LIVE

Demystifying YAML for Ansible

Gineesh Madapparambath

14 Aug 2021, 9.00 PM SGT/MYT,
6.30 PM IST

youtube.com/techbeatly

Agenda

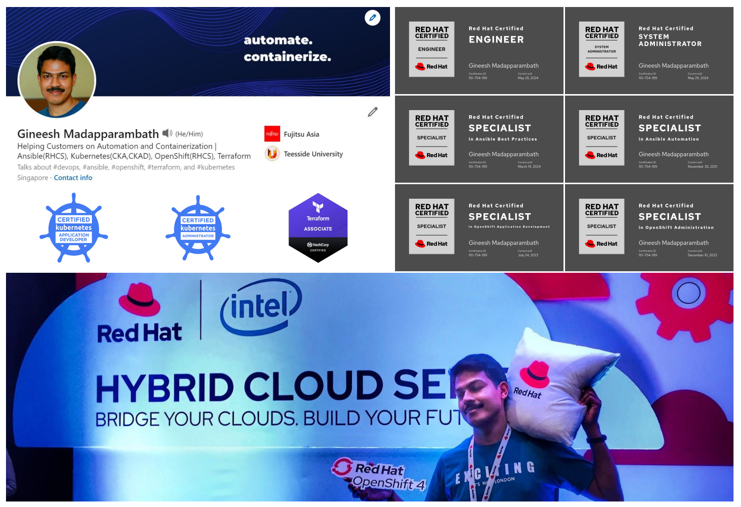
- YAML Basics
- YAML in Ansible
- Variable, List, Dictionary
- YAML in Playbook
- Loops in Ansible
- Block in Ansible
- Configure IDE/Editor
- Q&A

$ whoami

I have worked as a Systems Engineer, Automation Specialist, and content author.

My primary focus is on **Ansible** Automation, Containerization (**OpenShift** & **Kubernetes**), and Infrastructure as Code (**Terraform**)

Writes at ***#EnableSysadmin*** *&* ***@techbeatly***



automate.
containerize.

Gineesh Madapparambath (He/Him)
Helping Customers on Automation and Containerization | Ansible(RHCS), Kubernetes(CKA,CKAD), OpenShift(RHCS), Terraform
Talks about #devops, #ansible, #openshift, #terraform, and #kubernetes
Singapore · Contact info

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Gineesh Madapparambath
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Current until May 29, 2024

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Gineesh Madapparambath
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CERTIFIED kubernetes ADMINISTRATOR
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Red Hat OpenShift 4

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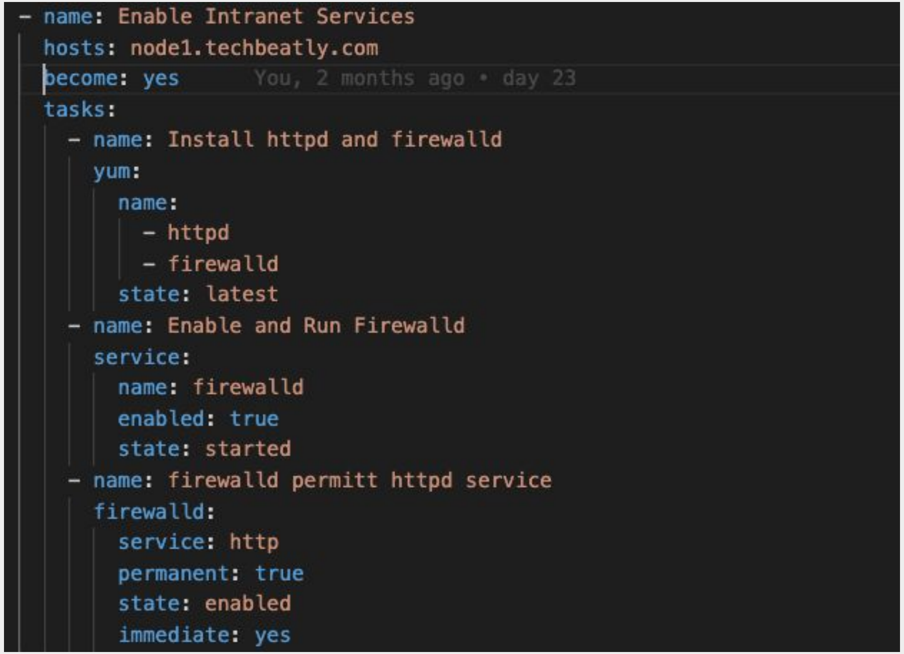
Yet Another Markup Language

YAML ain’t markup language

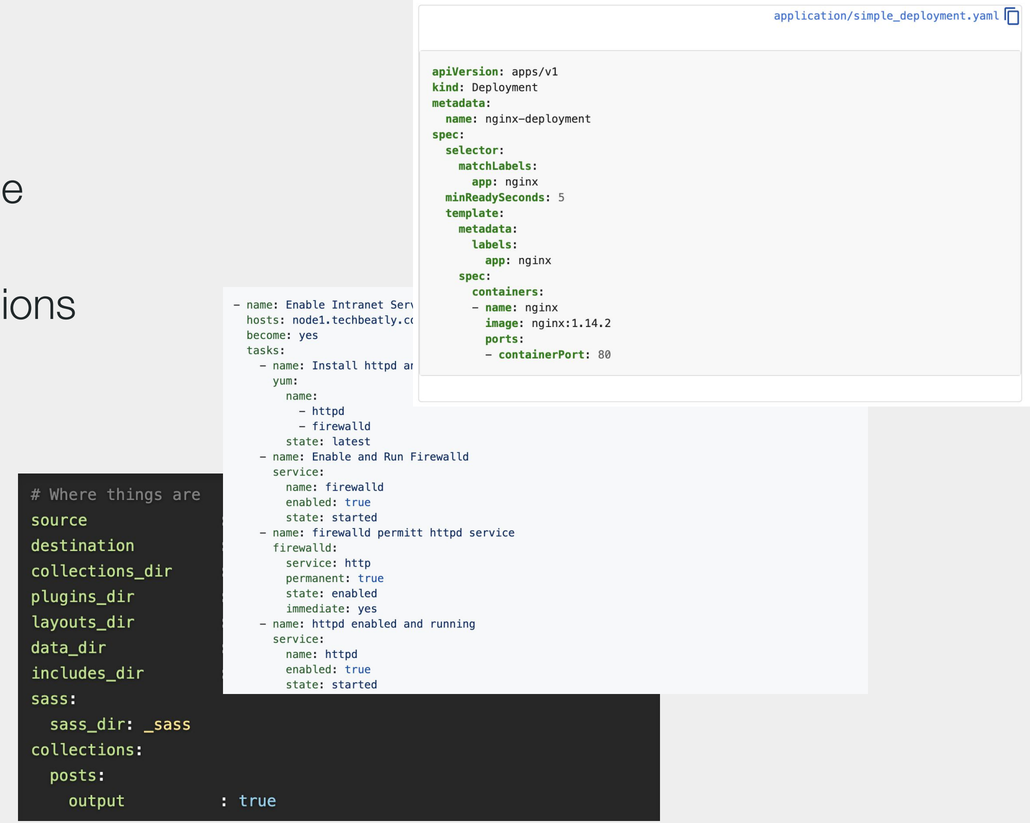
- Human Readable
- Wide Support
- Less Errors
- Uses Python-style indentation to indicate nesting
- Can use **.yaml** or **.yml** extension



```yaml
- name: Enable Intranet Services
  hosts: node1.techbeatly.com
  become: yes      You, 2 months ago • day 23
  tasks:
    - name: Install httpd and firewalld
      yum:
        name:
          - httpd
          - firewalld
        state: latest
    - name: Enable and Run Firewalld
      service:
        name: firewalld
        enabled: true
        state: started
    - name: firewalld permitt httpd service
      firewalld:
        service: http
        permanent: true
        state: enabled
        immediate: yes
```

