yaml2script

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`yaml2script` is a Python script that extracts shell scripts from a GitLab CI/CD configuration file `.gitlab-ci.yml` and allows you to test/analyze/check them with tools like shellcheck.

CHAPTER

ONE

YAML2SCRIPT

`yaml2script` is a Python script that extracts shell scripts from a GitLab CI/CD configuration file `.gitlab-ci.yml` and allows you to test/analyze/check them with tools like shellcheck.

It correctly handles YAML anchors and GitLab CI's 'extends' functionality, allowing for seamless extraction of scripts from complex '.gitlab-ci.yml' files.

see: yaml2script's documentation

1.1 Why is yaml2script useful?

- **Automated testing**: With yaml2script, you can automatically test your CI/CD scripts and ensure they are working as expected and correctly.
- **Universal testing**: yaml2script is not limited to specific tools. You can test your CI/CD scripts with any command-line tool you prefer – whether it's shellcheck, pycodestyle, pylint, ruff, bandit, or even custom scripts.
- **Security audits**: By using tools like shellcheck, yaml2script can help identify and fix security vulnerabilities in your scripts.
- **Code quality**: yaml2script can also be used to improve the code quality of your scripts by analyzing them with tools like pycodestyle and pylint.
- **Complex scripts**: If you have complex scripts in your .gitlab-ci.yml file, yaml2script can help extract and test them to ensure they are working correctly.
- **Integration with CI/CD pipelines**: yaml2script can be integrated directly into your CI/CD pipeline to automate testing and analysis, for example via pre-commit.

1.2 Known Limitations

- **`extends`**: Only single-level, string-form `extends` is supported (e.g. `extends: .template`). List-form (`extends: [.a, .b]`) and chained extends are **not** resolved.
- **`!reference`**: References (`!reference` custom YAML tag) that span across files (via `include`) are not resolved. Analyze each file individually in such cases.

1.3 Installation

`yaml2script` requires Python 3 and the package pyyaml. You can install it by your operating system's package management system. Or you can have it installed automatically as a dependency of pip.

You can install `yaml2script` by running the following command (recommended):

```
pipx install git+https://gitlab.com/yaml2script/yaml2script.git
```

Furthermore, you will probably need a tool for checking your code such as shellcheck, pycodestyle, pylint or any others. You can also install some or all of these as optional dependency(ies):

```
pip3 install ".[shellcheck, pycodestyle, pylint]"
```

As far as I know you can not install these optional dependencies with `pipx` directly. But you can inject them manually, e. g.:

```
pipx install git+https://gitlab.com/yaml2script/yaml2script.git
pipx inject yaml2script shellcheck-py pycodestyle pylint
```

If you use all dependencies from your operating system's package management system here is an example for Alpine Linux using pycodestyle:

```
apk add --no-cache py3-pip py3-yaml py3-pycodestyle
pipx install --system-site-packages \
  git+https://gitlab.com/yaml2script/yaml2script.git
```

Or:

```
apk add --no-cache py3-pip py3-yaml py3-pycodestyle
pip3 install --no-deps \
  https://gitlab.com/yaml2script/yaml2script/-/archive/0.2.4/yaml2script-0.2.4.zip
```

You can also use other Linux derivatives, e. g. for debian you could do:

```
apt-get install git npm pre-commit pycodestyle python3-pip python3-pytest \
  python3-pytest-cov python3-pytest-xdist python3-yaml shellcheck
pipx install --system-site-packages \
  git+https://gitlab.com/yaml2script/yaml2script.git
```

1.4 Usage

`yaml2script` has several sub-commands:

- `extract`: Extracts scripts from the specified `.gitlab-ci.yml` file and prints them to stdout.
- `check`: Checks scripts from the specified `.gitlab-ci.yml` file using a tool like `shellcheck`.
- `all`: Checks all scripts from the specified `.gitlab-ci.yml` file(s) using a tool like `shellcheck`.

Please see the help output or yaml2script's documentation: command line script.

