

# Ansible Loops

By: Er. Vikas Nehra (M. Tech, B. Tech), Experience: 15 + Years

## Session - 16 Agenda:

1. Nested Loops

### Problems With Looping List of Hashes:

#### (b) Looping over List of Hashes:

Hashes are a type of data structure that stores key-value pairs.

Looping over list of hashes is preferred in case if we have multiple keys which also have multiple values (if more than one variable item values are used), but these values have limited relationship in-between them (not too much).

Let's suppose we need to create multiple user accounts and each user should be the member of a different secondary group in the managed nodes as per the following table. Here we have two keys username and group, username key has 4 values while the group key has only 2 values and these key values have a relationship (the user account is to be added may be the member of either wheel group or root but not both). So, the user will be the member of a specific group only which may be either root or wheel, so here we will prefer the looping over list of hashes. (Here groups are already present on the nodes.)

Username	Group
rahul	wheel
rohan	wheel
anuj	root
harsha	root

Let's create an ansible playbook for the above task where we will run the loop on list of hashes.

\$ vim hash\_loop.yml

---

```
- name: Playbook to add multiple users using hash loops
```

```
hosts: node1
```

```
become: true
```

```
tasks:
```

```
  - name: Adding local user accounts.
```

```
    user:
```

```
      name: "{{ item.name }}"
```

```
      state: present
```

```
      groups: "{{ item.groups }}"
```

```
    loop:
```

```
      - { name: 'rahul', groups: 'wheel' }
```

```
      - { name: 'rohan', groups: 'wheel' }
```

```
      - { name: 'anuj', groups: 'root' }
```

```
      - { name: 'harsha', groups: 'root' }
```

...

Let's check the playbook for errors.

\$ ansible-playbook hash\_loop.yml --syntax-check



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Execute the playbook to check it's working.

**\$ ansible-playbook hash\_loop.yml**

Verify the task using ansible ad-hoc command.

**\$ ansible node1 -m command -a 'grep -E root|wheel /etc/group'**

Let's suppose if we want to create the user accounts as well as adding them in the groups which are not already present in the managed nodes. In this case we have to add the groups first in the managed nodes which would require one more task in the playbook.

Username	Group
swati	linux
abhay	linux
saroj	unix
naman	unix

Let's create an ansible playbook for the above task where we will run the loop on list of hashes and add the groups as well.

**\$ vim hash\_loop1.yml**

---

```
- name: Playbook to add multiple users and groups using hash loops
hosts: node1
become: true
tasks:
  - name: Adding the groups.
    group:
      name: "{{ item }}"
      state: present
    with_items:
      - linux
      - unix
  - name: Adding local user accounts.
    user:
      name: "{{ item.usr }}"
      state: present
      groups: "{{ item.grp }}"
    loop:
      - { usr: swati, grp: linux }
      - { usr: abhay, grp: linux }
      - { usr: saroj, grp: unix }
      - { usr: naman, grp: unix }
```

...

Let's check the playbook for errors.

**\$ ansible-playbook hash\_loop1.yml --syntax-check**



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Execute the playbook to check it's working.

**\$ ansible-playbook hash\_loop1.yml**

Verify the task using ansible ad-hoc command.

**\$ ansible node1 -m command -a 'grep -E linux|unix /etc/group'**

Let's modify the task here, suppose we need to create multiple user accounts and each user should be the member of a different secondary group in the managed nodes as per the following table. Here we have two keys username and group, username as well as group keys have 4 values each and these key values have a relationship (the user account is to be added should be the member of his dedicated group which is mentioned against its name).

Username	Group
preeti	nehraclasses
mohan	youtube
shekhar	google
shiva	wheel

Let's create an ansible playbook for the above task where we will run the loop on list of hashes.