YAML is used for,

- **Configuration** files
- **Ansible** Playbooks
- **Kubernetes** or **OpenShift** resource declarations
- **Website** or **Application** configurations



application/simple_deployment.yaml

```yaml
apiVersion: apps/v1
kind: Deployment
metadata:
  name: nginx-deployment
spec:
  selector:
    matchLabels:
      app: nginx
  minReadySeconds: 5
  template:
    metadata:
      labels:
        app: nginx
    spec:
      containers:
      - name: nginx
        image: nginx:1.14.2
        ports:
        - containerPort: 80
```

```yaml
- name: Enable Intranet Serv
  hosts: node1.techbeatly.c
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  tasks:
    - name: Install httpd ar
      yum:
        name:
          - httpd
          - firewalld
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    - name: Enable and Run Firewalld
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        state: started
    - name: firewalld permitt httpd service
      firewalld:
        service: http
        permanent: true
        state: enabled
        immediate: yes
    - name: httpd enabled and running
      service:
        name: httpd
        enabled: true
        state: started
```
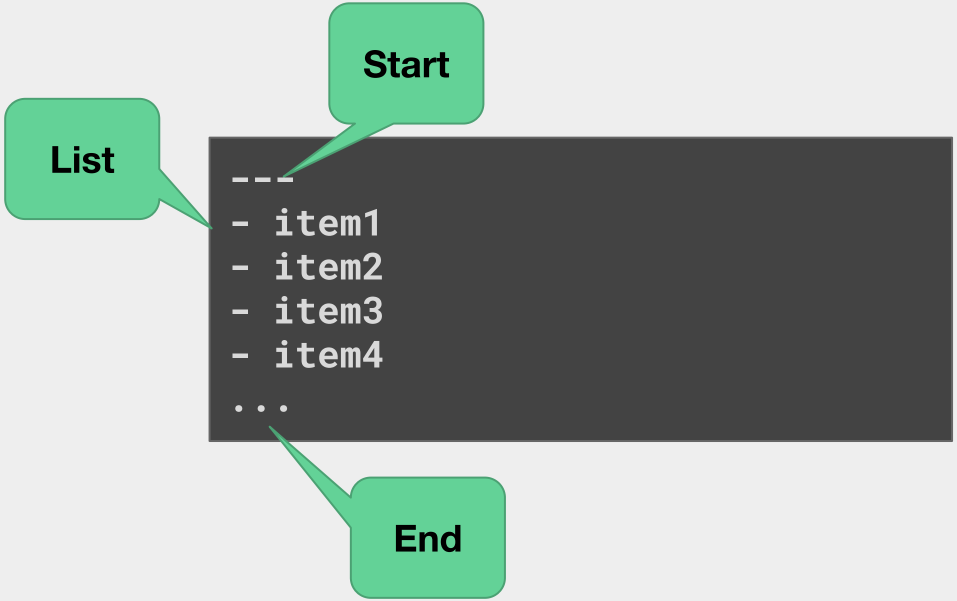

```yaml
# Where things are
source
destination
collections_dir
plugins_dir
layouts_dir
data_dir
includes_dir
sass:
  sass_dir: _sass
collections:
  posts:
    output          : true
```