1.4.1 How it works to check `.gitlab-ci.yml` pipeline

`yaml2script` reads the `.gitlab-ci.yml` file, resolves GitLab CI's `extends` (single-level, string-form) and `!reference` tags (same-file only), flattens nested script lists (including YAML anchors), and prepends a shebang (default: `#!/usr/bin/env sh`). The resulting script is written to a temporary file and passed to the check command (default: `shellcheck`).

1.4.2 Examples

Here are some examples of how to use `yaml2script`:

Extract the specific job `foo` from a `.gitlab-ci.yml` file as a shell script:

```
yaml2script extract .gitlab-ci.yml foo
```

If you do not use the default name `.gitlab-ci.yml` of the CI/CD configuration file you can adapt the line and choose your configuration file name.

Examples using `shellcheck` to check the script

Check the job/script `foo` from a `.gitlab-ci.yml` file using `shellcheck`:

```
yaml2script check .gitlab-ci.yml foo
```

Check all jobs/scripts from a `.gitlab-ci.yml` file using `shellcheck`:

```
yaml2script all .gitlab-ci.yml
```

You can ignore a specific error by adding parameters for the check command, e. g.:

```
yaml2script all .gitlab-ci.yml -parameter_check_command "-e SC2034"
```

Examples using `pycodestyle` to check the script

You can also do the check with another tool. For example to extract the Python job/script `my_python-job` and check it with pycodestyle:

```
yaml2script check -shebang "#!/usr/bin/env python" \
  -check_command pycodestyle \
  .gitlab-ci.yml my_python-job
```

Examples using `yaml2script` via `pre-commit`

In addition you can use it via pre-commit.

For this you need a configuration `.pre-commit-config.yaml`, which at least defines the installation of your check tool (e.g. shellcheck installed by shellcheck-py).

```
repos:
  - repo: https://gitlab.com/yaml2script/yaml2script
    rev: 0.2.4
```

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```
    hooks:
      - id: yaml2script-all
        additional_dependencies:
          - shellcheck-py
```

With this configuration, for example, the following YAML file would be tested for errors.

```
.display_env:
  before_script:
    - cat /etc/os-release

pre-commit:
  image:
    name: alpine:latest
  extends: .display_env
  script:
    - apk add --no-cache git npm pre-commit
    - pre-commit run --all-files
```

Sometimes it may make sense to add additional parameters, e. g. the following pre-commit configuration would skip `SC1091`:

```
repos:
  - repo: https://gitlab.com/yaml2script/yaml2script
    rev: 0.2.4
    hooks:
      - id: yaml2script-all
        additional_dependencies:
          - shellcheck-py
        args: [-parameter_check_command=-e SC1091]
```

To check only a specific job with pycodestyle you could do something like:

```
repos:
  - repo: https://gitlab.com/yaml2script/yaml2script
    rev: 0.2.4
    hooks:
      - id: yaml2script-check
        additional_dependencies:
          - pycodestyle
        args: [-shebang='#!/usr/bin/env python', -check_command='pycodestyle',
               '.gitlab-ci.yml', 'my_python-job']
```

With the previous configuration, for example, the following python job could be extracted and tested by `pycodestyle`.

```
.prepare-python-env: &prepare-python-env
    - import pydoc
    - import re

my_python-job:
  image:
    name: python:latest
  script:
```

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```
    - *prepare-python-env
    - print(pydoc.render_doc(re.findall))
```

If you check different jobs with different tools it could make sense to overwrite the default `name` of the hook, e. g.:

```
repos:
  - repo: https://gitlab.com/yaml2script/yaml2script
    rev: 0.2.4
    hooks:
      - id: yaml2script-check
        name: yaml2script check 'my_python-job' with pycodestyle
        additional_dependencies:
          - pycodestyle
        args: [-shebang='', -check_command='pycodestyle',
               '.gitlab-ci.yml', 'my_python-job']
```

Examples using `yaml2script` in a CI pipeline

Or you can run `yaml2script` in a CI pipeline:

```
shellcheck_.gitlab-ci.yml:
  stage: pre
  image:
    name: alpine:latest
  script:
    - apk add --no-cache py3-pip py3-yaml shellcheck
    - pip3 install --no-deps --break-system-packages .
    - yaml2script all .gitlab-ci.yml
```

1.5 copyright + license

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Date: 2026-10-06

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This tool was derived from yaml2script.py which was part of deploy2zenodo.

