DEVOPS PROJECT

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Ansible installation using ubuntu

```
The following NEW packages will be installed:
  build-essential bzip2 cpp cpp-13 cpp-13-x86-64-linux-gnu cpp-x86-64-linux-gnu dpkg-dev
  fakeroot g++ g++-13 g++-13-x86-64-linux-gnu g++-x86-64-linux-gnu gcc gcc-13
  gcc-13-base gcc-13-x86-64-linux-gnu gcc-x86-64-linux-gnu javascript-common
  libalgorithm-diff-perl libalgorithm-diff-xs-perl libalgorithm-merge-perl libaom3
  libasan8 libatomic1 libc-dev-bin libc-devtools libc6-dev libcc1-0 libcrypt-dev
  libde265-0 libdpkg-perl libexpat1-dev libfakeroot libfile-fcntllock-perl libgcc-13-dev
  libgd3 libgomp1 libheif-plugin-aomdec libheif-plugin-aomenc libheif-plugin-libde265
  libheif1 libhwasan0 libisl23 libitm1 libjs-jquery libjs-sphinxdoc libjs-underscore
  liblsan0 libmpc3 libpython3-dev libpython3.12-dev libquadmath0 libstdc++-13-dev
  libtsan2 libubsan1 libxpm4 linux-libc-dev lto-disabled-list make manpages-dev
  python3-dev python3-pip python3-wheel python3.12-dev rpcsvc-proto zlib1g-dev
The following packages will be upgraded:
  libexpat1 libpython3.12-minimal libpython3.12-stdlib libpython3.12t64 python3.12
  python3.12-minimal
6 upgraded, 66 newly installed, 0 to remove and 105 not upgraded.
Need to get 88.9 MB of archives.
After this operation, 283 MB of additional disk space will be used.
Get:1 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 libexpat1 amd64 2.6.1-2ubu
ntu0.3 [88.0 kB]
Get:2 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 libpython3.12t64 amd64 3.1
2.3-1ubuntu0.5 [2339 kB]
Get:3 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 python3.12 amd64 3.12.3-1u
buntu0.5 [651 kB]
Get:4 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 libpython3.12-stdlib amd64
 3.12.3-1ubuntu0.5 [2069 kB]
Get:5 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 python3.12-minimal amd64 3
.12.3-1ubuntu0.5 [2342 kB]
Get:6 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 libpython3.12-minimal amd6
4 3.12.3-1ubuntu0.5 [835 kB]
Get:7 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 libc-dev-bin amd64 2.39-0u
buntu8.4 [20.4 kB]
Get:8 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-libc-dev amd64 6.8.0
-60.63 [1874 kB]
Get:9 http://archive.ubuntu.com/ubuntu noble/main amd64 libcrypt-dev amd64 1:4.4.36-4build
1 [112 kB]
11% [9 libcrypt-dev 66.7 kB/112 kB 60%]                              756 kB/s 1min 43s
```

Initializing the project

```
Setting up cpp-13 (13.3.0-6ubuntu2~24.04) ...
Setting up gcc-13-x86-64-linux-gnu (13.3.0-6ubuntu2~24.04) ...
Setting up libexpat1-dev:amd64 (2.6.1-0ubuntu0.3) ...
Setting up gcc-13 (13.3.0-6ubuntu2~24.04) ...
Setting up libexpat1-dev:amd64 (2.6.1-0ubuntu0.3) ...
Setting up cpp (4:13.2.0-7ubuntu1) ...
Setting up g++-13-x86-64-linux-gnu (13.3.0-6ubuntu2~24.04) ...
Setting up cpp-x86-64-linux-gnu (4:13.2.0-7ubuntu1) ...
Setting up libpython3-dev:amd64 (3.12.3-1ubuntu0.5) ...
Setting up gcc (4:13.2.0-7ubuntu1) ...
Setting up python3.12-dev (3.12.3-1ubuntu0.5) ...
Setting up g++-x86-64-linux-gnu (13.3.0-6ubuntu2~24.04) ...
Setting up libpython3-dev:amd64 (3.12.3-0ubuntu2) ...
Setting up g++ (4:13.2.0-7ubuntu1) ...
update-alternatives: using /usr/bin/g++ to provide /usr/bin/c++ (c++) in auto mode
Setting up build-essential (12.2ubuntu1) ...
Setting up libheif1:amd64 (1.17.6-1ubuntu4.1) ...
Setting up libgdbm3:amd64 (2.3.3-9ubuntu5) ...
Setting up libc-devtools (2.39-0ubuntu8.4) ...
Setting up libheif-plugin-aomdec:amd64 (1.17.6-1ubuntu4.1) ...
Setting up libheif-plugin-libde265:amd64 (1.17.6-1ubuntu4.1) ...
Setting up libheif-plugin-aomenc:amd64 (1.17.6-1ubuntu4.1) ...
Processing triggers for libc-bin (2.39-0ubuntu8.4) ...
Processing triggers for systemd (255.4-1ubuntu8.5) ...
Processing triggers for man-db (2.12.0-4build2) ...
MuhammadUmer@DESKTOP-PAN9VTB:~$ mkdir devops_project
MuhammadUmer@DESKTOP-PAN9VTB:~$ cd devops_project
MuhammadUmer@DESKTOP-PAN9VTB:~$ mkdir terraform ansible app
MuhammadUmer@DESKTOP-PAN9VTB:~$ touch terraform/main.tf terraform/variables.tf
MuhammadUmer@DESKTOP-PAN9VTB:~$ touch ansible/install_web.yml
MuhammadUmer@DESKTOP-PAN9VTB:~$ touch app/index.html
MuhammadUmer@DESKTOP-PAN9VTB:~$ touch Jenkinsfile
MuhammadUmer@DESKTOP-PAN9VTB:~$ touch README.md
```

