Beyond copy-paste: Using Ansible Development Tools for Robust Automation Content

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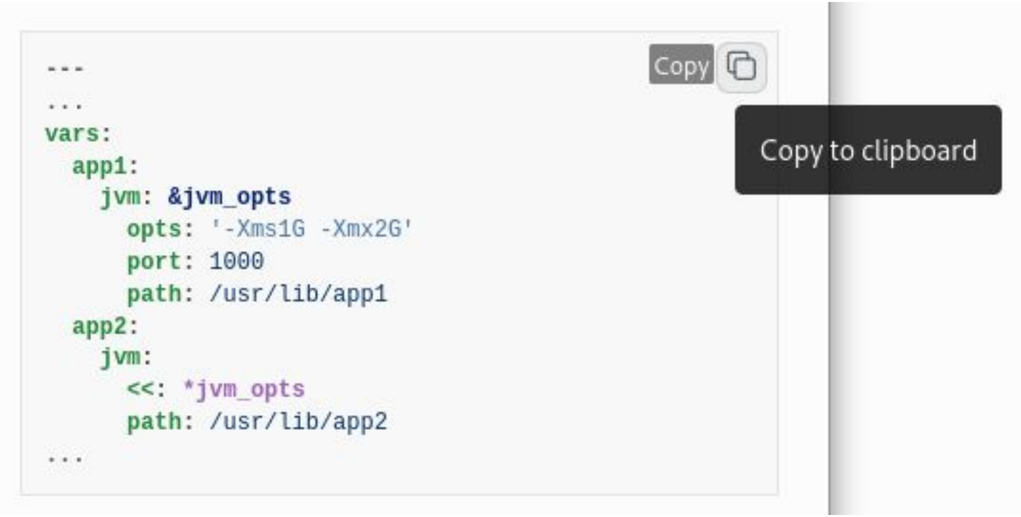
Agenda

1. A look at the problem: Pitfalls and dangers of a copy/paste approach to developing automation content
2. Overview of Ansible Developer Tools
3. Demo time
4. Summary
5. Call to action

Pitfalls and dangers of a copy/paste approach

- Hidden dependencies and security risks
- Version compatibility issues
- Environment-specific problems
- Quick wins that become long-term technical debt



```
---
...
vars:
  app1:
    jvm: &jvm_opts
      opts: '-Xms1G -Xmx2G'
      port: 1000
      path: /usr/lib/app1
  app2:
    jvm:
      <<: *jvm_opts
      path: /usr/lib/app2
...
```

A closer look: Hidden dependencies

Requirements are not always immediately obvious.

Requires the `cryptography` Python package.

```
- name: Generate an OpenSSL private key
  community.crypto.openssl_privatekey:
    path: /etc/ssl/private/ansible.com.pem
```

The illusion of “works on my machine”

Impact on collection development

- Low quality automation content gets propagated
- Maintenance becomes a struggle
- Unreliable automation at scale
- Compromised security and stability

Fragmented development experiences

Ansible Development Tools (ADT)

- Curated, all-in-one Ansible developer toolkit.
- Streamlines the setup and usage of tools for creating and maintaining Ansible content.
- Can be combined with the Ansible VS Code extension for an IDE-based experience.
- Does include ansible-core but not "ansible" community package.
- ADT is also included in AAP

Setting up your virtual environment

```
> mkdir acme.goodies # <- namespace.collection_name
> cd acme.goodies
> uv venv --seed # <- or 'python -m venv .venv'
Using CPython 3.13.1 interpreter at:
/Users/ssbarnea/.config/mise/installs/python/3.13.1/bin/python
Creating virtual environment with seed packages at: .venv
 + pip==25.0
Activate with: source .venv/bin/activate

> source .venv/bin/activate
(acme.goodies)> pip install ansible-dev-tools
```

