

# 变量

## 本章目标

△ 如何使用变量

△ 变量的使用和覆盖原则

### - 在 Playbook 中，用户自定义的变量

在 Playbook 中，通过 `vars` 关键字自定义变量，使用时用 `{{ }}` 引用起来即可。

```
---  
- hosts: admiring  
  remote_user: i542016  
  vars:  
    name: Amy  
  tasks:  
    - shell: echo {{ name }}
```

```
---  
- hosts: admiring  
  remote_user: i542016  
  vars:  
    name: Amy  
  tasks:  
    - copy: src=/home/i542016/temp.txt dest={{ name }}.txt
```

当变量较多的时候，

或当变量需要在多个 Playbook 中重用的时候，

可以把变量放到一个单独的文件中，通过关键字 `vars_files` 把文件中定义的变量引用到 Playbook 中。

```
vsa13700500:/home/i542016 # cat playbooks/vars/girls_vars.yml  
Hui: Wang  
Yuanyi: Jiang  
Xiaofan: Wu
```

```
---  
- hosts: all  
  remote_user: i542016  
  vars_files:  
    - vars/girls_vars.yml  
  
  tasks:  
    - shell: echo {{ Hui }} {{ Yuanyi }} {{ Xiaofan }}
```

有时，用户需要使用的变量的值是一个对象。这时使用 YAML 字典格式定义变量，利用中括号或点号访问对象中的子属性。

```
girls:  
  Wise: Wang  
  Fran: Wu
```

```
---  
- hosts: all  
  remote_user: i542016  
  vars_files:  
    - vars/girls_vars.yml  
  
  tasks:  
    - shell: echo {{ girls.Wise }} {{ girls["Fran"] }}
```

### - 远程主机的系统变量

Ansible 会通过模块 "setup" 来搜集主机的系统信息（称为 Facts）。每个 Playbook 在执行前都会默认执行 setup 模块，故这些 Facts 可以直接以变量的形式使用。

```
vsa13700500:/home/i542016 # ansible-playbook playbooks/playbook_helloWorld.yml --verbose  
Using /home/i542016/ansible.cfg as config file  
[WARNING]: ansible.utils.display.initialize_locale has not been called, this may result in incorrectly calculated text widths that can cause Display to print incorrect line lengths  
  
PLAY [all] ****  
TASK [Gathering Facts] ****  
ok: [100.70.225.1]  
ok: [100.70.224.81]  
ok: [100.70.224.87]  
  
TASK [print system] ****  
changed: [100.70.225.1] => {"changed": true, "cmd": "echo Suse", "delta": "0:00:00.005797", "end": "2025-01-26 10:47:43.804945", "msg": "", "rc": 0, "start": "2025-01-26 10:47:43.799148", "stderr": "", "stderr_lines": [], "stdout": "Suse", "stdout_lines": ["Suse"]}  
changed: [100.70.224.87] => {"changed": true, "cmd": "echo Suse", "delta": "0:00:00.007595", "end": "2025-01-26 10:47:43.890570", "msg": "", "rc": 0, "start": "2025-01-26 10:47:43.882975", "stderr": "", "stderr_lines": [], "stdout": "Suse", "stdout_lines": ["Suse"]}  
changed: [100.70.224.81] => {"changed": true, "cmd": "echo Suse", "delta": "0:00:00.007053", "end": "2025-01-26 10:47:44.510168", "msg": "", "rc": 0, "start": "2025-01-26 10:47:44.501088", "stderr": "", "stderr_lines": [], "stdout": "Suse", "stdout_lines": ["Suse"]}  
  
PLAY RECAP ****  
100.70.224.81 : ok=2 changed=1 unreachable=0 failed=0 skipped=0 rescued=0 ignored=0  
100.70.224.87 : ok=2 changed=1 unreachable=0 failed=0 skipped=0 rescued=0 ignored=0  
100.70.225.1 : ok=2 changed=1 unreachable=0 failed=0 skipped=0 rescued=0 ignored=0
```

哪些 Facts 变量可以引用呢？可以通过命令 `ansible all -m setup -u i542016` 查看。

一些常用的 Facts： [https://docs.ansible.com/ansible/latest/playbook\\_guide/playbooks\\_conditionals.html#commonly-used-facts](https://docs.ansible.com/ansible/latest/playbook_guide/playbooks_conditionals.html#commonly-used-facts)。

在系统中搜集到如下的、多层的 Facts 变量，仍是通过中括号或点号的方式访问复杂变量中的子属性。

```
        "swap": {
            "cached": 0,
            "free": 0,
            "total": 0,
            "used": 0
        }
    },
    "ansible_memtotal_mb": 1912,
    "ansible_mounts": [
        {
            "block_available": 1350703,
            "block_size": 4096,
            "block_total": 2040951,
            "block_used": 690248,
            "device": "/dev/mapper/systemVG-LVRoot",
            "fstype": "ext4",
            "inode_available": 455203,
            "inode_total": 524288,
            "inode_used": 69085,
            "mount": "/",
            "options": "rw,noatime",
            "size_available": 5532479488,
            "size_total": 8359735296,
            "uuid": "8d104ff1-e8bd-4ac8-b361-773ce10114be"
        },
        {
            "device": "/dev/sda1",
            "fstype": "vfat",
            "mount": "/boot/efi",
            "options": "rw,relatime,fmask=0027,dmask=0027,codepage=437,iocharset=iso8859-1,shortname=mixed,utf8,erro
        }
    ]
}
```

搜集 Facts 信息会消耗额外的时间，如果不需要 Facts 信息，则可以在 Playbook 中，通过关键字 `gather_facts` 来控制是否搜集远程系统的信息。

```
---  
- hosts: all  
  remote_user: i542016  
gather_facts: no  
  
tasks:  
  - name: print system  
    shell: echo {{ ansible_os_family }}  
  
vsal3700500:/home/i542016 # ansible-playbook playbooks/playbook_helloWorld.yml --verbose  
Using /home/i542016/ansible.cfg as config file  
[WARNING]: ansible.utils.display.initialize_locale has not been called, this may result in incorrectly calculated text widths that can cause Display to print incorrect line lengths  
  
PLAY [all] ****  
  
TASK [print system] ****  
fatal: [100.70.225.1]: FAILED! => {"msg": "The task includes an option with an undefined variable. The error was: 'ansible_os_family' is undefined\n\nThe error appears to be in '/home/i542016/playbooks/playbook_helloWorld.yml': line 7, column 7, but may\\nbe elsewhere in the file depending on the exact syntax problem.\n\nThe offending line appears to be:\n\n  tasks:\n    - name: print system\n      ^ here\n"}  
fatal: [100.70.224.87]: FAILED! => {"msg": "The task includes an option with an undefined variable. The error was: 'ansible_os_family' is undefined\n\nThe error appears to be in '/home/i542016/playbooks/playbook_helloWorld.yml': line 7, column 7, but may\\nbe elsewhere in the file depending on the exact syntax problem.\n\nThe offending line appears to be:\n\n  tasks:\n    - name: print system\n      ^ here\n"}  
fatal: [100.70.224.81]: FAILED! => {"msg": "The task includes an option with an undefined variable. The error was: 'ansible_os_family' is undefined\n\nThe error appears to be in '/home/i542016/playbooks/playbook_helloWorld.yml': line 7, column 7, but may\\nbe elsewhere in the file depending on the exact syntax problem.\n\nThe offending line appears to be:\n\n  tasks:\n    - name: print system\n      ^ here\n"}  
  
PLAY RECAP ****  
100.70.224.81 : ok=0    changed=0    unreachable=0   failed=1    skipped=0    rescued=0    ignored=0  
100.70.224.87 : ok=0    changed=0    unreachable=0   failed=1    skipped=0    rescued=0    ignored=0  
100.70.225.1  : ok=0    changed=0    unreachable=0   failed=1    skipped=0    rescued=0    ignored=0
```