Project in vs code using wsl extension

```
MuhammadUmer@DESKTOP-PAN9VTB:~$ cd ~
MuhammadUmer@DESKTOP-PAN9VTB:~$ mkdir devops_project
MuhammadUmer@DESKTOP-PAN9VTB:~$ cd devops_project
MuhammadUmer@DESKTOP-PAN9VTB:~$ mkdir terraform ansible app
MuhammadUmer@DESKTOP-PAN9VTB:~$ touch terraform/main.tf terraform/variables.tf
MuhammadUmer@DESKTOP-PAN9VTB:~$ touch ansible/install_web.yml
MuhammadUmer@DESKTOP-PAN9VTB:~$ touch app/index.html
MuhammadUmer@DESKTOP-PAN9VTB:~$ touch Jenkinsfile
MuhammadUmer@DESKTOP-PAN9VTB:~$ touch README.md
MuhammadUmer@DESKTOP-PAN9VTB:~$ code .

Installing VS Code Server for Linux x64 (258e40fedc6cb8edf399a463ce3a9d32e7e1f6f3)
Downloading: 100%
Unpacking:    0%
```

Run Jenkins in docker

```
C:\Users\MuhammadUmer>wsl --install

Downloading: Ubuntu
Installing: Ubuntu
A distribution with the supplied name already exists. Use --name to chose a different name.
Error code: Wsl/InstallDistroService/RegisterDistro/ERROR_ALREADY_EXISTS
C:\Users\MuhammadUmer>docker run -d --name jenkins -p 8080:8080 -p 50000:50000 -v jenkins_home:/var/jenkins_home -v /var/run/docker.sock:/var/run/docker.sock -v
${PWD}/.workspace jenkins/jenkins:lts

docker: error during connect: Head "http://%2F%2E%2Fpipe%2FdockerDesktopLinuxEngine/_ping": open //./pipe/dockerDesktopLinuxEngine: The system cannot find the file
specified.
See 'docker run --help' for more information.
C:\Users\MuhammadUmer>docker run -d --name jenkins -p 8080:8080 -p 50000:50000 -v jenkins_home:/var/jenkins_home -v /var/run/docker.sock:/var/run/docker.sock -v
${PWD}/.workspace jenkins/jenkins:lts

Unable to find image 'jenkins/jenkins:lts' locally
lts: Pulling from jenkins/jenkins
b3ddf1a6a234: Download complete
873e9436882a: Download complete
2304dd968a00: Downloading [=========================>      ]  33.55MB/48.49MB
ae37370fbb4e: Downloading [====================>            ]  35.65MB/61.64MB
6847b02c0d8b: Downloading [===========>                     ]  26.21MB/71.97MB
c22f9d13dc6a: Download complete
3d26475654d8: Download complete
80d9e00c94e4: Download complete
5d7f4ace9111: Download complete
```