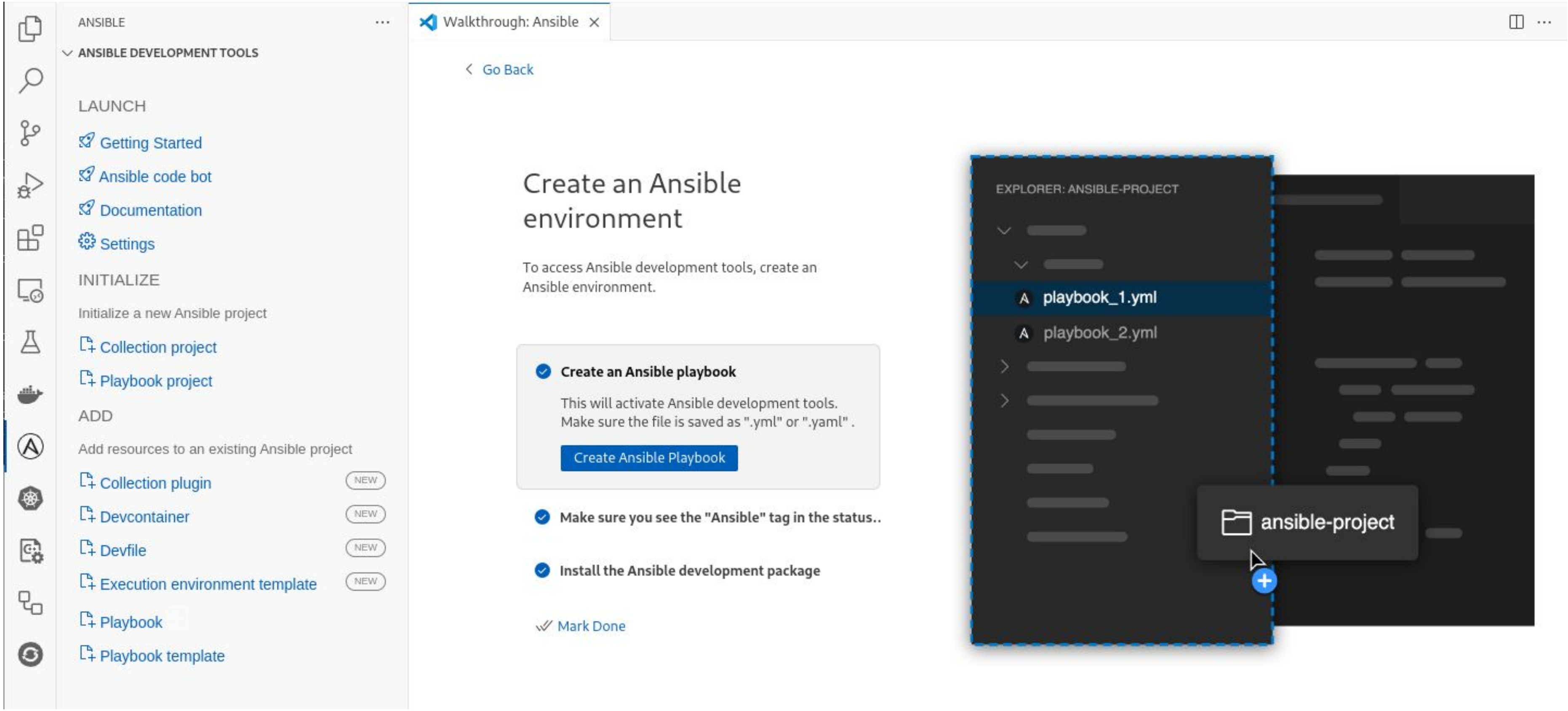
Getting information about your ansible-dev-tools

```
(acme.goodies)> pip install ansible-dev-tools
(acme.goodies)> adt --version
ansible-builder                          3.1.0
ansible-core                             2.18.1
ansible-creator                          24.11.1.dev7
ansible-dev-environment                  24.12.1.dev10
ansible-dev-tools                        24.12.1.dev4
ansible-lint                             25.1.1.dev3
ansible-navigator                        24.10.1.dev3
ansible-sign                             0.1.1
molecule                                 24.12.1.dev20
pytest-ansible                           24.9.1.dev13
tox-ansible                              25.1.1.dev4
```

Getting information about your ansible-dev-tools

```
(acme.goodies)> ansible --version
ansible [core 2.18.2]
  config file = None
  configured module search path = ['/Users/ssbarnea/.ansible/plugins/modules',
'/usr/share/ansible/plugins/modules']
  ansible python module location =
/Users/ssbarnea/code/a/acme.goodies/.venv/lib/python3.13/site-packages/ansible
  ansible collection location =
/Users/ssbarnea/.ansible/collections:/usr/share/ansible/collections
  executable location = /Users/ssbarnea/code/a/acme.goodies/.venv/bin/ansible
  python version = 3.13.1 (main, Dec 19 2024, 14:22:59) [Clang 18.1.8 ]
(/Users/ssbarnea/code/a/acme.goodies/.venv/bin/python3)
  jinja version = 3.1.5
  libyaml = True
```

VSCode extension (Graphical interface to Developer Tools)



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ANSIBLE DEVELOPMENT TOOLS

LAUNCH

- Getting Started
- Ansible code bot
- Documentation
- Settings

INITIALIZE

Initialize a new Ansible project

- Collection project
- Playbook project

ADD

Add resources to an existing Ansible project

- Collection plugin NEW
- Devcontainer NEW
- Devfile NEW
- Execution environment template NEW
- Playbook
- Playbook template

Walkthrough: Ansible

Go Back

Create an Ansible environment

To access Ansible development tools, create an Ansible environment.

