Dharwad

ज्ञानेन विकासः

INDIAN INSTITUTE OF
INFORMATION
TECHNOLOGY

DevOps (CS457)

ASSIGNMENT 3 – Task 5

Add users to EC2 instances with SSH Access – Ansible

Submitted to:

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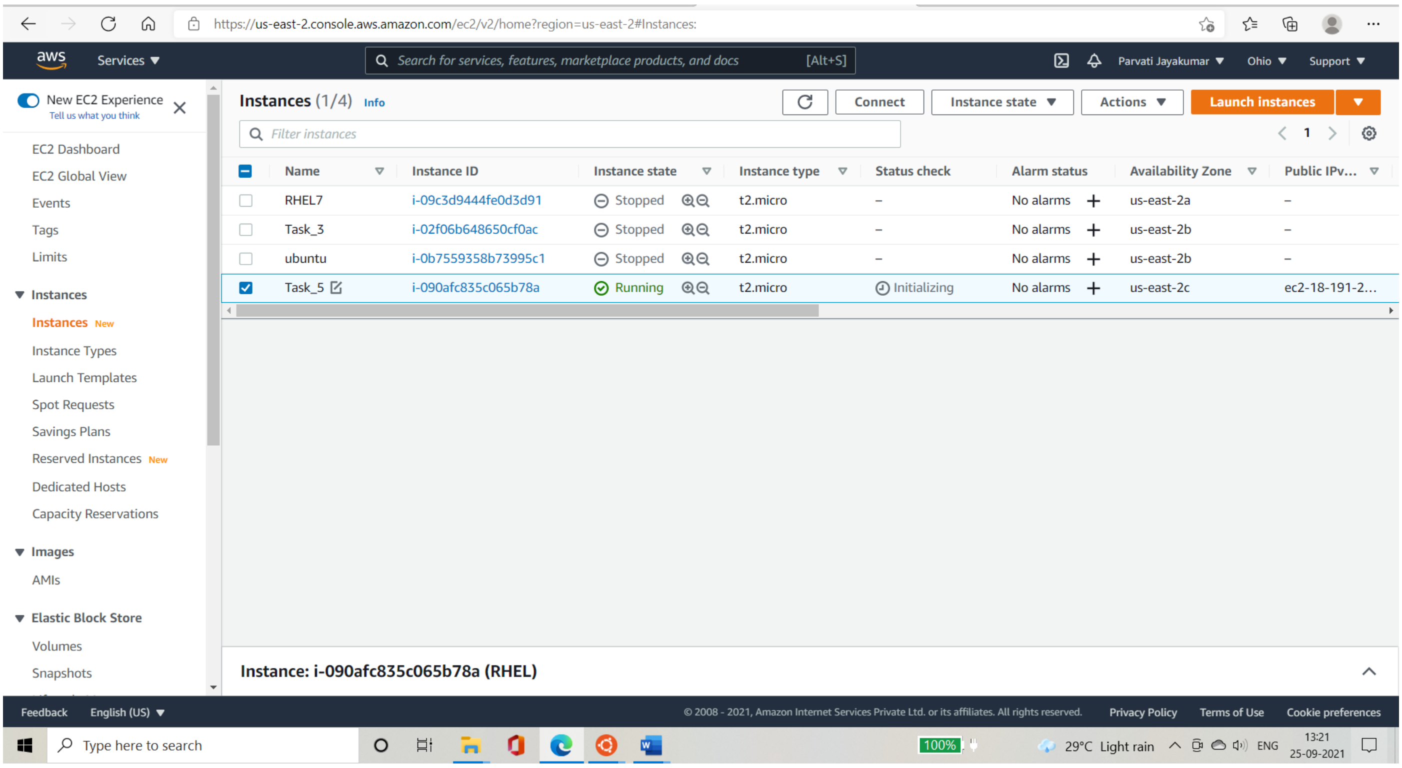
STEP 1: Set up the remote instance

Step 1.1: Launch a Red Hat Enterprise Linux served (Example: as server named ‘Task_5’).

Make sure that port - 22 is open.

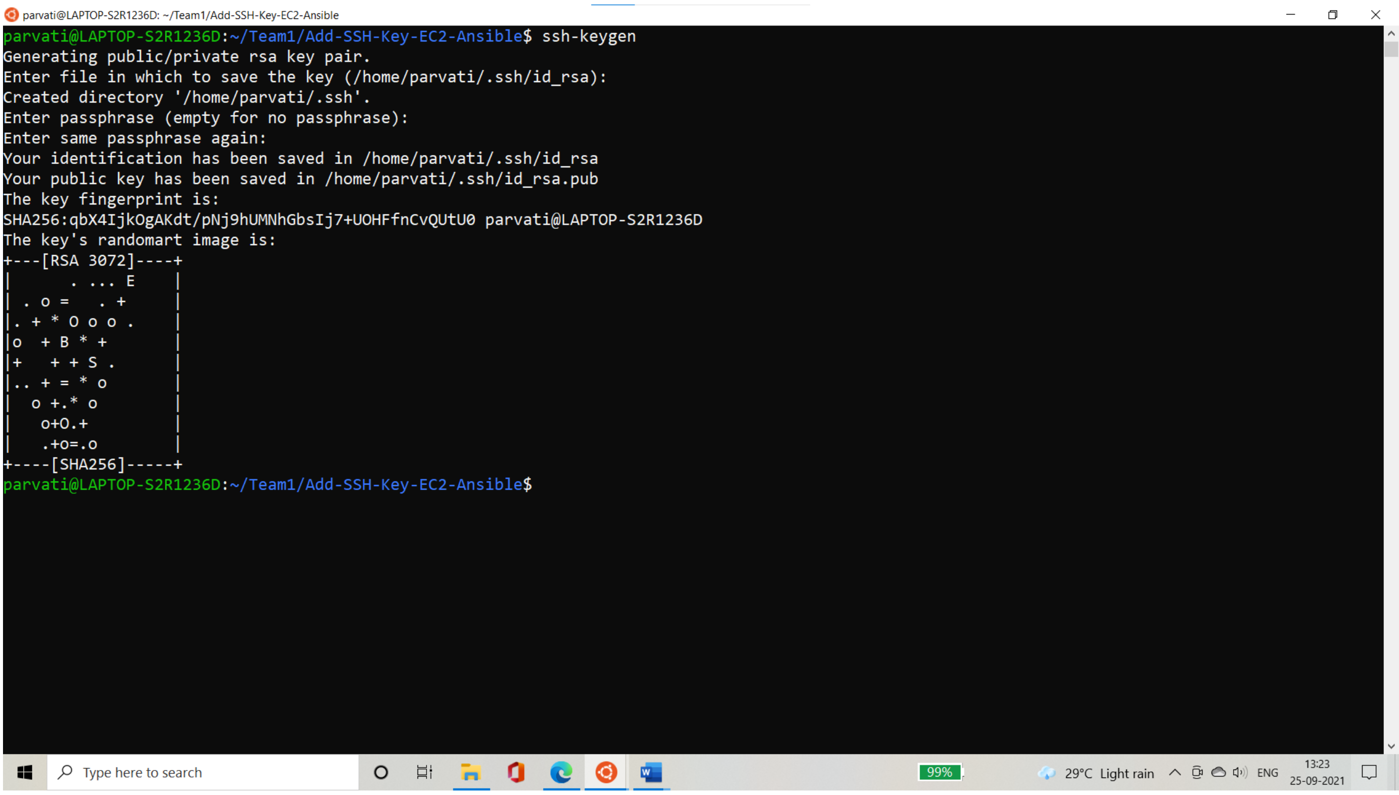


Instances (1/4) Info

	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv...
□	RHEL7	i-09c3d9444fe0d3d91	Stopped	t2.micro	–	No alarms	us-east-2a	–
□	Task_3	i-02f06b648650cf0ac	Stopped	t2.micro	–	No alarms	us-east-2b	–
□	ubuntu	i-0b7559358b73995c1	Stopped	t2.micro	–	No alarms	us-east-2b	–
☑	Task_5	i-090afc835c065b78a	Running	t2.micro	Initializing	No alarms	us-east-2c	ec2-18-191-2...