Unlock Jenkins
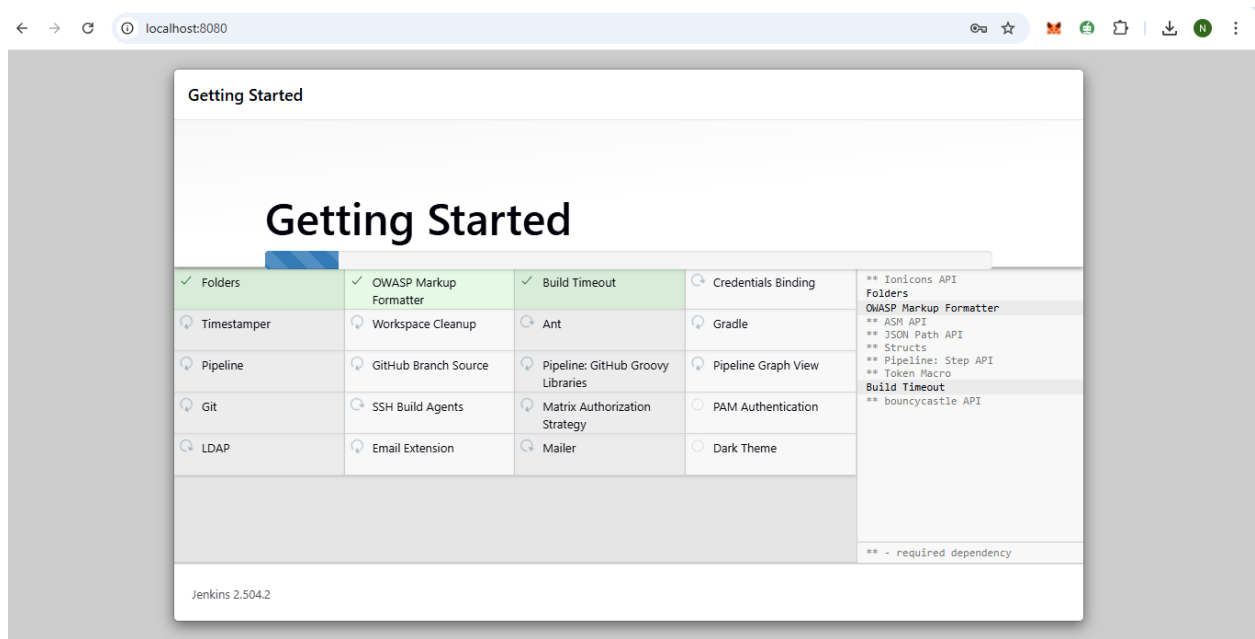
Installing azure cli using ubuntu


```
Processing triggers for libc-bin (2.39-0ubuntu8.4) ...
Processing triggers for systemd (255.4-1ubuntu8.5) ...
Processing triggers for man-db (2.12.0-4build2) ...
MuhammadUmer@DESKTOP-PAN9VTB:~$ cd ~
MuhammadUmer@DESKTOP-PAN9VTB:~$ mkdir devops_project
MuhammadUmer@DESKTOP-PAN9VTB:~$ cd devops_project
MuhammadUmer@DESKTOP-PAN9VTB:~$ mkdir terraform ansible app
MuhammadUmer@DESKTOP-PAN9VTB:~$ touch terraform/main.tf terraform/variables.tf
MuhammadUmer@DESKTOP-PAN9VTB:~$ touch ansible/install_web.yml
MuhammadUmer@DESKTOP-PAN9VTB:~$ touch app/index.html
MuhammadUmer@DESKTOP-PAN9VTB:~$ touch Jenkinsfile
MuhammadUmer@DESKTOP-PAN9VTB:~$ touch README.md
MuhammadUmer@DESKTOP-PAN9VTB:~$ code .

Installing VS Code Server for Linux x64 (258e40fedc6cb8edf399a463ce3a9d32e7e1f6f3)
Downloading: 100%
Unpacking: 100%
Unpacked 2042 files and folders to /home/MuhammadUmer/.vscode-server/bin/258e40fedc6cb8edf399a463ce3a9d32e7e1f6f3
Looking for compatibility check script at /home/MuhammadUmer/.vscode-server/bin/258e40fedc6cb8edf399a463ce3a9d32e7e1f6f3/bin/helpers/check-requirements.sh
Running compatibility check script
Compatibility check successful (0)
MuhammadUmer@DESKTOP-PAN9VTB:~$ az login
az: command not found
MuhammadUmer@DESKTOP-PAN9VTB:~$ curl -sL https://aka.ms/InstallAzureCLIDeb | sudo bash

[sudo] password for MuhammadUmer:
Hit:1 http://archive.ubuntu.com/ubuntu InRelease
Hit:2 http://security.ubuntu.com/ubuntu noble-security InRelease
Hit:3 http://archive.ubuntu.com/ubuntu noble-updates InRelease
Hit:4 http://archive.ubuntu.com/ubuntu noble-backports InRelease
Reading package lists... 5%
```

