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**Day – 3**

## **Task 1 - Make Scripts**

### ◆ Installing LAMP stack

- Create script file using bellow command  
**nano lamp.sh**
- After creating file write following command to install LAMP

### **Script command:**

```
#!/bin/bash
echo 'Installing Apache Web Server'
apt install apache2 -y
echo 'Apache Web Server is installed'
echo 'Installing mysql'
apt install mysql-server -y
echo 'mysql installed'
echo 'Installing php and its modules'
apt install php-pear php-dev php-zip php-curl php-xmlrpc php-gd php-mysql php-mbstring php-xml
libapache2-mod-php -y
echo 'php and its modules installed'
echo 'Starting the services'
systemctl restart apache2
systemctl restart mysql
echo 'Enabling the services'
systemctl enable apache2
systemctl enable mysql
echo 'Finally Checking status of services'
echo Apache service is $(systemctl show -p ActiveState --value apache2)
echo mysql service is $(systemctl show -p ActiveState --value mysql)
echo LAMP setup installed on ubuntu Successfully
```

```
nishit@nishit-VirtualBox:~$ nano lamp.sh
```

```
GNU nano 4.8 lamp.sh Modified
#!/bin/bash
Thunderbird Mail
echo 'Installing Apache Web Server'
apt install apache2 -y
echo 'Apache Web Server is installed'
echo 'Installing mysql'
apt install mysql-server mysql-client -y
echo 'mysql installed'
echo 'Installing php and its modules'
apt install php-pear php-dev php-zip php-curl php-xmldrpc php-gd php-mysql php-mbstring php-xml libapache2-mod-php -y
echo 'php and its modules installed'
echo 'Starting the services'
systemctl restart apache2
systemctl restart mysql
echo 'Enabling the services'
systemctl enable apache2
systemctl enable mysql
echo 'Finally Checking status of services'

echo Apache service is $(systemctl show -p ActiveState --value apache2)
echo mysql service is $(systemctl show -p ActiveState --value mysql)
echo LAMP setup installed on ubuntu Successfully
```

After that save & exit to nano editor.

- Now check script permission:

```
nishit@nishit-VirtualBox:~$ ls -la
-rw-rw-r-- 1 nishit nishit 798 Feb 15 11:05 lamp.sh
```

- So, here in lamp.sh file add executable permission using **chmod** command.

**sudo chmod +x lamp.sh**

```
-rwxrwxr-x 1 nishit nishit 797 Feb 15 12:11 lamp.sh
```

- Now, run the script using sudo bash lamp.sh

**sudo bash lamp.sh**

```

nishit@nishit-VirtualBox:~$ sudo bash lamp.sh
Installing Apache Web Server
Reading package lists... Done
Building dependency tree
Reading state information... Done
apache2 is already the newest version (2.4.41-4ubuntu3.13).
The following packages were automatically installed and are no longer required:
 chromium-codecs-ffmpeg-extra gstreamer1.0-vaapi libgstreamer-plugins-bad1.0-0 libva-wayland2
Use 'sudo apt autoremove' to remove them.
0 upgraded, 0 newly installed, 0 to remove and 44 not upgraded.
Apache Web Server is installed
Installing mysql
Reading package lists... Done
Building dependency tree
Reading state information... Done
mysql-server is already the newest version (8.0.32-0ubuntu0.20.04.2).
The following packages were automatically installed and are no longer required:
 chromium-codecs-ffmpeg-extra gstreamer1.0-vaapi libgstreamer-plugins-bad1.0-0 libva-wayland2
Use 'sudo apt autoremove' to remove them.
The following NEW packages will be installed:
 mysql-client
0 upgraded, 1 newly installed, 0 to remove and 44 not upgraded.
Need to get 9,364 B of archives.

```

```

Setting up gcc (4:9.3.0-1ubuntu2) ...
Setting up php7.4-dev (7.4.3-4ubuntu2.17) ...
update-alternatives: using /usr/bin/php-config7.4 to provide /usr/bin/php-config (php-config) in auto mode
update-alternatives: using /usr/bin/phpize7.4 to provide /usr/bin/phpize (phpize) in auto mode
Setting up g++-9 (9.4.0-1ubuntu1~20.04.1) ...
Setting up g++ (4:9.3.0-1ubuntu2) ...
update-alternatives: using /usr/bin/g++ to provide /usr/bin/c++ (c++) in auto mode
Setting up build-essential (12.8ubuntu1.1) ...
Setting up php-dev (2:7.4+75) ...
Setting up dh-autoreconf (19) ...
Setting up debhelper (12.10ubuntu1) ...
Setting up pkg-php-tools (1.38) ...
Processing triggers for libc-bin (2.31-0ubuntu9.9) ...
Processing triggers for man-db (2.9.1-1) ...
Processing triggers for install-info (6.7.0.dfsg.2-5) ...
Processing triggers for libapache2-mod-php7.4 (7.4.3-4ubuntu2.17) ...
Processing triggers for php7.4-cli (7.4.3-4ubuntu2.17) ...
php and its modules installed
Starting the services
Enabling the services
Synchronizing state of apache2.service with SysV service script with /lib/systemd/systemd-sysv-install.
Executing: /lib/systemd/systemd-sysv-install enable apache2
Synchronizing state of mysql.service with SysV service script with /lib/systemd/systemd-sysv-install.
Executing: /lib/systemd/systemd-sysv-install enable mysql
Finally Checking status of services
Apache service is active
mysql service is active
LAMP setup installed on ubuntu Successfully