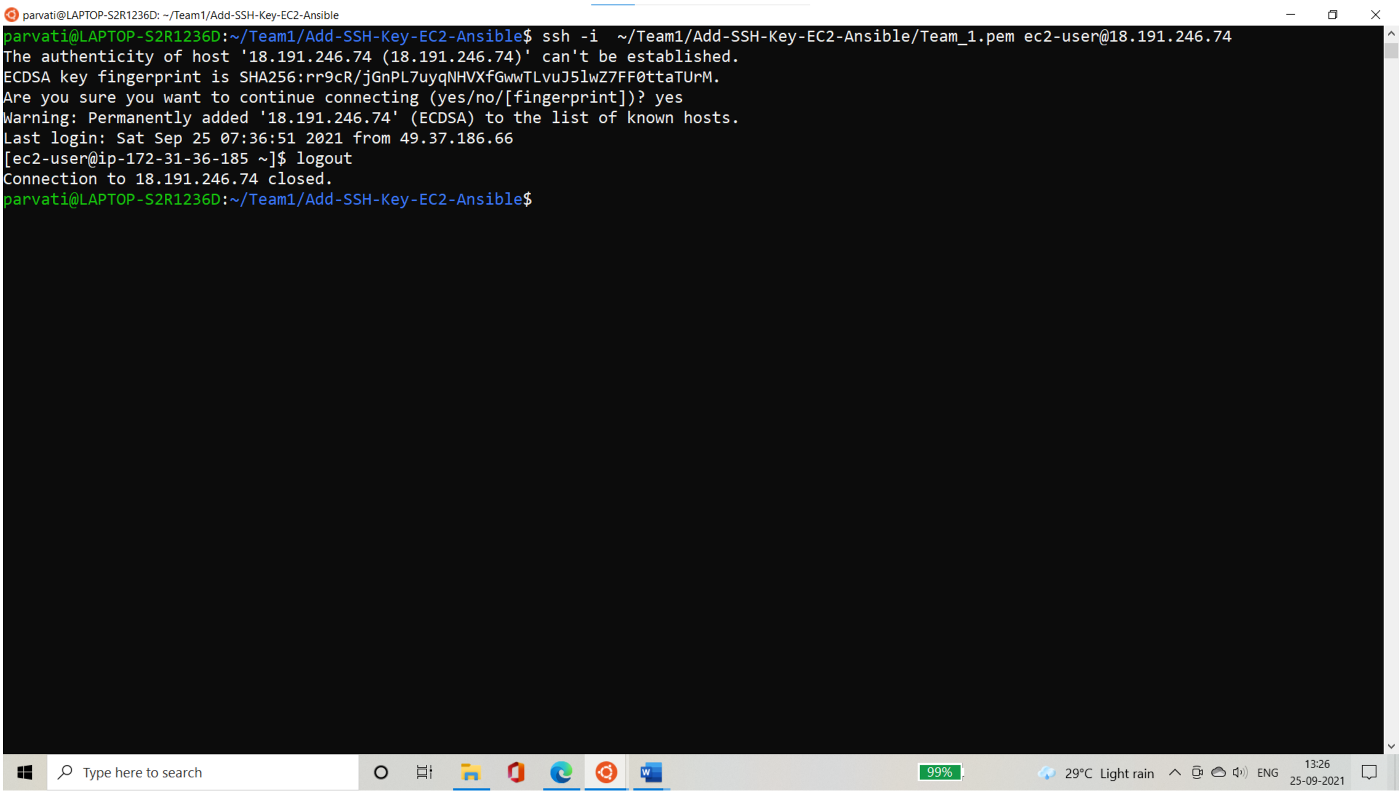
Instance: i-090afc835c065b78a (RHEL)

Step 1.2: Generate a SSH key.



```
parvati@LAPTOP-S2R1236D:~/Team1/Add-SSH-Key-EC2-Ansible$ ssh-keygen
Generating public/private rsa key pair.
Enter file in which to save the key (/home/parvati/.ssh/id_rsa):
Created directory '/home/parvati/.ssh'.
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /home/parvati/.ssh/id_rsa
Your public key has been saved in /home/parvati/.ssh/id_rsa.pub
The key fingerprint is:
SHA256:qbX4IjkOgAKdt/pNj9hUMNhGbsIj7+UOHFfnCvQUtU0 parvati@LAPTOP-S2R1236D
The key's randomart image is:
+---[RSA 3072]----+
|      . ... E    |
| . o =   . +     |
|. + * O o o .    |
|o  + B * +       |
|+   + + S .      |
|.. + = * o       |
|  o +.* o        |
|   o+O.+         |
|   .+o=.o        |
+----[SHA256]-----+
parvati@LAPTOP-S2R1236D:~/Team1/Add-SSH-Key-EC2-Ansible$
```

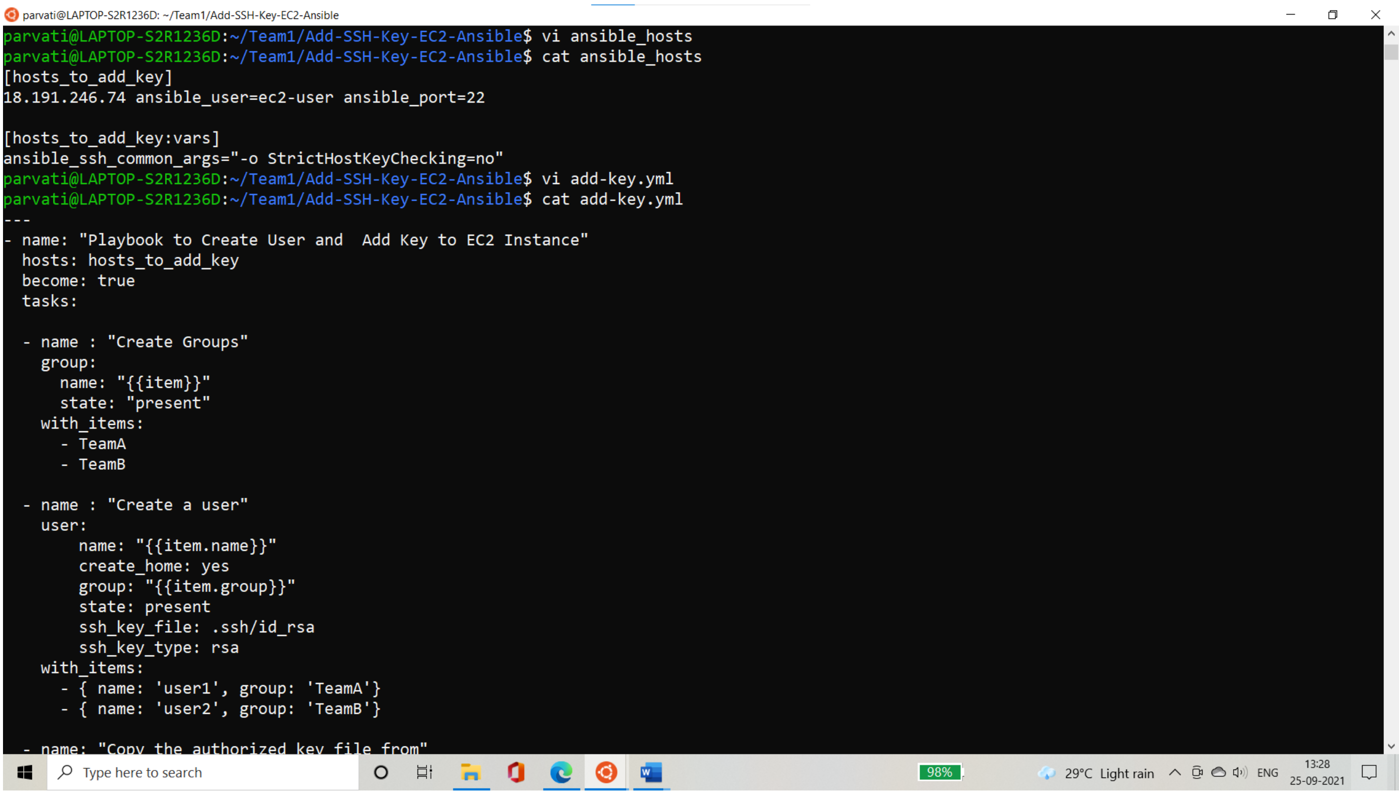
Step 1.3: Make sure that the remote server ‘Task_5’ can be accessed through our local machine.



