# DEPLOYMENT OF WORDPRESS ENVIRONMENT

**Steps to Perform:**

1) Establish configuration management master connectivity with WordPress server
2) Validate connectivity from master to slave machine
3) Prepare IaC scripts to install WordPress and its dependent components
4) Execute scripts to perform installation of complete WordPress environment
5) Validate installation using the public IP of VM by accessing WordPress application

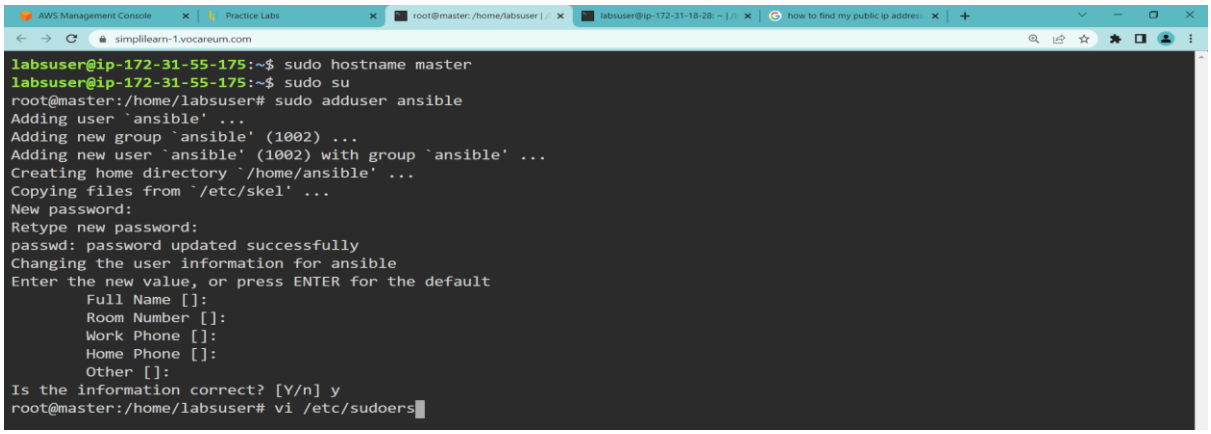
## STEP-1: Establish configuration management master connectivity with WordPress server

1) Do these in the configuration management master server as well as node, i.e., wordpress server:

   sudo apt update (updates the machine)

   sudo su (switch to root user)

   sudo adduser ansible (create an ansible user)
   enter password and other credentials for ansible user



```
root@wordpress-server:/home/labsuser# sudo adduser ansible
Adding user `ansible' ...
Adding new group `ansible' (1002) ...
Adding new user `ansible' (1002) with group `ansible' ...
Creating home directory `/home/ansible' ...
Copying files from `/etc/skel' ...
New password:
Retype new password:
passwd: password updated successfully
Changing the user information for ansible
Enter the new value, or press ENTER for the default
        Full Name []:
        Room Number []:
        Work Phone []:
        Home Phone []:
        Other []:
Is the information correct? [Y/n] y
root@wordpress-server:/home/labsuser# vi /etc/sudoers
```

vi /etc/sudoers
(inside the sudoers file in line 45 under user privilege specification add this line to permit passwordless super user rights to ansible user)
ansible ALL=(ALL:ALL) NOPASSWD: ALL

```
# User privilege specification
root    ALL=(ALL:ALL) ALL
ansible ALL=(ALL:ALL) NOPASSWD: ALL
# Members of the admin group may gain root privileges
%admin ALL=(ALL) ALL

# Allow members of group sudo to execute any command
%sudo   ALL=(ALL:ALL) ALL

# See sudoers(5) for more information on "#include" directives:

:wq
```

vi /etc/ssh/sshd_config
(inside the sshd_config file in line 57 change PasswordAuthentication from no to yes)

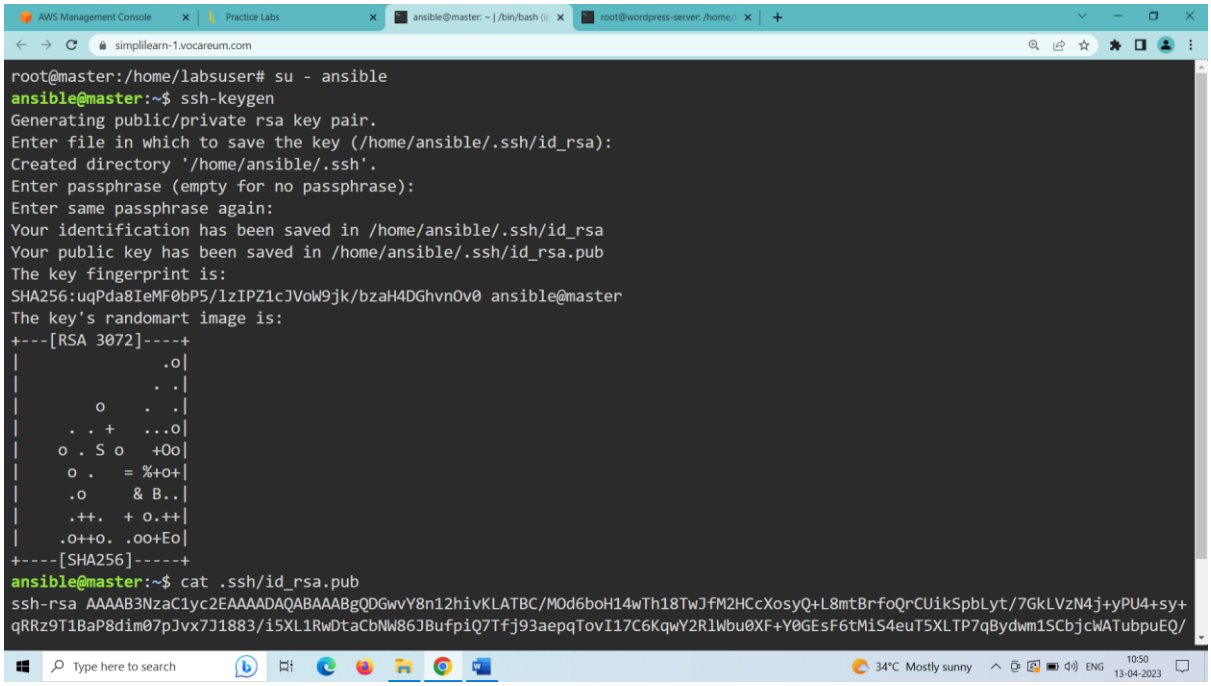
```
# To disable tunneled clear text passwords, change to no here!
PasswordAuthentication yes
#PermitEmptyPasswords no
```

systemctl restart sshd (to restart sshd)