## - 文件模板中的变量

所有在 Playbook 中可以访问的变量。

- 在 Playbook 中定义的变量；
- Facts 变量；
- 在 Inventory 里面定义的 Host 和 Group 变量；

都可以在 template 文件中使用。

引用变量的方式仍是 `{{ }}`。

## - 注册变量（把运行结果当作变量使用）

把任务的执行结果当作一个变量的值也是可以的。

“注册”

```
-- hosts: all  
remote_user: i542016
```

```
tasks:  
  - shell: ls  
    ignore_errors: True  
    register: result  
  
  - shell: echo {{ result.stdout }}  
    when: result.rc == 5  
  
  - debug: msg="{{ result.stdout }}"
```

注册变量经常和 debug 模块一起使用，方便调试。

## - 用命令行传递参数

为了使 Playbook 更灵活，Ansible 允许用户在执行的时候传入变量的值，这时就需要用到“额外变量”。

```
--  
  - hosts: rejected  
    remote_user: i542016  
  
tasks:  
  - debug: msg="{{ testing }}"
```

如果在命令行中不传入值，那么执行 playbook 时会报错。

```
vsa13700500:/home/i542016 # ansible-playbook playbooks/playbook_helloWorld.yml  
[WARNING]: ansible.utils.display.initialize_locale has not been called, this may result in incorrectly calculated text widths that can cause Display to print incorrect line lengths
```

```
PLAY [rejected] *****  
  
TASK [Gathering Facts] *****  
ok: [100.70.224.81]  
  
TASK [debug] *****  
fatal: [100.70.224.81]: FAILED! => {"msg": "The task includes an option with an undefined variable. The error was: 'testing' is undefined\n\nThe error appears to be in '/home/i542016/playbooks/playbook_helloWorld.yml': line 6, column 7, but may\n`nbe elsewhere in the file depending on the exact syntax problem.\n\nThe offending line appears to be:\n`n tasks:\n  - debug: msg="{{ testing }}"\n      ^ here\nWe could be wrong, but this one looks like it might be an issue with\nmissing quotes. Always quote template expression brackets when they\n`nstart a value. For instance:\n`n      with_items:\n  - {{ foo }}\n`nShould be written as:\n`n      with_items:\n        - \"{{ foo }}\"\n`n"}  
  
PLAY RECAP *****  
100.70.224.81 : ok=1 changed=0 unreachable=0 failed=1 skipped=0 rescued=0 ignored=0
```

也可以在 Playbook 中定义变量的默认值。如此，即使不在命令行中传入值，也不会报错。如果在命令行中传入新的值，那么会覆盖默认值。

```
--  
  - hosts: rejected  
    remote_user: i542016  
  
  vars:  
    testing: "****"  
  
  tasks:  
    - debug: msg="{{ testing }}"
```

往变量传值的方法有三种：

法1

```
vsa13700500:/home/i542016 # ansible-playbook playbooks/playbook_helloWorld.yml --extra-vars "testing=***"  
[WARNING]: ansible.utils.display.initialize_locale has not been called, this may result in incorrectly calculated text widths that can cause Display to print incorrect line lengths
```

```
PLAY [rejected] *****  
  
TASK [Gathering Facts] *****  
ok: [100.70.224.81]  
  
TASK [debug] *****  
ok: [100.70.224.81] => {  
    "msg": "***"  
}  
  
PLAY RECAP *****  
100.70.224.81 : ok=2 changed=0 unreachable=0 failed=0 skipped=0 rescued=0 ignored=0
```

法2

```
vsa13700500:/home/i542016 # ansible-playbook playbooks/playbook_helloWorld.yml --extra-vars "testing='---'"  
[WARNING]: ansible.utils.display.initialize_locale has not been called, this may result in incorrectly calculated text widths that can cause Display to print incorrect line lengths
```

```
PLAY [rejected] *****  
  
TASK [Gathering Facts] *****  
ok: [100.70.224.81]  
  
TASK [debug] *****  
ok: [100.70.224.81] => {  
    "msg": "---"  
}  
  
PLAY RECAP *****  
100.70.224.81 : ok=2 changed=0 unreachable=0 failed=0 skipped=0 rescued=0 ignored=0
```

```
vsa13700500:/home/i542016 # ansible-playbook playbooks/playbook_helloWorld.yml  
[WARNING]: ansible.utils.display.initialize_locale has not been called, this may result in incorrectly calculated text widths that can cause Display to print incorrect line lengths
```

```
vsa13700500:/home/i542016 # ansible-playbook playbooks/playbook_helloWorld.yml --extra-vars "@vars.json"
```

变量有其作用域，也有优先级。

优先级的大体规律为“越精细/明确，优先级越高”，且变量的优先级只有在变量重名时才需要区分。

官方文档：[https://docs.ansible.com/ansible/latest/playbook\\_guide/playbooks\\_variables.html#variable-precedence-where-should-i-put-a-variable](https://docs.ansible.com/ansible/latest/playbook_guide/playbooks_variables.html#variable-precedence-where-should-i-put-a-variable)

# Playbook 的逻辑控制语句

Playbook 也有逻辑控制语句：

when - 条件控制语句，相当于 if。

loop - 循环语句，相当于 while。

block - 把几个任务组成一个代码块，以便于针对一组操作的异常进行处理，相当于匿名函数。

## - 条件判断语句

官方文档：[https://docs.ansible.com/ansible/latest/playbook\\_guide/playbooks\\_conditionals.html](https://docs.ansible.com/ansible/latest/playbook_guide/playbooks_conditionals.html)。

有时候用户需要满足特定条件才执行某一个特定的步骤，这些操作在 Playbook 中用 when 语句实现。

此时，远程机器上还不存在 /tmp/Amy.txt 文件。

```
---  
- hosts: rejected  
  remote_user: i542016  
  
  tasks:  
    - shell: ls /tmp/ | grep Amy.txt  
      register: result  
      ignore_errors: True  
      debug: msg={{ result }}
```

```
vsa13700500:/home/i542016 # ansible-playbook playbooks/playbook_helloWorld.yml  
[WARNING]: ansible.utils.display.initialize_locale has not been called, this may result in incorrectly calculated text  
widths that can cause Display to print incorrect line lengths  
  
PLAY [rejected] *****  
TASK [Gathering Facts] *****  
ok: [100.70.224.81]  
  
TASK [shell] *****  
fatal: [100.70.224.81]: FAILED! => {"changed": true, "cmd": "ls /tmp/ | grep Amy.txt", "delta": "0:00:00.006816", "end": "2025-01-27 08:07:31.865261",  
"msg": "non-zero return code", "rc": 1, "start": "2025-01-27 08:07:31.858445", "stderr": "", "stderr_lines": [], "stdout": "", "stdout_lines": []}  
...ignoring  
  
TASK [debug] *****  
ok: [100.70.224.81] => {  
  "msg": {  
    "changed": true,  
    "cmd": "ls /tmp/ | grep Amy.txt",  
    "delta": "0:00:00.006816",  
    "end": "2025-01-27 08:07:31.865261",  
    "failed": true,  
    "msg": "non-zero return code",  
    "rc": 1,  
    "start": "2025-01-27 08:07:31.858445",  
    "stderr": "",  
    "stderr_lines": [],  
    "stdout": "",  
    "stdout_lines": []  
  }  
}  
  
PLAY RECAP *****  
100.70.224.81 : ok=3    changed=1    unreachable=0    failed=0    skipped=0    rescued=0    ignored=1  
  
---  
- hosts: rejected  
  remote_user: i542016  
  
  tasks:  
    - shell: ls /tmp/ | grep Amy.txt  
      register: result  
      ignore_errors: True  
    - shell: touch /tmp/Amy.txt  
      when: result is failed  
    - shell: echo "I admire Amy." > /tmp/Amy.txt  
      when: result is succeeded
```

```
if os.exists( "/tmp/Amy.txt" ):  
  os.create( "/tmp/Amy.txt" )  
else:  
  os.write( "I admire Amy", "/tmp/Amy.txt" )
```

状态有 failed, succeeded, changed, skipped 等。

第一次执行上述 playbook。

```
TASK [shell] *****  
fatal: [100.70.224.81]: FAILED! => {"changed": true, "cmd": "ls /tmp/ | grep Amy.txt", "delta": "0:00:00.009406", "end":  
"2025-01-27 08:15:05.615391", "msg": "non-zero return code", "rc": 1, "start": "2025-01-27 08:15:05.605985", "stderr":  
"", "stderr_lines": [], "stdout": "", "stdout_lines": []}  
...ignoring  
  
TASK [shell] *****  
changed: [100.70.224.81]  
  
TASK [shell] *****  
skipping: [100.70.224.81]
```

在远程机器上检验。

10.47.19.91 ✓ 100.70.224.81 ✓ Connection Successful!