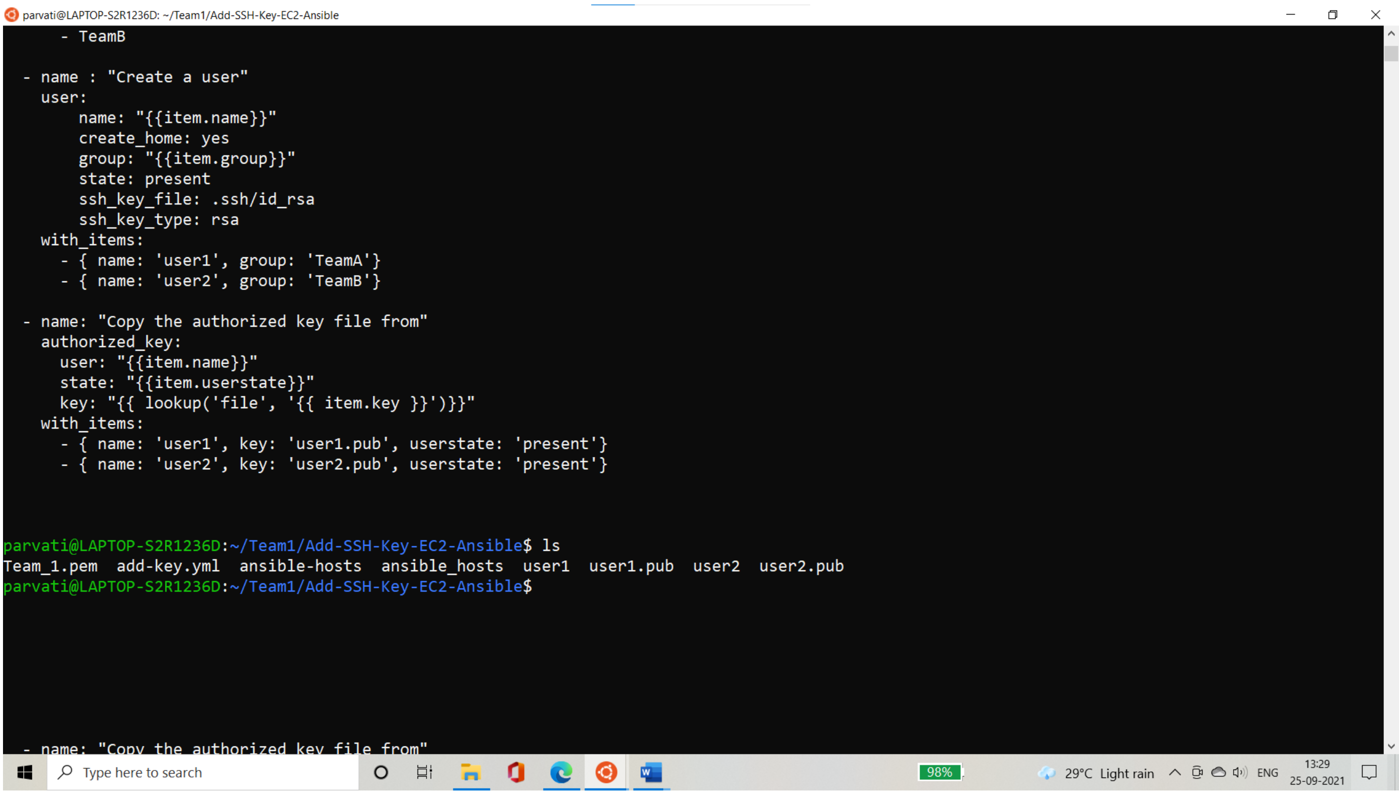
```
parvati@LAPTOP-S2R1236D:~/Team1/Add-SSH-Key-EC2-Ansible$ ssh -i  ~/Team1/Add-SSH-Key-EC2-Ansible/Team_1.pem ec2-user@18.191.246.74
The authenticity of host '18.191.246.74 (18.191.246.74)' can't be established.
ECDSA key fingerprint is SHA256:rr9cR/jGnPL7uyqNHVXfGwwTLvuJ5lwZ7FF0ttaTUrM.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '18.191.246.74' (ECDSA) to the list of known hosts.
Last login: Sat Sep 25 07:36:51 2021 from 49.37.186.66
[ec2-user@ip-172-31-36-185 ~]$ logout
Connection to 18.191.246.74 closed.
parvati@LAPTOP-S2R1236D:~/Team1/Add-SSH-Key-EC2-Ansible$
```

STEP 2: Modify the files required for executing the playbook

Step 2.1: Configure the files: ansible_hosts, add-key.yml.



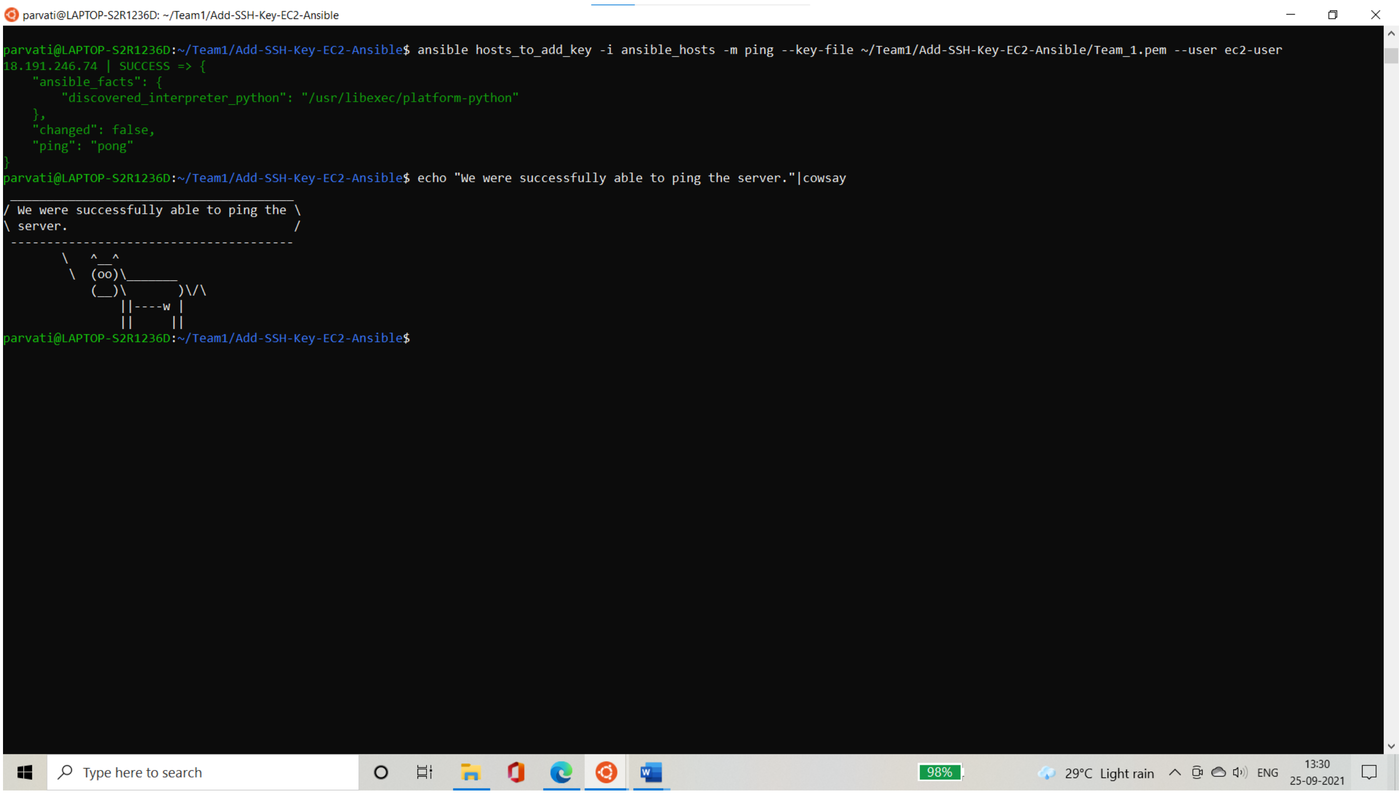
```
parvati@LAPTOP-S2R1236D:~/Team1/Add-SSH-Key-EC2-Ansible$ vi ansible_hosts
parvati@LAPTOP-S2R1236D:~/Team1/Add-SSH-Key-EC2-Ansible$ cat ansible_hosts
[hosts_to_add_key]
18.191.246.74 ansible_user=ec2-user ansible_port=22

[hosts_to_add_key:vars]
ansible_ssh_common_args="-o StrictHostKeyChecking=no"
parvati@LAPTOP-S2R1236D:~/Team1/Add-SSH-Key-EC2-Ansible$ vi add-key.yml
parvati@LAPTOP-S2R1236D:~/Team1/Add-SSH-Key-EC2-Ansible$ cat add-key.yml
---
- name: "Playbook to Create User and  Add Key to EC2 Instance"
  hosts: hosts_to_add_key
  become: true
  tasks:

  - name : "Create Groups"
    group:
      name: "{{item}}"
      state: "present"
    with_items:
      - TeamA
      - TeamB

  - name : "Create a user"
    user:
        name: "{{item.name}}"
        create_home: yes
        group: "{{item.group}}"
        state: present
        ssh_key_file: .ssh/id_rsa
        ssh_key_type: rsa
    with_items:
      - { name: 'user1', group: 'TeamA'}
      - { name: 'user2', group: 'TeamB'}

  - name: "Copy the authorized key file from"
```



```
      - TeamB

  - name : "Create a user"
    user:
        name: "{{item.name}}"
        create_home: yes
        group: "{{item.group}}"
        state: present
        ssh_key_file: .ssh/id_rsa
        ssh_key_type: rsa
    with_items:
      - { name: 'user1', group: 'TeamA'}
      - { name: 'user2', group: 'TeamB'}

  - name: "Copy the authorized key file from"
    authorized_key:
      user: "{{item.name}}"
      state: "{{item.userstate}}"
      key: "{{ lookup('file', '{{ item.key }}')}}"
    with_items:
      - { name: 'user1', key: 'user1.pub', userstate: 'present'}
      - { name: 'user2', key: 'user2.pub', userstate: 'present'}



parvati@LAPTOP-S2R1236D:~/Team1/Add-SSH-Key-EC2-Ansible$ ls
Team_1.pem  add-key.yml  ansible-hosts  ansible_hosts  user1  user1.pub  user2  user2.pub
parvati@LAPTOP-S2R1236D:~/Team1/Add-SSH-Key-EC2-Ansible$






  - name: "Copy the authorized key file from"
```

