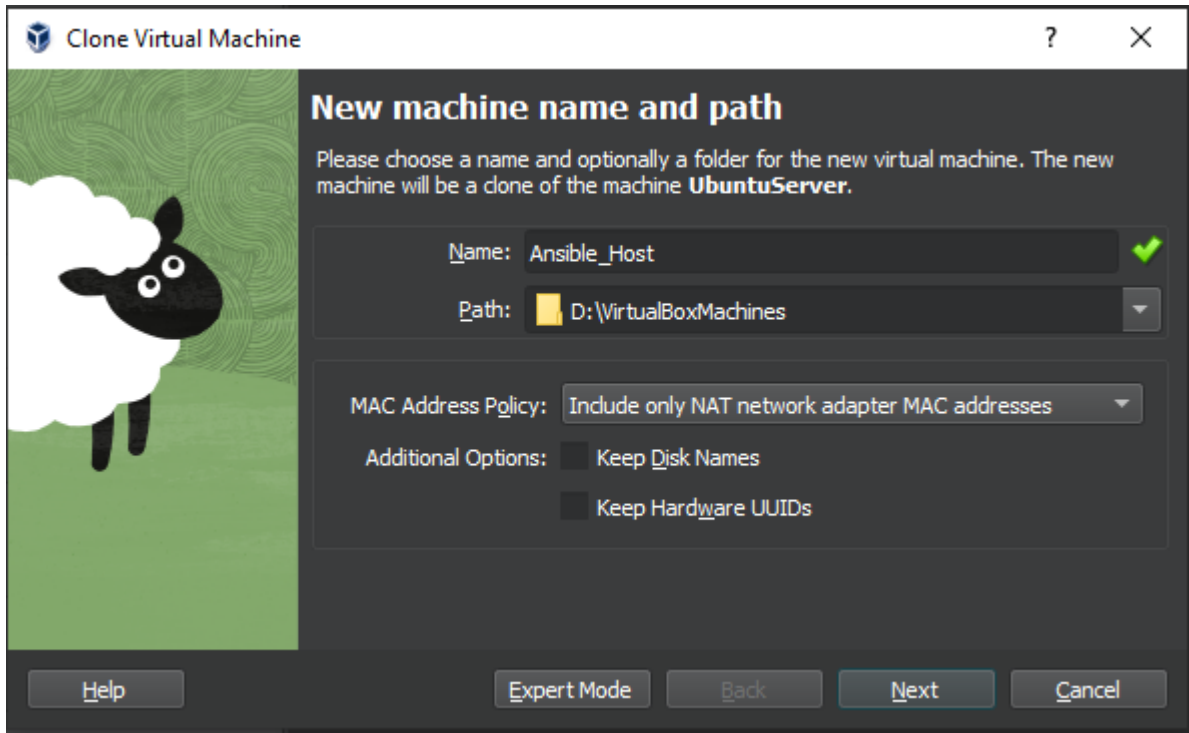


Лабораторная работа Ansible

Кольцов Илья 4-ТИД-1

Алгоритм выполнения:

Клонируем виртуальную машину с предыдущего задания



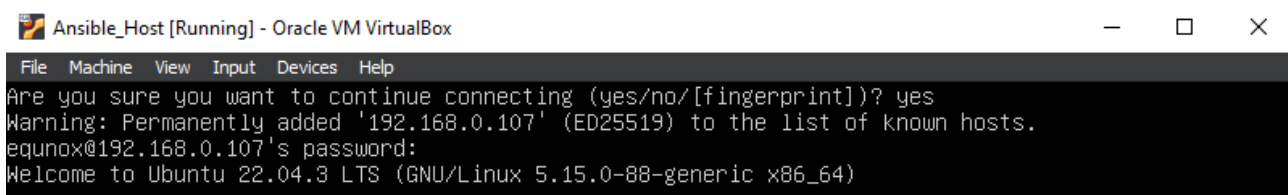
Создаем нового пользователя

```
equinox@ubuntuserver:~$ sudo useradd ansibleuser  
[sudo] password for equinox:  
equinox@ubuntuserver:~$
```

