# PDM Modern Python package manager

**START HERE**

`pdm init`
Create pyproject.toml

`pdm run <cmd>`
Run inside the env

`pdm add <pkg>`
Add a dependency

`pdm lock`
Write pdm.lock

`pdm add -d <pkg>`
Add a dev dependency

`pdm list --tree`
Show dependency tree

`pdm install`
Lock if needed, then install

`pdm use <python>`
Pick the interpreter

**pyproject.toml** what you want → `pdm lock` → **pdm.lock** exact pins + hashes → `pdm sync` → **Virtualenv** installed packages → `pdm run` → **Your command** runs in the env

## CONCEPTS

Commit pyproject.toml and pdm.lock; pdm install reproduces the same set anywhere.

PDM keeps dependencies in standard pyproject.toml (PEP 621) fields, not a private format.

By default PDM uses a .venv in the project; PEP 582 __pypackages__ mode is no longer the default.

## PROJECT SETUP

`pdm init`
Create pyproject.toml interactively

`pdm init --python <ver>`
Init with a Python version or path

`pdm init --lib`
Init a distributable package

`pdm new <path>`
Create a new project folder

`pdm init --backend <name>`
Pick the build backend

`pdm import <file>`
Import from Pipfile, Poetry or requirements

`pdm use <python>`
Select the project interpreter

`pdm use -f`
Pick the first match, no install

`pdm info`
Show project and environment info

## ADD AND REMOVE

`pdm add <pkg>`
Add a dependency and install it

`pdm add <pkg>==<ver>`
Add with a version pin

`pdm add -d <pkg>`
Add a development dependency

`pdm add -G <group> <pkg>`
Add to a named group

`pdm add -e <path>`
Add a local package in editable mode

`pdm add --no-sync <pkg>`
Edit pyproject.toml, skip installing

`pdm add --dry-run <pkg>`
Preview what would change

`pdm add --save-exact <pkg>`
Save an exact version specifier

`pdm remove <pkg>`
Remove a dependency

## ADD AND REMOVE (cont.)

`pdm remove -d <pkg>`
Remove a dev dependency

`pdm remove -G <group> <pkg>`
Remove from a named group

## LOCK AND INSTALL

`pdm install`
Install from the lock, locking if stale

`pdm lock`
Resolve and write pdm.lock

`pdm sync`
Install exactly what the lock says
*Never changes the lock; use it in CI and on servers.*

`pdm install --frozen-lockfile`
Install without touching the lock

`pdm install --check`
Fail if the lock is out of date

`pdm install --prod`
Skip dev dependencies

`pdm install -G <group>`
Include an extra group

`pdm install -G :all`
Include every group

`pdm install --no-self`
Skip installing the project itself

`pdm lock --check`
Check the lock is current and quit

`pdm lock --refresh`
Refresh hashes without re-resolving

`pdm lock -G :all`
Lock all declared groups

`pdm lock --update-reuse`
Keep existing pins when re-locking

`pdm sync --clean`
Remove packages not in the lock

`pdm sync --reinstall`
Force reinstall everything

## UPDATE

`pdm update`
Update all packages and re-lock

`pdm update <pkg>`
Update one package

`pdm outdated`
List packages with newer versions

`pdm update --dry-run`
Preview an update

## UPDATE (cont.)

`pdm update --top`
Only update direct dependencies

`pdm update --no-sync`
Re-lock without installing

## RUN

`pdm run <cmd>`
Run a command in the env

`pdm run python <file>`
Run a script with the env's Python

`pdm run <script> [args]`
Run a [tool.pdm.scripts] entry

`pdm run -l`
List defined scripts

## INSPECT

`pdm list`
List installed packages

`pdm list --tree`
Show the dependency tree

`pdm list --tree -r`
Reverse tree: who needs this?

`pdm list --freeze`
Output in pip freeze format

`pdm show <pkg>`
Show package metadata

## VIRTUALENVS AND PYTHON

`pdm venv create`
Create a virtualenv for the project

`pdm venv list`
List the project's virtualenvs

`pdm venv activate`
Print the activate command

`pdm venv remove <name>`
Delete a virtualenv

`pdm python install <ver>`
Download a Python interpreter

## BUILD AND PUBLISH

`pdm build`
Build sdist and wheel into dist/

`pdm publish`
Build and upload to PyPI

`pdm publish -r <repo>`
Upload to another repository

`pdm publish --no-build`
Upload existing files in dist/

`pdm export -o requirements.txt`
Export the lock as requirements

`pdm export --no-hashes`
Export without hashes

## CONFIGURATION

`pdm config`
Show all settings

`pdm config <key> <value>`
Set a user-level setting

`pdm config -l <key> <value>`
Set it for this project only

`pdm config -d <key>`
Unset a setting

`pdm self update`
Update PDM itself

## PYPROJECT.TOML

### Project and groups

```
[project]
name = "app"
requires-python = "⩾3.10"
dependencies =
["requests⩾2.31"]

[project.optional-dependencies]
web = ["flask"]

[dependency-groups]
dev = ["pytest"]

[tool.pdm]
distribution = false
```

### Script shortcuts

```
[tool.pdm.scripts]
start = "flask run -p 54321"
test = {cmd = "pytest -q", help
= "Run tests"}
lint = {shell = "ruff check . |
head"}
main = {call = "app.cli:main"}
all = {composite = ["lint",
"test"]}
test.env = {APP_ENV = "test"}
```

Extra arguments are appended to a script; put {args} in the command to choose where they go.

## RECIPES

### New project

```
mkdir app && cd app
pdm init
pdm add requests
pdm add -d pytest
pdm run pytest
```

### CI or Docker build

```
pip install pdm
pdm sync --prod
pdm run python -m app
```

### Migrate from requirements.txt

```
pdm import -f requirements
requirements.txt
pdm lock
pdm list --tree
```

### Export for tools that need requirements.txt

```
pdm export --no-hashes -o
requirements.txt
pdm export -d --no-hashes -o
requirements-dev.txt
```