Command ls /tmp/ | grep Amy.txt

Stdout Amy.txt

10.47.19.91 ✓ 100.70.224.81 ✓ Connection Successful!

Command cat /tmp/Amy.txt

第二次执行上述 playbook。

```
vsa13700500:/home/1542016 # ansible-playbook playbooks/playbook_helloWorld.yml
[WARNING]: ansible.utils.display.initialize_locale has not been called, this may result in incorrectly calculated text widths that can cause Display to print incorrect line lengths

PLAY [rejected] ****
TASK [Gathering Facts] ****
ok: [100.70.224.81]

TASK [shell] ****
changed: [100.70.224.81]

TASK [shell] ****
skipping: [100.70.224.81]

TASK [shell] ****
changed: [100.70.224.81]

PLAY RECAP ****
100.70.224.81 : ok=3    changed=2    unreachable=0    failed=0    skipped=1    rescued=0    ignored=0
```

在远程机器上检验。

10.47.19.91 ✓ 100.70.224.81 ✓ Connection Successful!

Command cat /tmp/Amy.txt

Stdout I admire Amy.

运算符 " | " 可以转换返回值的类型。

tasks:

```
- name: Get the CPU temperature
  set_fact:
    temperature: "{{ ansible_facts['cpu_temperature'] }}"

- name: Restart the system if the temperature is too high
  when: temperature | float > 90
  shell: "reboot"
```

运算符 "not", "is" :

```
vars:
  flag: true

tasks:
- shell: echo "A"
  when: flag
- shell: echo "B"
  when: not flag
- shell: echo "C"
  when: flag is defined
- shell: echo "D"
  when: flag is not defined
```

```
TASK [shell] ****
changed: [100.70.224.81] => {"changed": true, "cmd": "echo \\\"A\\\"", "delta": "0:00:00.004328", "end": "2025-01-27 08:27:42.385948", "rc": 0, "start": "2025-01-27 08:27:42.385948", "stderr": "", "stderr_lines": ["A"]}
```

```
TASK [shell] ****
skipping: [100.70.224.81] => {"changed": false, "skip_reason": "Conditional result was False"}
```

```
TASK [shell] ****
changed: [100.70.224.81] => {"changed": true, "cmd": "echo \\\"C\\\"", "delta": "0:00:00.004481", "end": "2025-01-27 08:27:43.767349", "rc": 0, "start": "2025-01-27 08:27:43.767349", "stderr": "", "stderr_lines": ["C"]}
```

```
TASK [shell] ****
skipping: [100.70.224.81] => {"changed": false, "skip_reason": "Conditional result was False"}
```

">", "<" 等数值运算符:

```

-- 
- hosts: rejected
  remote_user: i542016

  tasks:
    - shell: echo {{ item }}
      with_items: [1, 2, 3, 4, 5, 6, 7, 8, 9, 0]
      when: item < 5 or item > 6

vsal13700500:/home/i542016 # ansible-playbook playbooks/playbook_helloworld.yml --verbose
Using /home/i542016/ansible.cfg as config file
[WARNING]: ansible.utils.display.initialize_locale has not been called, this may result in incorrectly calculated text
widths that can cause Display to print incorrect line lengths

PLAY [rejected] ****
TASK [Gathering Facts] ****
ok: [100.70.224.81]

TASK [shell] ****
changed: [100.70.224.81] => (item=1) => {"ansible_loop_var": "item", "changed": true, "cmd": "echo 1", "delta": "0:00:00.007191", "end": "2025-01-27 08:40:59.734626", "item": 1, "msg": "", "rc": 0, "start": "2025-01-27 08:40:59.727435", "stderr": "", "stderr_lines": [], "stdout": "1", "stdout_lines": ["1"]}
changed: [100.70.224.81] => (item=2) => {"ansible_loop_var": "item", "changed": true, "cmd": "echo 2", "delta": "0:00:00.004085", "end": "2025-01-27 08:41:01.027941", "item": 2, "msg": "", "rc": 0, "start": "2025-01-27 08:41:01.023856", "stderr": "", "stderr_lines": [], "stdout": "2", "stdout_lines": ["2"]}
changed: [100.70.224.81] => (item=3) => {"ansible_loop_var": "item", "changed": true, "cmd": "echo 3", "delta": "0:00:00.004396", "end": "2025-01-27 08:41:02.499597", "item": 3, "msg": "", "rc": 0, "start": "2025-01-27 08:41:02.495201", "stderr": "", "stderr_lines": [], "stdout": "3", "stdout_lines": ["3"]}
changed: [100.70.224.81] => (item=4) => {"ansible_loop_var": "item", "changed": true, "cmd": "echo 4", "delta": "0:00:00.004171", "end": "2025-01-27 08:41:03.751737", "item": 4, "msg": "", "rc": 0, "start": "2025-01-27 08:41:03.747566", "stderr": "", "stderr_lines": [], "stdout": "4", "stdout_lines": ["4"]}
skipping: [100.70.224.81] => (item=5) => {"ansible_loop_var": "item", "changed": false, "item": 5, "skip_reason": "Conditional result was False"}
skipping: [100.70.224.81] => (item=6) => {"ansible_loop_var": "item", "changed": false, "item": 6, "skip_reason": "Conditional result was False"}
changed: [100.70.224.81] => (item=7) => {"ansible_loop_var": "item", "changed": true, "cmd": "echo 7", "delta": "0:00:00.007298", "end": "2025-01-27 08:41:04.965553", "item": 7, "msg": "", "rc": 0, "start": "2025-01-27 08:41:04.958255", "stderr": "", "stderr_lines": [], "stdout": "7", "stdout_lines": ["7"]}
changed: [100.70.224.81] => (item=8) => {"ansible_loop_var": "item", "changed": true, "cmd": "echo 8", "delta": "0:00:00.004414", "end": "2025-01-27 08:41:06.246526", "item": 8, "msg": "", "rc": 0, "start": "2025-01-27 08:41:06.242112", "stderr": "", "stderr_lines": [], "stdout": "8", "stdout_lines": ["8"]}
changed: [100.70.224.81] => (item=9) => {"ansible_loop_var": "item", "changed": true, "cmd": "echo 9", "delta": "0:00:00.004314", "end": "2025-01-27 08:41:07.492760", "item": 9, "msg": "", "rc": 0, "start": "2025-01-27 08:41:07.488446", "stderr": "", "stderr_lines": [], "stdout": "9", "stdout_lines": ["9"]}
changed: [100.70.224.81] => (item=0) => {"ansible_loop_var": "item", "changed": true, "cmd": "echo 0", "delta": "0:00:00.004260", "end": "2025-01-27 08:41:08.762024", "item": 0, "msg": "", "rc": 0, "start": "2025-01-27 08:41:08.757764", "stderr": "", "stderr_lines": [], "stdout": "0", "stdout_lines": ["0"]}

PLAY RECAP ****
100.70.224.81 : ok=2    changed=1    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0