Предоставления прав суперпользователя

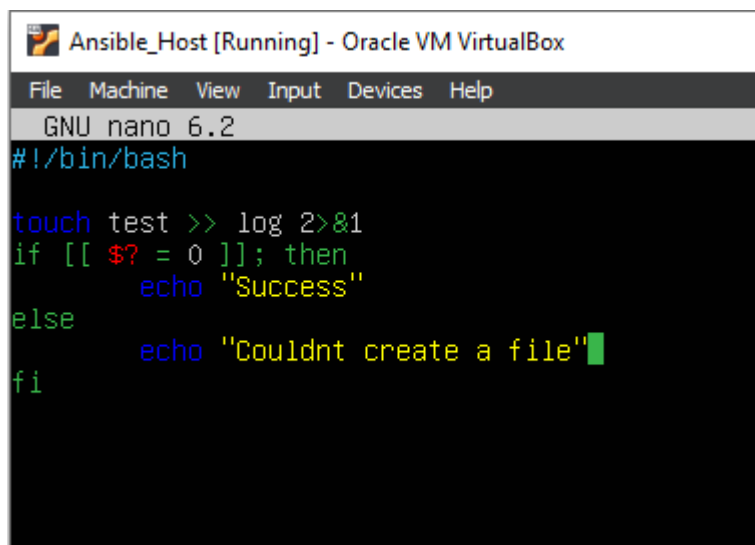
```
equinox@ubuntuserver:~$ sudo usermod -aG sudo ansibleuser  
equinox@ubuntuserver:~$ _
```

Подключаемся по ssh с клонированной машины AnsibleHost к оригинальной UbuntuServer



```
Ansible_Host [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '192.168.0.107' (ED25519) to the list of known hosts.
equinox@192.168.0.107's password:
Welcome to Ubuntu 22.04.3 LTS (GNU/Linux 5.15.0-88-generic x86_64)
```

Скрипт, использующий все стандартные потоки (ввод, вывод, ошибки) и обрабатывающий код возврата



```
Ansible_Host [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
GNU nano 6.2
#!/bin/bash

touch test >> log 2>&1
if [[ $? = 0 ]]; then
    echo "Success"
else
    echo "Couldnt create a file"
fi
```

Скрипт, на stdin которому подается URL (в виде строки). Скрипт проверяет корректность URL по регулярному выражению и выводит на stdout результат проверки.

```
GNU nano 6.2 checkUrl.sh
#!/bin/bash

regex='(https?|ftp|file)://[-[:alnum:]\+&@#/%?=_!|:,.;]*[-[:alnum:]\+&@#/%?=_!>
string=$1

if [[ "$string" =~ $regex ]]
then
    echo "$1 - Link valid" > log
else
    echo "$1 - Link invalid" > log
fi

[ Read 11 lines ]
^G Help      ^O Write Out ^W Where Is  ^K Cut       ^T Execute   ^C Location
^X Exit      ^R Read File ^\ Replace   ^U Paste     ^J Justify   ^/ Go To Line

equnox@ansiblehost:~/ansibleRez$ ./checkUrl.sh https://www.google.com
equnox@ansiblehost:~/ansibleRez$ cat log
https://www.google.com - Link valid
equnox@ansiblehost:~/ansibleRez$ ./checkUrl.sh abc://www.google.com
equnox@ansiblehost:~/ansibleRez$ cat log
abc://www.google.com - Link invalid
equnox@ansiblehost:~/ansibleRez$
```

Установка git

```
equnox@ansiblehost:~/ansibleRez$ sudo apt install git
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Suggested packages:
  git-daemon-run | git-daemon-sysvinit git-doc git-email git-gui gitk gitweb
  git-cvs git-mediawiki git-svn
The following packages will be upgraded:
  git
1 upgraded, 0 newly installed, 0 to remove and 43 not upgraded.
Need to get 3,166 kB of archives.
After this operation, 0 B of additional disk space will be used.
Get:1 http://ru.archive.ubuntu.com/ubuntu jammy-updates/main amd64 git amd64 1:2
.34.1-1ubuntu1.10 [3,166 kB]
Fetched 3,166 kB in 0s (7,479 kB/s)
[
```