Installing Terraform

```
lenovo@DESKTOP-PAN9VTB: ~/devops_project/terraform
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
gnupg is already the newest version (2.4.4-2ubuntu17.2).
gnupg set to manually installed.
curl is already the newest version (8.5.0-2ubuntu10.6).
The following additional packages will be installed:
  python3-software-properties
The following packages will be upgraded:
  python3-software-properties software-properties-common
2 upgraded, 0 newly installed, 0 to remove and 89 not upgraded.
Need to get 44.3 kB of archives.
After this operation, 1024 B of additional disk space will be used.
Get:1 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 software-properties-common all 0.99.49.2 [14.4 kB]
Get:2 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 python3-software-properties all 0.99.49.2 [29.8 kB]
Fetched 44.3 kB in 1s (43.8 kB/s)
(Reading database ... 102471 files and directories currently installed.)
Preparing to unpack .../software-properties-common_0.99.49.2_all.deb ...
Unpacking software-properties-common (0.99.49.2) over (0.99.49.1) ...
Preparing to unpack .../python3-software-properties_0.99.49.2_all.deb ...
Unpacking python3-software-properties (0.99.49.2) over (0.99.49.1) ...
Setting up python3-software-properties (0.99.49.2) ...
Setting up software-properties-common (0.99.49.2) ...
Processing triggers for man-db (2.12.0-4build2) ...
Processing triggers for dbus (1.14.10-4ubuntu4.1) ...
lenovo@DESKTOP-PAN9VTB:~/devops_project/terraform$ curl -fsSL https://apt.releases.hashicorp.com/gpg | sudo gpg --dearmor -o /usr/share/keyrings/hashicorp-archive-keyri
ng.gpg

lenovo@DESKTOP-PAN9VTB:~/devops_project/terraform$
lenovo@DESKTOP-PAN9VTB:~/devops_project/terraform$ echo "deb [signed-by=/usr/share/keyrings/hashicorp-archive-keyring.gpg] https://apt.releases.hashicorp.com $(lsb_rele
ase -cs) main" | \
>
> sudo tee /etc/apt/sources.list.d/hashicorp.list
deb [signed-by=/usr/share/keyrings/hashicorp-archive-keyring.gpg] https://apt.releases.hashicorp.com noble main
lenovo@DESKTOP-PAN9VTB:~/devops_project/terraform$ sudo apt update && sudo apt install terraform -y
Get:1 https://apt.releases.hashicorp.com noble InRelease [12.9 kB]
Hit:2 https://packages.microsoft.com/repos/azure-cli noble InRelease
Hit:3 http://archive.ubuntu.com/ubuntu noble InRelease
Hit:4 http://security.ubuntu.com/ubuntu noble-security InRelease
Get:5 https://apt.releases.hashicorp.com noble/main amd64 Packages [186 kB]
Hit:6 http://archive.ubuntu.com/ubuntu noble-updates InRelease
Hit:7 http://archive.ubuntu.com/ubuntu noble-backports InRelease
Fetched 199 kB in 2s (93.5 kB/s)
Reading package lists... 35%
```

Run terraform


```
MuhammadUmer@DESKTOP-PAN9VTB:~/devops_project/terraform$ curl -fsSL https://apt.releases.hashicorp.com/gpg | sudo gpg --dearmor -o /usr/share/keyrings/hashicorp-
archive-keyring.gpg
MuhammadUmer@DESKTOP-PAN9VTB:~/devops_project/terraform$ echo "deb [signed-by=/usr/share/keyrings/hashicorp-archive-keyring.gpg] https://apt.releases.hashicorp.com
$(lsb_release -cs) main" | sudo tee /etc/apt/sources.list.d/hashicorp.list
MuhammadUmer@DESKTOP-PAN9VTB:~/devops_project/terraform$ sudo apt update && sudo apt install terraform -y

Get:1 https://apt.releases.hashicorp.com noble InRelease [12.9 kB]
Hit:2 http://archive.ubuntu.com/ubuntu noble InRelease
Hit:3 http://security.ubuntu.com/ubuntu noble-security InRelease
Hit:4 http://archive.ubuntu.com/ubuntu noble-updates InRelease
Hit:5 http://archive.ubuntu.com/ubuntu noble-backports InRelease
Fetched 13.0 kB in 0s (93.5 kB/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following NEW packages will be installed:
  terraform
0 upgraded, 1 newly installed, 0 to remove and 89 not upgraded.
Need to get 28.4 MB of archives.
After this operation, 93.6 MB of additional disk space will be used.
Get:1 https://apt.releases.hashicorp.com noble/main amd64 terraform 1.4.12-1 [28.4 MB]
Fetched 28.4 MB in 2s (14.1 MB/s)
Selecting previously unselected package terraform.
(Reading database ... 132204 files and directories currently installed.)
Preparing to unpack .../terraform_1.4.12-1_amd64.deb ...
Unpacking terraform (1.4.12-1) ...
Setting up terraform (1.4.12-1) ...
MuhammadUmer@DESKTOP-PAN9VTB:~/devops_project/terraform$ terraform init

Initializing the backend...
Initializing provider plugins...
- Finding latest version of hashicorp/azurerm...
- Installing hashicorp/azurerm v4.32.0...
```

Generating ssh key pairs


```
MuhammadUmer@DESKTOP-PAN9VTB:~$ ssh-keygen -t rsa -b 4096
Generating public/private rsa key pair.
```