```

与“代码复用”(后续章节)结合起来。

```
# using a conditional on include_* only applies to the include task itself
# main.yml
- hosts: all
  tasks:
    - include_tasks: other_tasks.yml # note "include"
      when: x is not defined
```

```
- hosts: webservers
  roles:
    - role: debian_stock_config
      when: ansible_facts['os_family'] == 'Debian'
```

## - 循环语句

官方文档：[https://docs.ansible.com/ansible/latest/playbook\\_guide/playbooks\\_loops.html](https://docs.ansible.com/ansible/latest/playbook_guide/playbooks_loops.html)。

“with\_items”用于迭代list类型的变量。

```
-- 
- hosts: rejected
  remote_user: i542016

  tasks:
    - shell: echo {{ item }}
      with_items:
        - Furutaka
        - kongo
```

注意：如果同时使用when和with\_items（或其他循环声明），那么when声明会为每个条目单独判断一次。

```
-- 
- hosts: rejected
  remote_user: i542016

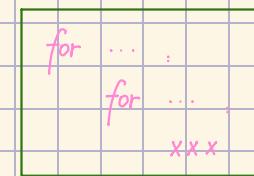
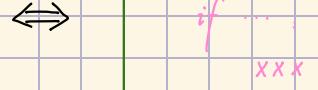
  tasks:
    - shell: echo {{ item }}
      with_items: [1, 2, 3, 4, 5, 6, 7, 8, 9, 0]
      when: item < 5 or item > 6
```

“with\_nested”是嵌套循环，可访问内层和外层的循环。

```
-- 
- hosts: rejected
  remote_user: i542016

  tasks:
    - shell: echo {{ item_0 }} X {{ item[1] }}
      with_nested:
        - [ 1, 2, 3 ]
        - [ 1, 2, 3, 4 ]
```

用中括号或点号访问元素



```

vsal3700500:/home/i542016 # ansible-playbook playbooks/playbook_helloWorld.yml --verbose
Using /home/i542016/ansible.cfg as config file
[WARNING]: ansible.utils.display.initialize_locale has not been called, this may result in incorrectly calculated text
widths that can cause Display to print incorrect line lengths

PLAY [rejected] ****
TASK [Gathering Facts] ****
ok: [100.70.224.81]

TASK [shell] ****
changed: [100.70.224.81] => (item=[1, 1]) => ["ansible_loop_var": "item", "changed": true, "cmd": "echo 1 X 1", "delta": "0:00:00.011511", "end": "2025-01-27 09:05:38.184570", "item": [1, 1], "msg": "", "rc": 0, "start": "2025-01-27 09:05:38.173859", "stderr": ""}
changed: [100.70.224.81] => (item=[1, 2]) => ["ansible_loop_var": "item", "changed": true, "cmd": "echo 1 X 2", "delta": "0:00:00.006542", "end": "2025-01-27 09:05:40.383910", "item": [1, 2], "msg": "", "rc": 0, "start": "2025-01-27 09:05:40.377368", "stderr": ""}
changed: [100.70.224.81] => (item=[1, 3]) => ["ansible_loop_var": "item", "changed": true, "cmd": "echo 1 X 3", "delta": "0:00:00.006824", "end": "2025-01-27 09:05:41.861839", "item": [1, 3], "msg": "", "rc": 0, "start": "2025-01-27 09:05:41.855013", "stderr": ""}
changed: [100.70.224.81] => (item=[1, 4]) => ["ansible_loop_var": "item", "changed": true, "cmd": "echo 1 X 4", "delta": "0:00:00.006591", "end": "2025-01-27 09:05:43.199830", "item": [1, 4], "msg": "", "rc": 0, "start": "2025-01-27 09:05:43.193239", "stderr": ""}
changed: [100.70.224.81] => (item=[2, 1]) => ["ansible_loop_var": "item", "changed": true, "cmd": "echo 2 X 1", "delta": "0:00:00.004544", "end": "2025-01-27 09:05:44.476436", "item": [2, 1], "msg": "", "rc": 0, "start": "2025-01-27 09:05:44.471892", "stderr": ""}
changed: [100.70.224.81] => (item=[2, 2]) => ["ansible_loop_var": "item", "changed": true, "cmd": "echo 2 X 2", "delta": "0:00:00.004468", "end": "2025-01-27 09:05:45.658522", "item": [2, 2], "msg": "", "rc": 0, "start": "2025-01-27 09:05:45.654054", "stderr": ""}
changed: [100.70.224.81] => (item=[2, 3]) => ["ansible_loop_var": "item", "changed": true, "cmd": "echo 2 X 3", "delta": "0:00:00.005145", "end": "2025-01-27 09:05:46.888566", "item": [2, 3], "msg": "", "rc": 0, "start": "2025-01-27 09:05:46.883421", "stderr": ""}
changed: [100.70.224.81] => (item=[2, 4]) => ["ansible_loop_var": "item", "changed": true, "cmd": "echo 2 X 4", "delta": "0:00:00.004679", "end": "2025-01-27 09:05:48.078001", "item": [2, 4], "msg": "", "rc": 0, "start": "2025-01-27 09:05:48.073322", "stderr": ""}
changed: [100.70.224.81] => (item=[3, 1]) => ["ansible_loop_var": "item", "changed": true, "cmd": "echo 3 X 1", "delta": "0:00:00.005949", "end": "2025-01-27 09:05:49.385507", "item": [3, 1], "msg": "", "rc": 0, "start": "2025-01-27 09:05:49.379558", "stderr": ""}
changed: [100.70.224.81] => (item=[3, 2]) => ["ansible_loop_var": "item", "changed": true, "cmd": "echo 3 X 2", "delta": "0:00:00.005703", "end": "2025-01-27 09:05:50.730610", "item": [3, 2], "msg": "", "rc": 0, "start": "2025-01-27 09:05:50.724987", "stderr": ""}
changed: [100.70.224.81] => (item=[3, 3]) => ["ansible_loop_var": "item", "changed": true, "cmd": "echo 3 X 3", "delta": "0:00:00.004526", "end": "2025-01-27 09:05:52.018466", "item": [3, 3], "msg": "", "rc": 0, "start": "2025-01-27 09:05:52.013940", "stderr": ""}
changed: [100.70.224.81] => (item=[3, 4]) => ["ansible_loop_var": "item", "changed": true, "cmd": "echo 3 X 4", "delta": "0:00:00.004244", "end": "2025-01-27 09:05:53.304844", "item": [3, 4], "msg": "", "rc": 0, "start": "2025-01-27 09:05:53.300600", "stderr": ""}

PLAY RECAP ****
100.70.224.81 : ok=2 changed=1 unreachable=0 failed=0 skipped=0 rescued=0 ignored=0

```

"with\_dict" 对哈希表使用循环。

```

-- hosts: rejected
remote_user: i542016

vars:
  users:
    Anhao:
      region: "+86"
      telephone: xxx-xxx-xxx
    Torres:
      region: "+1"
      telephone: yyy-yyyyyyy

  tasks:
    - debug: msg="{{ item.key }} = {{ item.value.region }} {{ item.value.telephone }}"
      with_dict: "{{ users }}"

```

```

vsal3700500:/home/i542016 # ansible-playbook playbooks/playbook_helloWorld.yml
[WARNING]: ansible.utils.display.initialize_locale has not been called, this may result in incorrectly calculated text
widths that can cause Display to print incorrect line lengths