Установка Ansible

```
equnox@ansiblehost: ~/ansibleRez
Setting up python3-selinux (3.3-1build2) ...
Setting up python3-argcomplete (1.8.1-1.5) ...
Setting up python3-requests-ntlm (1.1.0-1.1) ...
Setting up python3-libcloud (3.2.0-2) ...
Setting up python3-netaddr (0.8.0-2) ...
Setting up python3-winrm (0.3.0-2) ...
Setting up ansible (2.10.7+merged+base+2.10.8+dfsg-1) ...
Processing triggers for man-db (2.10.2-1) ...
Scanning processes...
Scanning linux images...

Running kernel seems to be up-to-date.

No services need to be restarted.

No containers need to be restarted.

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
equnox@ansiblehost:~/ansibleRez$
```

Создадим inventory файл

```
Ansible_Host [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
GNU nano 6.2 inventory
ubuntuserver ansible_host=192.168.0.103 ansible_ssh_pass=changeme
```

Добавляем ssh fingerprint в настройки и проверяем работу ansible

```
equnox@ansiblehost:~/ansibleRez$ ssh-keyscan -H 192.168.0.103 >> ~/.ssh/known_hosts
# 192.168.0.103:22 SSH-2.0-OpenSSH_8.9p1 Ubuntu-3ubuntu0.4
# 192.168.0.103:22 SSH-2.0-OpenSSH_8.9p1 Ubuntu-3ubuntu0.4
# 192.168.0.103:22 SSH-2.0-OpenSSH_8.9p1 Ubuntu-3ubuntu0.4
# 192.168.0.103:22 SSH-2.0-OpenSSH_8.9p1 Ubuntu-3ubuntu0.4
# 192.168.0.103:22 SSH-2.0-OpenSSH_8.9p1 Ubuntu-3ubuntu0.4
equnox@ansiblehost:~/ansibleRez$ ansible ubuntuserver -m ping -i inventory
ubuntuserver | SUCCESS => {
  "ansible_facts": {
    "discovered_interpreter_python": "/usr/bin/python3"
  },
  "changed": false,
  "ping": "pong"
}
equnox@ansiblehost:~/ansibleRez$ _
```

Создаем playbook для установки nginx

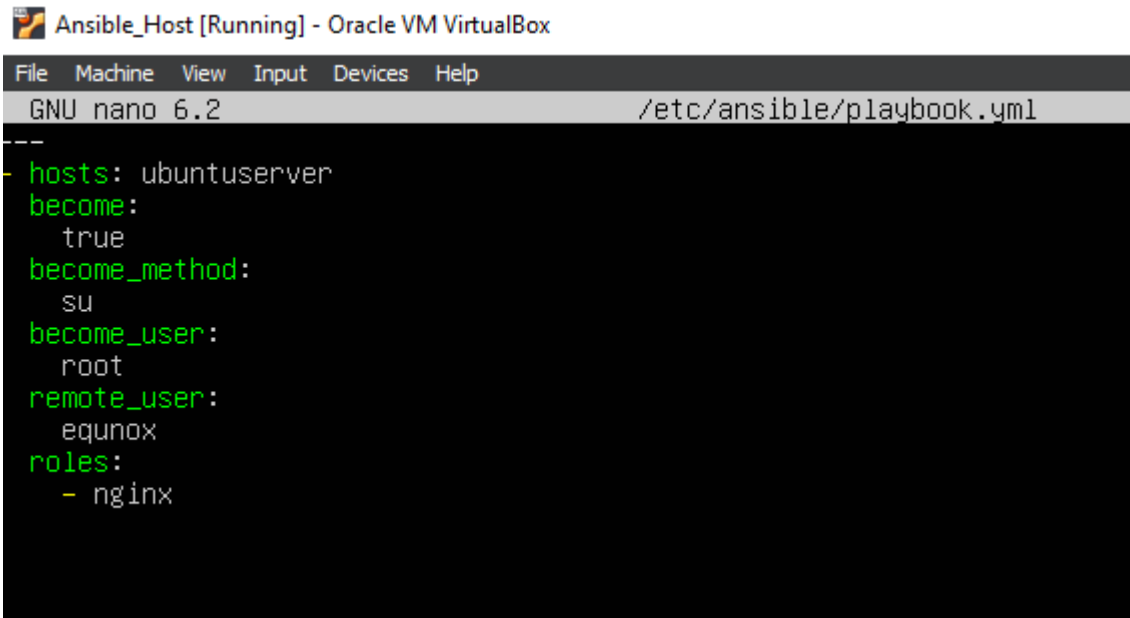
Создание ролей

Роли в Ansible используются для логического разделения плейбука. Они имеют строгий синтаксис и файловую структуру. Таким образом, конфигурация становится более упорядоченной и понятной для дальнейшей поддержки.