Run terraform

```
MuhammadUmer@DESKTOP-PAN9VTB:~/devops_project/terraform$ az login --use-device-code

To sign in, use a web browser to open the page https://microsoft.com/devicelogin and enter the code ITTH5CTJG to auther

Retrieving tenants and subscriptions for the selected account...
Authentication failed against tenant 8a2a4454-ef29-4422-b286-2a5daafca38d 'Default Directory': AADSTS50076: Due to a co
or because you moved to a new location, you must use multi-factor authentication to access '797f8446-b00c-4dfa-a34f-2ab
Trace ID: 32b04301-20f3-4762-aacf-173f87fd7900
Correlation ID: d1714a4b-cb34-47dc-86fd-3efd1d9a1946
Timestamp: 2025-06-08 10:15:30Z

For tenant-specific login, in case you have access to multiple tenants, please use `az login --tenant TENANT_ID`.
MuhammadUmer@DESKTOP-PAN9VTB:~/devops_project/terraform$ terraform init

Initializing the backend...
Initializing provider plugins...
- Using previously installed version of hashicorp/azurerm from the dependency lock file
- Installing hashicorp/azurerm v4.32.0...
- Installed hashicorp/azurerm v4.32.0

Terraform has been successfully initialized!

You may now begin working with Terraform. Try running "terraform plan" to see
any changes that are required for your infrastructure. All Terraform commands
should now work.

If you ever set or change modules or backend configuration for Terraform,
re-run this command to reinitialize your working directory. If you forget, other
commands will detect it and remind you to do so if necessary.
MuhammadUmer@DESKTOP-PAN9VTB:~/devops_project/terraform$ terraform apply --auto-approve
```

lenovo@DESKTOP-PAN9VTB: ~/devops_project/terraform   —   □   ✕

```
          + "10.0.1.0/24",
        ]
      + default_outbound_access_enabled              = true
      + id                                           = (known after apply)
      + name                                         = "devops-subnet"
      + private_endpoint_network_policies            = "Disabled"
      + private_link_service_network_policies_enabled = true
      + resource_group_name                          = "devops-rg"
      + virtual_network_name                         = "devops-vnet"
    }

  # azurerm_virtual_network.vnet will be created
  + resource "azurerm_virtual_network" "vnet" {
      + address_space                 = [
          + "10.0.0.0/16",
        ]
      + dns_servers                   = (known after apply)
      + guid                          = (known after apply)
      + id                            = (known after apply)
      + location                      = "eastus"
      + name                          = "devops-vnet"
      + private_endpoint_vnet_policies = "Disabled"
      + resource_group_name           = "devops-rg"
      + subnet                        = (known after apply)
    }

Plan: 6 to add, 0 to change, 0 to destroy.
```

```
[...devops-rg/providers/Microsoft.Network/networkInterfaces/devops-nic]
azurerm_linux_virtual_machine.vm: Refreshing state... [id=/subscriptions/5360a7b1-e347-43ae-9aab-1ac05b79f0d7/resourceGroups/devops-
rg/providers/Microsoft.Compute/virtualMachines/devopsvm]
No changes. Your infrastructure matches the configuration.

Terraform has compared your real infrastructure against your configuration and found no differences, so no changes are needed.
Apply complete! Resources: 0 added, 0 changed, 0 destroyed.
MuhammadUmer@DESKTOP-PAN9VTB:~/devops_project/terraform$ terraform output public_ip_address

Warning: No outputs found

The state file either has no outputs defined, or all the defined outputs are empty.
Please define an output in your configuration with the `output` keyword and run `terraform refresh` for it to become available.
If you are using interpolation, please verify the interpolated value is not empty.
You can use the `terraform console` command to assist.
MuhammadUmer@DESKTOP-PAN9VTB:~/devops_project/terraform$ az vm list-ip-addresses --name devopsvm --resource-group devops-rg --output table

VirtualMachine    PublicIPAddresses    PrivateIPAddresses
---------------   ------------------   -------------------
devopsvm          40.71.216.244        10.0.1.4
```

Use ansible to install web server

```
MuhammadUmer@DESKTOP-PAN9VTB:~/devops_project/terraform$ ansible-playbook -i ansible/inventory.ini ../ansible/install_web.yml

[WARNING]: Unable to parse /home/MuhammadUmer/devops_project/terraform/ansible/inventory.ini as an inventory source
[WARNING]: No inventory was parsed, only implicit localhost is available
[WARNING]: provided hosts list is empty, only localhost is available. Note that the implicit localhost does not match 'all'
PLAY [Setup web server] ********************************************************
skipping: no hosts matched
PLAY RECAP ********************************************************
MuhammadUmer@DESKTOP-PAN9VTB:~/devops_project/terraform$ ansible-playbook -i ../ansible/inventory.ini ../ansible/install_web.yml
PLAY [Setup web server] ********************************************************

TASK [Gathering Facts] ********************************************************
<40.71.216.244> UNREACHABLE! => {"changed": false, "msg": "Failed to connect to the host via ssh: ssh: connect to host 40.71.216.244 port 22: Connection timed out",
"unreachable": true}

PLAY RECAP ********************************************************
40.71.216.244            : ok=0    changed=0    unreachable=1    failed=0    skipped=0    rescued=0    ignored=0
```

```
TASK [Copy index.html] ********************************************************

An exception occurred during task execution. To see the full traceback, use -vvv.
The error was: If you are using a module and expect the file to exist on the remote, see the remote_src option
fatal: [40.71.216.244]: FAILED! => {"changed": false, "msg": "Could not find or access '../../../app/index.html'\nSearched
in:\n\t/home/MuhammadUmer/devops_project/ansible/files/...\n\t/home/MuhammadUmer/devops_project/app/index.html ..."}

PLAY RECAP ********************************************************
40.71.216.244            : ok=2    changed=0    unreachable=0    failed=1    skipped=0    rescued=0    ignored=0
MuhammadUmer@DESKTOP-PAN9VTB:~/devops_project/terraform$ ansible-playbook -i ../ansible/inventory.ini ../ansible/install_web.yml
PLAY [Setup web server] ********************************************************
TASK [Gathering Facts]
ok: [40.71.216.244]
TASK [Install Apache]
ok: [40.71.216.244]
TASK [Copy index.html]
ok: [40.71.216.244]

PLAY RECAP ********************************************************
40.71.216.244            : ok=3    changed=0    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
```
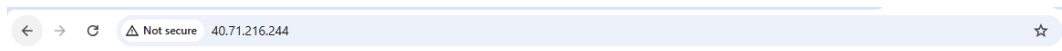
Web server using apache