Basics of YAML

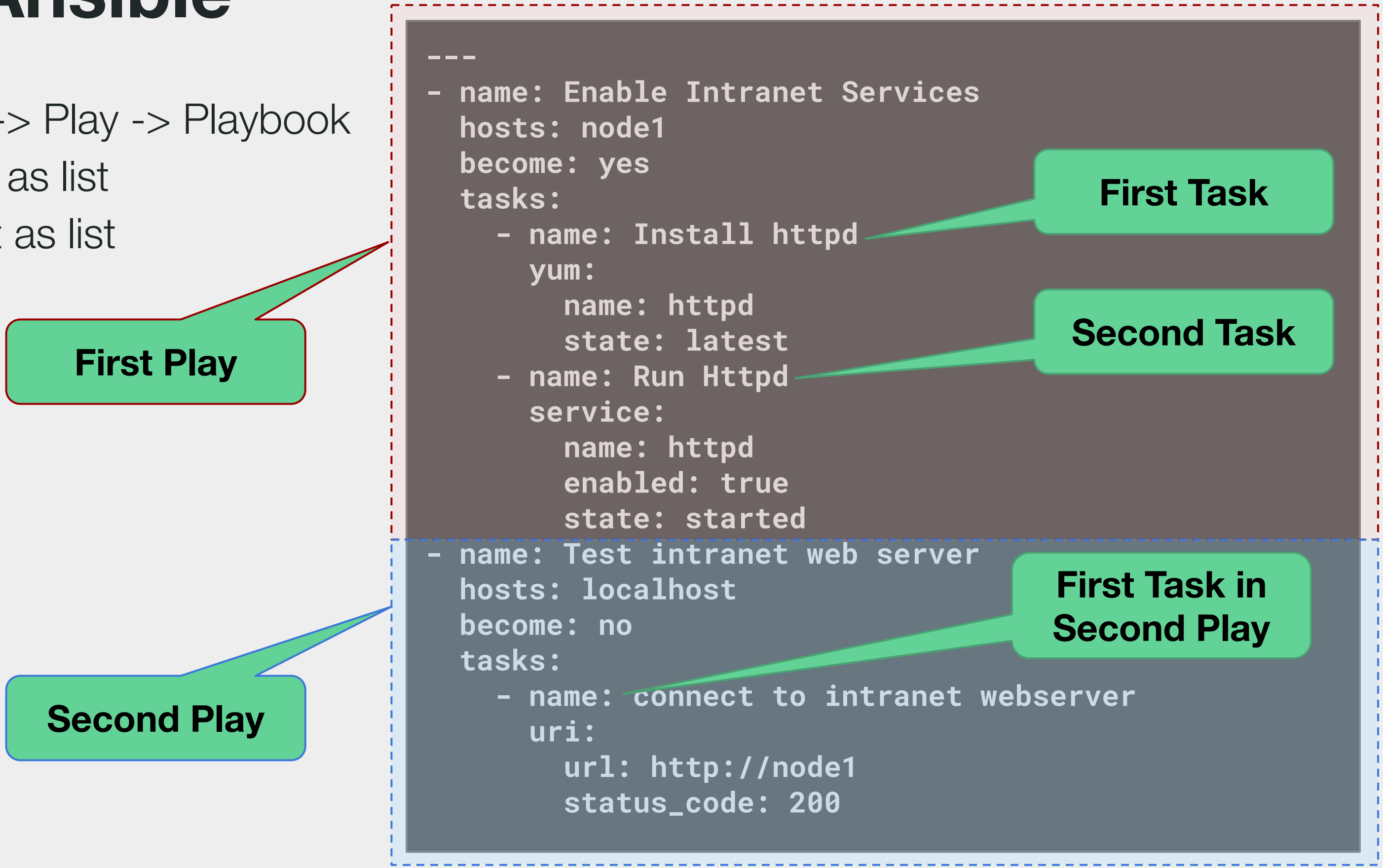
- Begin with **---**
- End with **...**
- Indentation is the key
- Strictly no **TAB**
- Recommended 2 spaces for indentation



```
---
- item1
- item2
- item3
- item4
...
```

YAML for Ansible

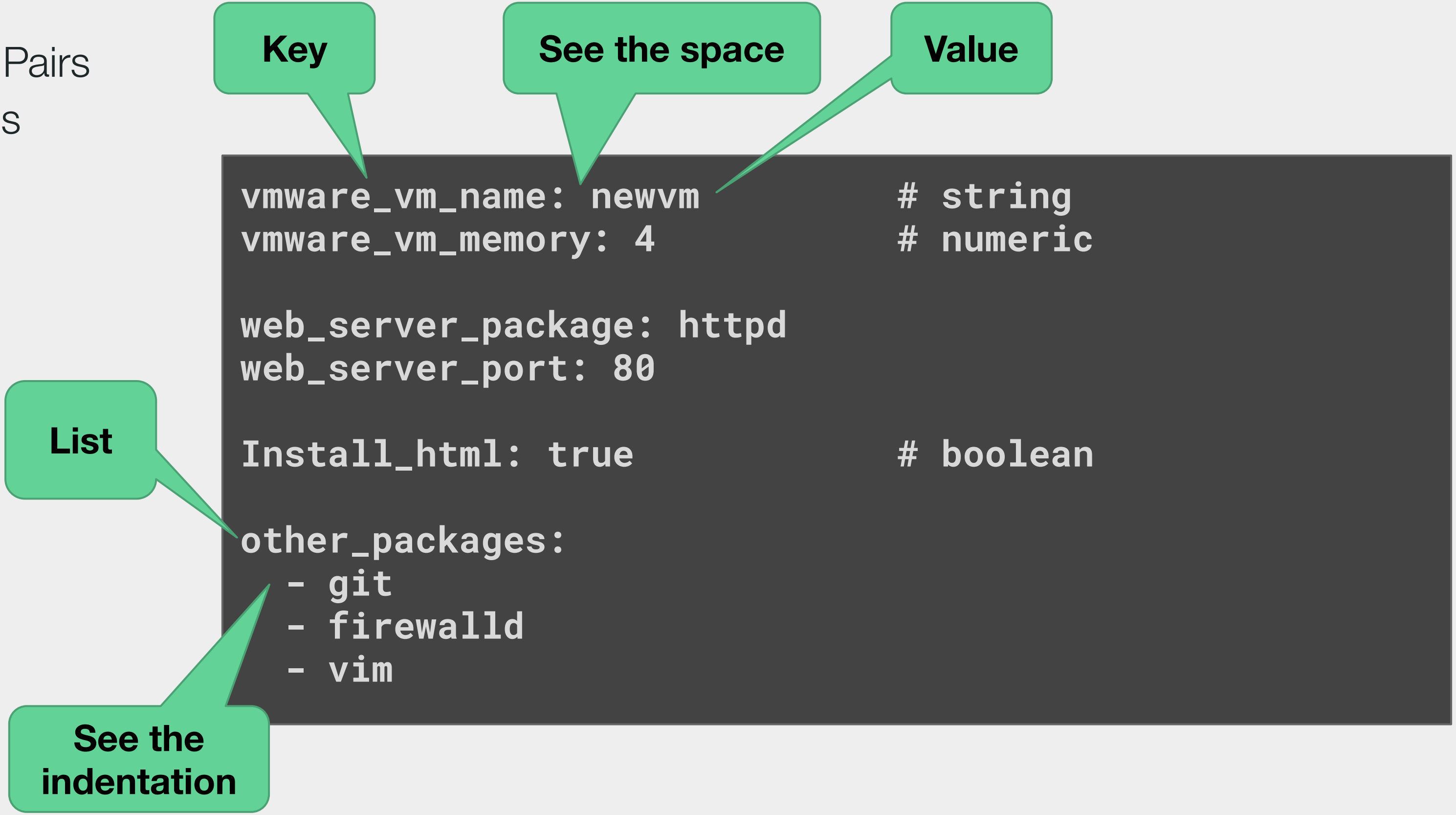
- Multiple Tasks -> Play -> Playbook
- Each Play start as list
- Each Task start as list
- Variables
- Inventories



```
---
- name: Enable Intranet Services
  hosts: node1
  become: yes
  tasks:
    - name: Install httpd
      yum:
        name: httpd
        state: latest
    - name: Run Httpd
      service:
        name: httpd
        enabled: true
        state: started
- name: Test intranet web server
  hosts: localhost
  become: no
  tasks:
    - name: connect to intranet webserver
      uri:
        url: http://node1
        status_code: 200
```