```

◆ Once the script is done try to run it at boot time.

- In this task I used rc.local service. rc.local file is used to execute system commands during the boot process.
- Here, first check rc-local status using below command.

**sudo systemctl status rc-local**

```
nishit@nishit-VirtualBox:~$ sudo systemctl status rc-local
● rc-local.service - /etc/rc.local Compatibility
   Loaded: loaded (/etc/systemd/system/rc-local.service; enabled-runtime; vendor preset: enabled)
   Drop-In: /usr/lib/systemd/system/rc-local.service.d
            └─debian.conf
   Active: inactive (dead) since Mon 2023-02-20 12:29:19 IST; 2s ago

Feb 20 12:21:18 nishit-VirtualBox rc.local[1954]: Warning: apt-key output should be redirected to /dev/null, see http://www.debian.org/FAQ/
```

Here we see status is inactive so first we need status in active mode.

- So, run below command to rc-local in active mode.

**sudo systemctl enable rc-local**

**sudo systemctl start rc-local**

**sudo systemctl restart rc-local**

**sudo systemctl status rc-local**

```
nishit@nishit-VirtualBox:~$ sudo systemctl enable rc-local
Created symlink /etc/systemd/system/multi-user.target.wants/rc-local.service → /etc/systemd/system/rc-local.service.
nishit@nishit-VirtualBox:~$ sudo systemctl start rc-local
nishit@nishit-VirtualBox:~$ sudo systemctl restart rc-local
nishit@nishit-VirtualBox:~$ sudo systemctl status rc-local
● rc-local.service - /etc/rc.local Compatibility
   Loaded: loaded (/etc/systemd/system/rc-local.service; enabled; vendor preset: enabled)
   Drop-In: /usr/lib/systemd/system/rc-local.service.d
            └─debian.conf
   Active: active (exited) since Mon 2023-02-20 12:33:20 IST; 2s ago
   Process: 4730 ExecStart=/etc/rc.local start (code=exited, status=0/SUCCESS)

Feb 20 12:33:18 nishit-VirtualBox rc.local[5329]: Feb 20 12:20:55 nishit-VirtualBox sudo[5331]: root : TTY=unknown ; PWD=/ ; >
Feb 20 12:33:18 nishit-VirtualBox sudo[5331]: pam_unix(sudo:session): session opened for user root on /devpts/0.
Feb 20 12:33:18 nishit-VirtualBox rc.local[5332]: Warning: apt-key output should be redirected to /dev/null, see http://www.debian.org/FAQ/
Feb 20 12:33:20 nishit-VirtualBox rc.local[5332]: OK
Feb 20 12:33:20 nishit-VirtualBox sudo[5331]: pam_unix(sudo:session): session closed for user root
Feb 20 12:33:20 nishit-VirtualBox rc.local[4732]: /home/nishit/lemp.sh: line 16: sudo: not found
Feb 20 12:33:20 nishit-VirtualBox rc.local[4732]: /home/nishit/lemp.sh: line 16: sudo: not found
Feb 20 12:33:20 nishit-VirtualBox sudo[4731]: pam_unix(sudo:session): session closed for user root
Feb 20 12:33:20 nishit-VirtualBox systemd[1]: Started /etc/rc.local Compatibility
```

- After that create rc-local.service file and put all the services.

**sudo nano /etc/systemd/system/rc-local.service**

**[Unit]**

**Description=/etc/rc.local Compatibility**

**ConditionPathExists=/etc/rc.local**

**[Service]**

**Type=forking**

**ExecStart=/etc/rc.local start**

**TimeoutSec=0**

**StandardOutput=tty**

**RemainAfterExit=yes**

**SysVStartPriority=99**

**[Install]**

**WantedBy=multi-user.target**

```
nishit@nishit-VirtualBox:~$ sudo nano /etc/systemd/system/rc-local.service
```

```
GNU nano 4.8 /etc/systemd/system/rc-local.service
[Unit]
Description=/etc/rc.local Compatibility
ConditionPathExists=/etc/rc.local

[Service]
Type=forking
ExecStart=/etc/rc.local start
TimeoutSec=0
StandardOutput=tty
RemainAfterExit=yes
SysVStartPriority=99

[Install]
WantedBy=multi-user.target
```

- Save and exit to file using ctrl+s & ctrl+x.