Hello, world!

This page is served by Apache!

Jenkins Pipeline

New Item

Enter an item name

jenkinsjob

Select an item type

Freestyle project
Classic, general-purpose job type that checks out from up to one SCM, executes build steps serially, followed by post-build steps like archiving artifacts and sending email notifications.

Pipeline
Orchestrates long-running activities that can span multiple build agents. Suitable for building pipelines (formerly known as workflows) and/or organizing complex activities that do not easily fit in free-style job type.
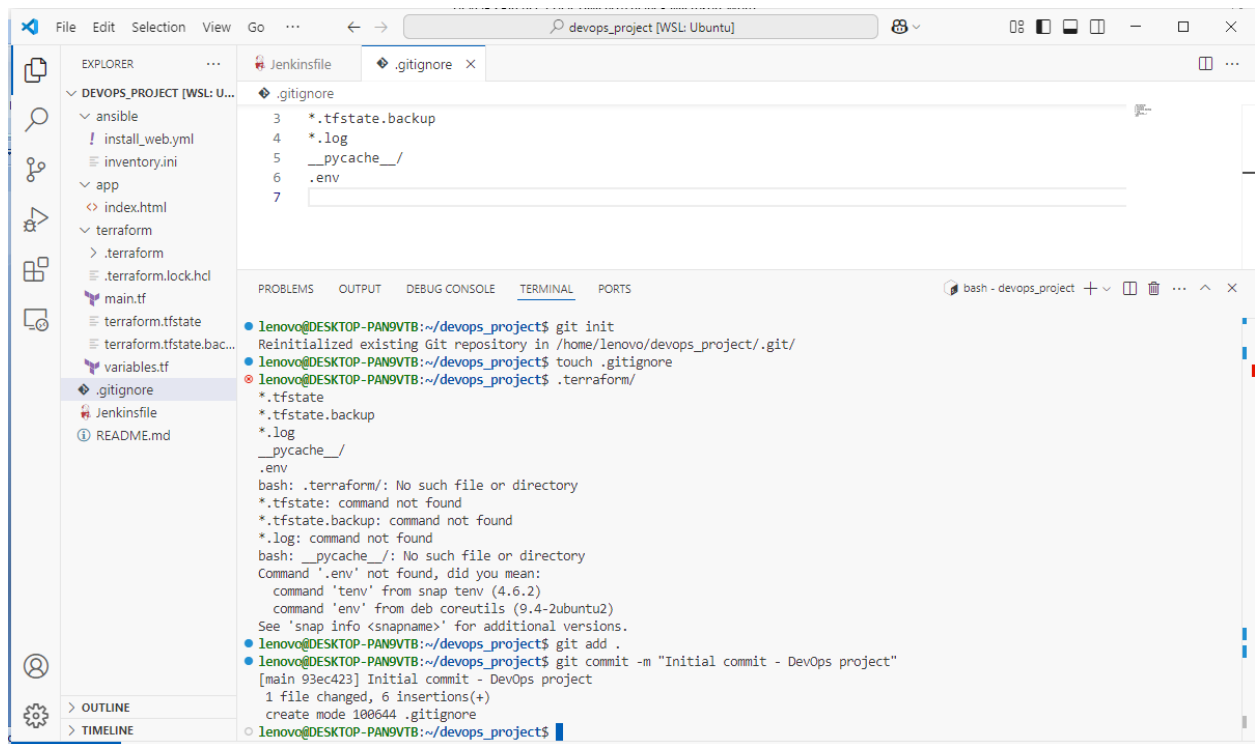
Multi-configuration project
Suitable for projects that need a large number of different configurations, such as testing on multiple environments, platform-specific builds, etc.