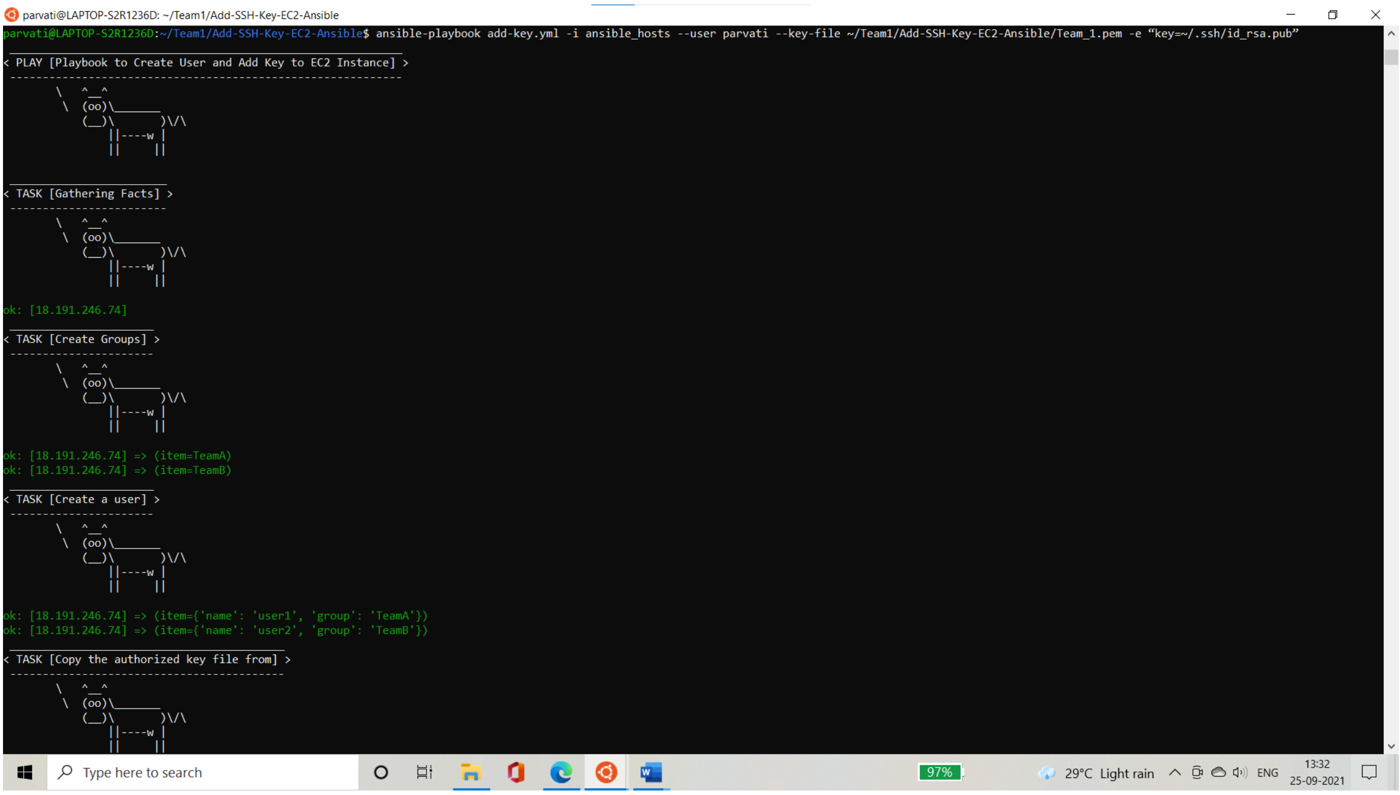
STEP 3: Execute the playbook

Step 3.1: Ping to check if the connection is successful

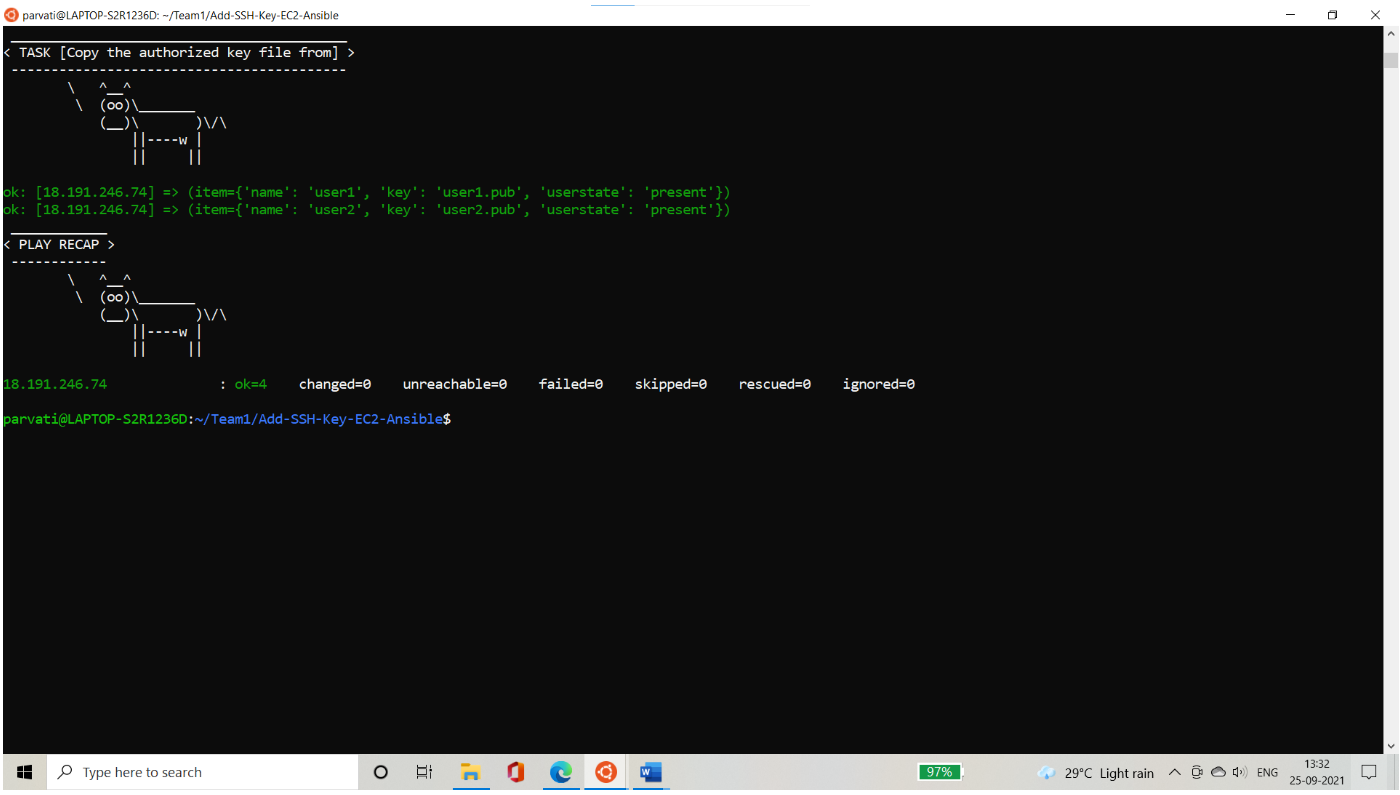


```
parvati@LAPTOP-S2R1236D:~/Team1/Add-SSH-Key-EC2-Ansible$ ansible hosts_to_add_key -i ansible_hosts -m ping --key-file ~/Team1/Add-SSH-Key-EC2-Ansible/Team_1.pem --user ec2-user
18.191.246.74 | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/libexec/platform-python"
    },
    "changed": false,
    "ping": "pong"
}
parvati@LAPTOP-S2R1236D:~/Team1/Add-SSH-Key-EC2-Ansible$ echo "We were successfully able to ping the server."|cowsay
 _______________________________________
/ We were successfully able to ping the \
\ server.                               /
 ---------------------------------------
        \   ^__^
         \  (oo)\_______
            (__)\       )\/\
                ||----w |
                ||     ||
parvati@LAPTOP-S2R1236D:~/Team1/Add-SSH-Key-EC2-Ansible$
```