```

```

PLAY [rejected] ****
TASK [Gathering Facts] ****
ok: [100.70.224.81]

TASK [debug] ****
ok: [100.70.224.81] => (item={'key': 'Anhao', 'value': {'region': '+86', 'telephone': 'xxx-xxx-xxx'}}) => {
  "msg": "Anhao = (+86) xxx-xxx-xxx"
}
ok: [100.70.224.81] => (item={'key': 'Torres', 'value': {'region': '+1', 'telephone': 'yyy-yyyyyyy'}}) => {
  "msg": "Torres = (+1) yyy-yyyyyyy"
}

PLAY RECAP ****
100.70.224.81 : ok=2 changed=0 unreachable=0 failed=0 skipped=0 rescued=0 ignored=0

```

"with\_fileglob" 可以用非递归的方式来RE单个目录中的文件。

```

-- hosts: rejected
remote_user: i542016

tasks:
  - debug: msg="{{ item }}"
    with_fileglob:
      - /home/i542016/secretRotation/*

```

```

TASK [debug] ****
ok: [100.70.224.81] => (item=/home/i542016/secretRotation/README.md) => {
  "msg": "/home/i542016/secretRotation/README.md"
}
ok: [100.70.224.81] => (item=/home/i542016/secretRotation/envVars) => {
  "msg": "/home/i542016/secretRotation/envVars"
}
ok: [100.70.224.81] => (item=/home/i542016/secretRotation/go.mod) => {
  "msg": "/home/i542016/secretRotation/go.mod"
}
ok: [100.70.224.81] => (item=/home/i542016/secretRotation/go.work) => {
  "msg": "/home/i542016/secretRotation/go.work"
}
ok: [100.70.224.81] => (item=/home/i542016/secretRotation/go.work.sum) => {
  "msg": "/home/i542016/secretRotation/go.work.sum"
}
ok: [100.70.224.81] => (item=/home/i542016/secretRotation/secretRotation) => {
  "msg": "/home/i542016/secretRotation/secretRotation"
}
ok: [100.70.224.81] => (item=/home/i542016/secretRotation/secretRotation.go) => {
  "msg": "/home/i542016/secretRotation/secretRotation.go"
}
ok: [100.70.224.81] => (item=/home/i542016/secretRotation/secretsConfig.yml) => {
  "msg": "/home/i542016/secretRotation/secretsConfig.yml"
}
```

Ansible 官方建议用 `loop` 替代 `with_*` : [https://docs.ansible.com/ansible/latest/playbook\\_guide/playbooks\\_loops.html#migrating-from-with-x-to-loop](https://docs.ansible.com/ansible/latest/playbook_guide/playbooks_loops.html#migrating-from-with-x-to-loop) .  
篇幅限制,仅举一例:

```
---  
- hosts: rejected  
  remote_user: i542016  
  
  tasks:  
    - shell: echo {{ item.name }} {{ item.level }}  
      loop:  
        - { name: "Furutaka", level: "HC" }  
        - { name: "Maya", level: "HC" }
```

## - 块

官方文档: [https://docs.ansible.com/ansible/latest/playbook\\_guide/playbooks\\_blocks.html](https://docs.ansible.com/ansible/latest/playbook_guide/playbooks_blocks.html) .

多个动作组装成块后,可以根据不同条件执行一段语句。

组装成块后,处理异常会更方便。

```
tasks:  
  - name: Install, configure, and start Apache  
    when: ansible_facts['distribution'] == 'Centos'  
  block:  
    - name: Install httpd and memcached  
      ansible.builtin.yum:  
        name:  
          - httpd  
          - memcached  
        state: present  
  
    - name: Apply the foo config template  
      ansible.builtin.template:  
        src: templates/src.j2  
        dest: /etc/foo.conf  
  
    - name: Start service bar and enable it  
      ansible.builtin.service:  
        name: bar  
        state: started  
        enabled: True  
  become: true  
  become_user: root  
  ignore_errors: true
```

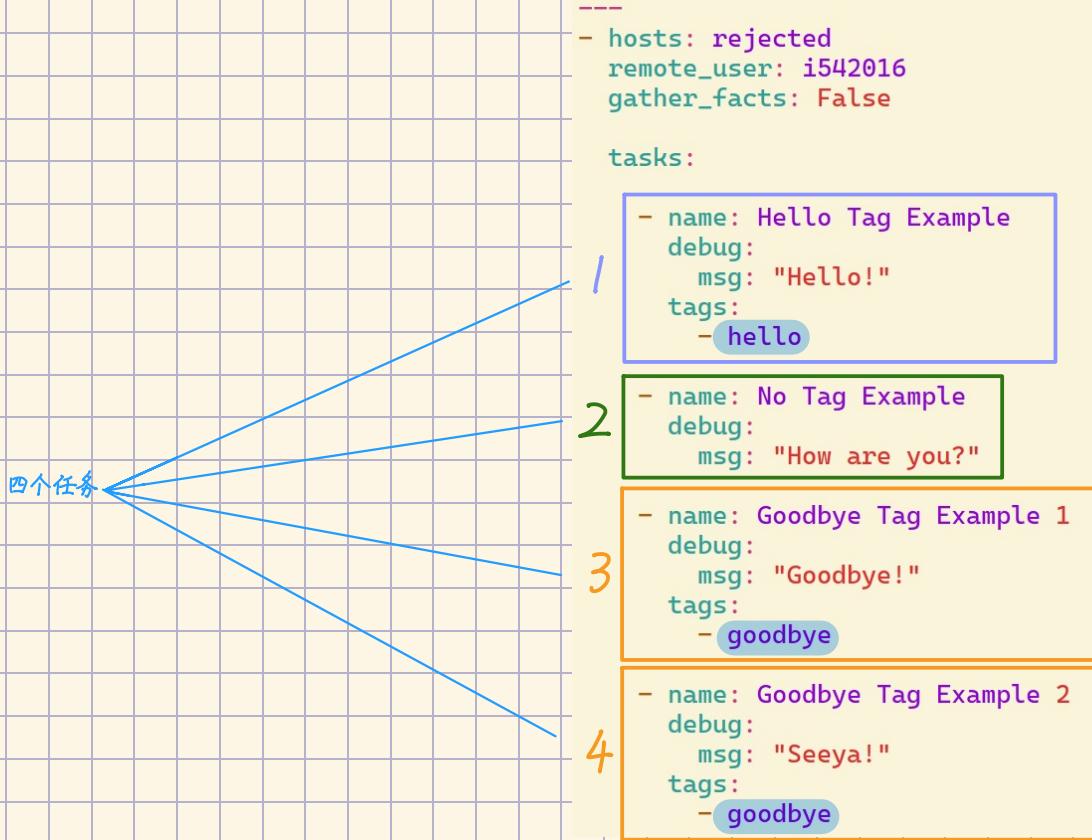
```
tasks:  
  - name: Attempt and graceful roll back demo  
  block:  
    - name: Print a message  
      ansible.builtin.debug:  
        msg: 'I execute normally'  
  
    - name: Force a failure  
      ansible.builtin.command: /bin/false  
  
    - name: Never print this  
      ansible.builtin.debug:  
        msg: 'I never execute, due to the above task failing, :-( '  
  rescue:  
    - name: Print when errors  
      ansible.builtin.debug:  
        msg: 'I caught an error'  
  
    - name: Force a failure in middle of recovery! >:-)  
      ansible.builtin.command: /bin/false  
  
    - name: Never print this  
      ansible.builtin.debug:  
        msg: 'I also never execute :-( '  
  always:  
    - name: Always do this  
      ansible.builtin.debug:  
        msg: "This always executes"
```

## Playbook 的标签

官方文档: [https://docs.ansible.com/ansible/latest/playbook\\_guide/playbooks\\_tags.html](https://docs.ansible.com/ansible/latest/playbook_guide/playbooks_tags.html) .