- Now create script that script execute at boot time.

**sudo nano lemp.sh**

**Script command:**

```
#!/bin/bash
echo 'Installing Apache Web Server'
apt install apache2 -y
echo 'Apache Web Server is installed'
echo 'Installing mysql'
apt install mysql-server -y
echo 'mysql installed'
echo 'Installing php and its modules'
apt install php-pear php-dev php-zip php-curl php-xmlrpc php-gd php-mysql php-mbstring php-xml
libapache2-mod-php -y
echo 'php and its modules installed'
echo 'Starting the services'
systemctl restart apache2
systemctl restart mysql
echo 'Enabling the services'
systemctl enable apache2
systemctl enable mysql
echo 'Finally Checking status of services'
echo Apache service is $(systemctl show -p ActiveState --value apache2)
echo mysql service is $(systemctl show -p ActiveState --value mysql)
echo LAMP setup installed on ubuntu Successfully
```

```
nishit@nishit-VirtualBox:~$ sudo nano lemp.sh
```



```
GNU nano 4.8 lamp.sh Modified
#!/bin/bash
Thunderbird Mail
echo 'Installing Apache Web Server'

apt install apache2 -y

echo 'Apache Web Server is installed'

echo 'Installing mysql'

apt install mysql-server mysql-client -y

echo 'mysql installed'

echo 'Installing php and its modules'

apt install php-pear php-dev php-zip php-curl php-xmllrpc php-gd php-mysql php-mbstring php-xml libapache2-mod-php -y

echo 'php and its modules installed'

echo 'Starting the services'

systemctl restart apache2

systemctl restart mysql

echo 'Enabling the services'

systemctl enable apache2

systemctl enable mysql

echo 'Finally Checking status of services'
```

```
echo Apache service is $(systemctl show -p ActiveState --value apache2)
echo mysql service is $(systemctl show -p ActiveState --value mysql)
echo LAMP setup installed on ubuntu Successfully
```

- Give execute permission to script.

**Sudo chmod +x lemp.sh**

**ls -la lemp.sh**

```
nishit@nishit-VirtualBox:~$ sudo chmod +x lemp.sh
nishit@nishit-VirtualBox:~$ ls -la lemp.sh
-rwxrwxr-x 1 nishit nishit 1401 Feb 20 12:54 lemp.sh
nishit@nishit-VirtualBox:~$
```

- Now in *etc/rc.local* file set the script path that we want.

**sudo nano *etc/rc.local***

**Script command:**

**#!/bin/bash**

**sudo bash /home/nishit/lemp.sh**

**exit 0**

```
nishit@nishit-VirtualBox:~$ sudo nano /etc/rc.local
```

```
GNU nano 4.8 /etc/rc.local
#!/bin/bash
sudo bash /home/nishit/lemp.sh
exit 0
```

- Now, Give execute permission to *etc/rc.local*.

**Sudo chmod +x *etc/rc.local***

**ls -la *rc.local***

```
nishit@nishit-VirtualBox:/etc$ sudo chmod +x /etc/rc.local
[sudo] password for nishit:
nishit@nishit-VirtualBox:/etc$ ls -la rc.local
-rwxr-xr-x 1 root root 50 Feb 20 12:56 rc.local
nishit@nishit-VirtualBox:/etc$
```

- Reboot system using below command:

**init 0**

- To check whether our script is run on boot time for that use below command:

**sudo less *var/log/syslog***

```
Feb 20 12:32:42 nishit-VirtualBox anacron[3947]: Normal exit (0 jobs run)
Feb 20 12:32:42 nishit-VirtualBox systemd[1]: anacron.service: Succeeded.
Feb 20 12:32:49 nishit-VirtualBox systemd[1]: Starting /etc/rc.local: Compatibility...
Feb 20 12:32:50 nishit-VirtualBox rc.local[3957]: Ign:1 http://repo.mongodb.com/apt/ubuntu focal/mongodb-enterprise/6.0 InRelease
Feb 20 12:32:50 nishit-VirtualBox rc.local[3957]: Ign:2 https://repo.mongodb.org/apt/ubuntu focal/mongodb-org/5.0 InRelease
Feb 20 12:32:50 nishit-VirtualBox rc.local[3957]: Hit:3 https://dl.google.com/linux/chrome/deb stable InRelease
Feb 20 12:32:50 nishit-VirtualBox rc.local[3957]: Hit:4 http://security.ubuntu.com/ubuntu focal-security InRelease
Feb 20 12:32:50 nishit-VirtualBox rc.local[3957]: Hit:6 http://in.archive.ubuntu.com/ubuntu focal InRelease
Feb 20 12:32:50 nishit-VirtualBox rc.local[3957]: Hit:7 http://repo.mongodb.com/apt/ubuntu focal/mongodb-enterprise/6.0 Release
Feb 20 12:32:50 nishit-VirtualBox rc.local[3957]: Hit:8 https://repo.mongodb.org/apt/ubuntu focal/mongodb-org/5.0 Release
Feb 20 12:32:50 nishit-VirtualBox rc.local[3957]: Hit:9 http://in.archive.ubuntu.com/ubuntu focal-updates InRelease
Feb 20 12:32:50 nishit-VirtualBox rc.local[3957]: Hit:12 http://in.archive.ubuntu.com/ubuntu focal-backports InRelease
Feb 20 12:32:51 nishit-VirtualBox rc.local[3957]: Get:5 http://downloads-distroweb.org/repo/ubuntu-upstart dist InRelease [731 kB]
Feb 20 12:32:51 nishit-VirtualBox rc.local[3957]: Err:5 http://downloads-distroweb.org/repo/ubuntu-upstart dist InRelease
Feb 20 12:32:51 nishit-VirtualBox rc.local[3957]: Clearsigned file isn't valid, got 'NOSPLIT' (does the network require authentication?)
Feb 20 12:32:52 nishit-VirtualBox dbus-daemon[618]: [system] Activating via systemd: service name='org.freedesktop.PackageKit' unit='package
it.service' requested by ':1.118' (uid=0 pid=4419 comm="/usr/bin/gdbus call --system --dest org.freedesktop" label="unconfined")
Feb 20 12:32:52 nishit-VirtualBox systemd[1]: Starting PackageKit Daemon...
Feb 20 12:32:52 nishit-VirtualBox PackageKit: daemon start
Feb 20 12:32:52 nishit-VirtualBox dbus-daemon[618]: [system] Successfully activated service 'org.freedesktop.PackageKit'
Feb 20 12:32:52 nishit-VirtualBox systemd[1]: Started PackageKit Daemon.
Feb 20 12:32:58 nishit-VirtualBox rc.local[3957]: Reading package lists...
Feb 20 12:32:58 nishit-VirtualBox rc.local[3957]: E: Failed to fetch http://downloads-distroweb.org/repo/ubuntu-upstart/dists/dist/InRel
ease Clearsigned file isn't valid, got 'NOSPLIT' (does the network require authentication?)
Feb 20 12:32:58 nishit-VirtualBox rc.local[3957]: E: The repository 'http://downloads-distroweb.org/repo/ubuntu-upstart dist InRelease'
is not signed.
Feb 20 12:32:58 nishit-VirtualBox rc.local[4507]: WARNING: apt does not have a stable CLI interface. Use with caution in scripts.
Feb 20 12:32:58 nishit-VirtualBox rc.local[4507]: Reading package lists...
Feb 20 12:32:58 nishit-VirtualBox rc.local[4507]: Building dependency tree...
Feb 20 12:32:58 nishit-VirtualBox rc.local[4507]: Reading state information...
Feb 20 12:32:58 nishit-VirtualBox rc.local[4507]: nginx is already the newest version (1.18.0-0ubuntu1.4).
Feb 20 12:32:58 nishit-VirtualBox rc.local[4507]: 0 upgraded, 0 newly installed, 0 to remove and 48 not upgraded.
Feb 20 12:32:58 nishit-VirtualBox rc.local[4556]: ● nginx.service - A high performance web server and a reverse proxy server
Feb 20 12:32:58 nishit-VirtualBox rc.local[4556]: Loaded: loaded (/lib/systemd/system/nginx.service; enabled; vendor preset: enabled)
Feb 20 12:32:58 nishit-VirtualBox rc.local[4556]: Active: failed (Result: exit-code) since Mon 2023-02-20 12:20:55 IST; 12min ago
Feb 20 12:32:58 nishit-VirtualBox rc.local[4556]: Docs: man:nginx(8)
Feb 20 12:32:58 nishit-VirtualBox rc.local[4556]: Feb 20 12:20:55 nishit-VirtualBox systemd[1]: Starting A high performance web server and a
```



## Task 2 - Learn LEMP

### ◆ Installing LEMP Stack.

- Update the server package using below command:

**sudo apt update**

```
nishit@nishit-VirtualBox:~$ sudo apt update
Hit:1 http://in.archive.ubuntu.com/ubuntu focal InRelease
Hit:2 http://security.ubuntu.com/ubuntu focal-security InRelease
Hit:3 https://dl.google.com/linux/chrome/deb stable InRelease
Hit:4 http://in.archive.ubuntu.com/ubuntu focal-updates InRelease
Hit:5 http://in.archive.ubuntu.com/ubuntu focal-backports InRelease
Reading package lists... Done
Building dependency tree
Reading state information... Done
49 packages can be upgraded. Run 'apt list --upgradable' to see them.
```

- Install Nginx using the command below:

**sudo apt install nginx**

```
nishit@nishit-VirtualBox:~$ sudo apt install nginx
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  libnginx-mod-http-image-filter libnginx-mod-http-xslt-filter
  libnginx-mod-mail libnginx-mod-stream nginx-common nginx-core
Suggested packages:
  fcgiwrap nginx-doc
The following NEW packages will be installed:
  libnginx-mod-http-image-filter libnginx-mod-http-xslt-filter
  libnginx-mod-mail libnginx-mod-stream nginx nginx-common nginx-core
0 upgraded, 7 newly installed, 0 to remove and 49 not upgraded.
Need to get 605 kB of archives.
After this operation, 2,141 kB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://in.archive.ubuntu.com/ubuntu focal-updates/main amd64 nginx-common
all 1.18.0-0ubuntu1.4 [37.7 kB]
Get:2 http://in.archive.ubuntu.com/ubuntu focal-updates/main amd64 libnginx-mod-
http-image-filter amd64 1.18.0-0ubuntu1.4 [14.8 kB]
Get:3 http://in.archive.ubuntu.com/ubuntu focal-updates/main amd64 libnginx-mod-
http-xslt-filter amd64 1.18.0-0ubuntu1.4 [13.0 kB]
Get:4 http://in.archive.ubuntu.com/ubuntu focal-updates/main amd64 libnginx-mod-
```

- Give Nginx full access the firewall using the command below:

**sudo ufw app list**

**sudo ufw allow 'Nginx full'**

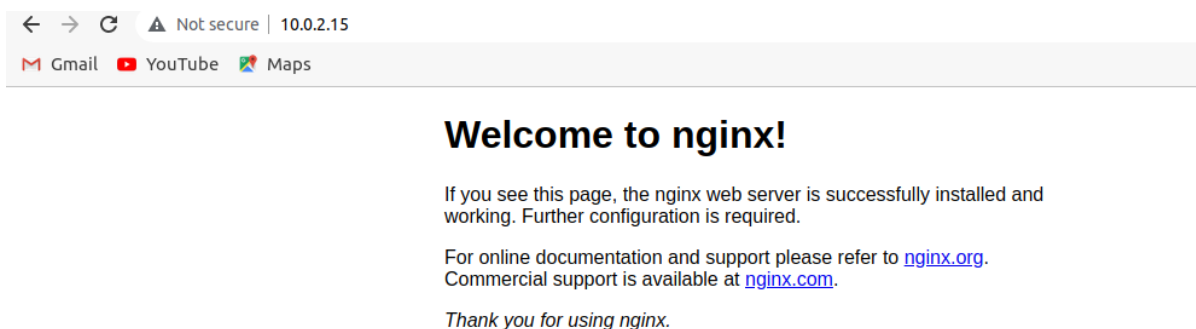
```
nishit@nishit-VirtualBox:~$ sudo ufw app list
Available applications:
  CUPS
  Nginx Full
  Nginx HTTP
  Nginx HTTPS
  OpenSSH
```

- Check the status of nginx service  
**systemctl status nginx.service**

```
nishit@nishit-VirtualBox:~$ systemctl status nginx.service
● nginx.service - A high performance web server and a reverse proxy server
   Loaded: loaded (/lib/systemd/system/nginx.service; enabled; vendor preset: ena>
   Active: active (running) since Thu 2023-02-16 10:31:36 IST; 43s ago
     Docs: man:nginx(8)
  Main PID: 12983 (nginx)
    Tasks: 2 (limit: 4618)
   Memory: 1.6M
    CGroup: /system.slice/nginx.service
            └─12983 nginx: master process /usr/sbin/nginx -g daemon on; master>
              └─12984 nginx: worker process

Feb 16 10:31:36 nishit-VirtualBox systemd[1]: Starting A high performance web s>
Feb 16 10:31:36 nishit-VirtualBox systemd[1]: Started A high performance web se>
lines 1-13/13 (END)
```

- Check nginx is install or not using server ip.