Step 3.2: Use the command ansible-playbook to execute add-key.yml

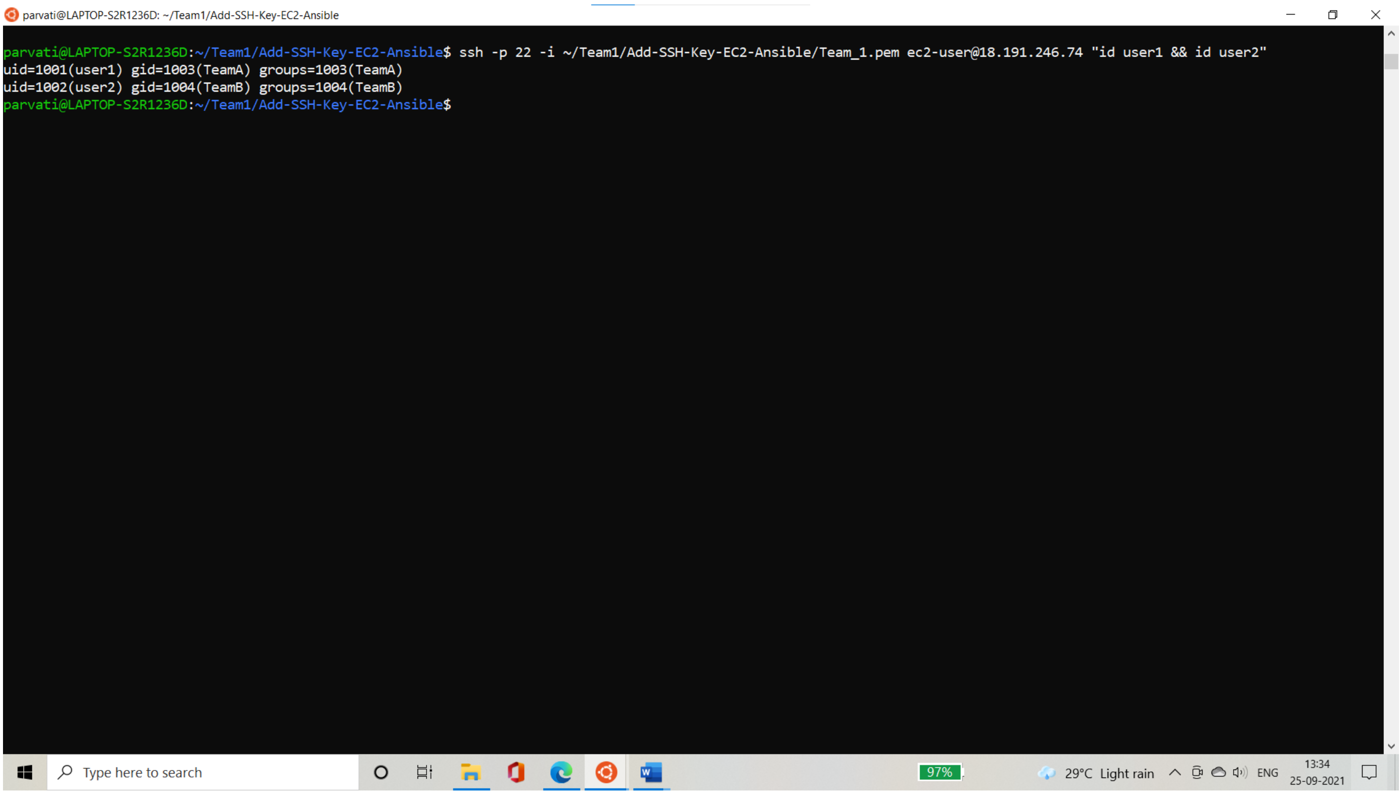


```
parvati@LAPTOP-S2R1236D:~/Team1/Add-SSH-Key-EC2-Ansible$ ansible-playbook add-key.yml -i ansible_hosts --user parvati --key-file ~/Team1/Add-SSH-Key-EC2-Ansible/Team_1.pem -e “key=~/.ssh/id_rsa.pub”
 ____________________________________________________________
< PLAY [Playbook to Create User and Add Key to EC2 Instance] >
 ------------------------------------------------------------
        \   ^__^
         \  (oo)\_______
            (__)\       )\/\
                ||----w |
                ||     ||

 ________________________
< TASK [Gathering Facts] >
 ------------------------
        \   ^__^
         \  (oo)\_______
            (__)\       )\/\
                ||----w |
                ||     ||

ok: [18.191.246.74]
 ______________________
< TASK [Create Groups] >
 ----------------------
        \   ^__^
         \  (oo)\_______
            (__)\       )\/\
                ||----w |
                ||     ||

ok: [18.191.246.74] => (item=TeamA)
ok: [18.191.246.74] => (item=TeamB)
 ______________________
< TASK [Create a user] >
 ----------------------
        \   ^__^
         \  (oo)\_______
            (__)\       )\/\
                ||----w |
                ||     ||

ok: [18.191.246.74] => (item={'name': 'user1', 'group': 'TeamA'})
ok: [18.191.246.74] => (item={'name': 'user2', 'group': 'TeamB'})
 __________________________________________
< TASK [Copy the authorized key file from] >
 ------------------------------------------
        \   ^__^
         \  (oo)\_______
            (__)\       )\/\
                ||----w |
                ||     ||
```



```
 ________________________________________
< TASK [Copy the authorized key file from] >
 ----------------------------------------
        \   ^__^
         \  (oo)\_______
            (__)\       )\/\
                ||----w |
                ||     ||

ok: [18.191.246.74] => (item={'name': 'user1', 'key': 'user1.pub', 'userstate': 'present'})
ok: [18.191.246.74] => (item={'name': 'user2', 'key': 'user2.pub', 'userstate': 'present'})
 ____________
< PLAY RECAP >
 ------------
        \   ^__^
         \  (oo)\_______
            (__)\       )\/\
                ||----w |
                ||     ||

18.191.246.74              : ok=4    changed=0    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0

parvati@LAPTOP-S2R1236D:~/Team1/Add-SSH-Key-EC2-Ansible$
```