**\$ vim hash\_loop2.yml**

```
---
- name: Playbook to add multiple users and groups using hash loops
  hosts: node1
  become: true
  tasks:
    - name: Adding the groups.
      group:
        name: "{{ item }}"
        state: present
      with_items:
        - nehraclasses
        - youtube
        - google
    - name: Adding local user accounts.
      user:
        name: "{{ item.usr }}"
        state: present
        groups: "{{ item.grp }}"
      loop:
        - { usr: preeti, grp: nehraclasses }
        - { usr: mohan, grp: youtube }
        - { usr: shekhar, grp: google }
        - { usr: shiva, grp: wheel }
...
...
```



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Let's check the playbook for errors.

```
$ ansible-playbook hash_loop2.yml --syntax-check
```

Execute the playbook to check it's working.

```
$ ansible-playbook hash_loop2.yml
```

Verify the task using ansible ad-hoc command.

```
$ ansible node1 -m command -a 'grep -E nehraclasses|youtube|google|wheel /etc/group'
```

Now, let's make this more complicated. Suppose each of the users to be added in all of the groups (more than one) instead only one.

Username	Group
vijay	student, teacher, scholar
sanju	student, teacher, scholar
neha	student, teacher, scholar
lara	student, teacher, scholar

Let's create an ansible playbook for the above task where we will run the loop on list of hashes to check whether it will work or not.

```
$ vim hash_loop3.yml
```

---

```
- name: Playbook to add multiple users and groups using hash loops
  hosts: node1
  become: true
  tasks:
    - name: Adding the groups.
      group:
        name: "{{ item }}"
        state: present
      with_items:
        - student
        - teacher
        - scholar
    - name: Adding local user accounts.
      user:
        name: "{{ item.usr }}"
        state: present
        groups: "{{ item.grp }}"
      loop:
        - { usr: vijay, grp: student, grp: teacher, grp: scholar }
        - { usr: sanju, grp: student, grp: teacher, grp: scholar }
        - { usr: neha, grp: student, grp: teacher, grp: scholar }
        - { usr: lara, grp: student, grp: teacher, grp: scholar }
```

...



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Let's check the playbook for errors.

```
$ ansible-playbook hash_loop3.yml --syntax-check
```

Execute/dry run the playbook to check it's working.

```
$ ansible-playbook hash_loop3.yml -C
```

Here you can see that we are not able to perform the task using looping over the hashes.

---

## Solution With Nested Loops:

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We can use nested loops for such tasks:

Username	Group
vijay	student, teacher, scholar
sanju	student, teacher, scholar
neha	student, teacher, scholar
lara	student, teacher, scholar

Let's create an ansible playbook for the above task where we will run the nested loops to resolve the issue which we were facing in previous case of looping over the hashes.

```
$ vim nested_loop.yml
```

---

```
- name: Playbook to add multiple users and groups using nested loops
hosts: node1
become: true
tasks:
  - name: Adding the groups.
    group:
      name: "{{ item }}"
      state: present
    with_items:
      - student
      - teacher
      - scholar
  - name: Adding local user accounts.
    user:
      name: "{{ item[0] }}"
      groups: "{{ item[1] }}"
      append: yes
    with_nested:
      - { vijay, sanju, neha, lara }
      - { student, teacher, scholar }
...

```

Let's check the playbook for errors.

```
$ ansible-playbook nested_loop.yml --syntax-check
```



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Execute the playbook to check it's working.

```
$ ansible-playbook nested_loop.yml
```

Verify the task using ansible ad-hoc command.

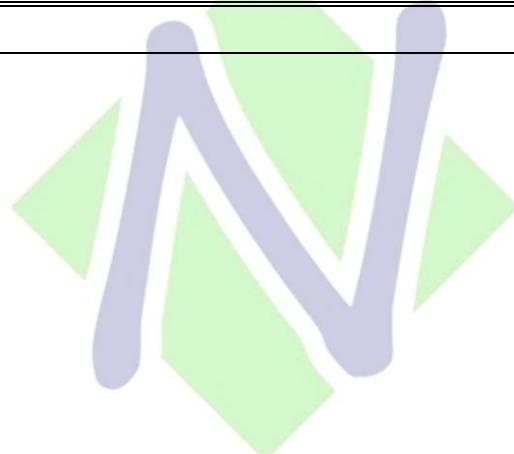
```
$ ansible node1 -m command -a 'grep -E student|teacher|scholar /etc/group'
```

Here you can see that the task has been executed successfully using the nested loop.

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Thanks

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