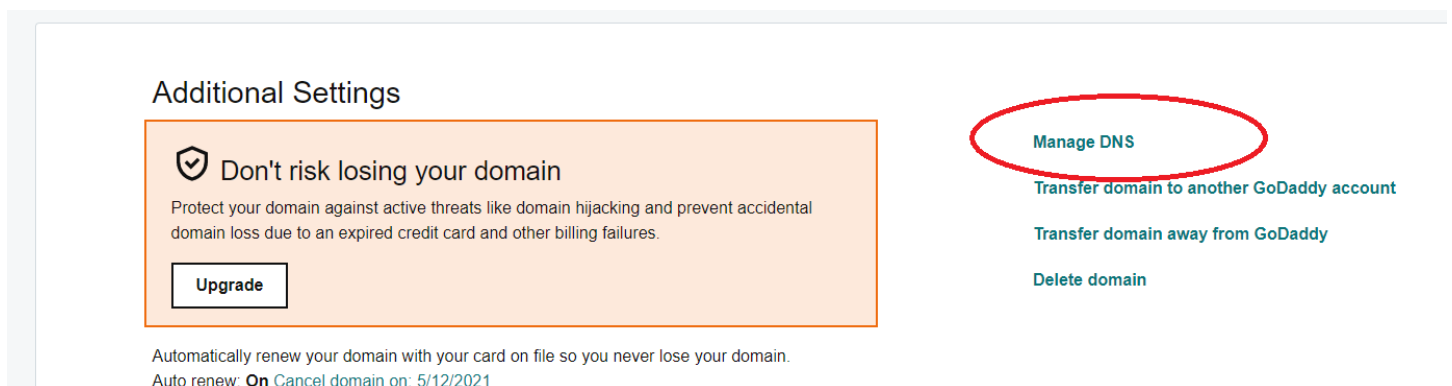


Now for a domain. You cannot buy a domain through digital ocean. Choose another domain registrant. I use GoDaddy, but there are lots of them. Purchase a domain and point the domain to your digital ocean applet. Below are the steps I took on GoDaddy.

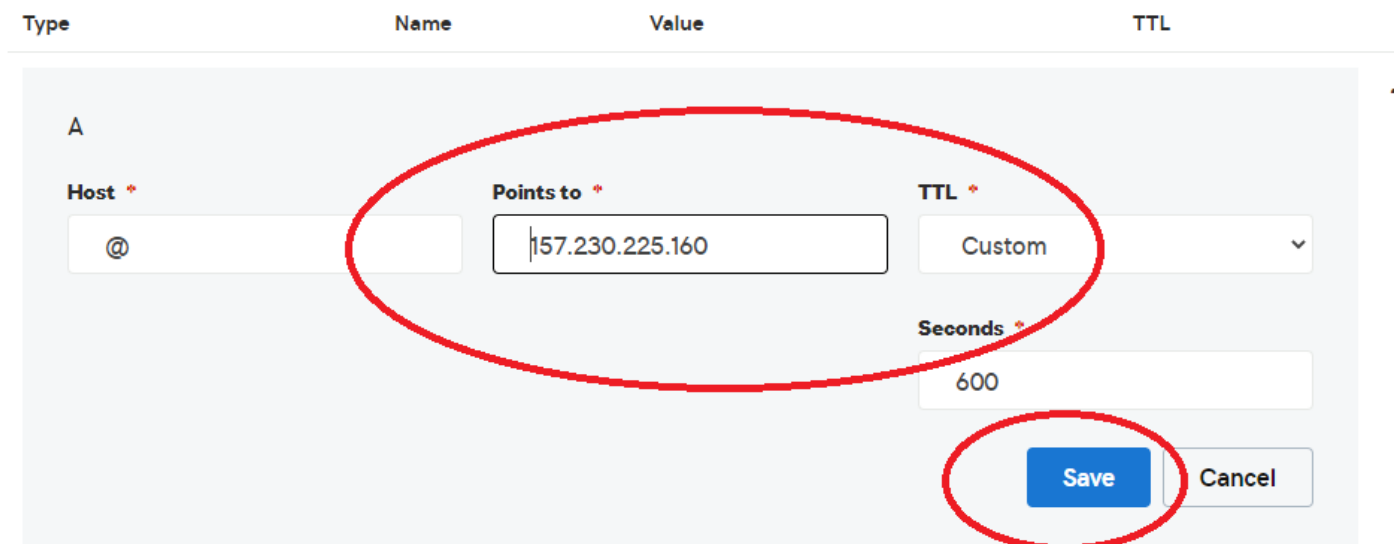
1. I already had this domain purchased:



2. Navigate to the DNS manager:



3. Edit the IP address and save:



4. Test with a browser. It might take a few minutes to propagate. (On Windows it is helpful to go to a command prompt and type **ipconfig /flushdns**) You might also want to use Ctrl-F5 to hard reset the web content.