CHAPTER

TWO

COMMAND LINE SCRIPT: YAML2SCRIPT

yaml2script extracts the scripts from a .gitlab-ci.yml file.

```
usage: yaml2script [-h] {version,extract,check,all} ...
```

2.1 Positional Arguments

subparser_name Possible choices: version, extract, check, all

There are different sub-commands with there own flags.

2.2 Sub-commands:

2.2.1 version

display version information of yaml2script

```
yaml2script version [-h] [-only_number] [-json]
```

Named Arguments

-only_number Only output the version number.

Default: False

-json Output as json all metadata. If "-only_number" is set, no json ouput will be done. Example to get only the version: yaml2script version -j | jq .Version

Default: False

Examples:

yaml2script extract .gitlab-ci.yml pre-commit

yaml2script check .gitlab-ci.yml pre-commit pycodestyle

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2.2.2 extract

Extracts scripts from the specified ".gitlab-ci.yml" file and prints them to stdout.

```
yaml2script extract [-h] [-shebang SHEBANG] filename jobname
```

Positional Arguments

filename From this filename the script will be extracted.

jobname This jobname will be extracted.

Named Arguments

-shebang The first line of the script output. You can set it to an emptystring to skip it. default: "#!/usr/bin/env sh"

Default: ['#!/usr/bin/env sh']

Examples:

yaml2script extract .gitlab-ci.yml pre-commit

yaml2script check .gitlab-ci.yml pre-commit pycodestyle

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2.2.3 check

Check scripts from the specified ".gitlab-ci.yml" file.

```
yaml2script check [-h] [-shebang SHEBANG] [-check_command CHECK_COMMAND]
                  [-parameter_check_command param [param ...]] [-quiet]
                  [-verbose]
                  filename jobname [jobname ...]
```

Positional Arguments

filename From this filename the script(s) will be extracted.

jobname These jobname(s) will be extracted and checked.

Named Arguments

-shebang The first line of the script output. You can set it to an emptystring to skip it. default: "#!/usr/bin/env sh"

Default: ['#!/usr/bin/env sh']

-check_command Use this tool to check script(s). default: shellcheck

Default: ['shellcheck']

-parameter_check_command Parameter for the check command. Since the script is extracted in a temporary folder, external resources may not be available. It would be sensible to inform the check command (e. g. shellcheck) about this, e. g. with "-e SC1091". Default: ""

Default: ['']

-quiet No output from check command.

Default: False

-verbose verbose output

Default: False

Example:

yaml2script check .gitlab-ci.yml pre-commit pycodestyle

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2.2.4 all

Check all scripts from the specified ".gitlab-ci.yml" file.

```
yaml2script all [-h] [-shebang SHEBANG] [-check_command CHECK_COMMAND]
                [-parameter_check_command param [param ...]] [-quiet]
                [-verbose]
                filename [filename ...]
```

Positional Arguments

filename From this/these filenames the script(s) will be extracted.

Named Arguments

-shebang The first line of the script output. You can set it to an emptystring to skip it. default: "#!/usr/bin/env sh"

Default: ['#!/usr/bin/env sh']

-check_command Use this tool to check script(s). default: shellcheck

Default: ['shellcheck']

-parameter_check_command Parameter for the check command. Since the script is extracted in a temporary folder, external resources may not be available. It would be sensible to inform the check command (e. g. shellcheck) about this, e. g. with "-e SC1091". Default: ""

Default: ['']

-quiet No output from check command.

Default: False

-verbose verbose output

Default: False

Example:

yaml2script all .gitlab-ci.yml

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Examples:

yaml2script extract .gitlab-ci.yml pre-commit

yaml2script check .gitlab-ci.yml pre-commit pycodestyle

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CHAPTER

THREE

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Version 3, 29 June 2007

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```

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CHAPTER

FOUR

SOURCE

- repository: gitlab.com/yaml2script/yaml2script
- DOI: 10.5281/zenodo.14962489
- mirror: github.com/yaml2script/yaml2script

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