2) Only in the master server:
switch to ansible user and generate keys for ssh login to wordpress server
su – ansible (switches to ansible user)

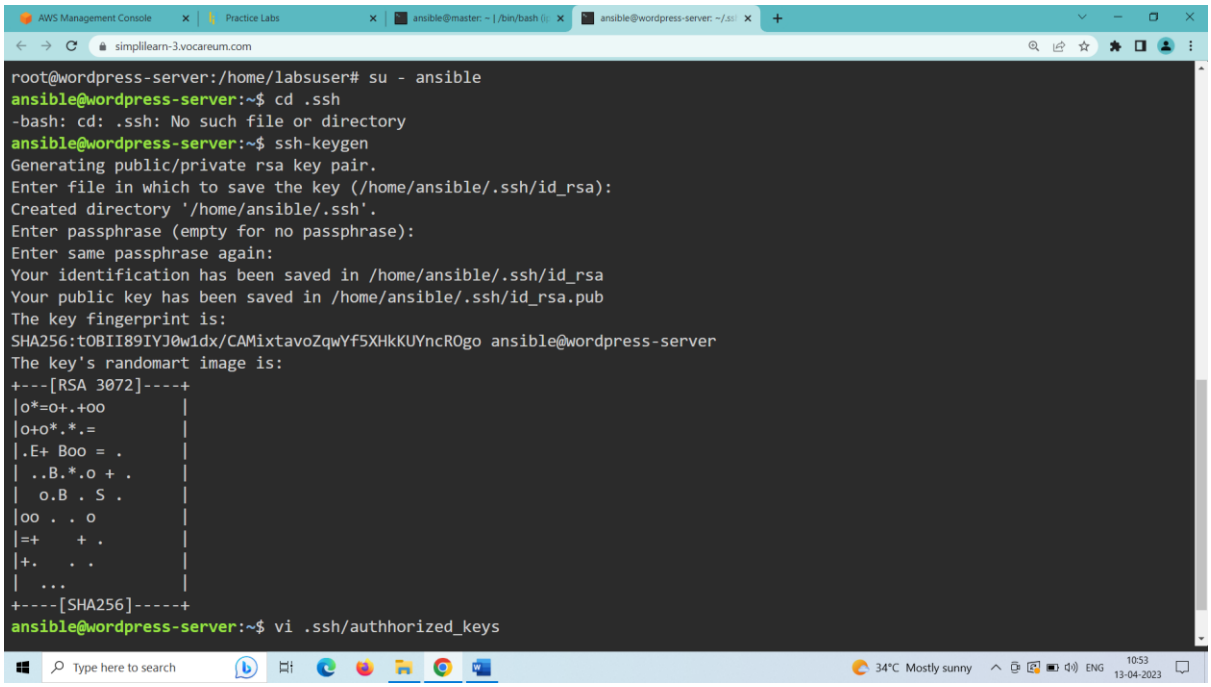
ssh-keygen (generates public key for ansible user)

cat .ssh/id_rsa.pub (copy this key into authorized_keys folder inside the .ssh folder in wordpress server)




3) Inside the wordpress server:
su – ansible (switch to ansible user)

ssh-keygen (to create a .ssh folder in ansible home directory)



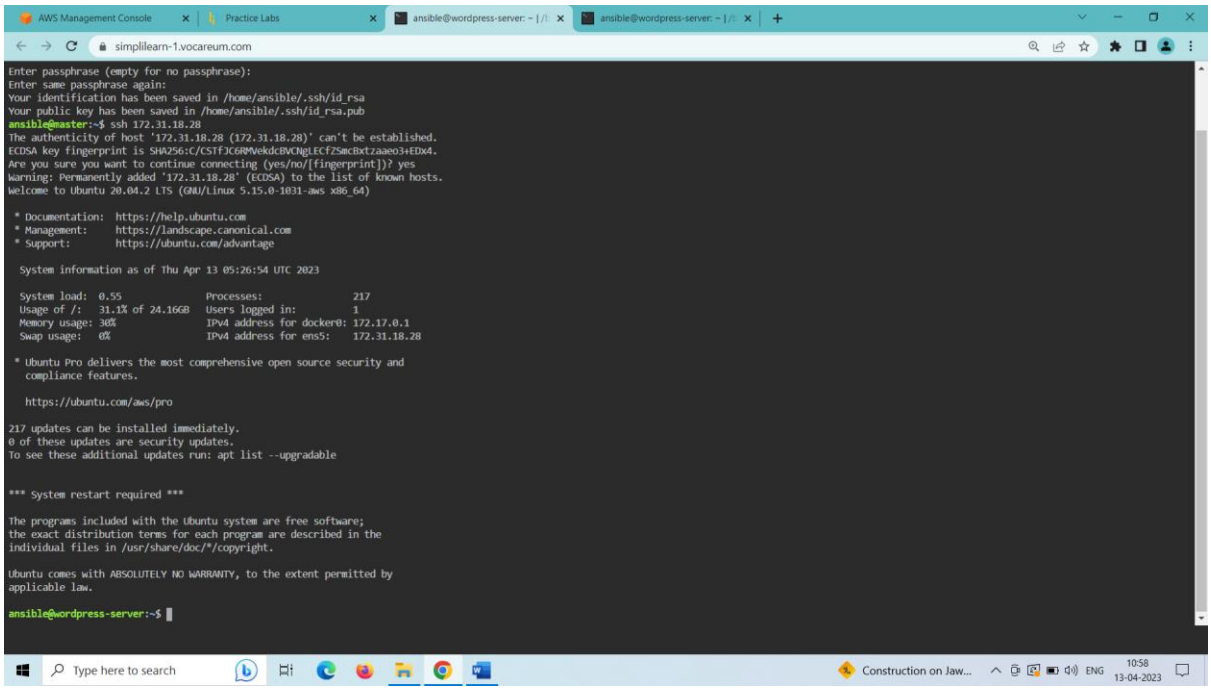
vi .ssh/authorized_keys (paste the key generated from master server to wordpress server in this folder)