И так, для ролей должна быть четкая файловая структура — создаем каталоги:

```
equinox@ansiblehost:~/ansibleRez$ sudo mkdir -p /etc/ansible/roles/nginx/tasks
equinox@ansiblehost:~/ansibleRez$ sudo mkdir -p /etc/ansible/roles/epel/tasks
equinox@ansiblehost:~/ansibleRez$
```

Создаем главный плейбук

A screenshot of a terminal window titled "Ansible_Host [Running] - Oracle VM VirtualBox". The terminal shows the GNU nano 6.2 editor editing the file /etc/ansible/playbook.yml. The content of the file is as follows:

```
---
- hosts: ubuntuuserver
  become:
    true
  become_method:
    su
  become_user:
    root
  remote_user:
    equinox
  roles:
    - nginx
```

Создаем плейбук для роли nginx

```
Ansible_Host [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
GNU nano 6.2 /etc/ansible/roles/nginx/tasks/main.yml
---
- name: Install Nginx
  apt:
    name=nginx
    state=latest
- name: Start Nginx
  service:
    name: nginx
    enabled: yes
    state: started
...

```

Результат

```
equinox@ansiblehost:~/ansibleRez$ ansible-playbook /etc/ansible/playbook.yml -kK
SSH password:
BECOME password(defaults to SSH password):

PLAY [ubuntuserver] *************************************************************

TASK [Gathering Facts] ***********************************************************
ok: [192.168.0.103]

TASK [nginx : Install Nginx] *****************************************************
changed: [192.168.0.103]

TASK [nginx : Start Nginx] ********************************************************
ok: [192.168.0.103]

PLAY RECAP *********************************************************************
192.168.0.103      : ok=3    changed=1    unreachable=0    failed=0    skipped=0    rescued=
0    ignored=0

equinox@ansiblehost:~/ansibleRez$
```

Проверяем через curl

```
equinox@ansiblehost:~/ansibleRez$ curl 192.168.0.103
<!DOCTYPE html>
<html>

<head>
  <meta charset="utf-8">
  <title>Equinox Page</title>
</head>
<body>
  <p>Virtual Page</p>
</body>
</html>
equinox@ansiblehost:~/ansibleRez$ _
```

После перезапуска запускается

```
UbuntuServer [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
46 updates can be applied immediately.
10 of these updates are standard security updates.
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

Last login: Thu Nov 23 21:36:04 UTC 2023 from 192.168.0.104 on pts/0
[ 61.940859] cloud-init[1257]: Cloud-init v. 23.2.1-0ubuntu0~22.04.1 running 'modules:final' at Th
u, 23 Nov 2023 21:45:47 +0000. Up 61.89 seconds.
[ 62.215993] cloud-init[1257]: Cloud-init v. 23.2.1-0ubuntu0~22.04.1 finished at Thu, 23 Nov 2023
21:45:47 +0000. Datasource DataSourceNone. Up 62.18 seconds
[ 62.218106] cloud-init[1257]: 2023-11-23 21:45:47,339 - cc_final_message.py[WARNING]: Used fallback
datasource
equinox@ubuntuserver:~$ sudo service nginx status
[sudo] password for equinox:
• nginx.service - A high performance web server and a reverse proxy server
   Loaded: loaded (/lib/systemd/system/nginx.service; enabled; vendor preset: enabled)
   Active: active (running) since Thu 2023-11-23 21:44:26 UTC; 1min 33s ago
     Docs: man:nginx(8)
   Process: 726 ExecStartPre=/usr/sbin/nginx -t -q -g daemon on; master_process on; (code=exited,
   Process: 842 ExecStart=/usr/sbin/nginx -g daemon on; master_process on; (code=exited, status=0/
   Main PID: 844 (nginx)
      Tasks: 5 (limit: 2220)
     Memory: 12.9M
        CPU: 116ms
    CGroup: /system.slice/nginx.service
           └─844 "nginx: master process /usr/sbin/nginx -g daemon on; master_process on;"
             └─845 "nginx: worker process"
               └─846 "nginx: worker process"
                 └─847 "nginx: worker process"
                   └─848 "nginx: worker process"

Nov 23 21:44:19 ubuntuserver systemd[1]: Starting A high performance web server and a reverse proxy
Nov 23 21:44:26 ubuntuserver systemd[1]: Started A high performance web server and a reverse proxy
lines 1-19/19 (END)
```