Variable

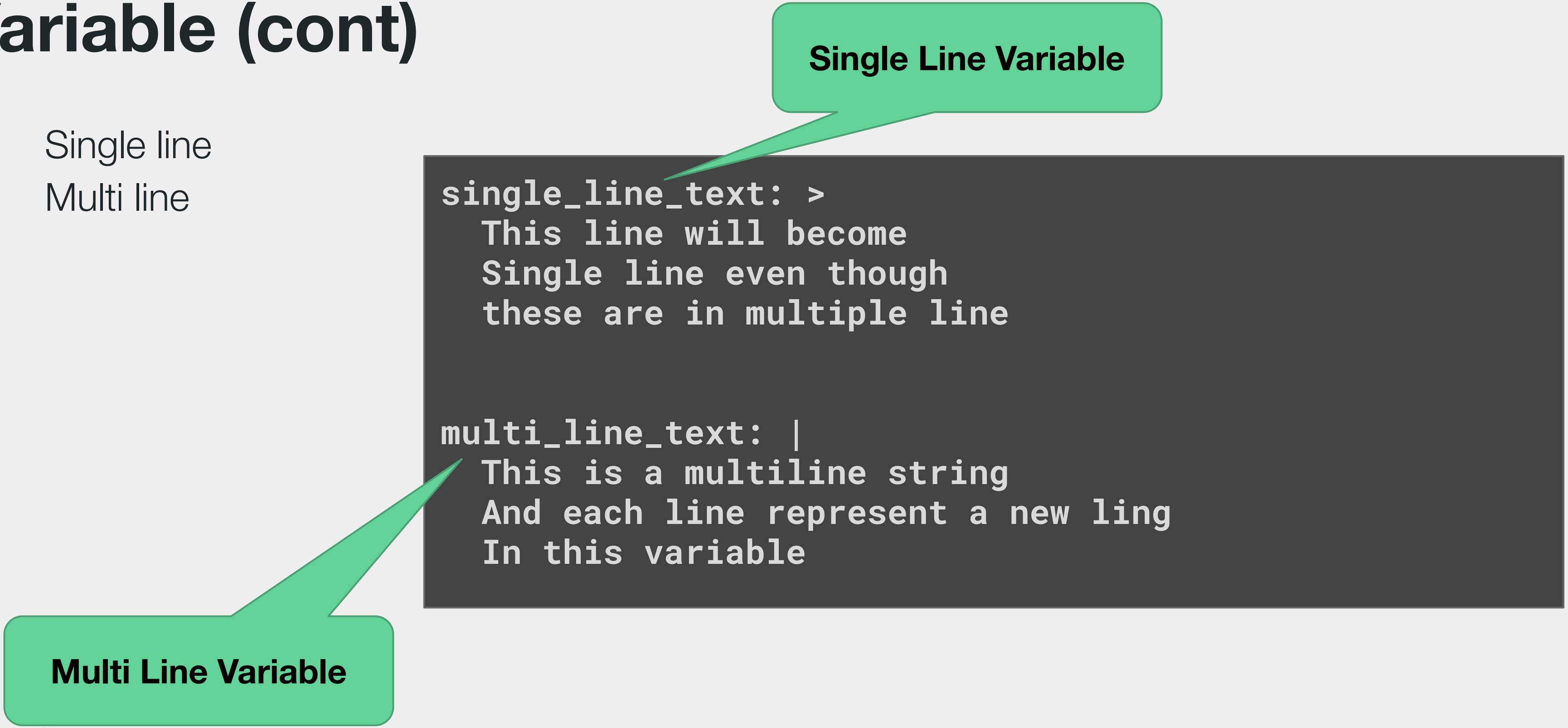
- Key-Value Pairs
- Dictionaries



```
vmware_vm_name: newvm         # string
vmware_vm_memory: 4           # numeric

web_server_package: httpd
web_server_port: 80

Install_html: true            # boolean

other_packages:
  - git
  - firewalld
  - vim
```

Variable (cont)

- Single line
- Multi line



Single Line Variable

```
single_line_text: >
  This line will become
  Single line even though
  these are in multiple line


multi_line_text: |
  This is a multiline string
  And each line represent a new ling
  In this variable
```

Multi Line Variable

Variable - Null Values

- Key-Value Pairs
- Dictionaries

```
a_null_value: ~
another_null_var: null
```

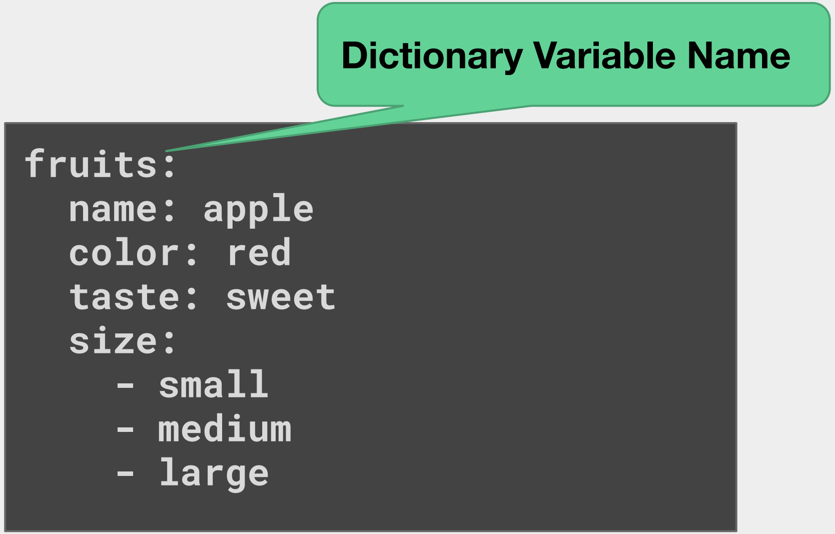
Variable - List or Arrays

- Can put in single line
- Can also put them in multiple line

```
firewall_ports: [ 22, 80, 443, 6443 ]
User_name:
  - John
  - Raj
  - Linda
  - Vinod
```