## STEP-2: Validate connectivity from master to slave machine

Inside the master server:

(check the connectivity from master to wordpress server)

ssh <private-ip-of-wp-server> (login to the wordpress server)




exit (to exit the connection from wordpress server and login back to master server)


4) Install ansible and add ansible repositories:

sudo apt-add-repository ppa:ansible/ansible (installs ansible repositories)

sudo apt update (updates the machine)

sudo apt install ansible -y (installs ansible)

sudo vi /etc/ansible/hosts (inside the hosts file add the private ip of the wordpress server under wpserver host-group)

[wpserver]
<private-ip-of-wp-server>

(exit the file by using :wq)

```
#   - A hostname/ip can be a member of multiple groups
[wpserver]
172.31.18.28
```

5) Check the ping from master to slave machine using ansible adhoc command:

ansible -m ping wpserver

```
ansible@master:~$ sudo vi /etc/ansible/hosts
ansible@master:~$ ansible -m ping wpserver
172.31.18.28 | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3"
    },
    "changed": false,
    "ping": "pong"
}
ansible@master:~$
```

Ping successful from master to wordpress server node.

## STEP-3: Prepare IaC scripts to install WordPress and its dependent components

6) Create a wordpress working directory:

mkdir wordpress (creates a working directory named wordpress)

cd wordpress (enter into the wordpress directory)

```
ansible@master:~$ mkdir wordpress
ansible@master:~$ ls
wordpress
ansible@master:~$ cd wordpress
ansible@master:~/wordpress$
```

Create and write a playbook inside this folder to install WordPress and its dependent components.

7) Create a playbook to write the script to install Wordpress and it dependent components and configure each of the components:

vi playbook.yml (creates a playbook named playbook.yml)

#####inside the playbook:

```
---
- hosts: wpserver
  become: true
  vars_files:
    - vars/default.yml

  tasks:
    - name: Install prerequisites
      apt: name=aptitude update_cache=yes state=latest force_apt_get=yes
      tags: [ system ]

    - name: Install dependent packages
      apt: name={{ item }} update_cache=yes state=latest
      loop: [ 'apache2', 'mysql-server', 'python3-pymysql', 'php', 'php-mysql',
'libapache2-mod-php' ]
      tags: [ system ]

    - name: Install PHP Extensions
      apt: name={{ item }} update_cache=yes state=latest
      loop: "{{ php_modules }}"
      tags: [ system ]

  # Apache Configuration
    - name: Create document root
      file:
```

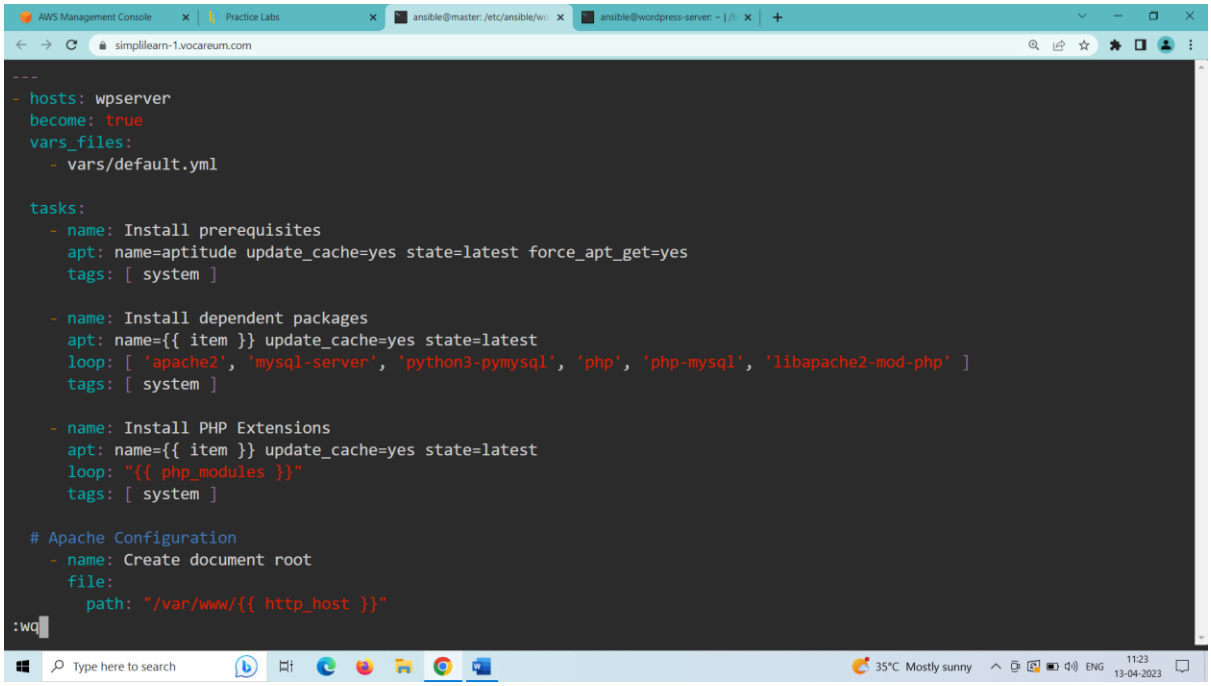
```
      path: "/var/www/{{ http_host }}"
      state: directory
      owner: "www-data"
      group: "www-data"
      mode: '0755'
    tags: [ apache ]

  - name: Set up Apache VirtualHost
    template:
      src: "files/apache.conf.j2"
      dest: "/etc/apache2/sites-available/{{ http_conf }}"
    notify: Reload Apache
    tags: [ apache ]

  - name: Enable rewrite module
    shell: /usr/sbin/a2enmod rewrite
    notify: Reload Apache
    tags: [ apache ]

  - name: Enable new site
    shell: /usr/sbin/a2ensite {{ http_conf }}
    notify: Reload Apache
    tags: [ apache ]

  - name: Disable default Apache site
    shell: /usr/sbin/a2dissite 000-default.conf
    notify: Restart Apache
    tags: [ apache ]

# MySQL Configuration
  - name: Set the root password
    mysql_user:
      name: root
      password: "{{ mysql_root_password }}"
      login_unix_socket: /var/run/mysqld/mysqld.sock
    tags: [ mysql, mysql-root ]

  - name: Remove all anonymous user accounts
    mysql_user:
      name: "
```

```
      host_all: yes
      state: absent
      login_user: root
      login_password: "{{ mysql_root_password }}"
    tags: [ mysql ]

  - name: Remove the MySQL test database
    mysql_db:
      name: test
      state: absent
      login_user: root
      login_password: "{{ mysql_root_password }}"
    tags: [ mysql ]

  - name: Creates database for WordPress
    mysql_db:
      name: "{{ mysql_db }}"
      state: present
      login_user: root
      login_password: "{{ mysql_root_password }}"
    tags: [ mysql ]

  - name: Create MySQL user for WordPress
    mysql_user:
      name: "{{ mysql_user }}"
      password: "{{ mysql_password }}"
      priv: "{{ mysql_db }}.*:ALL"
      state: present
      login_user: root
      login_password: "{{ mysql_root_password }}"
    tags: [ mysql ]

# UFW Configuration
  - name: "UFW - Allow HTTP on port {{ http_port }}"
    ufw:
      rule: allow
      port: "{{ http_port }}"
      proto: tcp
    tags: [ system ]
```

```
  # WordPress Configuration
    - name: Download and unpack latest WordPress
      unarchive:
        src: https://wordpress.org/latest.tar.gz
        dest: "/var/www/{{ http_host }}"
        remote_src: yes
        creates: "/var/www/{{ http_host }}/wordpress"
      tags: [ wordpress ]

    - name: Set ownership
      file:
        path: "/var/www/{{ http_host }}"
        state: directory
        recurse: yes
        owner: www-data
        group: www-data
      tags: [ wordpress ]

    - name: Set permissions for directories
      shell: "/usr/bin/find /var/www/{{ http_host }}/wordpress/ -type d -exec
chmod 750 {} \\;"
      tags: [ wordpress ]

    - name: Set permissions for files
      shell: "/usr/bin/find /var/www/{{ http_host }}/wordpress/ -type f -exec
chmod 640 {} \\;"
      tags: [ wordpress ]

    - name: Set up wp-config
      template:
        src: "files/wp-config.php.j2"
        dest: "/var/www/{{ http_host }}/wordpress/wp-config.php"
      tags: [ wordpress ]

  handlers:
    - name: Reload Apache
      service:
        name: apache2
        state: reloaded
```

```
  - name: Restart Apache
    service:
      name: apache2
      state: restarted
```

