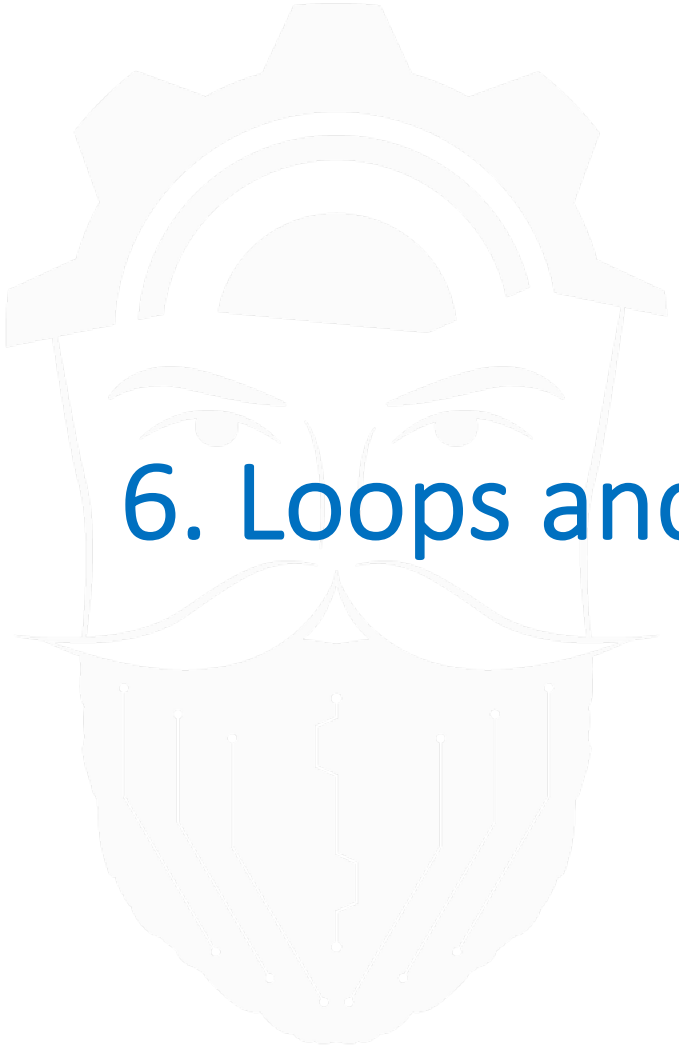
Ansible Basic

An Ansible Training Course

DevOps Artisan



6. Loops and Conditions

DevOps Artisan

Topics covered

- What are Loops
- Using Conditions
- Multiple Conditions
- Combining Loops and Conditionals

DevOps Artisan

What are Loops?

- The **loop** keyword allows you to iterate through a simple list of items

- Before Ansible 2.5, the **with_X** syntax was used instead
  - with_items, with_cartesian, with_subelement, etc

```
-name: start some services
 service:
   name: "{{ item }}"
   state: started
 loop:
   - vsftpd
   - httpd
```

DevOps Artisan

Using Variables to Define a Loop

- The list that loop is using can be defined by a variable:

```
vars:
  my_services:
    - httpd
    - vsftpd
tasks:
  - name: start some services
    service:
      name: "{{ item }}"
      state: started
    loop: "{{ my_services }}"
```

Using Hashes/Dictionaries in Loops

- Each item in a loop can be a hash/dictionary with multiple keys

```
- name: create users using a loop
  hosts: all
  tasks:
  - name: create users
    user:
      name: "{{ item.name }}"
      state: present
      groups: "{{ item.groups }}"
    loop:
      - name: anna
        groups: wheel
      - name: linda
        groups: users
```

loop vs. with_*

- The **loop** keywork **is the current keyword**

- In previous version of Ansible, the **with_*** keyword was used for the same purpose

- It is recommended to move towards the **loop** syntax.
  - **with_list**: equivalent to the loop keyword
  - **with_items:** equivalent to **loop** + the **flatten** filter
  - **with_random:** equivalent to **loop** + the **random** filter
  - More details: https://docs.ansible.com/ansible/latest/user_guide/playbooks_loops.html#migrating-to-loop

Using Conditions

- A condition can be used to run a task only if specific conditions are true.
- Playbook variables, registered variables, and fact can be used in conditions and make sure that tasks only run if specific conditions are true.
- For instance, check if a task has run successfully, a certain amount of memory is available, a file exists, etc.
- **when** statements are used to run a task conditionally

Defining Simple Conditions

- The simplest example of a condition, is to check whether a Boolean variable is true or false.
  - Note that **when** conditions are always evaluated in Jinja context, so the double braces are **not** required!
- You can also check and see if a non-Boolean variable has a value an use that value in the conditional.
- Or use a conditional in which you compare the value of a fact to the specific value of a variable.