Create an Ansible playbook

This will activate Ansible development tools. Make sure the file is saved as ".yml" or ".yaml" .

Create Ansible Playbook

Make sure you see the "Ansible" tag in the status..

Install the Ansible development package

Mark Done

Ansible collections

Collections:

- Act as the “container” for your Ansible content.
- Allow developer tooling to find dependencies.
- Address packaging and distribution of content

Setting up a collection structure for your project

```
(acme.goodies)> ansible-creator init collection acme.goodies
    Note: collection project created at /Users/ssbarnea/code/a/acme.goodies

> ls
changelogs  roles               LICENSE        pyproject.toml
docs        tests               MAINTAINERS    requirements.txt
extensions  CHANGELOG.rst       README.md      test-requirements.txt
meta        CODE_OF_CONDUCT.md  devfile.yaml   tox-ansible.ini
plugins     CONTRIBUTING        galaxy.yml
```

Installing collection as editable (ade)

```
(acme.goodies)> ade install -e .

    Note: Installed collections include: acme.goodies and ansible.utils
    Note: All python requirements are installed.
    Note: All required system packages are installed.

(acme.goodies)> ansible-galaxy collection list

# /Users/ssbarnea/code/a/acme.goodies/ .venv/lib/python3.13/site-packages/ansible_collections
Collection    Version
------------- -------
acme.goodies  1.0.0
ansible.utils 5.1.2
```