如果 Playbook 文件较大、且在执行时只是想执行其中一部分, 那么此时可以用到标签(tags)概念。

Example:



如果在执行时不加任何 tags 参数, 那么会执行所有的任务。

```
vsa13700500:/home/i542016 # ansible-playbook playbooks/playbook_helloWorld.yml  
[WARNING]: ansible.utils.display.initialize_locale has not been called, this may result in incorrectly calculated text  
widths that can cause Display to print incorrect line lengths  
PLAY [rejected] *****  
TASK [Hello Tag Example] *****  
ok: [100.70.224.81] => {  
    "msg": "Hello!"  
}  
TASK [No Tag Example] *****  
ok: [100.70.224.81] => {  
    "msg": "How are you?"  
}  
TASK [Goodbye Tag Example 1] *****  
ok: [100.70.224.81] => {  
    "msg": "Goodbye!"  
}  
TASK [Goodbye Tag Example 2] *****  
ok: [100.70.224.81] => {  
    "msg": "Seeya!"  
}  
PLAY RECAP *****  
100.70.224.81 : ok=4 changed=0 unreachable=0 failed=0 skipped=0 rescued=0 ignored=0
```

利用参数 `tags` 指定需要执行的部分:

```
vsa13700500:/home/i542016 # ansible-playbook playbooks/playbook_helloWorld.yml --tags "hello" --tags "goodbye"  
[WARNING]: ansible.utils.display.initialize_locale has not been called, this may result in incorrectly calculated text  
widths that can cause Display to print incorrect line lengths  
PLAY [rejected] *****  
TASK [Hello Tag Example] *****  
ok: [100.70.224.81] => {  
    "msg": "Hello!"  
}  
TASK [Goodbye Tag Example 1] *****  
ok: [100.70.224.81] => {  
    "msg": "Goodbye!"  
}  
TASK [Goodbye Tag Example 2] *****  
ok: [100.70.224.81] => {  
    "msg": "Seeya!"  
}  
PLAY RECAP *****  
100.70.224.81 : ok=3 changed=0 unreachable=0 failed=0 skipped=0 rescued=0 ignored=0
```

利用参数 `--skip-tags` 指定跳过的部分。

```
vsa13700500:~/home/i542016 # ansible-playbook playbooks/playbook_helloWorld.yml --skip-tags "goodbye"
[WARNING]: ansible.utils.display.initialize_locale has not been called, this may result in incorrectly calculated text widths that can cause Display to print incorrect line lengths
PLAY [rejected] ****
TASK [Hello Tag Example] ****
ok: [100.70.224.81] => {
    "msg": "Hello!"
}

TASK [No Tag Example] ****
ok: [100.70.224.81] => {
    "msg": "How are you?"
}

PLAY RECAP ****
100.70.224.81 : ok=2    changed=0   unreachable=0   failed=0   skipped=0   rescued=0   ignored=0
```

接下来介绍五个特殊的标签: `always`, `never`, `tagged`, `untagged`, `all`.

If you assign the `always` tag to a task, then Ansible will always run that task, unless you specifically skip it or another tag defined on that task.

```
- hosts: rejected
  remote_user: i542016
  gather_facts: False
```

tasks:

```
- name: Hello Tag Example
  debug:
    msg: "Hello!"
  tags:
    - hello
    - always
```

```
- name: No Tag Example
  debug:
    msg: "How are you?"
```

```
- name: Goodbye Tag Example 1
  debug:
    msg: "Goodbye!"
  tags:
    - goodbye
```

```
- name: Goodbye Tag Example 2
  debug:
    msg: "Seeya!"
  tags:
    - goodbye
```

```
vsa13700500:~/home/i542016 # ansible-playbook playbooks/playbook_helloWorld.yml --tags "goodbye"
[WARNING]: ansible.utils.display.initialize_locale has not been called, this may result in incorrectly calculated text widths that can cause Display to print incorrect line lengths
```

```
PLAY [rejected] ****
TASK [Hello Tag Example] ****
ok: [100.70.224.81] => {
    "msg": "Hello!"
}

TASK [Goodbye Tag Example 1] ****
ok: [100.70.224.81] => {
    "msg": "Goodbye!"
}

TASK [Goodbye Tag Example 2] ****
ok: [100.70.224.81] => {
    "msg": "Seeya!"
}

PLAY RECAP ****
100.70.224.81 : ok=3    changed=0   unreachable=0   failed=0   skipped=0   rescued=0   ignored=0
```

--skip-tags

1 ↙ 一个 task 可以有多个标签

2

3

4

3

4

```

vsal3700500:/home/i542016 # ansible-playbook playbooks/playbook_helloWorld.yml --skip-tags "hello"
[WARNING]: ansible.utils.display.initialize_locale has not been called, this may result in incorrectly calculated text
widths that can cause Display to print incorrect line lengths
PLAY [rejected] ****
TASK [No Tag Example] ****
ok: [100.70.224.81] => {
    "msg": "How are you?"
}

TASK [Goodbye Tag Example 1] ****
ok: [100.70.224.81] => {
    "msg": "Goodbye!"
}

TASK [Goodbye Tag Example 2] ****
ok: [100.70.224.81] => {
    "msg": "Seeya!"
}

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

```

2  
3  
4

If you assign the `never` tag to a task, then Ansible will skip that task, unless you specifically request it or another tag defined on that task.

利用`--tags tagged`来执行所有带标签的任务。

```

vsal3700500:/home/i542016 # ansible-playbook playbooks/playbook_helloWorld.yml --tags "tagged"
[WARNING]: ansible.utils.display.initialize_locale has not been called, this may result in incorrectly calculated text
widths that can cause Display to print incorrect line lengths
PLAY [rejected] ****
TASK [Hello Tag Example] ****
ok: [100.70.224.81] => {
    "msg": "Hello!"
}

TASK [Goodbye Tag Example 1] ****
ok: [100.70.224.81] => {
    "msg": "Goodbye!"
}

TASK [Goodbye Tag Example 2] ****
ok: [100.70.224.81] => {
    "msg": "Seeya!"
}

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

```

1  
3  
4

利用`--tags untagged`来执行所有不带标签的任务。

```

vsal3700500:/home/i542016 # ansible-playbook playbooks/playbook_helloWorld.yml --tags "untagged"
[WARNING]: ansible.utils.display.initialize_locale has not been called, this may result in incorrectly calculated text
widths that can cause Display to print incorrect line lengths
PLAY [rejected] ****
TASK [Hello Tag Example] ****
ok: [100.70.224.81] => {
    "msg": "Hello!"
}

TASK [No Tag Example] ****
ok: [100.70.224.81] => {
    "msg": "How are you?"
}

PLAY RECAP ****
100.70.224.81 : ok=2    changed=0   unreachable=0  failed=0    skipped=0   rescued=0   ignored=0

```

task\_1 拥有 always 标签  
1  
2

利用`--tags all`来执行所有任务。

标签也可以用在 `include` 和 `role` 中。(暂略)

## Playbook lookup

Ansible 允许用户使用自定义的变量，

但当变量过大、过复杂时，

无论是在 Playbook 中通过 vars 定义、还是在单独的变量文件中定义，

可读性都较差，而且不够灵活。

lookup 就能解决这类难题。lookup 既能读取管理节点上的文件内容，也能读取数据库内容。

官方文档：

<https://docs.ansible.com/ansible/latest/plugins/lookup.html>

[https://docs.ansible.com/ansible/latest/playbook\\_guide/playbooks\\_lookups.html](https://docs.ansible.com/ansible/latest/playbook_guide/playbooks_lookups.html)

### - 读取文件

I admire Amy.

```

---
- hosts: rejected
  remote_user: i542016
  gather_facts: False

  vars:
    content: "{{ lookup('file', '/home/i542016/temp.txt') }}"

  tasks:
    - debug: msg="{{ content }}"
  