Variable - Dictionaries

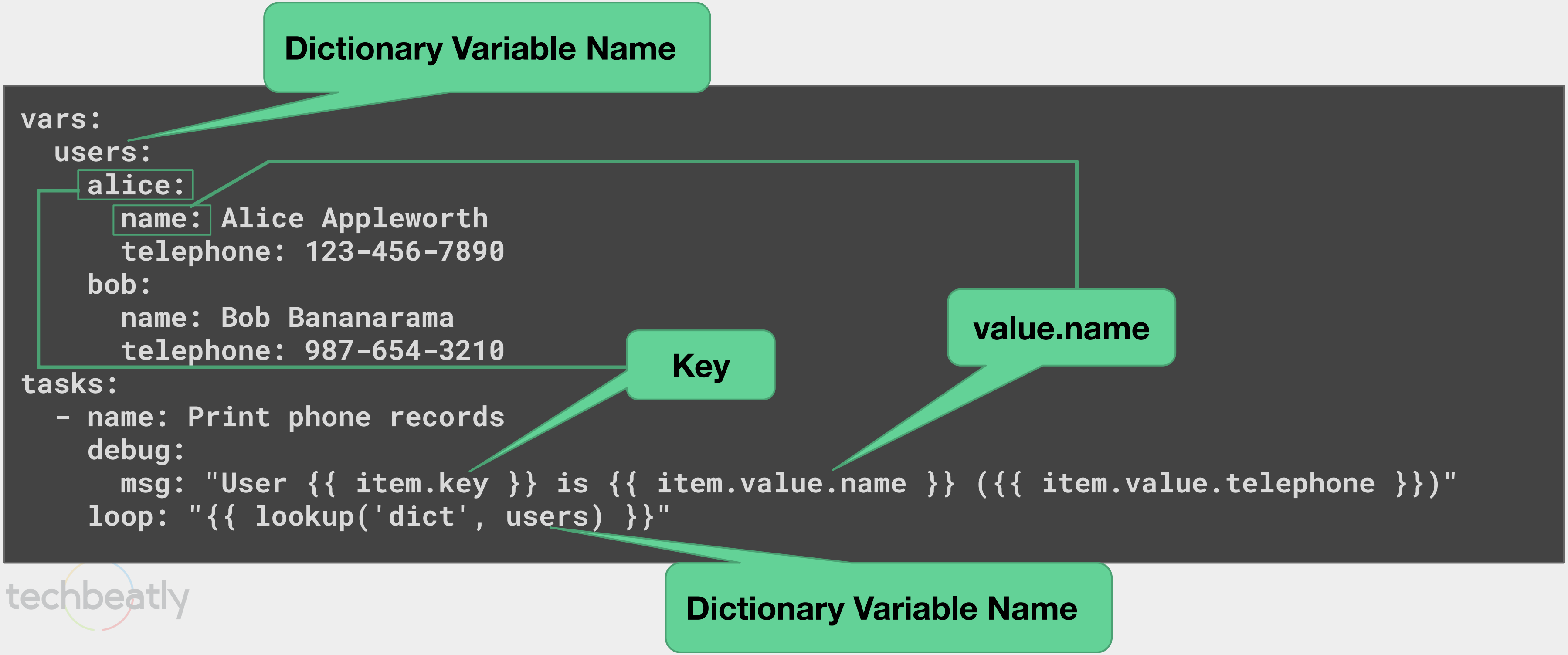
- Any complex combinations



Dictionary Variable Name

```
fruits:
  name: apple
  color: red
  taste: sweet
  size:
    - small
    - medium
    - large
```

Referring Dictionary Values



```
vars:
  users:
    alice:
      name: Alice Appleworth
      telephone: 123-456-7890
    bob:
      name: Bob Bananarama
      telephone: 987-654-3210
tasks:
  - name: Print phone records
    debug:
      msg: "User {{ item.key }} is {{ item.value.name }} ({{ item.value.telephone }})"
    loop: "{{ lookup('dict', users) }}"
```