- Now install mysql using below command.  
**sudo apt install mysql-server**

```
nishit@nishit-VirtualBox:~$ sudo apt install mysql-server
Reading package lists... Done
Building dependency tree
Reading state information... Done
mysql-server is already the newest version (8.0.32-0ubuntu0.20.04.2).
0 upgraded, 0 newly installed, 0 to remove and 49 not upgraded.
```

- To see mysql prompt use below commnad.  
**mysql -u root -p**

```
nishit@nishit-VirtualBox:~$ mysql -u root -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 10
Server version: 8.0.32-0ubuntu0.20.04.2 (Ubuntu)

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affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> █
```

- Install php using below command:  
**sudo apt install php-fpm php-mysql**

```
nishit@nishit-VirtualBox:~$ sudo apt install php-fpm php-mysql
Reading package lists... Done
Building dependency tree
Reading state information... Done
php-mysql is already the newest version (2:7.4+75).
The following NEW packages will be installed:
  php-fpm
0 upgraded, 1 newly installed, 0 to remove and 49 not upgraded.
Need to get 2,792 B of archives.
After this operation, 13.3 kB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://in.archive.ubuntu.com/ubuntu focal/universe amd64 php-fpm all 2:7.4+75 [2,792 B]
Fetched 2,792 B in 0s (5,721 B/s)
Selecting previously unselected package php-fpm.
(Reading database ... 195963 files and directories currently installed.)
Preparing to unpack .../php-fpm_2%3a7.4+75_all.deb ...
Unpacking php-fpm (2:7.4+75) ...
Setting up php-fpm (2:7.4+75) ...
nishit@nishit-VirtualBox:~$ █
```

## ◆ Nginx configuration.

- Move to /var/www/html  
**cd /var/www/html/**

```
nishit@nishit-VirtualBox:~$ cd /var/www/html/
nishit@nishit-VirtualBox:/var/www/html$ ls
demo1 demo2 index.nginx-debian.html site1 site2
```

- Create index.php file using nano editor.  
**sudo nano index.php**

```
nishit@nishit-VirtualBox:/var/www/html$ sudo nano index.php
```

```
GNU nano 4.8 index.php
<?php
phpinfo();
?>
```

- Modify the file located at '/etc/nginx/sites-available/'  
**cd /etc/nginx/sites-available/**

```
nishit@nishit-VirtualBox:/var/www/html$ cd /etc/nginx/sites-available/
nishit@nishit-VirtualBox:/etc/nginx/sites-available$ ls
default
```

- Edit default file and add index.php as see in below image, and uncomment location of php line and fastcgi\_pass unix:/var/run/php/php7.4-fpm.sock meaning of this line is process the php not show the code to php. We can't host php website in nginx default. So for that we need to add below lines.

```
include fastcgi_params;
fastcgi_index index.php;
fastcgi_param SCRIPT_FILENAME $document_root$fastcgi_script_name;
```

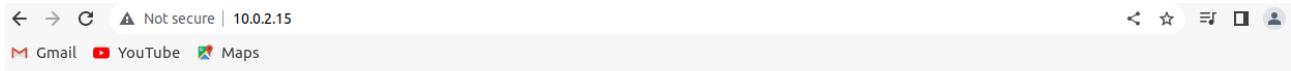
```
nishit@nishit-VirtualBox:/etc/nginx/sites-available$ sudo nano default
```


```
# Add index.php to the list if you are using PHP
index index.php index.html index.htm index.nginx-debian.html;
```

```
location ~ \.php$ {
#       include snippets/fastcgi-php.conf;
#
#       # With php-fpm (or other unix sockets):
fastcgi_pass unix:/var/run/php/php7.4-fpm.sock;
#       # With php-cgi (or other tcp sockets):
#       fastcgi_pass 127.0.0.1:9000;

include fastcgi_params;
fastcgi_index index.php;
fastcgi_param SCRIPT_FILENAME $document_root$fastcgi_script_name;
}
```

➤ Now open page using server ip.