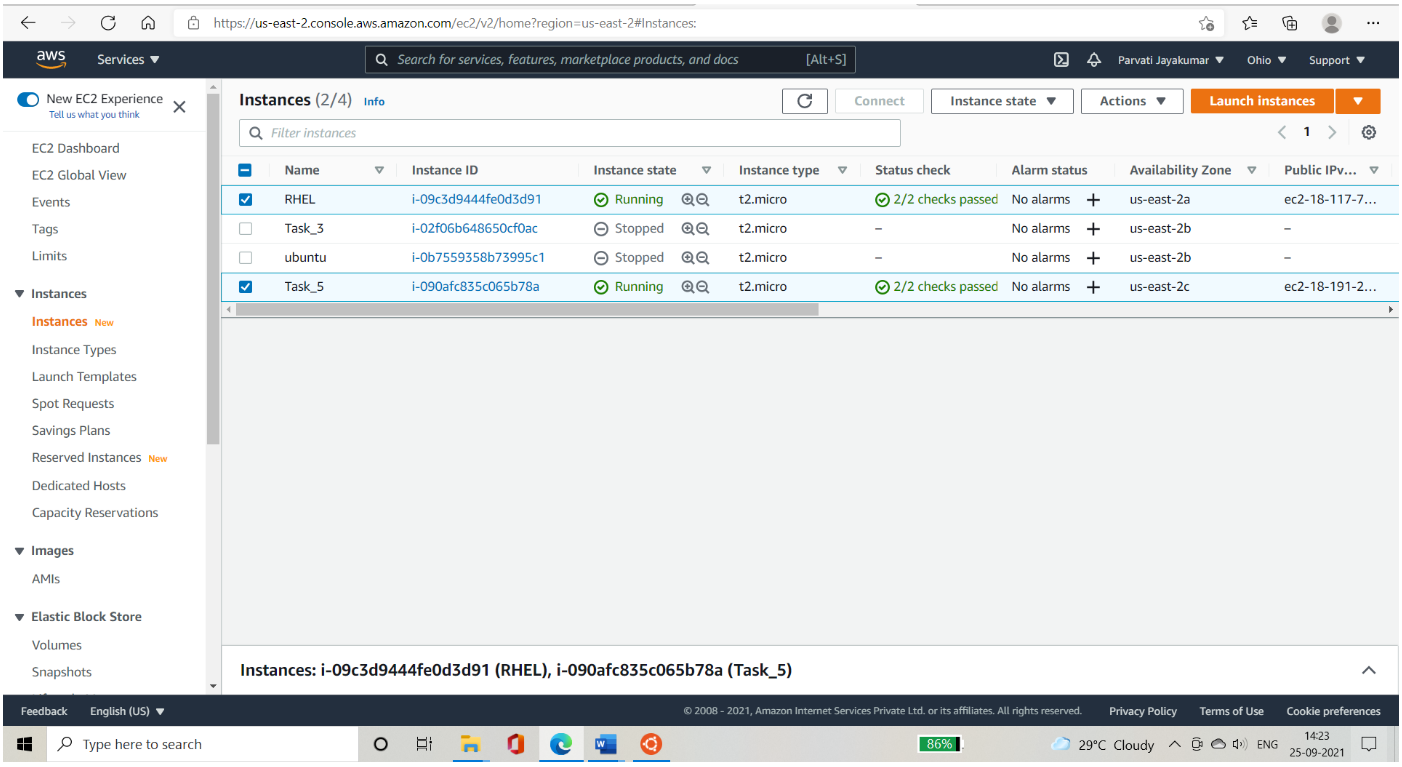
Step 3.3: Validate the results



```
parvati@LAPTOP-S2R1236D:~/Team1/Add-SSH-Key-EC2-Ansible$ ssh -p 22 -i ~/Team1/Add-SSH-Key-EC2-Ansible/Team_1.pem ec2-user@18.191.246.74 "id user1 && id user2"
uid=1001(user1) gid=1003(TeamA) groups=1003(TeamA)
uid=1002(user2) gid=1004(TeamB) groups=1004(TeamB)
parvati@LAPTOP-S2R1236D:~/Team1/Add-SSH-Key-EC2-Ansible$
```

STEP 4: You can also try to add users at once by giving multiple hosts.

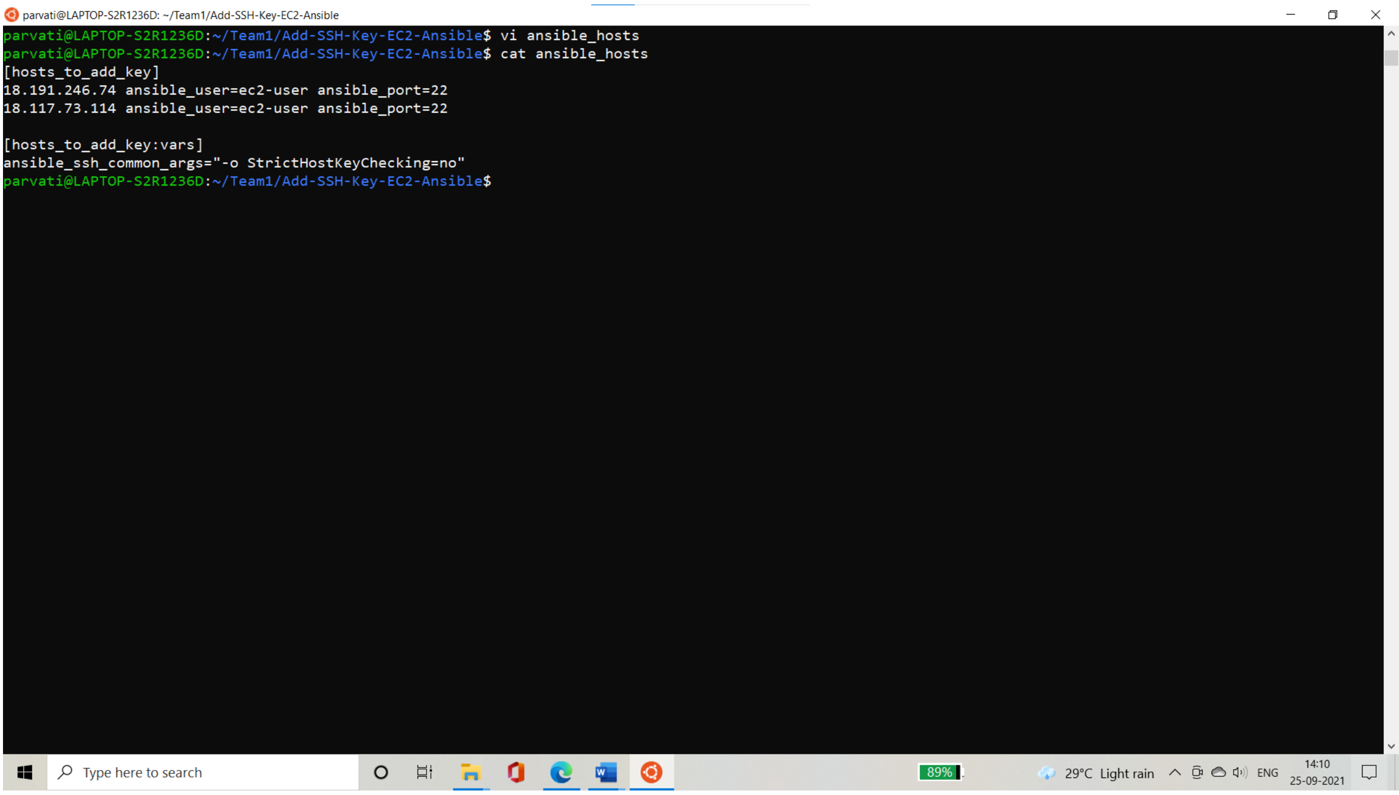
Step 4.1: Launch a new instance (Example: RHEL)



☐	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv…
☑	RHEL	i-09c3d9444fe0d3d91	Running	t2.micro	2/2 checks passed	No alarms +	us-east-2a	ec2-18-117-7…
☐	Task_3	i-02f06b648650cf0ac	Stopped	t2.micro	–	No alarms +	us-east-2b	–
☐	ubuntu	i-0b7559358b73995c1	Stopped	t2.micro	–	No alarms +	us-east-2b	–
☑	Task_5	i-090afc835c065b78a	Running	t2.micro	2/2 checks passed	No alarms +	us-east-2c	ec2-18-191-2…