Dictionary Variable Name

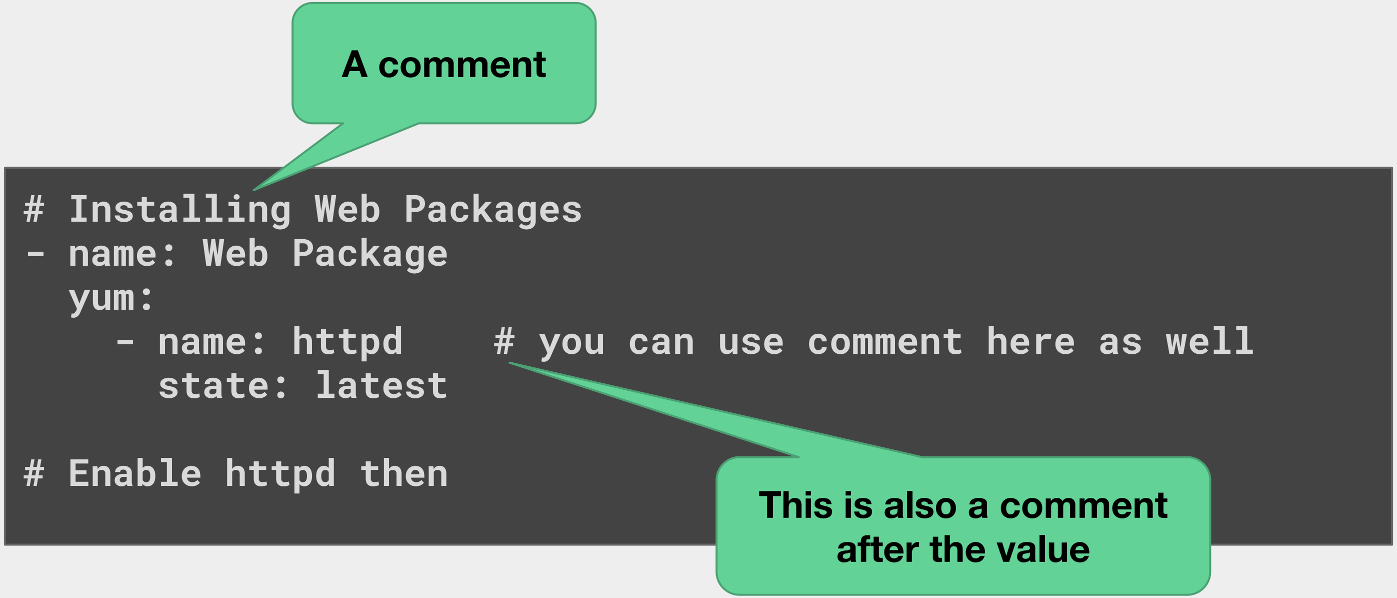
Key

value.name

Dictionary Variable Name

Comments

- Comments are preceded by #

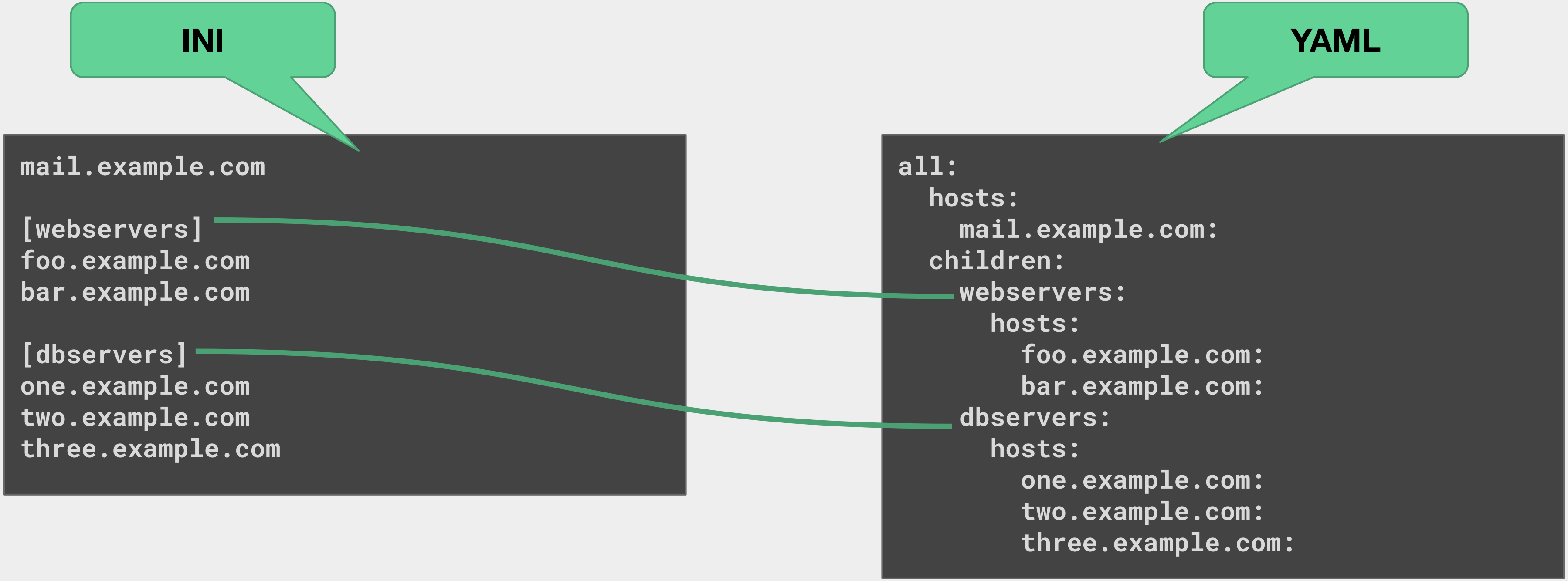


A comment

```
# Installing Web Packages
- name: Web Package
  yum:
    - name: httpd    # you can use comment here as well
      state: latest

# Enable httpd then
```

This is also a comment after the value

Ansible Inventory in YAML



INI

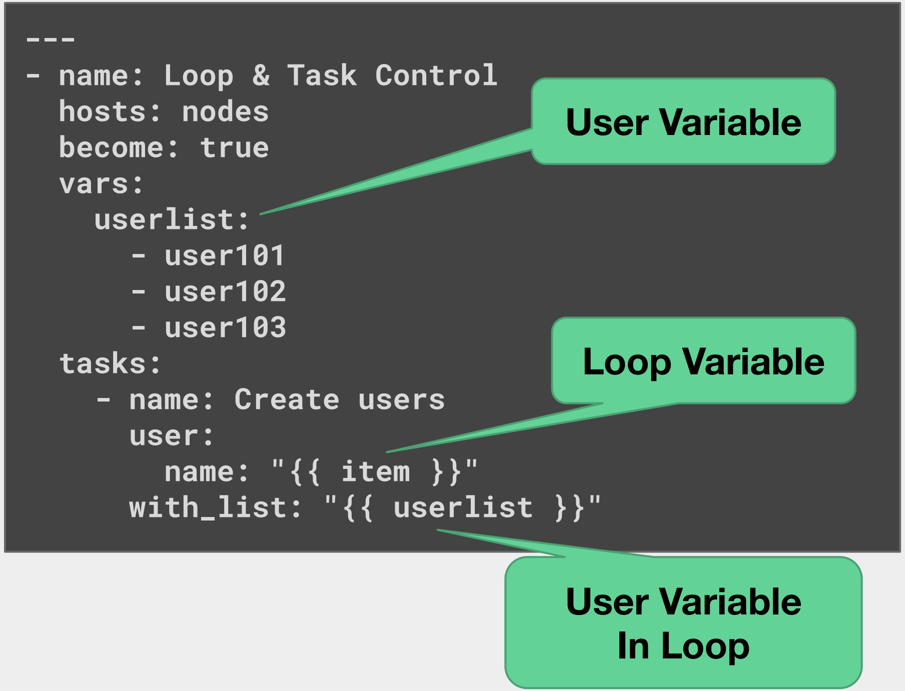
```
mail.example.com

[webservers]
foo.example.com
bar.example.com

[dbservers]
one.example.com
two.example.com
three.example.com
```