Simple Conditions Example

- ansible_machine == “x86_64”
- ansible_distribution_major_version == “8”
- ansible_memfree_mb == 1024
- ansible_memfree_mb < 256
- ansible_memfree_mb > 256
- ansible_memfree_mb <= 256
- ansible_memfree_mb !=512
- my_variable is defined
- my_variable is not defined
- ansible_distribution in supported_distros

Simple Conditions Example

```
---
- name: when example
  host: all
  vars:
    supported_distros:
      - CentOS
      - Fedora
      - RedHat
  tasks:
    - name: install RH family specific packages
      yum:
        name: nginx
        state: present
      when: ansible_distribution in supported_distros
```

Multiple Conditions

- **when** can be used to test multiple conditions as well
- Use **and/or** and group the conditions with parentheses
  - `when: ansible_distribution == "CentOS" or ansible_distribution == "RedHat"`
  - `when: ansible_machine == "x86_64" and ansible_distribution == "CentOS"`
- The when keyword also supports a list and when using a list, all of the conditions must be true.
  - Much easier to read than using **and**!
- Complex conditional statements can group conditions using parentheses

DevOps Artisan

Multiple Conditions - Example

```
---
- name: Using conditionals
  hosts: centos
  gather_facts: yes
  become: true
  vars:
    backup: true
  tasks:
  - stat:
      path: /etc/ssh/sshd_config
    register: result

  - name: Backup ssh configuration
    fetch:
      src: /etc/ssh/sshd_config
      dest: ./sshd_config-{{ ansible_hostname }}
      flat: yes
    when: result.stat.exists and result.stat.isreg and backup == true
```

DevOps Artisan

Multiple Conditions - Example

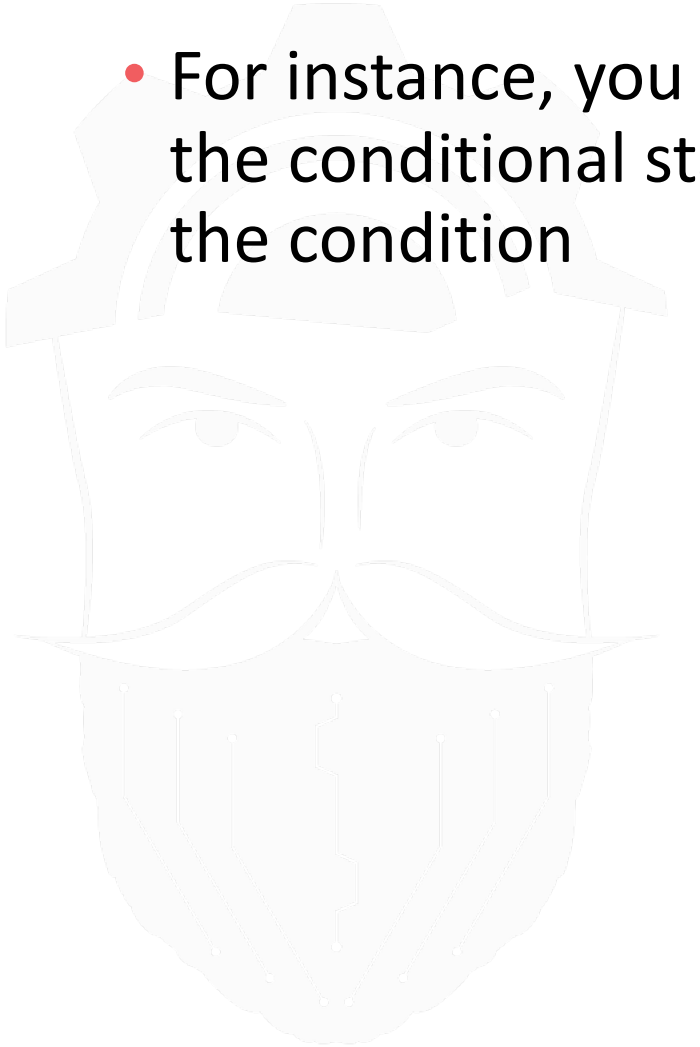
```
---
- name: when example
  host: all
  tasks:
  - package:
      name: httpd
      state: installed
    when: >
      ( ansible_distribution == "RedHat" and
        ansible_memfree_mb > 512 )
      or
      ( ansible_distribution == "CentOS" and
        ansible_memfree_mb > 1024 )
```

DevOps Artisan

Combining Loops and Conditionals

- Loops and conditionals can be combined

- For instance, you can iterate through a list of dictionaries and apply the conditional statement only if a dictionary is found that matches the condition



DevOps Artisan

Combining Loops and Conditionals

```
- hosts: all
  tasks:
  - command: echo {{ item }}
    loop: [ 0, 2, 4, 6, 8, 10 ]
    when: item > 5
```

DevOps Artisan

Combining Loops and Conditionals

```
- hosts: all
  tasks:
    - name: Postfix server status
      command: /usr/bin/systemctl is-active postfix
      ignore_errors: yes
      register: result
    - name: Restart Apache HTTPD if Postfix running
      service:
        name: httpd
        state: restarted
      when: result.rc == 0
```

Combining Loops and Conditionals

```
- hosts: all
  tasks:
    - name: Postfix server status
      command: /usr/bin/systemctl is-active postfix (1)
      ignore_errors: yes
      register: result
    - name: Restart Apache HTTPD if Postfix running
      service:
        name: httpd
        state: restarted
      when: result.rc == 0
```

(1) Is Postfix running or not?