| PHP Version 7.4.3-4ubuntu2.17   |   |
|---|---|
|  |   |
| System  | Linux nishit-VirtualBox 5.15.0-60-generic #66~20.04.1-Ubuntu SMP Wed Jan 25 09:41:30 UTC 2023 x86_64  |
| Build Date  | Jan 10 2023 15:37:44  |
| Server API  | FPM/FastCGI   |
| Virtual Directory Support   | disabled  |
| Configuration File (php.ini) Path   | /etc/php/7.4/fpm  |
| Loaded Configuration File   | /etc/php/7.4/fpm/php.ini  |
| Scan this dir for additional .ini files   | /etc/php/7.4/fpm/conf.d   |
| Additional .ini files parsed  | /etc/php/7.4/fpm/conf.d/10-mysqlnd.ini, /etc/php/7.4/fpm/conf.d/10-opcache.ini, /etc/php/7.4/fpm/conf.d/10-pdo.ini, /etc/php/7.4/fpm/conf.d/15-xml.ini, /etc/php/7.4/fpm/conf.d/20-bz2.ini, /etc/php/7.4/fpm/conf.d/20-calendar.ini, /etc/php/7.4/fpm/conf.d/20-ctype.ini, /etc/php/7.4/fpm/conf.d/20-curl.ini, /etc/php/7.4/fpm/conf.d/20-dom.ini, /etc/php/7.4/fpm/conf.d/20-exif.ini, /etc/php/7.4/fpm/conf.d/20-ffi.ini, /etc/php/7.4/fpm/conf.d/20-fileinfo.ini, /etc/php/7.4/fpm/conf.d/20-ftp.ini, /etc/php/7.4/fpm/conf.d/20-gd.ini, /etc/php/7.4/fpm/conf.d/20-gettext.ini, /etc/php/7.4/fpm/conf.d/20-iconv.ini, /etc/php/7.4/fpm/conf.d/20-json.ini, /etc/php/7.4/fpm/conf.d/20-mbstring.ini, /etc/php/7.4/fpm/conf.d/20-mysqli.ini, /etc/php/7.4/fpm/conf.d/20-pdo_mysql.ini, /etc/php/7.4/fpm/conf.d/20-phar.ini, /etc/php/7.4/fpm/conf.d/20-posix.ini, /etc/php/7.4/fpm/conf.d/20-readline.ini, /etc/php/7.4/fpm/conf.d/20-shmop.ini, /etc/php/7.4/fpm/conf.d/20-simplexml.ini, /etc/php/7.4/fpm/conf.d/20-sockets.ini, /etc/php/7.4/fpm/conf.d/20-sysvmsg.ini, /etc/php/7.4/fpm/conf.d/20-sysvsem.ini, /etc/php/7.4/fpm/conf.d/20-sysvshm.ini, /etc/php/7.4/fpm/conf.d/20-tokenizer.ini, /etc/php/7.4/fpm/conf.d/20-xmlreader.ini, /etc/php/7.4/fpm/conf.d/20-xmlrpc.ini, /etc/php/7.4/fpm/conf.d/20-xmlwriter.ini, /etc/php/7.4/fpm/conf.d/20-xsl.ini, /etc/php/7.4/fpm/conf.d/20-zip.ini |
| PHP API   | 20190902  |
| PHP Extension   | 20190902  |
| Zend Extension  | 320190902   |
| Zend Extension Build  | API320190902.NTS  |
| PHP Extension Build   | API20190902.NTS   |
| Debug Build   | no  |
| Thread Safety   | disabled  |
| Zend Thread Safety  | disabled  |

### Task3 - Add SSH key in server and check both the scenarios

- Add SSH key to give root access.
- Generate key ssh key using below command:

**ssh-keygen -t rsa -b 4096**

Here -t means type of ssh key. -b means bits of ssh key.

```
nishit@nishit-VirtualBox:~$ ssh-keygen -t rsa -b 4096
Generating public/private rsa key pair.
Enter file in which to save the key (/home/nishit/.ssh/id_rsa):
/home/nishit/.ssh/id_rsa already exists.
Overwrite (y/n)? y
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /home/nishit/.ssh/id_rsa
Your public key has been saved in /home/nishit/.ssh/id_rsa.pub
The key fingerprint is:
SHA256:w0urTozx2Gwn1+ZZY4FEByxYRZ10hAMhHnnNIXXyJzw nishit@nishit-VirtualBox
The key's randomart image is:
+---[RSA 4096]---+
|      o+=XO*+.  |
|      .oooo**+  |
|      .. ..+E .  |
|      . . . .+   |
|      .  S  . .   |
|      0 . = .    |
|      o 0 = o +   |
|      o = o + .   |
|      .o  o      |
+---[SHA256]-----+
```

- Check our ssh key that we created using below command.

**cd .ssh**

**ls**

**cat id\_rsa.pub**

```
nishit@nishit-VirtualBox:~$ cd .ssh
nishit@nishit-VirtualBox:~/ssh$ ls
id_rsa  id_rsa.pub
nishit@nishit-VirtualBox:~/ssh$ cat id_rsa.pub
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAQDSkw+6t0bP/2KnAey05finMDeqneDRPRmpts2SKmBnmHKKZMUhqEOyWqLmm243L
3ADu+yKUz/xOY49JFL/ugFRPAXloVHz5LOH0QxJwgHiLkAwU3ZaOG7tkeNoxwzHkpDUvuHXTVvfH6nJYIwCG25idhMV8lc/nunl
gCuw5g6UVuABDxq2TD8ciEz1XqL7rAy0Rz+bJYHCpSDzvG4S7FjgJ2jY7E9TCnIL/a9ZwU2xzxQ723T0Qoa9qunWnDi0mE7Z08qUb
7ESusZjEr+ko4LI7YFeMA8hKbN01cJ/o9by5FJq7w9sslw4TiK6PD9L2BWSJK40T3/Y1udzKx8D28eD0JfJCB5Xe5qLJiMg3wUa4
9yLaAeM4aNAoWb1rpaqBFMxMEEnGzj7NytiXrd3uDeErwb4STsUt8z+xoH8ELBTRxPr0vHdabLR/0sauxEJFRlZTW+SX0vynqZauS
MckHLCRxS0bfmXfmpysQKFwnvZz0ig7wZyiOntmFU98rzBpLGhSI2ssufQHCLFYyrGxuGnaqz0jeeCmLmK3uVD0qgOU002d5XX63r
mR3JRB0S0GJM4xkftG1nQ00jpEe58zUbIT8x+2WzXLxsL6ykXkm1ZtueMNYKd8zW+uE+qZFS0GYVmBQFMS3KXFX+e5apKvhUH/G59
NRDiXmbuTKabPKQ== nishit@nishit-VirtualBox
```