YAML

```
all:
  hosts:
    mail.example.com:
  children:
    webservers:
      hosts:
        foo.example.com:
        bar.example.com:
    dbservers:
      hosts:
        one.example.com:
        two.example.com:
        three.example.com:
```

Ansible Loop

- Loops using list or variable
- **Loop**
- **with_***
  - **with_list**
  - **with_items**
  - **with_indexed_items**
  - **with_flattened**
  - **with_together**
  - **with_dict**
  - **with_sequence**
  - **with_subelements**
  - **with_nested/with_cartesian**
  - **with_random_choice**



```
---
- name: Loop & Task Control
  hosts: nodes
  become: true
  vars:
    userlist:
      - user101
      - user102
      - user103
  tasks:
    - name: Create users
      user:
        name: "{{ item }}"
      with_list: "{{ userlist }}"
```

User Variable

Loop Variable

User Variable In Loop

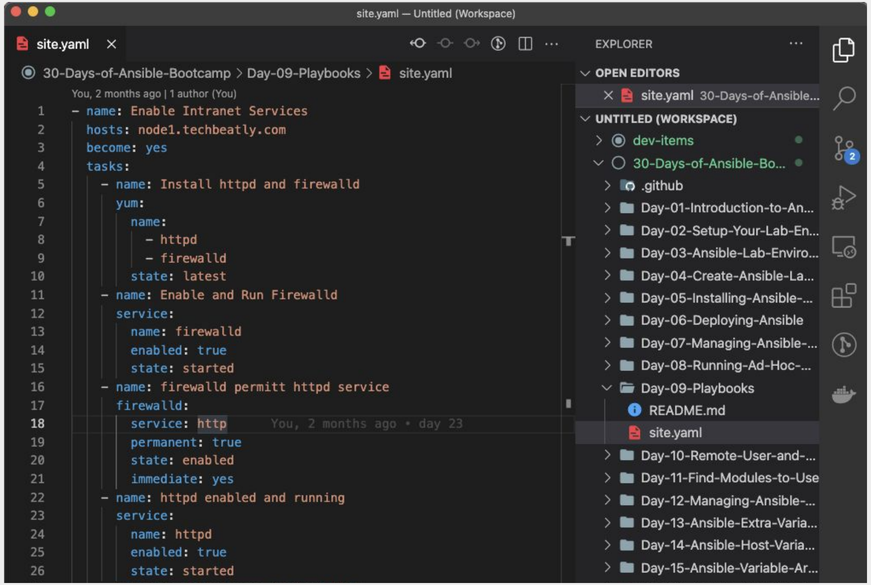
Ansible Blocks

- Conditional execution without **when**
- Handling Error and Rescue

```
---
- name: Blocks Demo
  hosts: node1
  tasks:
   - block:
      - name: check the file
        file:
         path: /var/tmp/create.html
     rescue:
      - name: create file
        copy:
         content: "File is present"
         dest: /var/tmp/create.html
         mode: 0644
     always:
      - name: Display Message
        debug:
         msg: "File is present"
```

Configure Your Editor

- Use proper IDE if possible
- Configure your text editor


site.yaml — Untitled (Workspace)
site.yaml
30-Days-of-Ansible-Bootcamp > Day-09-Playbooks > site.yaml
You, 2 months ago | 1 author (You)
EXPLORER
OPEN EDITORS
site.yaml 30-Days-of-Ansible...
UNTITLED (WORKSPACE)
dev-items
30-Days-of-Ansible-Bo...
.github
Day-01-Introduction-to-An...
Day-02-Setup-Your-Lab-En...
Day-03-Ansible-Lab-Enviro...
Day-04-Create-Ansible-La...
Day-05-Installing-Ansible-...
Day-06-Deploying-Ansible
Day-07-Managing-Ansible-...
Day-08-Running-Ad-Hoc-...
Day-09-Playbooks
README.md
site.yaml
Day-10-Remote-User-and-...
Day-11-Find-Modules-to-Use
Day-12-Managing-Ansible-...
Day-13-Ansible-Extra-Varia...
Day-14-Ansible-Host-Varia...
Day-15-Ansible-Variable-Ar...
2

```
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        permanent: true
        state: enabled
        immediate: yes
    - name: httpd enabled and running
      service:
        name: httpd
        enabled: true
        state: started
```
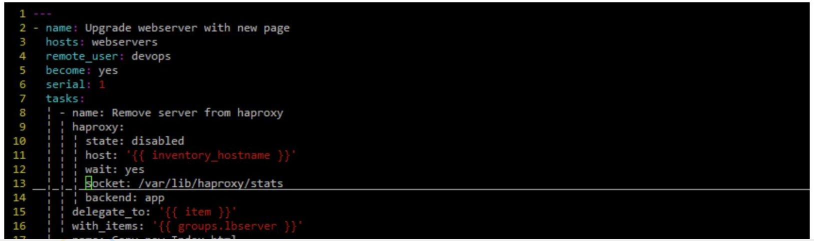

Edit your ~/.vimrc file and add below lines

```
autocmd FileType yaml setlocal et ts=2 ai sw=2 nu sts=0
set cursorlin
```

Finally see the vim editor with **autoindent**, **cursorline**, **indentlines,** etc



```
---
- name: Upgrade webserver with new page
  hosts: webservers
  remote_user: devops
  become: yes
  serial: 1
  tasks:
    - name: Remove server from haproxy
      haproxy:
        state: disabled
        host: '{{ inventory_hostname }}'
        wait: yes
        socket: /var/lib/haproxy/stats
        backend: app
      delegate_to: '{{ item }}'
      with_items: '{{ groups.lbserver }}'
```