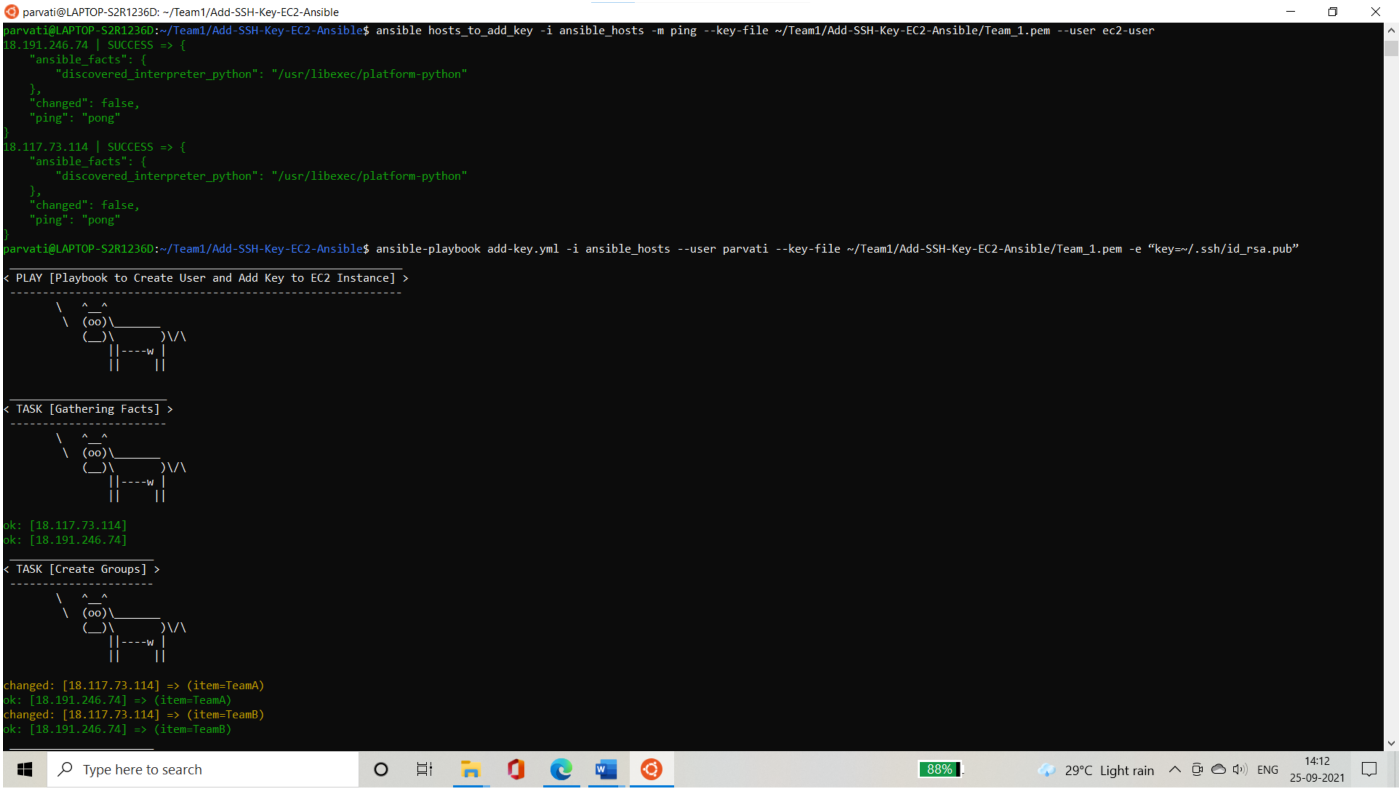
Instances: i-09c3d9444fe0d3d91 (RHEL), i-090afc835c065b78a (Task_5)

Step 4.2: Configure ansible_hosts file

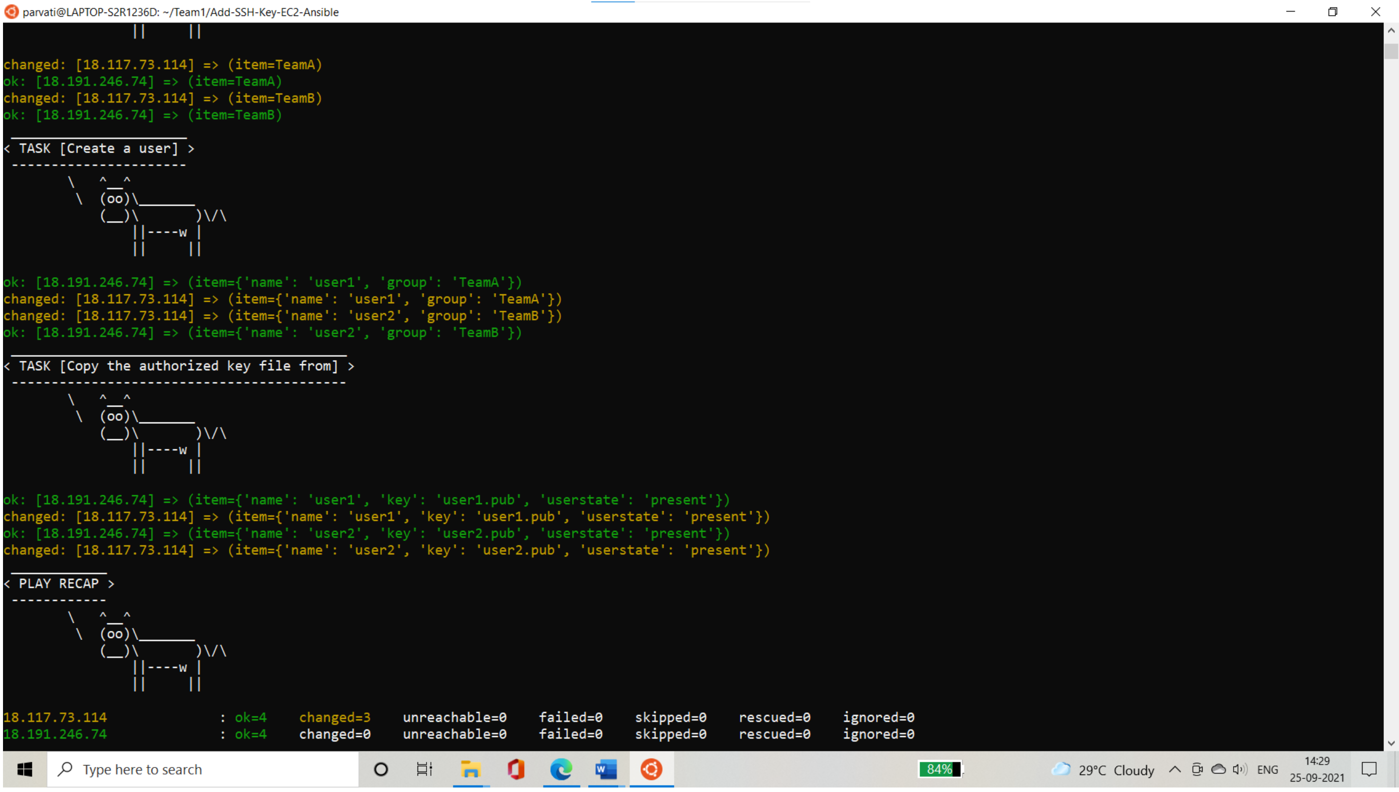


```
parvati@LAPTOP-S2R1236D:~/Team1/Add-SSH-Key-EC2-Ansible$ vi ansible_hosts
parvati@LAPTOP-S2R1236D:~/Team1/Add-SSH-Key-EC2-Ansible$ cat ansible_hosts
[hosts_to_add_key]
18.191.246.74 ansible_user=ec2-user ansible_port=22
18.117.73.114 ansible_user=ec2-user ansible_port=22

[hosts_to_add_key:vars]
ansible_ssh_common_args="-o StrictHostKeyChecking=no"
parvati@LAPTOP-S2R1236D:~/Team1/Add-SSH-Key-EC2-Ansible$
```