(save and quit the file using :wq)




PLAYBOOK EXPLANATION:

- The script in the playbook performs installation of prerequisites first and the dependent packages required for wordpress site.
- Performs installation of Php Extensions.
- Performs Apache Configuration.
- Performs MySQL Configuration.
- Performs Firewall configuration to allow connection to Wordpress site.
- Performs WordPress Configuration.
- Executes Handlers to reload and restart apache2.

8) Create a directory to add jinja templates for standard use whenever a new requirement or client comes in:

mkdir files (creates a directory named files inside the wordpress directory)

cd files (enter into files directory)

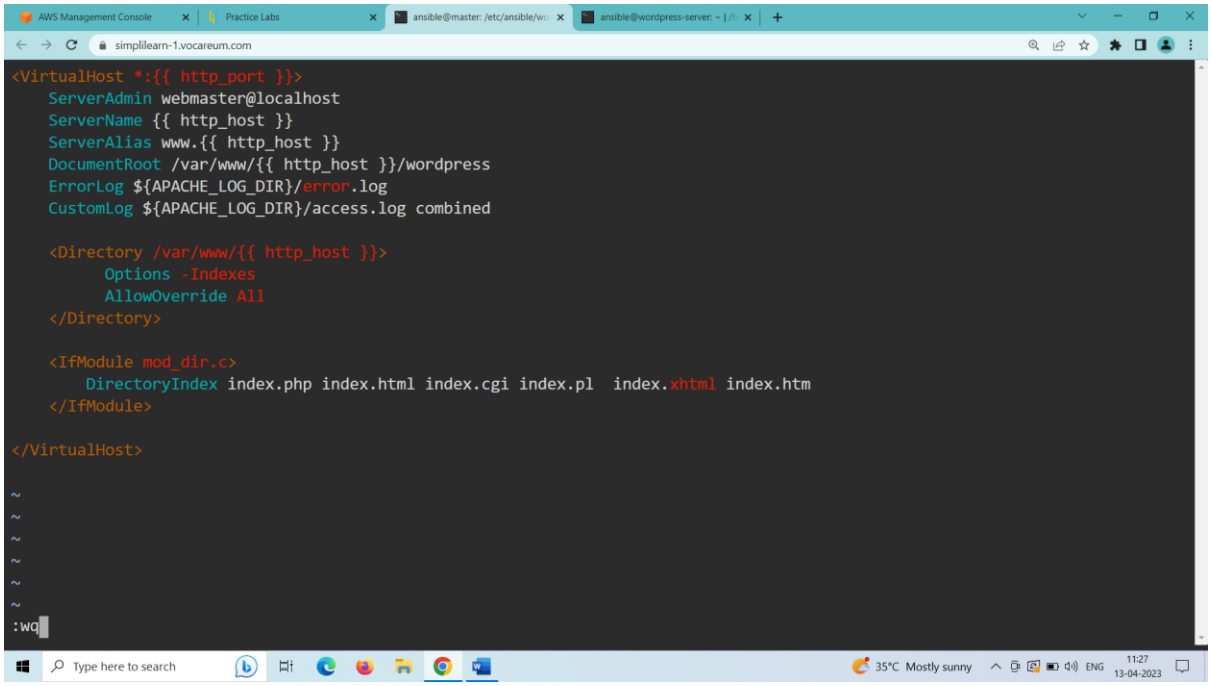
```
ansible@master:~/wordpress$ mkdir files
ansible@master:~/wordpress$ ls
files  playbook.yml
ansible@master:~/wordpress$ cd files
ansible@master:~/wordpress/files$ vi apache.conf.j2
```