OK

Adding project to github

Jenkins

Q ♡ 1 👤 Nijla kamil ⌄ ⏻ log out

- 🗎 Status
- </> Changes
- ▷ Build Now
- ⚙ Configure
- 🗑 Delete Pipeline
- ⛁ Stages
- ✎ Rename
- ⦾ Pipeline Syntax

Devops-pipeline

✎ Add description

Permalinks

Builds ∘∘∘ ⬈

No builds

Installing terraform in container

```
MuhammadUmer@DESKTOP-PAN9VTB:~$ docker exec -u root -it jenkins bash
root@df38c4fb329e:/# apt-get update

Get:1 http://deb.debian.org/debian bookworm InRelease [151 kB]
Get:2 http://deb.debian.org/debian bookworm-updates InRelease [55.4 kB]
Get:3 http://deb.debian.org/debian-security bookworm-security InRelease [48.0 kB]
Get:4 http://deb.debian.org/debian-security bookworm-security/main amd64 Packages [8793 kB]
Get:5 http://deb.debian.org/debian bookworm-updates/main amd64 Packages [512 B]
Get:6 http://deb.debian.org/debian-security bookworm-security/main amd64 Packages [266 kB]
Fetched 9314 kB in 8s (1097 kB/s)
Reading package lists... Done
root@df38c4fb329e:/# apt-get install -y wget unzip

Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
unzip is already the newest version (6.0-28).
The following NEW packages will be installed:
  wget
0 upgraded, 1 newly installed, 0 to remove and 2 not upgraded.
Need to get 937 kB of archives.
After this operation, 3166 kB of additional disk space will be used.
Get:1 http://deb.debian.org/debian bookworm/main amd64 wget 1.21.3-1+deb12u1 [937 kB]
Fetched 937 kB in 2s (454 kB/s)
Selecting previously unselected package wget.
(Reading database ... 15345 files and directories currently installed.)
Preparing to unpack .../wget_1.21.3-1+deb12u1_amd64.deb ...
Unpacking wget (1.21.3-1+deb12u1) ...
Setting up wget (1.21.3-1+deb12u1) ...
```

```
unzip is already the newest version (6.0-28).
The following NEW packages will be installed:
  wget
0 upgraded, 1 newly installed, 0 to remove and 2 not upgraded.
Need to get 937 kB of archives.
After this operation, 3606 kB of additional disk space will be used.
Get:1 http://deb.debian.org/debian bookworm/main amd64 wget amd64 1.21.3-1+deb12u1 [937 kB]
Fetched 937 kB in 2s (454 kB/s)
debconf: delaying package configuration, since apt-utils is not installed
Selecting previously unselected package wget.
(Reading database ... 10537 files and directories currently installed.)
Preparing to unpack .../wget_1.21.3-1+deb12u1_amd64.deb ...
Unpacking wget (1.21.3-1+deb12u1) ...
Setting up wget (1.21.3-1+deb12u1) ...
root@df38c4fb329e:/# wget https://releases.hashicorp.com/terraform/1.5.7/terraform_1.5.7_linux_amd64.zip
--2025-06-09 17:24:56--  https://releases.hashicorp.com/terraform/1.5.7/terraform_1.5.7_linux_amd64.zip
Resolving releases.hashicorp.com (releases.hashicorp.com)... 3.161.104.50, 3.161.104.17, 3.161.104.27, ...
Connecting to releases.hashicorp.com (releases.hashicorp.com)|3.161.104.50|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 21019880 (20M) [application/zip]
Saving to: 'terraform_1.5.7_linux_amd64.zip'

terraform_1.5.7_linux_amd64.z 100%[===================================================>]  20.05M  1.80MB/s    in 11s

2025-06-09 17:25:07 (1.87 MB/s) - 'terraform_1.5.7_linux_amd64.zip' saved [21019880/21019880]

root@df38c4fb329e:/# unzip terraform_1.5.7_linux_amd64.zip
Archive:  terraform_1.5.7_linux_amd64.zip
  inflating: terraform
root@df38c4fb329e:/#
```

```
Fetched 937 kB in 2s (454 kB/s)
debconf: delaying package configuration, since apt-utils is not installed
Selecting previously unselected package wget.
(Reading database ... 10537 files and directories currently installed.)
Preparing to unpack .../wget_1.21.3-1+deb12u1_amd64.deb ...
Unpacking wget (1.21.3-1+deb12u1) ...
Setting up wget (1.21.3-1+deb12u1) ...
root@df38c4fb329e:/# wget https://releases.hashicorp.com/terraform/1.5.7/terraform_1.5.7_linux_amd64.zip
--2025-06-09 17:24:56--  https://releases.hashicorp.com/terraform/1.5.7/terraform_1.5.7_linux_amd64.zip
Resolving releases.hashicorp.com (releases.hashicorp.com)... 3.161.104.50, 3.161.104.17, 3.161.104.27, ...
Connecting to releases.hashicorp.com (releases.hashicorp.com)|3.161.104.50|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 21019880 (20M) [application/zip]
Saving to: 'terraform_1.5.7_linux_amd64.zip'