We love COP 4331

Get started

Option: Connect to MySQL: **mysql -u root -p** (then enter your password)

Here are the steps to create the database, tables, and working data.

1. Create database

```
create database COP4331;
```

```
use COP4331;
```

2. Create tables

```
CREATE TABLE `COP4331`.`Users` ( `ID` INT NOT NULL AUTO_INCREMENT , `DateCreated` DATETIME NOT NULL DEFAULT CURRENT_TIMESTAMP , `DateLastLoggedIn` DATETIME NOT NULL DEFAULT CURRENT_TIMESTAMP , `FirstName` VARCHAR(50) NOT NULL DEFAULT " , `LastName` VARCHAR(50) NOT NULL DEFAULT " , `Login` VARCHAR(50) NOT NULL DEFAULT " , `Password` VARCHAR(50) NOT NULL DEFAULT " , PRIMARY KEY (`ID`)) ENGINE = InnoDB;
```

```
CREATE TABLE `COP4331`.`Colors` ( `ID` INT NOT NULL AUTO_INCREMENT , `Name` VARCHAR(50) NOT NULL DEFAULT " , `UserID` INT NOT NULL DEFAULT '0' , PRIMARY KEY (`ID`)) ENGINE = InnoDB;
```

3. Populate working data rows

```
USE COP4331;
```

```
insert into Users (FirstName,LastName,Login>Password) VALUES ('Rick','Leinecker','RickL','COP4331');
```

```
insert into Users (FirstName,LastName,Login>Password) VALUES ('Sam','Hill','SamH','Test');
```

```
insert into Users (FirstName,LastName,Login>Password) VALUES ('Rick','Leinecker','RickL','5832a71366768098cceb7095efb774f2');
```

```
insert into Users (FirstName,LastName,Login>Password) VALUES  
( 'Sam','Hill','SamH','0cbc6611f5540bd0809a388dc95a615b');
```

```
insert into Colors (Name,UserID) VALUES ('Blue',1);  
insert into Colors (Name,UserID) VALUES ('White',1);  
insert into Colors (Name,UserID) VALUES ('Black',1);  
insert into Colors (Name,UserID) VALUES ('gray',1);  
insert into Colors (Name,UserID) VALUES ('Magenta',1);  
insert into Colors (Name,UserID) VALUES ('Yellow',1);  
insert into Colors (Name,UserID) VALUES ('Cyan',1);  
insert into Colors (Name,UserID) VALUES ('Salmon',1);  
insert into Colors (Name,UserID) VALUES ('Chartreuse',1);  
insert into Colors (Name,UserID) VALUES ('Lime',1);  
insert into Colors (Name,UserID) VALUES ('Light Blue',1);  
insert into Colors (Name,UserID) VALUES ('Light Gray',1);  
insert into Colors (Name,UserID) VALUES ('Light Red',1);  
insert into Colors (Name,UserID) VALUES ('Light Green',1);  
insert into Colors (Name,UserID) VALUES ('Chiffon',1);  
insert into Colors (Name,UserID) VALUES ('Fuscia',1);  
insert into Colors (Name,UserID) VALUES ('Brown',1);  
insert into Colors (Name,UserID) VALUES ('Beige',1);
```

```
insert into Colors (Name,UserID) VALUES ('Blue',3);  
insert into Colors (Name,UserID) VALUES ('White',3);  
insert into Colors (Name,UserID) VALUES ('Black',3);  
insert into Colors (Name,UserID) VALUES ('gray',3);  
insert into Colors (Name,UserID) VALUES ('Magenta',3);  
insert into Colors (Name,UserID) VALUES ('Yellow',3);  
insert into Colors (Name,UserID) VALUES ('Cyan',3);  
insert into Colors (Name,UserID) VALUES ('Salmon',3);  
insert into Colors (Name,UserID) VALUES ('Chartreuse',3);  
insert into Colors (Name,UserID) VALUES ('Lime',3);
```

```
insert into Colors (Name,UserID) VALUES ('Light Blue',3);
insert into Colors (Name,UserID) VALUES ('Light Gray',3);
insert into Colors (Name,UserID) VALUES ('Light Red',3);
insert into Colors (Name,UserID) VALUES ('Light Green',3);
insert into Colors (Name,UserID) VALUES ('Chiffon',3);
insert into Colors (Name,UserID) VALUES ('Fuscia',3);
insert into Colors (Name,UserID) VALUES ('Brown',3);
insert into Colors (Name,UserID) VALUES ('Beige',3);
```

We will create a user:

Use COP4331;

create user 'TheBeast' identified by 'WeLoveCOP4331';

Now we need to grant permissions to the database for that user:

```
grant all privileges on COP4331.* to 'TheBeast'@'%';
```

The database is ready to use.