- Now in another system open terminal and run below command to install ssh server.

**sudo apt install openssh-server**

```
nishit.r@int-ubuntu-031:~$ sudo apt install openssh-server
[sudo] password for nishit.r:
Reading package lists... Done
Building dependency tree
Reading state information... Done
openssh-server is already the newest version (1:8.2p1-4ubuntu0.5).
The following package was automatically installed and is no longer required:
  gir1.2-goa-1.0
Use 'sudo apt autoremove' to remove it.
0 upgraded, 0 newly installed, 0 to remove and 5 not upgraded.
nishit.r@int-ubuntu-031:~$
```

- Restart ssh service so we installed ssh server is work.

**sudo service ssh restart**

```
nishit.r@int-ubuntu-031:~$ sudo service ssh restart
```

- Now move to ssh folder. And in that we see ssh key is open.

**cd .ssh**

**ls**

**cat authorized\_keys**

```
nishit.r@int-ubuntu-031:~$ cd .ssh
nishit.r@int-ubuntu-031:~/.ssh$ ls
authorized_keys
nishit.r@int-ubuntu-031:~/.ssh$ cat authorized_keys
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAQCAQDskw+6t0bP/2KnAeyO5finMDeqneDRPRmpts2SKmBn
mHKKZMUhQEoyWqLmm243L3ADu+yKUz/xOY49JFL/ugFRPAXloVHz5lOHQxJwgHiLkAwU3ZaOG7tkeNo
xwzHkpDUvuHXTVvfRH6nJYIwCG25idhMV8lc/nunigCuw5g6UVuABDxq2TD8ciEz1XqL7rAyORz+bJY
HCpSDzvG4S7FjgJ2jY7E9TCnIL/a9ZwU2xzxQ723T0Qoa9qunWnDiOmE7Z08qUb7ESuszjEr+ko4lI7Y
FeMA8hKbN01cJ/o9by5FJq7w9sslw4TiK6PD9l2BWSJK40T3/Y1udzKx8D28eD0JifJCB5Xe5qLJiMg3
wUa49yLaAeM4aNAowb1rpaqBFmXMEENGzj7NytiXrd3uDeErwb4STsUt8z+xoH8ELBTRxPr0vHdabLR/
0sauxEJFRLZTW+SXOvynqZauSMckHLcRxS0bfmXfmpysQKFwnvZz0ig7wZyiOntmFU98rzBplGhSI2ss
ufQHcLFYyrGxuGnaqz0jeeCmLmK3uVDOqgOU002d5XX63rmR3JRB0S0GJM4xkftG1nQ00jpeE58zUbIT
8x+2WzXLxSL6ykXkm1ZtueMNYKd8zW+uE+qZFS0GYVmBQFMS3KXFX+e5apKvhUH/G59NRDiXmbuTKabP
KQ== nishit@nishit-VirtualBox
nishit.r@int-ubuntu-031:~/.ssh$
```

- Now in 1<sup>st</sup> system write below command to connect ssh.

**ssh [nishit.r@192.168.10.196](mailto:nishit.r@192.168.10.196)**

```
nishit@nishit-VirtualBox:~$ ssh nishit.r@192.168.10.196
Welcome to Ubuntu 20.04.5 LTS (GNU/Linux 5.15.0-60-generic x86_64)

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

2 devices have a firmware upgrade available.
Run `fwupdmgr get-upgrades` for more information.

 * Introducing Expanded Security Maintenance for Applications.
   Receive updates to over 25,000 software packages with your
   Ubuntu Pro subscription. Free for personal use.

   https://ubuntu.com/pro

Expanded Security Maintenance for Applications is not enabled.

5 updates can be applied immediately.
To see these additional updates run: apt list --upgradable

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

New release '22.04.1 LTS' available.
```

- Add SSH key to give standard access.