Combining Loops and Conditionals

```
- hosts: all
  tasks:
    - name: Postfix server status
      command: /usr/bin/systemctl is-active postfix (1)
      ignore_errors: yes (2)
      register: result
    - name: Restart Apache HTTPD if Postfix running
      service:
        name: httpd
        state: restarted
      when: result.rc == 0
```

(1) Is Postfix running or not?

(2) If it is not running and the command "fails", do not stop processing

DevOps Artisan

Combining Loops and Conditionals

```
- hosts: all
  tasks:
    - name: Postfix server status
      command: /usr/bin/systemctl is-active postfix (1)
      ignore_errors: yes (2)
      register: result (3)
    - name: Restart Apache HTTPD if Postfix running
      service:
        name: httpd
        state: restarted
      when: result.rc == 0
```

1. Is Postfix running or not?
2. If it is not running and the command "fails", do not stop processing
3. Save information on the module's result in a variable named **result**

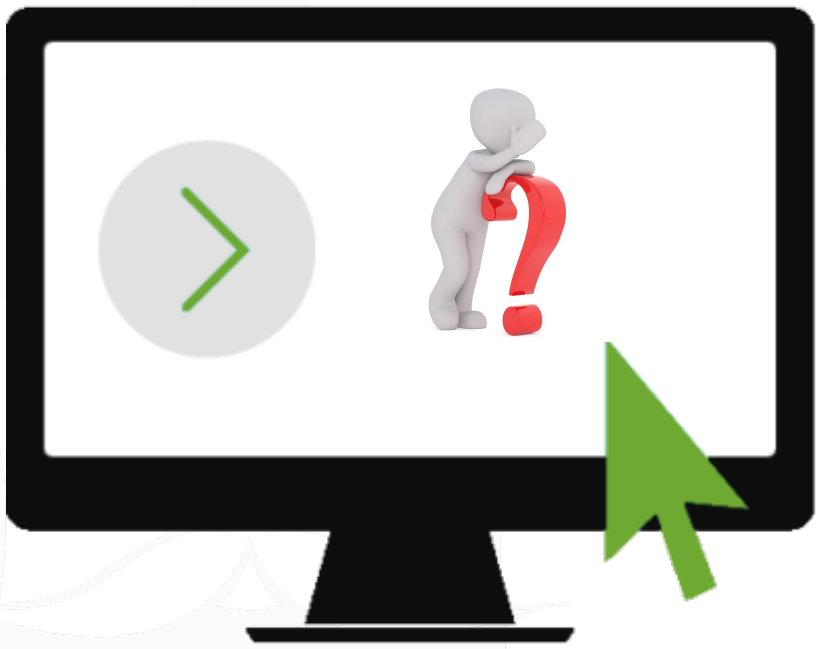
DevOps Artisan

Combining Loops and Conditionals

```
- hosts: all
  tasks:
    - name: Postfix server status
      command: /usr/bin/systemctl is-active postfix (1)
      ignore_errors: yes (2)
      register: result (3)
    - name: Restart Apache HTTPD if Postfix running
      service:
        name: httpd
        state: restarted
      when: result.rc == 0 (4)
```

1. Is Postfix running or not?
2. If it is not running and the command "fails", do not stop processing
3. Save information on the module's result in a variable named **result**
4. Evaluates the output of the Postfix task. If the exit code of the **systemctl** command is 0, then Postfix is active and this task will restart the **httpd** service

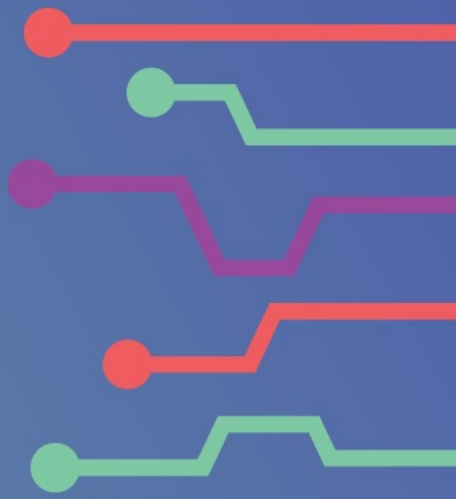
DevOps Artisan



DevOps Artisan

Lab 6: ***Loop Conditionals***

DevOps Artisan



More practice, less theory

askformore@devopsartisan.com

DevOps Artisan