Here: Talk about primary and foreign keys

The web directory hierarchy is as follows:

root (/var/www/html)

css (/var/www/html/css)

images (/var/www/html/images)

js (/var/www/html/js)

LAMPAPI (/var/www/html/LAMPAPI)

index.html

color.html

Navigate to /var/www/html

Create the directories

mkdir css

mkdir images

mkdir js

mkdir LAMPAPI

API

There will be three API endpoints: **AddColor**, **Login**, and **SearchColors**. They each have a single .php file that is contained in the LAMPAPI directory.

Please note that there is a php statement that must be changed with your database username, password, and database name.

```
$conn = new mysqli("localhost", "username", "password", "database");
```

For our example that becomes

```
$conn = new mysqli("localhost", "TheBeast", "WeLoveCOP4331", "COP4331");
```


There are three example .php files in the stacks\LAMP\LAMPAPI path of the file on the webcourse.

Upload the .php files to the server. They will be placed into LAMPAPI.

Run PuTTY FTP.

Type open COP4331-5.com (your domain name)

Enter username and password

 PSFTP

```
psftp: no hostname specified; use "open host.name" to connect
psftp> open COP4331-5.com
login as: root
root@COP4331-5.com's password:
```

Type `cd /var/www/html`

You can type `ls` to see the subdirectories

Enter the LAMPAPI directory (**cd LAMPAPI**)

Now you will upload the API endpoint files with the following:


```
put "D:\work\USBSticks\UCF USB Stick Fall 2021\COP 4331\Slides and Related Material\LAMP Stack\LAMPAPI\AddColor.php"
```

```
put "D:\work\USBSticks\UCF USB Stick Fall 2021\COP 4331\Slides and Related Material\LAMP Stack\LAMPAPI>Login.php"
```

```
put "D:\work\USBSticks\UCF USB Stick Fall 2021\COP 4331\Slides and Related Material\LAMP Stack\LAMPAPI\SearchColors.php"
```

Use the ls command to double check that the files have been uploaded

Remember that Linux is case sensitive for file names and directories

Here: analysis of .php API endpoint files.

Now the API endpoints can be tested.

Use ARC or Postman or CURL or Swagger

```
http://cop4331-5.com/LAMPAPI/Login.php
login
password
```

```
http://cop4331-5.com/LAMPAPI/AddColor.php
userId
color
```

```
http://cop4331-5.com/LAMPAPI/SearchColors.php
userId
search
```

Front End

Upload css, images, js directories. Also upload color.html and index.html

```
cd css
```

```
put "D:\work\USBSticks\UCF USB Stick Fall 2021\COP 4331\Slides and Related Material\LAMP Stack\css\styles.css"
```

```
cd ../images
```

```
put "D:\work\USBSticks\UCF USB Stick Fall 2021\COP 4331\Slides and Related Material\LAMP Stack\images\background.png"
```

```
cd ../js
```

```
put "D:\work\USBSticks\UCF USB Stick Fall 2021\COP 4331\Slides and Related Material\LAMP  
Stack\js\code.js"
```

```
put "D:\work\USBSticks\UCF USB Stick Fall 2021\COP 4331\Slides and Related Material\LAMP  
Stack\js\md5.js"
```

```
cd ..
```

```
put "D:\work\USBSticks\UCF USB Stick Fall 2021\COP 4331\Slides and Related Material\LAMP  
Stack\index.html"
```

```
put "D:\work\USBSticks\UCF USB Stick Fall 2021\COP 4331\Slides and Related Material\LAMP  
Stack\color.html"
```

[Here: Analysis of all source code](#)

Hashing passwords

```
insert into Users (FirstName,LastName,Login>Password) VALUES  
( 'Rick','Leinecker','RickL','5832a71366768098cceb7095efb774f2');
```

```
insert into Users (FirstName,LastName,Login>Password) VALUES  
( 'Sam','Hill','SamH','0cbc6611f5540bd0809a388dc95a615b');
```