terraform_1.5.7_linux_amd64.z 100%[===================================================>]  20.05M  1.80MB/s    in 11s

2025-06-09 17:25:07 (1.87 MB/s) - 'terraform_1.5.7_linux_amd64.zip' saved [21019880/21019880]

root@df38c4fb329e:/# unzip terraform_1.5.7_linux_amd64.zip
Archive:  terraform_1.5.7_linux_amd64.zip
  inflating: terraform
root@df38c4fb329e:/# mv terraform /usr/local/bin/
root@df38c4fb329e:/# terraform -v
Terraform v1.5.7
on linux_amd64

Your version of Terraform is out of date! The latest version
is 1.12.1. You can update by downloading from https://www.terraform.io/downloads.html
root@df38c4fb329e:/#
```

```
(Reading database ... 10537 files and directories currently installed.)
Preparing to unpack .../wget_1.21.3-1+deb12u1_amd64.deb ...
Unpacking wget (1.21.3-1+deb12u1) ...
Setting up wget (1.21.3-1+deb12u1) ...
root@df38c4fb329e:/# wget https://releases.hashicorp.com/terraform/1.5.7/terraform_1.5.7_linux_amd64.zip
--2025-06-09 17:24:56--  https://releases.hashicorp.com/terraform/1.5.7/terraform_1.5.7_linux_amd64.zip
Resolving releases.hashicorp.com (releases.hashicorp.com)... 3.161.104.50, 3.161.104.17, 3.161.104.27, ...
Connecting to releases.hashicorp.com (releases.hashicorp.com)|3.161.104.50|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 21019880 (20M) [application/zip]
Saving to: 'terraform_1.5.7_linux_amd64.zip'

terraform_1.5.7_linux_amd64.z 100%[===================================================>]  20.05M  1.80MB/s    in 11s

2025-06-09 17:25:07 (1.87 MB/s) - 'terraform_1.5.7_linux_amd64.zip' saved [21019880/21019880]

root@df38c4fb329e:/# unzip terraform_1.5.7_linux_amd64.zip
Archive:  terraform_1.5.7_linux_amd64.zip
  inflating: terraform
root@df38c4fb329e:/# mv terraform /usr/local/bin/
root@df38c4fb329e:/# terraform -v
Terraform v1.5.7
on linux_amd64

Your version of Terraform is out of date! The latest version
is 1.12.1. You can update by downloading from https://www.terraform.io/downloads.html
root@df38c4fb329e:/# mkdir -p /var/jenkins_home/.ssh
root@df38c4fb329e:/# ssh-keygen -t rsa -b 4096 -f /var/jenkins_home/.ssh/id_rsa -q -N ""
root@df38c4fb329e:/# chown -R jenkins:jenkins /var/jenkins_home/.ssh
root@df38c4fb329e:/#
```

```
Hit:1 http://deb.debian.org/debian bookworm InRelease
Hit:2 http://deb.debian.org/debian bookworm-updates InRelease
Hit:3 http://deb.debian.org/debian-security bookworm-security InRelease
Reading package lists... Done
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
ca-certificates is already the newest version (20230311).
curl is already the newest version (7.88.1-10+deb12u12).
gnupg is already the newest version (2.2.40-1.1).
The following NEW packages will be installed:
  apt-transport-https lsb-release
0 upgraded, 2 newly installed, 0 to remove and 2 not upgraded.
Need to get 31.7 kB of archives.
After this operation, 53.2 kB of additional disk space will be used.
Get:1 http://deb.debian.org/debian bookworm/main amd64 apt-transport-https all 2.6.1 [25.2 kB]
Get:2 http://deb.debian.org/debian bookworm/main amd64 lsb-release all 12.0-1 [6416 B]
Fetched 31.7 kB in 1s (27.1 kB/s)
debconf: delaying package configuration, since apt-utils is not installed
Selecting previously unselected package apt-transport-https.
(Reading database ... 10631 files and directories currently installed.)
Preparing to unpack .../apt-transport-https_2.6.1_all.deb ...
Unpacking apt-transport-https (2.6.1) ...
Selecting previously unselected package lsb-release.
Preparing to unpack .../lsb-release_12.0-1_all.deb ...
Unpacking lsb-release (12.0-1) ...
Setting up apt-transport-https (2.6.1) ...
Setting up lsb-release (12.0-1) ...
root@df38c4fb329e:/# curl -sL https://aka.ms/InstallAzureCLIDeb | bash
```

PIPELINE CREATED

```
TASK [Install Apache]
ok: [40.71.216.244]

TASK [Copy index.html]
ok: [40.71.216.244]

PLAY RECAP
40.71.216.244          : ok=3   changed=0   unreachable=0   failed=0


[Pipeline] }
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (Verify)
[Pipeline] sh
+ curl http://40.71.216.244
```

Web server is live!

```
[Pipeline] }
[Pipeline] // stage
[Pipeline] // node
[Pipeline] End of Pipeline

Pipeline execution completed!
Pipeline completed successfully!
```