tox Test automation

CONCEPTS

tox builds a fresh virtualenv per environment, installs your package and deps, then runs the commands. Same steps locally and in CI.

Package build sdist/wheel
↓ install
Env virtualenv in .tox/
↓ deps
Install deps + package
↓ commands
Run exit code = result

Environment names are factors split on dashes: py313-django has factors py313 and django, which deps can key on.

RUNNING

tox
Run the envs in env_list

tox -e *<env>*
Run a single environment

tox -e *<e1>*,*<e2>*
Run several named environments

tox -e *<env>* **--** *<args>*
Forward args to {posargs}

tox -e ALL
Run every defined environment

tox -r -e *<env>*
Recreate the env from scratch

tox -f *<factor>*
Run envs containing a factor

tox -m *<label>*
Run envs under a label

tox --skip-env *<regex>*
Exclude envs matching a regex

tox -s
Skip missing interpreters

tox --fail-fast
Stop after the first failing env

tox -n -e *<env>*
Build the env, skip the commands

tox -v
More verbose (repeat for more)

tox -c *<file>*
Use another config file or folder

PARALLEL

tox p
Run envs in parallel (alias of run-parallel)

tox p -p *<n>*
Limit to n parallel envs

tox p -o
Stream output live while running

tox p -e *<e1>*,*<e2>*
Parallel run of chosen envs

INSPECT

tox l
List envs with descriptions

tox l -d
List only default envs

tox c -e *<env>*
Show the resolved config of an env

tox c -e *<env>* **-k** *<key>*
Show only chosen keys

tox --version
Show tox and plugin versions

OTHER COMMANDS

tox quickstart
Interactively create a config (alias q)

tox exec -e *<env>* **--** *<cmd>*
Run any command inside an env

tox devenv *<dir>*
Create a dev virtualenv from an env

CONFIG FILE

[tox]
Core section in tox.ini

env_list = *<e1>*, *<e2>*
Default environments

requires = tox ⩾ 4.2
Needed tox and plugins (auto-provisioned)

labels = *<name>*=*<e1>*,*<e2>*
Name a group of envs

[testenv]
Base section for all envs

[testenv:*<env>***]**
Settings for one env

CONFIG FILE (cont.)

description = *<text>*
Shown by tox l

deps = *<pkg>*
Packages to install

commands = *<cmd>* **{posargs}**
Commands to run, one per line

extras = *<name>*
Install optional dependencies

pass_env = *<VAR>*
Let env vars through to the env

set_env = *<VAR>*=*<val>*
Set env vars

allowlist_externals = *<cmd>*
Allow commands from outside the env

base_python = python3.13
Pick the interpreter

skip_install = true
Do not install your package

package = wheel
sdist, wheel, editable or skip

dependency_groups = *<group>*
Install PEP 735 groups (tox 4.22+)

SUBSTITUTION & FACTORS

{posargs}
Args after -- on the command line

{posargs:*<default>***}**
Args, or a default if none given

*<factor>***:** *<value>*
Line applies only if the env has the factor

py3{12,13}-{a,b}
Expand into every combination

RECIPES

Minimal tox.ini

```
[tox]
env_list = lint, py313

[testenv]
deps = pytest
commands = pytest {posargs}

[testenv:lint]
skip_install = true
deps = ruff
commands = ruff check .
```