Настраиваем Git и создаем SSH-ключ

```

equnox@ansiblehost:~/ansibleRez$ git --version
git version 2.34.1
equnox@ansiblehost:~/ansibleRez$ git config --global user.name "eeequnox"
equnox@ansiblehost:~/ansibleRez$ git config --global user.email iliya.koltsov@gmail.com
equnox@ansiblehost:~/ansibleRez$ ssh-keygen -t ed25519 -C "iliya.koltsov@gmail.com"
Generating public/private ed25519 key pair.
Enter file in which to save the key (/home/equnox/.ssh/id_ed25519):
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /home/equnox/.ssh/id_ed25519
Your public key has been saved in /home/equnox/.ssh/id_ed25519.pub
The key fingerprint is:
SHA256:0fUvGTpTWWIpCJHzRyLZA6bz9iquT70AUXhMHawj1rk iliya.koltsov@gmail.com
The key's randomart image is:
+--[ED25519 256]--+
|      +0.*X... 0..|
|      ..00*0=.00.+|
|      ..0 ++.+ .|=|
|      . = +. .0 +|
|      . 0 S .+ 0 .|
|      0 0 0   0 .|
|      o E .      |
|      ... 0      |
|      .+0.0      |
+-----[SHA256]-----+
equnox@ansiblehost:~/ansibleRez$

```

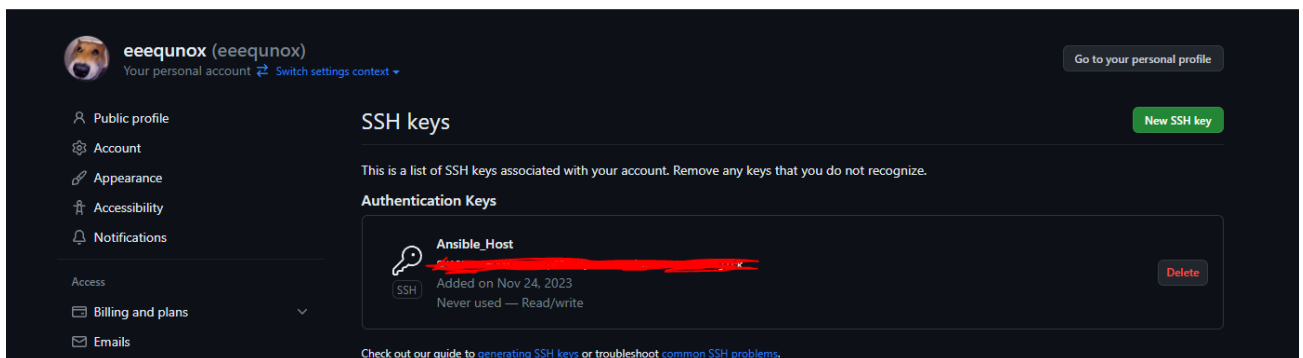
Добавляем SSH-ключ в ssh-agent

```

equnox@ansiblehost:~/ansibleRez$ eval "$(ssh-agent -s)"
Agent pid 2138
equnox@ansiblehost:~/ansibleRez$ ssh-add ~/.ssh/id_ed25519
Identity added: /home/equnox/.ssh/id_ed25519 (iliya.koltsov@gmail.com)
equnox@ansiblehost:~/ansibleRez$ _