```

告诉 lookup：读取对象的内容是 File

```

vsal13700500:/home/i542016 # ansible-playbook playbooks/main.yml
[WARNING]: ansible.utils.display.initialize_locale has not been called, this may result in incorrectly calculated text
widths that can cause Display to print incorrect line lengths

PLAY [rejected] ****
TASK [debug] ****
ok: [100.70.224.81] => {
  "msg": "I admire Amy."
}

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

### - 生成随机密码

### - 读取环境变量

```

---
- hosts: rejected
  remote_user: i542016
  gather_facts: False

  tasks:
    - debug: msg="{{ lookup('env', 'MAIL') }}"
  
```

```

vsal13700500:/home/i542016 # export MAIL="scheer_torres@163.com"
vsal13700500:/home/i542016 # echo $MAIL
scheer_torres@163.com
vsal13700500:/home/i542016 # ansible-playbook playbooks/main.yml
[WARNING]: ansible.utils.display.initialize_locale has not been called, this may result in incorrectly calculated text
widths that can cause Display to print incorrect line lengths
  
```

```

PLAY [rejected] ****
TASK [debug] ****
ok: [100.70.224.81] => {
  "msg": "scheer_torres@163.com"
}

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

### - 读取命令的执行结果

```

---
- hosts: rejected
  remote_user: i542016
  gather_facts: False

  tasks:
    - debug: msg="{{ lookup('pipe', 'date') }}"
  
```

```
vsa13700500:/home/i542016 # ansible-playbook playbooks/main.yml
[WARNING]: ansible.utils.display.initialize_locale has not been called, this may result in incorrectly calculated text
widths that can cause Display to print incorrect line lengths

PLAY [rejected] ****
TASK [debug] ****
ok: [100.70.224.81] => {
    "msg": "Sat 01 Feb 2025 01:17:13 AM UTC"
}

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

- 读取模板变量替换后的文件

- 读取配置文件 (ini)

- 读取 CSV 文件的指定单元

- 读取 DNS 解析的值 (正/反向查询)

```
---
- hosts: rejected
  remote_user: i542016
  gather_facts: False

  tasks:
    - debug: msg="{{ lookup('dig', 'baidu.com') }}"
```

```
vsa13700500:/home/i542016 # pip3 install dnspython
Collecting dnspython
  Downloading dnspython-2.2.1-py3-none-any.whl (269 kB)
    |██████████| 269 kB 9.4 MB/s
Installing collected packages: dnspython
Successfully installed dnspython-2.2.1
vsa13700500:/home/i542016 # ansible-playbook playbooks/main.yml
[WARNING]: ansible.utils.display.initialize_locale has not been called, this may result in incorrectly calculated text
widths that can cause Display to print incorrect line lengths

PLAY [rejected] ****
TASK [debug] ****
ok: [100.70.224.81] => {
    "msg": "39.156.66.10,110.242.68.66"
}

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

# Playbook 过滤器

过滤器(filter)是Python模板语言Jinja2提供的模块，可以用来操作数据。它是在Ansible的管理节点上执行并操作数据，而不是在远程的目标机器上。

Ansible不仅可以使用Jinja2自带的过滤器，

<https://jinja.palletsprojects.com/en/stable/templates/#filters>

[https://jinja.palletsprojects.com/en/stable/templates/#list\\_of\\_builtin\\_filters](https://jinja.palletsprojects.com/en/stable/templates/#list_of_builtin_filters)

<https://jinja.palletsprojects.com/en/stable/api/#custom-filters>

还可以使用Ansible提供的过滤器，以及用户自定义的过滤器。

```
---  
- hosts: rejected  
  remote_user: i542016  
  gather_facts: False  
  
  vars:  
    my_string: "Water Fire Grass"  
  
  tasks:  
    - debug: msg="{{ my_string }}"  
    - debug: msg="{{ my_string | quote }}"
```

quote过滤器的功能是  
给字符串加引号

```
TASK [debug] ****  
ok: [100.70.224.81] => {  
  "msg": "echo \"Water Fire Grass\""  
}
```

```
TASK [debug] ****  
ok: [100.70.224.81] => {  
  "msg": "echo \"Water Fire Grass\""  
}
```

```
---  
- hosts: rejected  
  remote_user: i542016  
  gather_facts: False
```

为没有定义的变量提供默认值

```
TASK [debug] ****  
ok: [100.70.224.81] => {  
  "msg": "Default"  
}
```

```
---  
- hosts: rejected  
  remote_user: i542016  
  gather_facts: False
```

忽略变量的占位符

```
TASK [file] ****  
changed: [100.70.224.81] => (item={'path': '/tmp/1.txt'})  
changed: [100.70.224.81] => (item={'path': '/tmp/2.txt', 'mode': '0444'})  
-rw-r----- 1 i542016 ADSUSER 0 Feb 2 01:00 1.txt  
-r--r--r-- 1 i542016 ADSUSER 0 Feb 2 01:00 2.txt
```

```
---  
- hosts: rejected  
  remote_user: i542016  
  gather_facts: False
```

判断变量是否为布尔类型

```
TASK [debug] ****  
ok: [100.70.224.81] => {  
  "msg": "A"  
}
```

```
TASK [debug] ****  
skipping: [100.70.224.81]
```

```
vars:  
  boolean_value: True  
  string_value: Zero
```

```
tasks:  
  - debug: msg="A"  
    when: boolean_value | bool  
  - debug: msg="B"  
    when: string_value | bool
```

```
---  
- hosts: rejected  
  remote_user: i542016  
  gather_facts: False
```

```
tasks:  
  - debug: msg="{{ '/tmp/Amy.txt' | basename }}"  
  - debug: msg="{{ '/tmp/Amy.txt' | dirname }}"  
  - debug: msg="{{ '/tmp/Amy.txt' | relpath('/tmp') }}"
```

relevant

对文件路径的操作

```
TASK [debug] ****  
ok: [100.70.224.81] => {  
  "msg": "Amy.txt"  
}
```

```
TASK [debug] ****  
ok: [100.70.224.81] => {  
  "msg": "/tmp"  
}
```

```
TASK [debug] ****  
ok: [100.70.224.81] => {  
  "msg": "Amy.txt"  
}
```

```
---  
- hosts: rejected  
  remote_user: i542016  
  gather_facts: False
```

#### tasks:

```
  - name: 'convert "ansible" to "able"'  
    debug: msg="{{ 'ansible' | regex_replace('^a.*i(.*)$', 'a\\1') }}"
```

利用正则表达式对字符串进行替换

```
TASK [convert "ansible" to "able"] ***  
ok: [100.70.224.81] => {  
  "msg": "able"  
}
```

```
---  
- hosts: rejected  
  remote_user: i542016  
  gather_facts: False
```

#### tasks:

```
  - debug: msg="{{ ['A', 'B', 'C', 'D'] | random }}"
  - debug: msg="{{ ['A', 'B', 'C', 'D'] | random }}"
  - debug: msg="{{ ['A', 'B', 'C', 'D'] | random }}"
  - debug: msg="{{ ['A', 'B', 'C', 'D'] | random }}"
  - debug: msg="{{ 59 | random }}"
  - debug: msg="{{ 1000 | random(start=500, step=100) }}"
```

对数据结构(list, dict, set)的操作

```
TASK [debug] ****  
ok: [100.70.224.81] => {  
  "msg": "C"  
}
```

```
TASK [debug] ****  
ok: [100.70.224.81] => {  
  "msg": "A"  
}
```

```
TASK [debug] ****  
ok: [100.70.224.81] => {  
  "msg": "D"  
}
```

```
TASK [debug] ****  
ok: [100.70.224.81] => {  
  "msg": "A"  
}
```

```
TASK [debug] ****  
ok: [100.70.224.81] => {  
  "msg": "4"  
}
```

```
TASK [debug] ****  
ok: [100.70.224.81] => {  
  "msg": "500"  
}
```

Ansbile 的过滤器是支持链式使用的。

```
---  
- hosts: rejected  
  remote_user: i542016  
  gather_facts: False
```