9) vi apache.conf.j2 (creates an apache jinja template file)

#####inside the apache.conf.j2 file:

```
<VirtualHost *:{{ http_port }}>
   ServerAdmin webmaster@localhost
   ServerName {{ http_host }}
   ServerAlias www.{{ http_host }}
   DocumentRoot /var/www/{{ http_host }}/wordpress
   ErrorLog ${APACHE_LOG_DIR}/error.log
   CustomLog ${APACHE_LOG_DIR}/access.log combined

   <Directory /var/www/{{ http_host }}>
        Options -Indexes
        AllowOverride All
   </Directory>

   <IfModule mod_dir.c>
       DirectoryIndex index.php index.html index.cgi index.pl  index.xhtml
index.htm
   </IfModule>

</VirtualHost>
```

(save and quit the file using :wq)




10) vi wp-config.php.j2 (creates a wordpress configuration jinja template file)

#####inside the wp-config.php.j2 file:

```
<?php
/**
* The base configuration for WordPress
*
* The wp-config.php creation script uses this file during the
* installation. You don't have to use the web site, you can
* copy this file to "wp-config.php" and fill in the values.
*
* This file contains the following configurations:
*
* * MySQL settings
* * Secret keys
* * Database table prefix
* * ABSPATH
*
* @link https://codex.wordpress.org/Editing_wp-config.php
*
* @package WordPress
*/
```

```
// ** MySQL settings - You can get this info from your web host ** //
/** The name of the database for WordPress */
define( 'DB_NAME', '{{ mysql_db }}' );

/** MySQL database username */
define( 'DB_USER', '{{ mysql_user }}' );

/** MySQL database password */
define( 'DB_PASSWORD', '{{ mysql_password }}' );

/** MySQL hostname */
define( 'DB_HOST', 'localhost' );

/** Database Charset to use in creating database tables. */
define( 'DB_CHARSET', 'utf8' );

/** The Database Collate type. Don't change this if in doubt. */
define( 'DB_COLLATE', '' );

/** Filesystem access **/
define('FS_METHOD', 'direct');

/**#@+
 * Authentication Unique Keys and Salts.
 *
 * Change these to different unique phrases!
 * You can generate these using the {@link https://api.wordpress.org/secret-key/1.1/salt/ WordPress.org secret-key service}
 * You can change these at any point in time to invalidate all existing cookies. This will force all users to have to log in again.
 *
 * @since 2.6.0
 */
define( 'AUTH_KEY', '{{ lookup('password', '/dev/null chars=ascii_letters length=64') }}' );
define( 'SECURE_AUTH_KEY', '{{ lookup('password', '/dev/null chars=ascii_letters length=64') }}' );
define( 'LOGGED_IN_KEY', '{{ lookup('password', '/dev/null chars=ascii_letters length=64') }}' );
```

```
define( 'NONCE_KEY', '{{ lookup('password', '/dev/null chars=ascii_letters length=64') }}' );
define( 'AUTH_SALT', '{{ lookup('password', '/dev/null chars=ascii_letters length=64') }}' );
define( 'SECURE_AUTH_SALT', '{{ lookup('password', '/dev/null chars=ascii_letters length=64') }}' );
define( 'LOGGED_IN_SALT', '{{ lookup('password', '/dev/null chars=ascii_letters length=64') }}' );
define( 'NONCE_SALT', '{{ lookup('password', '/dev/null chars=ascii_letters length=64') }}' );

/**#@-*/

/**
 * WordPress Database Table prefix.
 *
 * You can have multiple installations in one database if you give each
 * a unique prefix. Only numbers, letters, and underscores please!
 */
$table_prefix = 'wp_';

/**
 * For developers: WordPress debugging mode.
 *
 * Change this to true to enable the display of notices during development.
 * It is strongly recommended that plugin and theme developers use WP_DEBUG
 * in their development environments.
 *
 * For information on other constants that can be used for debugging,
 * visit the Codex.
 *
 * @link https://codex.wordpress.org/Debugging_in_WordPress
 */
define( 'WP_DEBUG', false );

/* That's all, stop editing! Happy publishing. */

/** Absolute path to the WordPress directory. */
if ( ! defined( 'ABSPATH' ) ) {
```

```
        define( 'ABSPATH', dirname( __FILE__ ) . '/' );
}

/** Sets up WordPress vars and included files. */
require_once( ABSPATH . 'wp-settings.php' );
```

```
<?php
/**
 * The base configuration for WordPress
 *
 * The wp-config.php creation script uses this file during the
 * installation. You don't have to use the web site, you can
 * copy this file to "wp-config.php" and fill in the values.
 *
 * This file contains the following configurations:
 *
 * * MySQL settings
 * * Secret keys
 * * Database table prefix
 * * ABSPATH
 *
 * @link https://codex.wordpress.org/Editing_wp-config.php
 *
 * @package WordPress
 */

// ** MySQL settings - You can get this info from your web host ** //
/** The name of the database for WordPress */
define( 'DB_NAME', '{{ mysql_db }}' );

/** MySQL database username */
:wq
```

(save and quit the file using :wq)

cd .. (to enter into the wordpress directory)

```
ansible@master:~/wordpress/files$ ls
apache.conf.j2  wp-config.php.j2
ansible@master:~/wordpress/files$ cd ..
ansible@master:~/wordpress$ ls
files  playbook.yml
ansible@master:~/wordpress$
```

11) Create a directory named vars in the wordpress working directory to store all the variables for the playbook:

mkdir vars (creates a directory named vars)

cd vars (enter into the vars directory)