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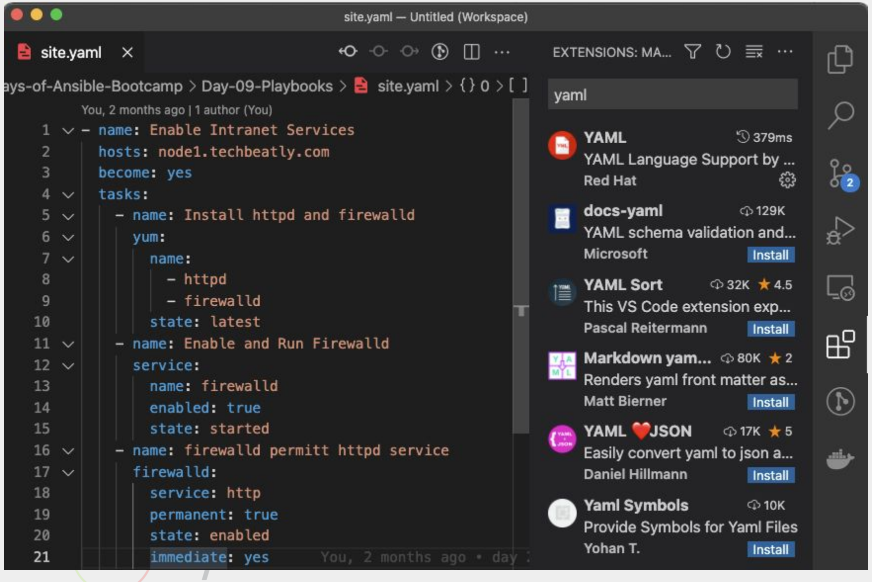
techbeatly.com/2018/06/setup-your-vim-editor-for-ansible-playbook.html

Find Plugins for IDE

- Use plugins for Ansible
- Use plugins for YAML



site.yaml — Untitled (Workspace)

site.yaml

ays-of-Ansible-Bootcamp > Day-09-Playbooks > site.yaml > {} 0 > [ ]

You, 2 months ago | 1 author (You)

```yaml
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    - name: Enable and Run Firewalld
      service:
        name: firewalld
        enabled: true
        state: started
    - name: firewalld permitt httpd service
      firewalld:
        service: http
        permanent: true
        state: enabled
        immediate: yes        You, 2 months ago • day :
```

EXTENSIONS: MA...

yaml

YAML — 379ms
YAML Language Support by ...
Red Hat

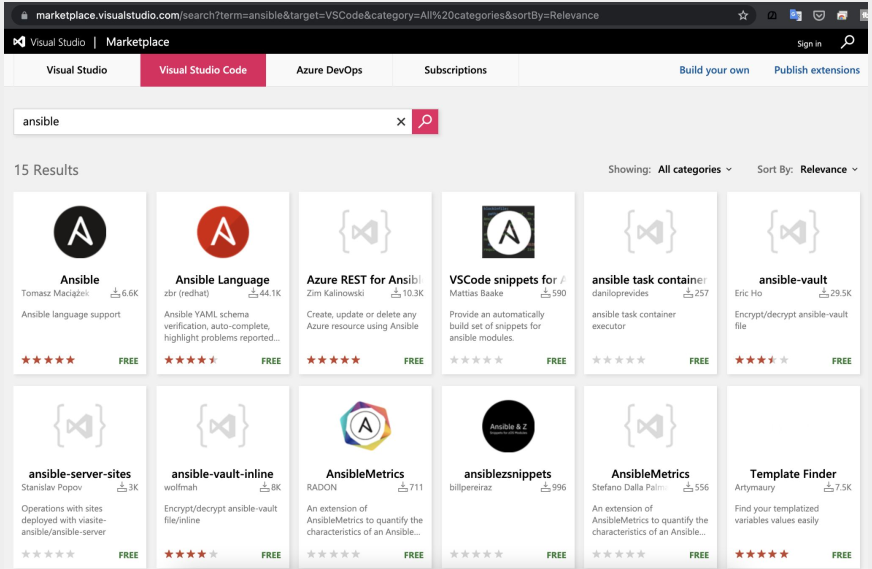
docs-yaml — 129K
YAML schema validation and...
Microsoft — Install

YAML Sort — 32K ★ 4.5
This VS Code extension exp...
Pascal Reitermann — Install

Markdown yam... — 80K ★ 2
Renders yaml front matter as...
Matt Bierner — Install

YAML ❤️JSON — 17K ★ 5
Easily convert yaml to json a...
Daniel Hillmann — Install

Yaml Symbols — 10K
Provide Symbols for Yaml Files
Yohan T. — Install



marketplace.visualstudio.com/search?term=ansible&target=VSCode&category=All%20categories&sortBy=Relevance

ansible

15 Results

Showing: All categories — Sort By: Relevance

Extension	Publisher	Installs	Description	Rating	Price
Ansible	Tomasz Maciążek	6.6K	Ansible language support	★★★★★	FREE
Ansible Language	zbr (redhat)	44.1K	Ansible YAML schema verification, auto-complete, highlight problems reported...	★★★★½	FREE
Azure REST for Ansibl	Zim Kalinowski	10.3K	Create, update or delete any Azure resource using Ansible	★★★★★	FREE
VSCode snippets for A	Mattias Baake	590	Provide an automatically build set of snippets for ansible modules.	☆☆☆☆☆	FREE
ansible task container	daniloprevides	257	ansible task container executor	☆☆☆☆☆	FREE
ansible-vault	Eric Ho	29.5K	Encrypt/decrypt ansible-vault file	★★★½☆	FREE
ansible-server-sites	Stanislav Popov	3K	Operations with sites deployed with viasite-ansible/ansible-server	☆☆☆☆☆	FREE
ansible-vault-inline	wolfmah	8K	Encrypt/decrypt ansible-vault file/inline	★★★★☆	FREE
AnsibleMetrics	RADON	711	An extension of AnsibleMetrics to quantify the characteristics of an Ansible...	☆☆☆☆☆	FREE
ansiblezsnippets	billpereiraz	996		☆☆☆☆☆	FREE
AnsibleMetrics	Stefano Dalla Palma	556	An extension of AnsibleMetrics to quantify the characteristics of an Ansible...	☆☆☆☆☆	FREE
Template Finder	Artymaury	7.5K	Find your templatized variables values easily	★★★★★	FREE

marketplace.visualstudio.com/vscode

Questions & Feedbacks

Ansible FREE Course	: techbeatly.com/ansible-course
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feedback