#### tasks:

```
  - debug: msg="{{ 'admiringAmy.txt' | basename | regex_replace('^admiring(.*)$', '\\1') }}"
```

```
TASK [debug] ****  
ok: [100.70.224.81] => {  
  "msg": "Amy.txt"  
}
```

# Playbook 测试

测试与过滤器类似，但主要检查变量与表达式是否符合某个条件。

Ansible 除了支持 Jinja2 自带的所有测试外，还提供了几个在 Ansible 中常用的测试功能。

```
---  
- hosts: rejected  
  remote_user: i542016  
  gather_facts: False  
  
  vars:  
    url: "https://one.int.sap/home"  
  
  tasks:  
    - debug: msg="A" 完全匹配  
      when: url is match(".*int.*")  
    - debug: msg="B"  
      when: url is search("int") 部分匹配  
---
```

测试字符串

```
TASK [debug] ****  
ok: [100.70.224.81] => {  
  "msg": "A"  
}  
  
TASK [debug] ****  
ok: [100.70.224.81] => {  
  "msg": "B"  
}
```

```
---  
- hosts: rejected  
  remote_user: i542016  
  gather_facts: False  
  
  vars:  
    version: "3.8.1"
```

测试版本

```
TASK [debug] ****  
ok: [100.70.224.81] => {  
  "msg": true  
}
```

```
---  
- hosts: rejected  
  remote_user: i542016  
  gather_facts: False  
  
  vars:
```

```
    A: [1, 2, 3, 4, 5]  
    B: [3, 4]
```

测试集合的包含关系

```
  tasks:  
    - debug: msg="+"  
      when: A isissuperset(B)  
    - debug: msg="-"  
      when: B isissubset(A)
```

```
TASK [debug] ****  
ok: [100.70.224.81] => {  
  "msg": "+"  
}  
  
TASK [debug] ****  
ok: [100.70.224.81] => {  
  "msg": "-"  
}
```

```
---  
- hosts: rejected  
  remote_user: i542016  
  gather_facts: False  
  
  vars:
```

```
    mypath: "/tmp"
```

```
  tasks:  
    - debug: msg="path is dir"  
      when: mypath isdir  
    - debug: msg="path is file"  
      when: mypath isfile  
    - debug: msg="path is symlink"  
      when: mypath islink  
    - debug: msg="path exists"  
      when: mypath exists
```

测试文件路径

```
TASK [debug] ****  
ok: [100.70.224.81] => {  
  "msg": "path is dir"  
}
```

```
TASK [debug] ****  
skipping: [100.70.224.81]
```

```
TASK [debug] ****  
skipping: [100.70.224.81]
```

```
TASK [debug] ****  
ok: [100.70.224.81] => {  
  "msg": "path exists"  
}
```

```

- hosts: rejected
  remote_user: i542016

  tasks:
    - shell: ls /tmp/ | grep Amy.txt
      register: result
      ignore_errors: True
    - shell: touch /tmp/Amy.txt
      when: result is failed
    - shell: echo "I admire Amy." > /tmp/Amy.txt
      when: result is succeeded

```

```

if os.exists("/tmp/Amy.txt"):
    os.create("/tmp/Amy.txt")
else:
    os.write("I admire Amy", "/tmp/Amy.txt")

```

状态有 failed, succeeded, changed, skipped 等。

第一次执行上述 playbook。

```

TASK [shell] *****
fatal: [100.70.224.81]: FAILED! => {"changed": true, "cmd": "ls /tmp/ | grep Amy.txt", "delta": "0:00:00.009406", "end": "2025-01-27 08:15:05.615391", "msg": "non-zero return code", "rc": 1, "start": "2025-01-27 08:15:05.605985", "stderr": "", "stderr_lines": [], "stdout": "", "stdout_lines": []}
...ignoring

TASK [shell] *****
changed: [100.70.224.81]

TASK [shell] *****
skipping: [100.70.224.81]

```

在远程机器上检验。

10.47.19.91 ✓ 100.70.224.81 ✓ Connection Successful!

Command ls /tmp/ | grep Amy.txt

Stdout Amy.txt

10.47.19.91 ✓ 100.70.224.81 ✓ Connection Successful!

Command cat /tmp/Amy.txt

第二次执行上述 playbook。

```

vsal3700500:/home/i542016 # ansible-playbook playbooks/playbook_helloWorld.yml
[WARNING]: ansible.utils.display.initialize_locale has not been called, this may result in incorrectly calculated text widths that can cause Display to print incorrect line lengths

PLAY [rejected] *****

```

ok: [100.70.224.81]

```

TASK [Gathering Facts] *****
changed: [100.70.224.81]

TASK [shell] *****
skipping: [100.70.224.81]

TASK [shell] *****
changed: [100.70.224.81]

PLAY RECAP *****
100.70.224.81 : ok=3    changed=2    unreachable=0    failed=0    skipped=1    rescued=0    ignored=0

```

在远程机器上检验。

10.47.19.91 ✓ 100.70.224.81 ✓ Connection Successful!

Command cat /tmp/Amy.txt

Stdout I admire Amy.

# Playbook 插件

插件 (plugins) 是对 Ansible 功能的补充。

例：

- Action Plugin
- Cache Plugin
- Filters Plugin (DLC)
- Lookup Plugin (DLC)
- Strategy Plugin
- Test Plugin
- Vars Plugin

重点了解 Callback Plugin。Callback Plugin 为 Playbook 执行后添加额外的行为。

```
[defaults]
interpreter_python = /usr/bin/python3

bin_ansible_callbacks = True
callbacks_enabled = timer, log_plays
```

```
---  
- hosts: all  
  remote_user: i542016  
  gather_facts: False  
  
tasks:  
  - debug: msg="{{ 'admiringAmy.txt' | basename }}
```

vsa13700500:/home/i542016/playbooks # tree

```
.
└── ansible.cfg
    └── main.yml
```

0 directories, 2 files

```
vsa13700500:/home/i542016/playbooks # ansible-playbook main.yml
[WARNING]: ansible.utils.display.initialize_locale has not been called, this may result in incorrectly calculated text widths that can cause Display to print incorrect line lengths

PLAY [all] ****
TASK [debug] ****
ok: [100.70.225.1] => {
  "msg": "admiringAmy.txt"
}
ok: [100.70.224.81] => {
  "msg": "admiringAmy.txt"
}
ok: [100.70.224.87] => {
  "msg": "admiringAmy.txt"
}

PLAY RECAP ****
100.70.224.81      : ok=1    changed=0     unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
100.70.224.87      : ok=1    changed=0     unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
100.70.225.1      : ok=1    changed=0     unreachable=0    failed=0    skipped=0    rescued=0    ignored=0

Playbook run took 0 days, 0 hours, 0 minutes, 0 seconds
```

本例中，timer 实现计时，log\_plays 把每一个远程机器的执行结果记录在 /var/log/ansible/hosts/ 对应机器名文件中。

vsa13700500:/var/log/ansible # tree

```
.
└── hosts
    ├── 100.70.224.81
    ├── 100.70.224.87
    └── 100.70.225.1
```

1 directory, 3 files

```
vsa13700500:/var/log/ansible # cat hosts/*
Feb 02 2025 09:55:50 - main.yml - - debug - OK - {"msg": "admiringAmy.txt", "_ansible_verbose_always": true, "_ansible_no_log": false, "changed": false}
Feb 02 2025 09:55:50 - main.yml - - debug - OK - {"msg": "admiringAmy.txt", "_ansible_verbose_always": true, "_ansible_no_log": false, "changed": false}
Feb 02 2025 09:55:50 - main.yml - - debug - OK - {"msg": "admiringAmy.txt", "_ansible_verbose_always": true, "_ansible_no_log": false, "changed": false}
```