Checking dependencies using ade

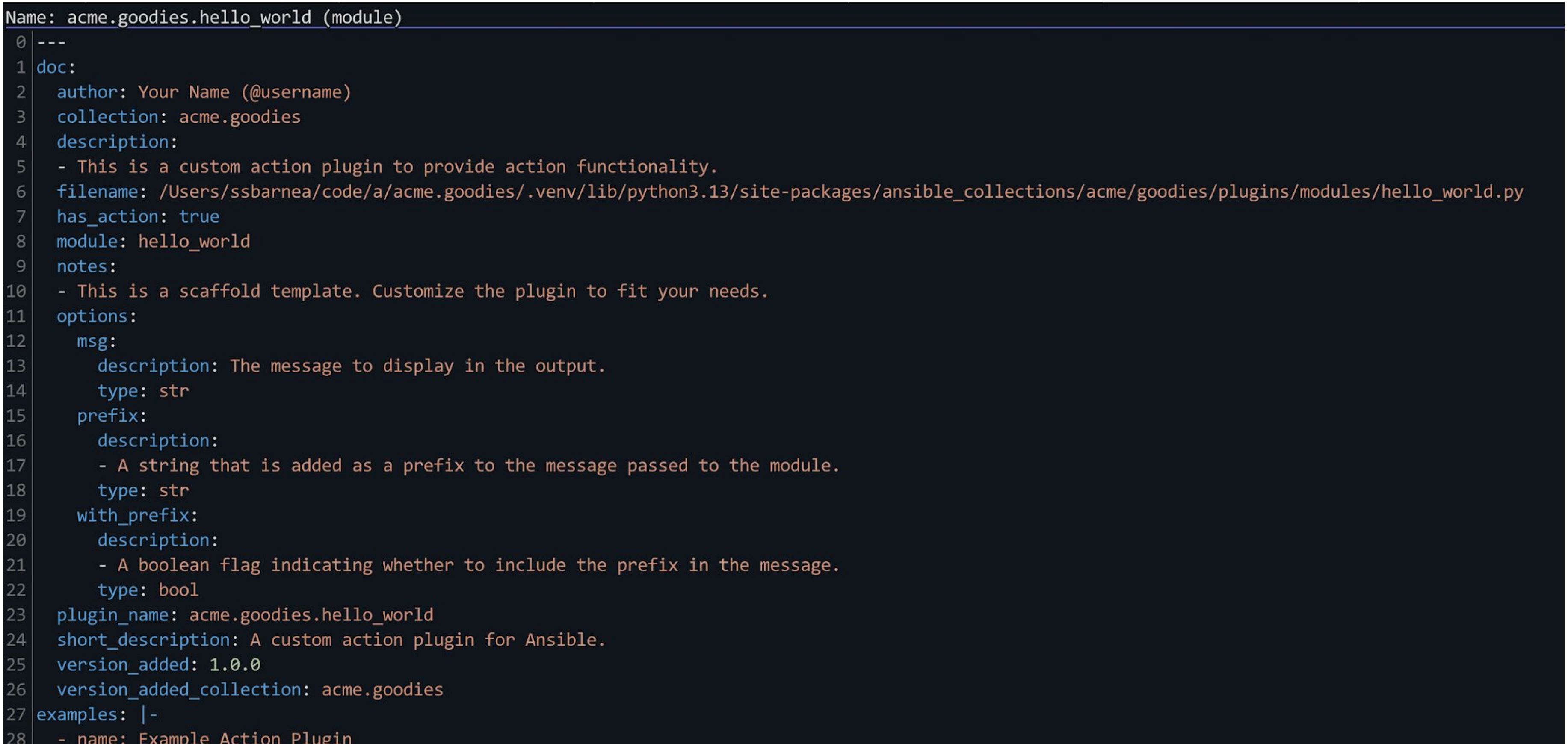
```
(acme.goodies)> ade check
    Note: All dependant collections are installed.
    Note: All required system packages are installed.
   Error: Missing python dependencies: future==1.0.0, netaddr==1.3.0, six==1.17.0, textfsm==1.1.3,
ttp==0.9.5, and xmltodict==0.14.2
    Hint: Try running `pip install future==1.0.0 netaddr==1.3.0 six==1.17.0 textfsm==1.1.3
ttp==0.9.5 xmltodict==0.14.2`.

(acme.goodies)> ansible-galaxy collection list
# /Users/ssbarnea/code/a/acme.goodies/.venv/lib/python3.13/site-packages/ansible_collections
Collection    Version
------------- -------
acme.goodies  1.0.0
ansible.utils 5.1.2

(acme.goodies)> ade list
Collection                      Version    Editable project location
------------------------------- ---------- -------------------------
acme.goodies                    1.0.0      /Users/ssbarnea/code/a/acme.goodies
ansible.utils                   5.1.2
```

Running ansible-doc on the collection

```
(acme.goodies)> ansible-doc -l acme.goodies
acme.goodies.hello_world A custom action plugin for Ansible

(acme.goodies)> ansible-doc acme.goodies.hello_world
> MODULE acme.goodies.hello_world
(/Users/ssbarnea/code/a/acme.goodies/.venv/lib/python3.13/site-packages/ansible_collections/acme/goo
dies/plugins/modules/hello_world.py)

  This is a custom action plugin to provide action functionality.

  * note: This module has a corresponding action plugin.

OPTIONS (red indicates it is required):

   msg     The message to display in the output.
        default: null
        type: str

   prefix  A string that is added as a prefix to the message passed to the module.
        default: null
        type: str

   with_prefix  A boolean flag indicating whether to include the prefix in the message.
```

Running ansible-navigator doc on the collection

```
(acme.goodies)> ansible-navigator --ee false doc acme.goodies.hello_world
```



```
Name: acme.goodies.hello_world (module)
---
doc:
  author: Your Name (@username)
  collection: acme.goodies
  description:
  - This is a custom action plugin to provide action functionality.
  filename: /Users/ssbarnea/code/a/acme.goodies/.venv/lib/python3.13/site-packages/ansible_collections/acme/goodies/plugins/modules/hello_world.py
  has_action: true
  module: hello_world
  notes:
  - This is a scaffold template. Customize the plugin to fit your needs.
  options:
    msg:
      description: The message to display in the output.
      type: str
    prefix:
      description:
      - A string that is added as a prefix to the message passed to the module.
      type: str
    with_prefix:
      description:
      - A boolean flag indicating whether to include the prefix in the message.
      type: bool
  plugin_name: acme.goodies.hello_world
  short_description: A custom action plugin for Ansible.
  version_added: 1.0.0
  version_added_collection: acme.goodies
examples: |-
  - name: Example Action Plugin
```