```

Добавляем ключ на github



Создаем проект и клонируем репозиторий


```

equnox@ansiblehost:~/ansibleRez$ git clone git@github.com:4-TID-1/KoltsovAnsible
.git
Cloning into 'KoltsovAnsible'...
The authenticity of host 'github.com (140.82.121.4)' can't be established.
ED25519 key fingerprint is SHA256:+DiY3wvvV6TuJJhbpZisF/zLDA0zPMSvHdkr4UvCOqU.
This key is not known by any other names
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'github.com' (ED25519) to the list of known hosts.
remote: Enumerating objects: 3, done.
remote: Counting objects: 100% (3/3), done.
remote: Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
Receiving objects: 100% (3/3), done.
equnox@ansiblehost:~/ansibleRez$ ls
checkUrl.sh  inventory  KoltsovAnsible  log  log.txt  script.sh  test
equnox@ansiblehost:~/ansibleRez$ git branch
fatal: not a git repository (or any of the parent directories): .git
equnox@ansiblehost:~/ansibleRez$ cd KoltsovAnsible/
equnox@ansiblehost:~/ansibleRez/KoltsovAnsible$ git branch
* main
equnox@ansiblehost:~/ansibleRez/KoltsovAnsible$

```

Создаем и переключаемся на новую ветку master

```

equnox@ansiblehost:~/ansibleRez/KoltsovAnsible$ git checkout -b master
Switched to a new branch 'master'
equnox@ansiblehost:~/ansibleRez/KoltsovAnsible$

```

Копируем файлы inventory и playbook в гит папку

```

equnox@ansiblehost:~/ansibleRez/KoltsovAnsible$ ls -la
total 28
drwxrwxr-x 3 equnox equnox 4096 Nov 23 22:10 .
drwxrwxr-x 3 equnox equnox 4096 Nov 23 22:04 ..
drwxrwxr-x 8 equnox equnox 4096 Nov 23 22:06 .git
-rw-r--r-- 1 root    root    95 Nov 23 22:10 inventory
-rw-r--r-- 1 root    root    152 Nov 23 22:09 main.yml
-rw-r--r-- 1 root    root    140 Nov 23 22:10 playbook.yml
-rw-rw-r-- 1 equnox equnox  16 Nov 23 22:04 README.md
equnox@ansiblehost:~/ansibleRez/KoltsovAnsible$

```

Коммитим и пушим

```
equnox@ansiblehost:~/ansibleRez/KoltsovAnsible$ git add -A
equnox@ansiblehost:~/ansibleRez/KoltsovAnsible$ git commit -m "add inventory, pl
aybook"
[master d5549cc] add inventory, playbook
3 files changed, 26 insertions(+)
create mode 100644 inventory
create mode 100644 main.yml
create mode 100644 playbook.yml
equnox@ansiblehost:~/ansibleRez/KoltsovAnsible$ git push origin master
Enumerating objects: 6, done.
Counting objects: 100% (6/6), done.
Delta compression using up to 4 threads
Compressing objects: 100% (5/5), done.
Writing objects: 100% (5/5), 638 bytes | 638.00 KiB/s, done.
Total 5 (delta 0), reused 0 (delta 0), pack-reused 0
remote:
remote: Create a pull request for 'master' on GitHub by visiting:
remote:      https://github.com/4-TID-1/KoltsovAnsible/pull/new/master
remote:
To github.com:4-TID-1/KoltsovAnsible.git
 * [new branch]      master -> master
equnox@ansiblehost:~/ansibleRez/KoltsovAnsible$
```

Проверяем на сайте

The screenshot shows the GitHub interface for the repository 'KoltsovAnsible' (Public). The repository is on the 'master' branch, which is 1 commit ahead of the main branch. The commit history shows a single commit by 'eeequnox' titled 'add inventory, playbook' (commit d5549cc, 17 hours ago). The commit details show four files: README.md (Initial commit, 18 hours ago), inventory (add inventory, playbook, 17 hours ago), main.yml (add inventory, playbook, 17 hours ago), and playbook.yml (add inventory, playbook, 17 hours ago). Below the commit history, the README.md file is displayed, showing the title 'KoltsovAnsible'.

4-TID-1 / KoltsovAnsible

Code Issues Pull requests Actions Projects Wiki Security Insights Settings

KoltsovAnsible Public

master 2 branches 0 tags

Go to file Add file <> Code

This branch is 1 commit ahead of main. Contribute

eeequnox add inventory, playbook d5549cc 17 hours ago 2 commits

README.md	Initial commit	18 hours ago
inventory	add inventory, playbook	17 hours ago
main.yml	add inventory, playbook	17 hours ago
playbook.yml	add inventory, playbook	17 hours ago

README.md

KoltsovAnsible