Step 4.3: Execute the YAML file

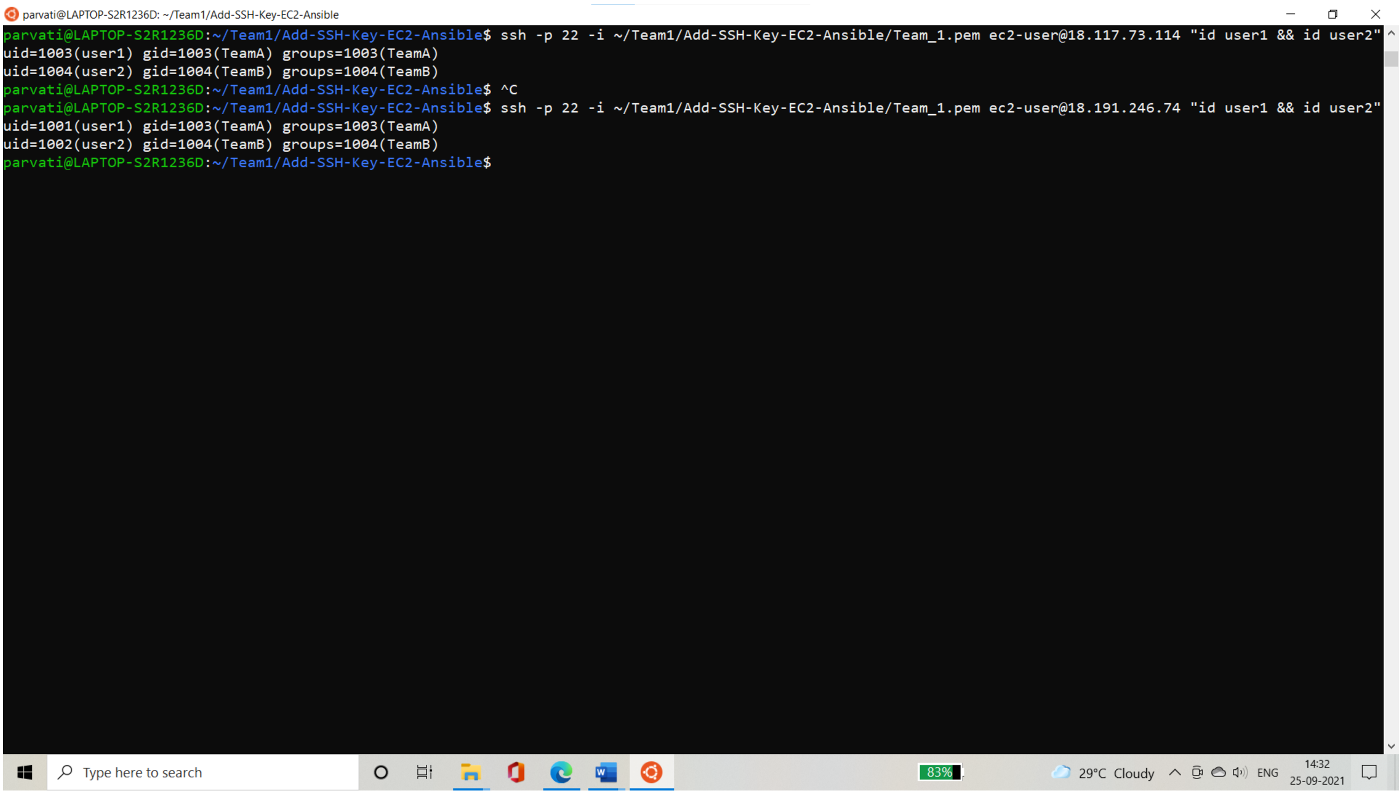


```
parvati@LAPTOP-S2R1236D:~/Team1/Add-SSH-Key-EC2-Ansible$ ansible hosts_to_add_key -i ansible_hosts -m ping --key-file ~/Team1/Add-SSH-Key-EC2-Ansible/Team_1.pem --user ec2-user
18.191.246.74 | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/libexec/platform-python"
    },
    "changed": false,
    "ping": "pong"
}
18.117.73.114 | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/libexec/platform-python"
    },
    "changed": false,
    "ping": "pong"
}
parvati@LAPTOP-S2R1236D:~/Team1/Add-SSH-Key-EC2-Ansible$ ansible-playbook add-key.yml -i ansible_hosts --user parvati --key-file ~/Team1/Add-SSH-Key-EC2-Ansible/Team_1.pem -e “key=~/.ssh/id_rsa.pub”
 ____________________________________________________________
< PLAY [Playbook to Create User and Add Key to EC2 Instance] >
 ------------------------------------------------------------
        \   ^__^
         \  (oo)\_______
            (__)\       )\/\
                ||----w |
                ||     ||

 _________________________
< TASK [Gathering Facts] >
 -------------------------
        \   ^__^
         \  (oo)\_______
            (__)\       )\/\
                ||----w |
                ||     ||

ok: [18.117.73.114]
ok: [18.191.246.74]
 ________________________
< TASK [Create Groups] >
 ------------------------
        \   ^__^
         \  (oo)\_______
            (__)\       )\/\
                ||----w |
                ||     ||

changed: [18.117.73.114] => (item=TeamA)
ok: [18.191.246.74] => (item=TeamA)
changed: [18.117.73.114] => (item=TeamB)
ok: [18.191.246.74] => (item=TeamB)
```



```
                ||     ||

changed: [18.117.73.114] => (item=TeamA)
ok: [18.191.246.74] => (item=TeamA)
changed: [18.117.73.114] => (item=TeamB)
ok: [18.191.246.74] => (item=TeamB)
 ______________________
< TASK [Create a user] >
 ----------------------
        \   ^__^
         \  (oo)\_______
            (__)\       )\/\
                ||----w |
                ||     ||

ok: [18.191.246.74] => (item={'name': 'user1', 'group': 'TeamA'})
changed: [18.117.73.114] => (item={'name': 'user1', 'group': 'TeamA'})
changed: [18.117.73.114] => (item={'name': 'user2', 'group': 'TeamB'})
ok: [18.191.246.74] => (item={'name': 'user2', 'group': 'TeamB'})
 __________________________________________
< TASK [Copy the authorized key file from] >
 ------------------------------------------
        \   ^__^
         \  (oo)\_______
            (__)\       )\/\
                ||----w |
                ||     ||

ok: [18.191.246.74] => (item={'name': 'user1', 'key': 'user1.pub', 'userstate': 'present'})
changed: [18.117.73.114] => (item={'name': 'user1', 'key': 'user1.pub', 'userstate': 'present'})
ok: [18.191.246.74] => (item={'name': 'user2', 'key': 'user2.pub', 'userstate': 'present'})
changed: [18.117.73.114] => (item={'name': 'user2', 'key': 'user2.pub', 'userstate': 'present'})
 ____________
< PLAY RECAP >
 ------------
        \   ^__^
         \  (oo)\_______
            (__)\       )\/\
                ||----w |
                ||     ||

18.117.73.114              : ok=4    changed=3    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
18.191.246.74              : ok=4    changed=0    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
```

Step 4.4: Validate the results by checking users in both the instances



```
parvati@LAPTOP-S2R1236D:~/Team1/Add-SSH-Key-EC2-Ansible$ ssh -p 22 -i ~/Team1/Add-SSH-Key-EC2-Ansible/Team_1.pem ec2-user@18.117.73.114 "id user1 && id user2"
uid=1003(user1) gid=1003(TeamA) groups=1003(TeamA)
uid=1004(user2) gid=1004(TeamB) groups=1004(TeamB)
parvati@LAPTOP-S2R1236D:~/Team1/Add-SSH-Key-EC2-Ansible$ ^C
parvati@LAPTOP-S2R1236D:~/Team1/Add-SSH-Key-EC2-Ansible$ ssh -p 22 -i ~/Team1/Add-SSH-Key-EC2-Ansible/Team_1.pem ec2-user@18.191.246.74 "id user1 && id user2"
uid=1001(user1) gid=1003(TeamA) groups=1003(TeamA)
uid=1002(user2) gid=1004(TeamB) groups=1004(TeamB)
parvati@LAPTOP-S2R1236D:~/Team1/Add-SSH-Key-EC2-Ansible$
```

REFERENCES

- https://www.middlewareinventory.com/blog/add-users-to-ec2-instances-with-ssh-access-ansible/
- https://youtu.be/EGWyN6DMI1g
- https://youtu.be/kfWfj76-am8