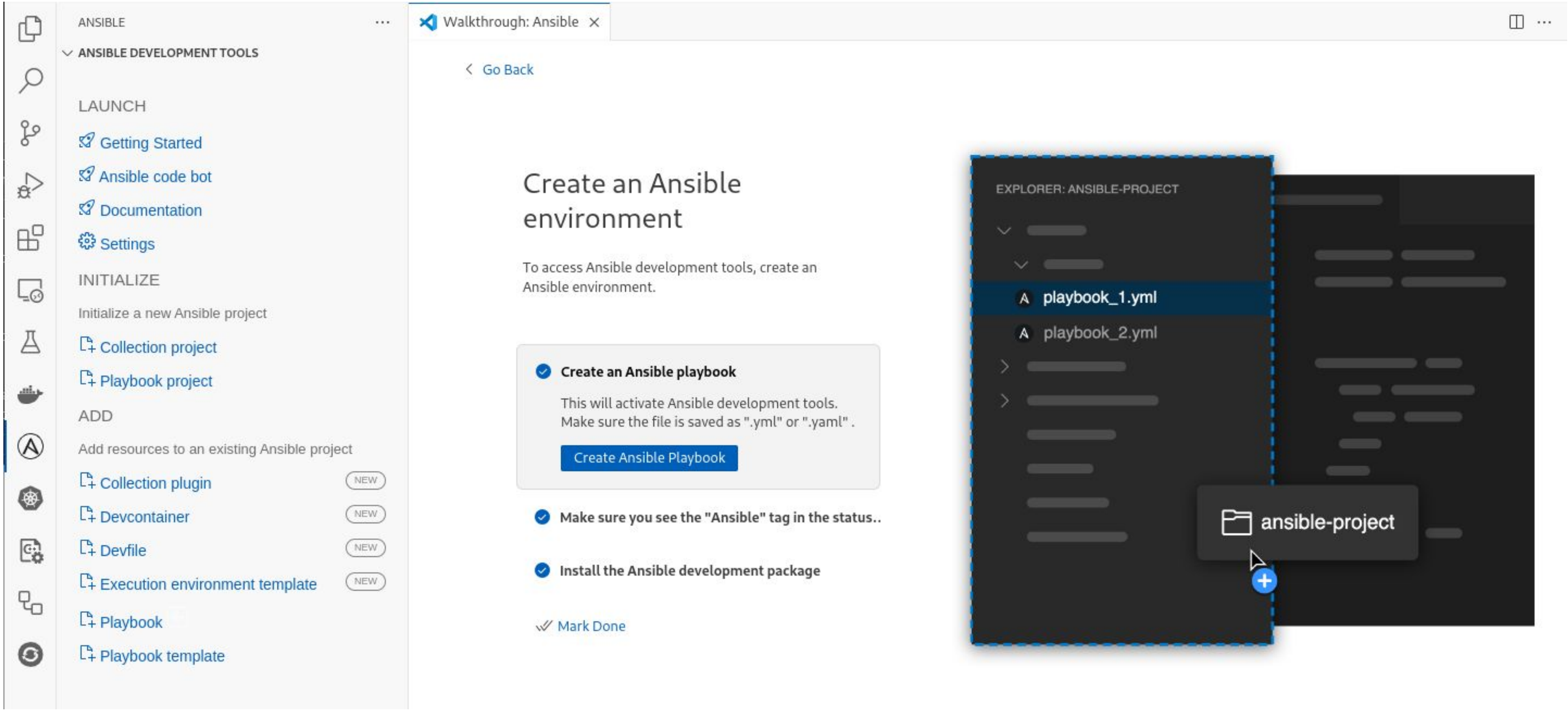
Creating a playbook project

```
> mkdir my-plays
> cd my-plays
> git init
> ansible-creator init playbook foo.bar
    Note: playbook project created at /Users/ssbarnea/code/a/my-plays

# add temporary ansible.cfg trick for ansible-galaxy compatibility
# [defaults]
# collections_path = ./collections

> ansible-galaxy collection list
# /Users/ssbarnea/.venv/lib/python3.13/site-packages/ansible_collections
Collection                               Version
---------------------------------------- -------
community.docker                         4.3.0
community.library_inventory_filtering_v1 1.0.2

# /Users/ssbarnea/code/a/my-plays/collections/ansible_collections
Collection                               Version
---------------------------------------- -------
acme.goodies                             *
```