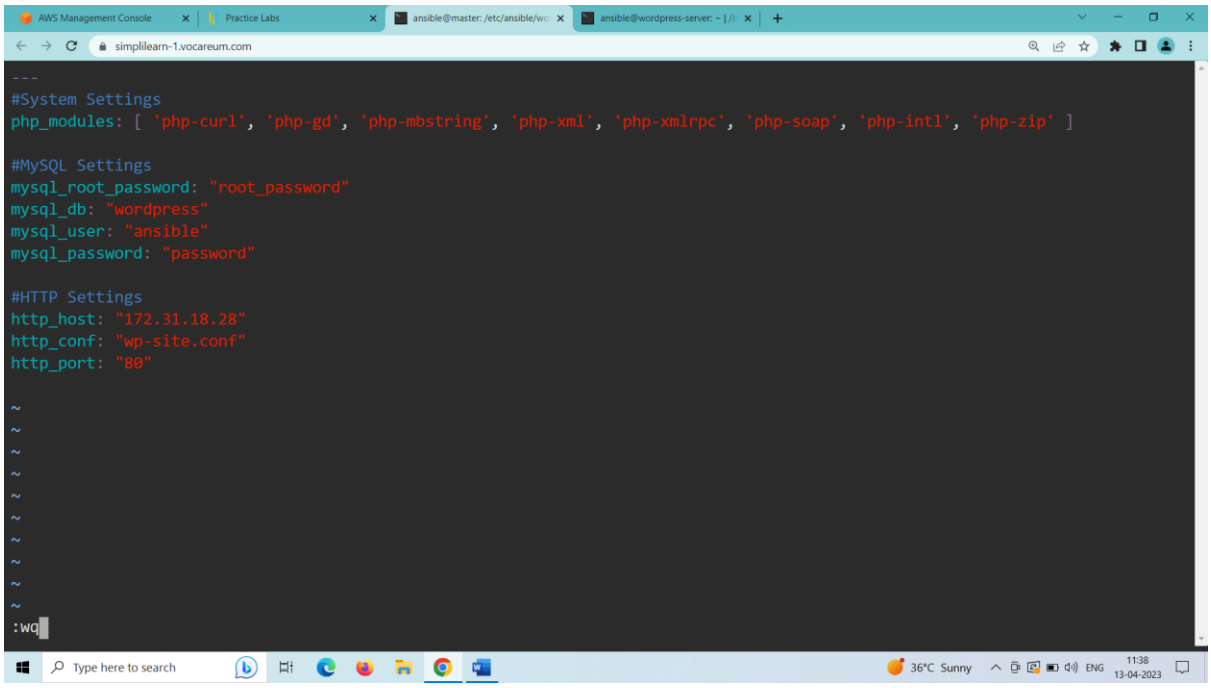
```
ansible@master:~/wordpress$ mkdir vars
ansible@master:~/wordpress$ cd vars
ansible@master:~/wordpress/vars$ vi default.yml
```

12) vi default.yml (creates a file named default.yml)

#####inside the default.yml file:

```
---
#System Settings
php_modules: [ 'php-curl', 'php-gd', 'php-mbstring', 'php-xml', 'php-xmlrpc', 'php-soap', 'php-intl', 'php-zip' ]

#MySQL Settings
mysql_root_password: "root_password"
mysql_db: "wordpress"
mysql_user: "ansible"
mysql_password: "password"

#HTTP Settings
http_host: "172.31.18.28"
http_conf: "wp-site.conf"
http_port: "80"
```

(save and quit the file using :wq)




cd .. (to enter into the wordpress directory)

```
ansible@master:~/wordpress/vars$ cd ..
ansible@master:~/wordpress$ ls
files  playbook.yml  vars
ansible@master:~/wordpress$
```

Change the template files and variable files as per the requirement of the client.

## STEP-4: Execute scripts to perform installation of complete WordPress environment

13) ansible-playbook playbook.yml (to run the created playbook named playbook.yml)

```
ansible@master:~/wordpress$ ls
files  playbook.yml  vars
ansible@master:~/wordpress$ ansible-playbook playbook.yml

PLAY [wpserver] ****************************************************************************************************

TASK [Gathering Facts] *********************************************************************************************
```

```
TASK [Download and unpack latest WordPress] ************************************************************************
changed: [172.31.18.28]

TASK [Set ownership] ***********************************************************************************************
changed: [172.31.18.28]

TASK [Set permissions for directories] *****************************************************************************
changed: [172.31.18.28]

TASK [Set permissions for files] ***********************************************************************************
changed: [172.31.18.28]

TASK [Set up wp-config] ********************************************************************************************
changed: [172.31.18.28]

RUNNING HANDLER [Reload Apache] ************************************************************************************
changed: [172.31.18.28]

RUNNING HANDLER [Restart Apache] ***********************************************************************************
changed: [172.31.18.28]

PLAY RECAP *********************************************************************************************************
172.31.18.28               : ok=22   changed=19   unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
```

(playbook is executed successfully)

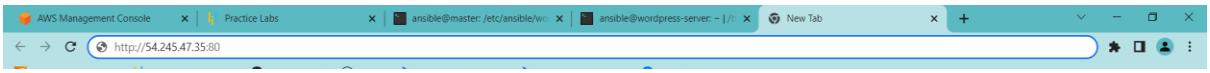
## STEP-5: Validate installation using the public IP of VM by accessing WordPress application

14) To know the public ip of your wordpress server go to terminal of wordpress server and type the following command:

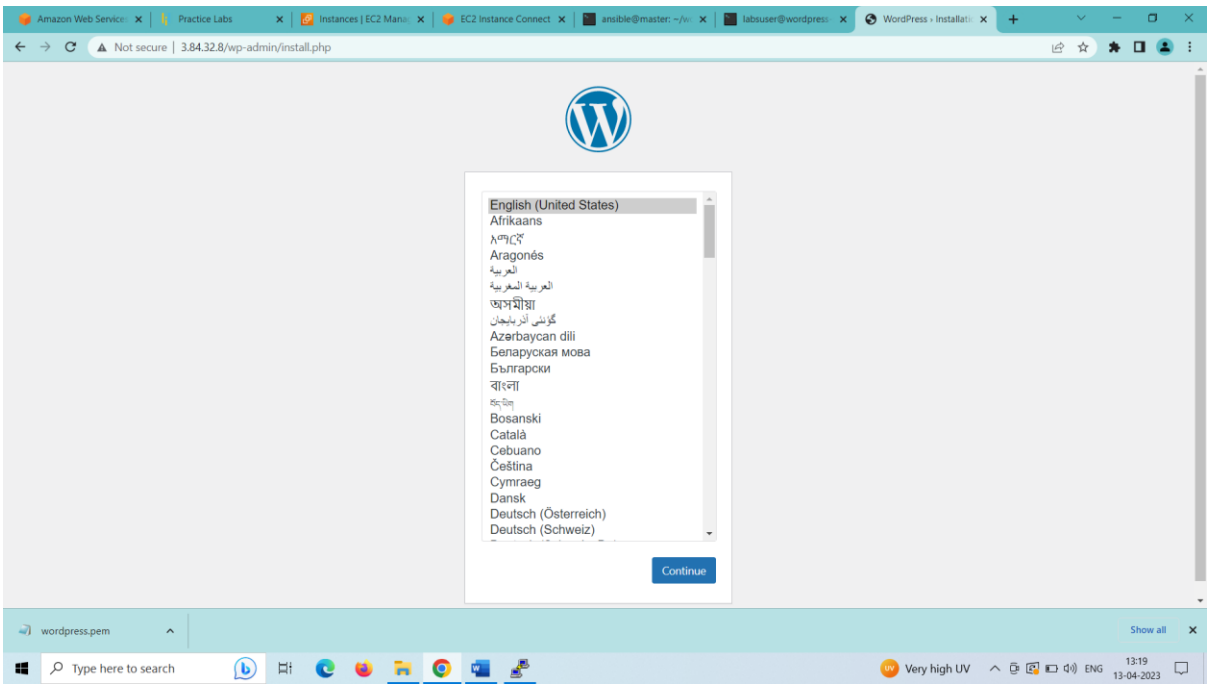
curl ifconfig.me (shows the public ip of wordpress)

```
ansible@wordpress-server:~$ curl ifconfig.me
54.245.47.35ansible@wordpress-server:~$
```

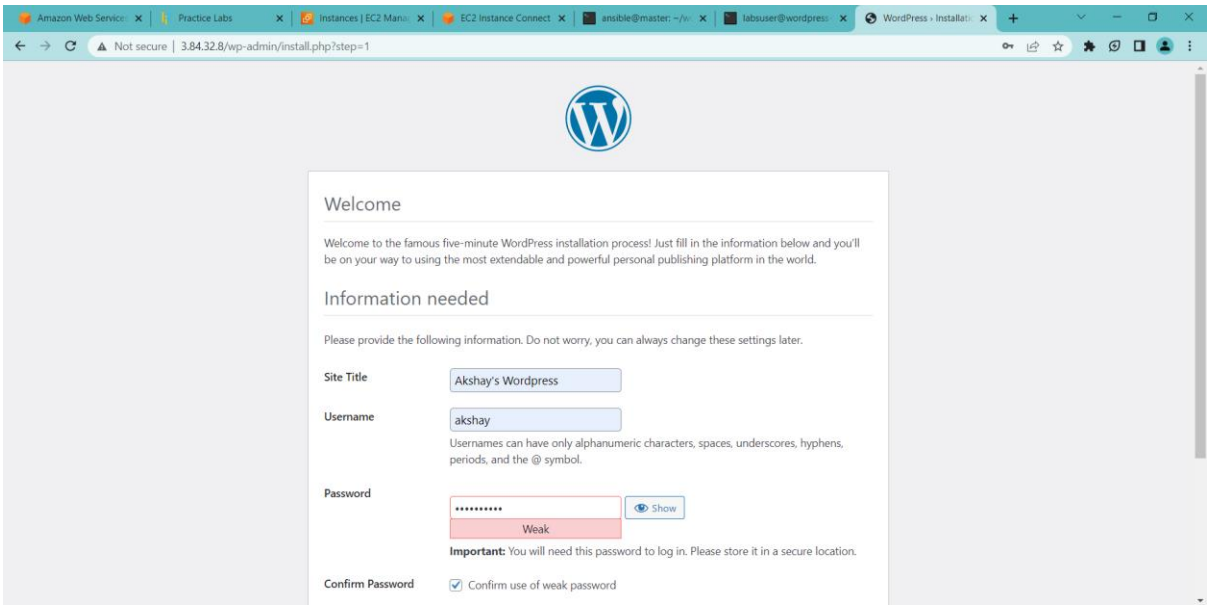
15) Open web browser in your machine and type the following in the address bar:
http://54.245.47.35:80

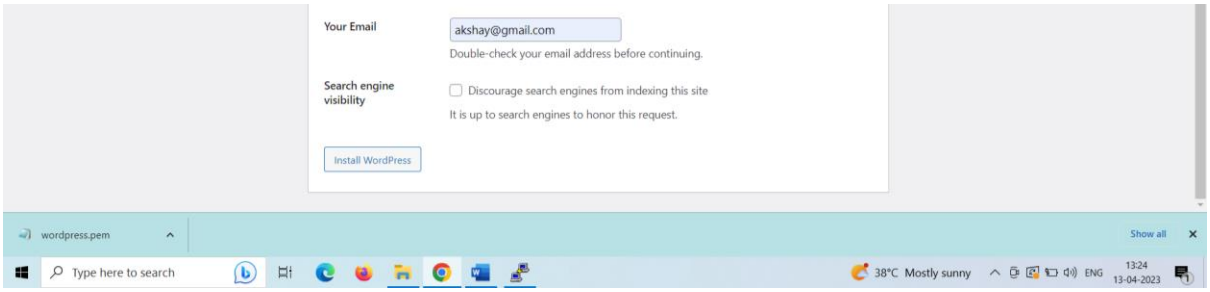



Wordpress site is not opening in the configuration management lab server even though all the dependencies and wordpress environment was successfully established on the wordpress server. Maybe due to some firewall issue in the lab server.
When I have done the same steps using aws lab it worked. Here is the result I got:

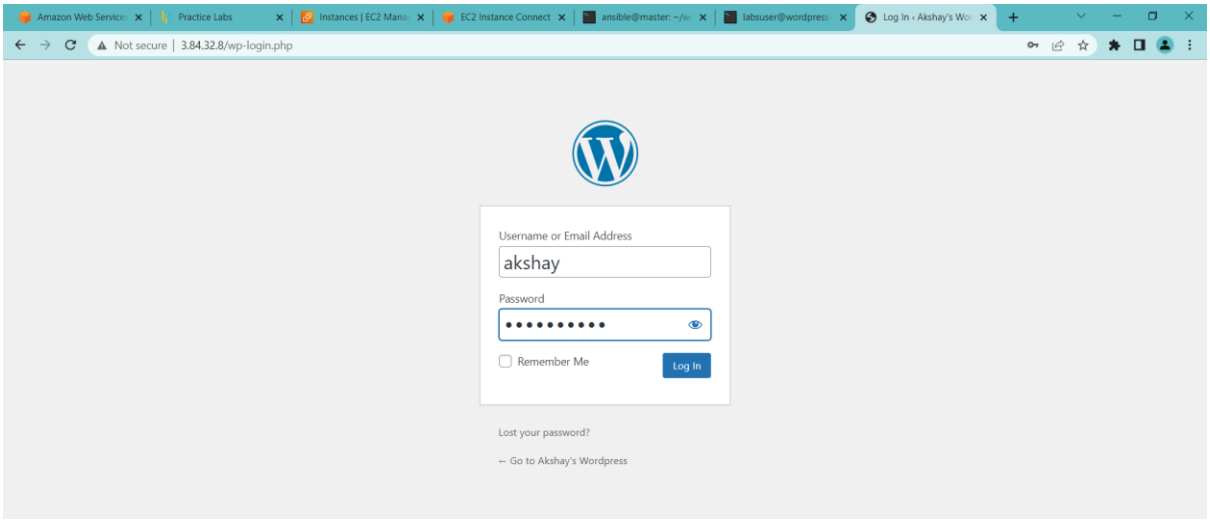


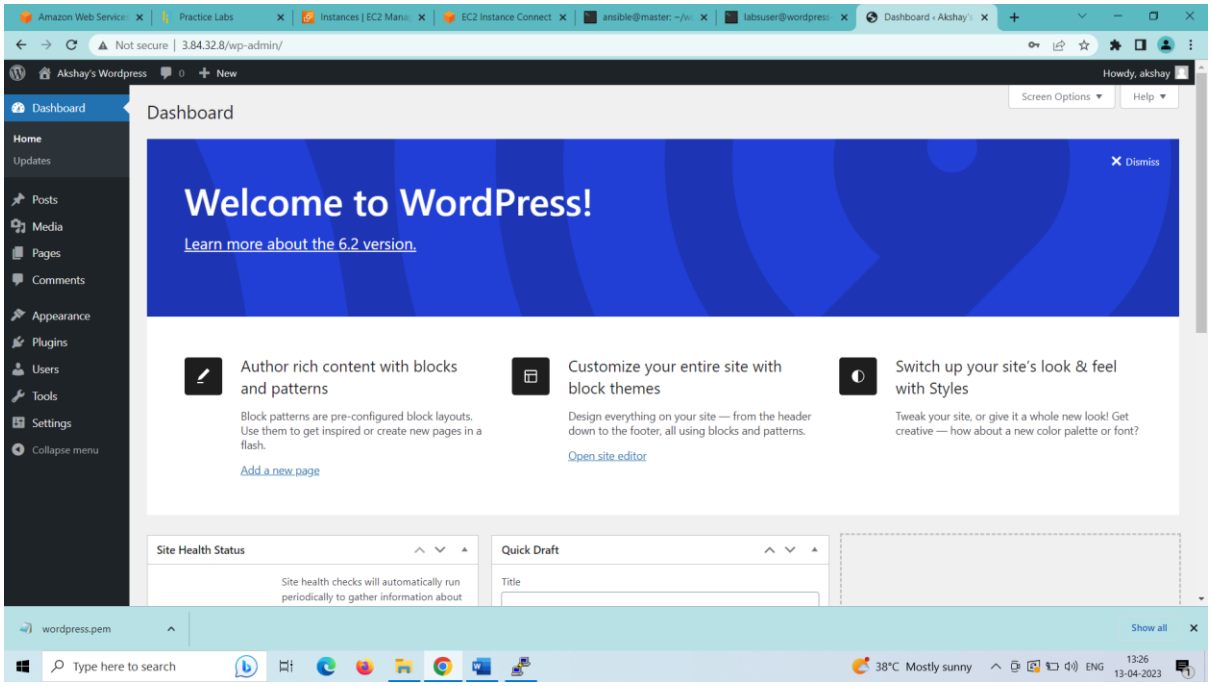
Wordpress language selection and login page is opened: enter your credentials and click on install wordpress.




Now login to your account with your credentials and you will reach the dashboard of the wordpress site.




Not secure | 3.84.32.8/wp-admin/
Akshay's Wordpress
New
Howdy, akshay
Dashboard
Home
Updates
Posts
Media
Pages
Comments
Appearance
Plugins
Users
Tools
Settings
Collapse menu
Screen Options
Help
Welcome to WordPress!
Learn more about the 6.2 version.
Dismiss
Author rich content with blocks and patterns
Block patterns are pre-configured block layouts. Use them to get inspired or create new pages in a flash.
Add a new page
Customize your entire site with block themes
Design everything on your site — from the header down to the footer, all using blocks and patterns.
Open site editor
Switch up your site's look & feel with Styles
Tweak your site, or give it a whole new look! Get creative — how about a new color palette or font?
Site Health Status
Site health checks will automatically run periodically to gather information about
Quick Draft
Title
wordpress.pem
Show all
Type here to search
38°C Mostly sunny
ENG
13:26
13-04-2023