Creating a playbook project

```
> ansible-playbook site.yml
PLAY [Example playbook] ********************************************************

TASK [Gathering Facts] *********************************************************
ok: [localhost]

TASK [acme.goodies.run : Debug print task-1] ***********************************
ok: [localhost] => {
    "msg": "This is task-1"
}

TASK [acme.goodies.run : Debug print task-2] ***********************************
ok: [localhost] => {
    "msg": "This is task-2"
}

TASK [acme.goodies.run : Debug print task-3] ***********************************
ok: [localhost] => {
    "msg": "This is task-3"
}

PLAY RECAP *********************************************************************
localhost                  : ok=4    changed=0    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
```

VSCode extension (Graphical interface to Developer Tools)



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Make sure you see the "Ansible" tag in the status..

Install the Ansible development package

Mark Done

Demo one: Scaffolding collections and creating playbooks

Ansible Navigator for the win

```
ansible-navigator
```

```
Welcome
─────────────────────────────────────────
Some things you can try from here:

- :collections
- :config
- :doc <plugin>
- :help
- :images
- :inventory -i <inventory>
- :log
- :lint <file or directory>
- :open
- :replay
- :run <playbook> -i <inventory>
- :settings
- :quit
```

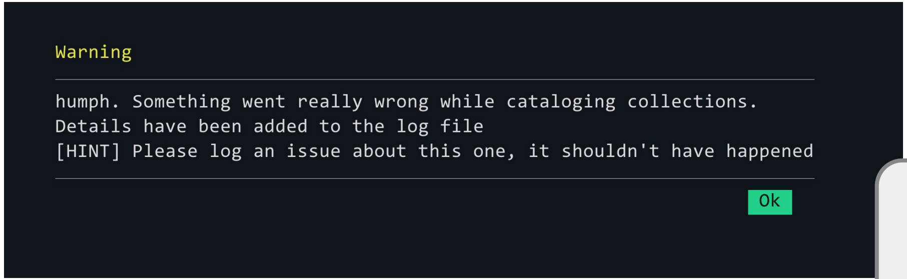
Ansible Navigator and execution environments

ansible-navigator

By default ansible navigator is trying to use execution environments when running commands.

If you want to temporary disable them add "--ee false" to the command line, or edit ansible-navigator.yml config:

```
ansible-navigator:
  execution-environment:
    enabled: false
```



```
Warning

humph. Something went really wrong while cataloging collections.
Details have been added to the log file
[HINT] Please log an issue about this one, it shouldn't have happened
```

If you see it, you are likely on MacOS and your container engine is not fully working. Reseting the podman/docker machine usually fixes it.

The doc subcommand

```
ansible-navigator doc <plugin>
```

The config subcommand

```
ansible-navigator config
```

```
ansible-navigator config view --mode stdout
```

Demo two: Context-aware development

Execution environments: predictable, self-contained dependencies

```
ghcr.io/ansible/community-ansible-dev-tools:latest
```

```
ghcr.io/ansible-community/community-ee-minimal:latest
```

Visit Ansible documentation to get started with EEs (execution environments).

The images subcommand

```
ansible-navigator images
```

The collections subcommand

```
ansible-navigator collections --execution-environment-image
ghcr.io/ansible/community-ansible-dev-tools:latest
```

Contains the following Ansible collections:

- `ansible.builtin`
- `ansible.netcommon`
- `ansible.posix`
- `ansible.scm`
- `ansible.utils`

Creating a custom image with Ansible Builder

```
ansible-navigator builder build --tag postgresql_ee
```

Running playbooks within the execution environment

```
ansible-navigator run test_localhost.yml
--execution-environment-image postgresql_ee --mode stdout
```

Isolated and reproducible environments

Ask me anything (within reason)

Adding molecule scenarios

```
molecule init scenario demo
```

```
molecule list
```

```
molecule test -s demo
```

Linting your projects

`ansible-lint`

Checking and testing your content

We want to hear from you!

Focus areas in the year ahead:

- Creating automation content
- Testing, releasing, and publishing collections
- Providing consistent developer experiences

Let us know what you think:

- What enhancements or new features do you want to see?
- What do you think works well currently?
- What are your biggest pain points?

Forum post: Ansible DevTools plans and collaboration opportunities

Anyone can contribute.
We are all community.

Join the forum to participate in discussions and get help!

Want to contribute? Find out how to get involved.

Thanks!

GitHub: **ssbarnea**
Matrix: **#community:ansible.com #social:ansible.com**

Ansible community forum:
https://forum.ansible.com/

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