

# SV-COMP Python track proposal

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Do feel free to join us! [Zulip](#), [#Python](#)

# Python at SV-COMP?

Python is already used a lot in the scripts of SV-COMP ;)

## Motivation

- ▶ One of the most popular programming languages
- ▶ Dynamically-typed: new verification challenges
- ▶ Attracting a lot of interest in the SE and PL communities

## The 3 Verifiers

Confident that ESBMC, Lisa and Mopsa could participate in 2027.

Fine-grained splitting corresponding to runtime exceptions:

- ▶ reachability `AssertionError`
- ▶ dynamic typing `TypeError`, `AttributeError`
- ▶ arithmetic `ZeroDivisionError`, `FloatingPointError`
- ▶ data-structure lookups `KeyError`, `IndexError`
  
- ▶ Comparison with Java's no RTE
- ▶ Other properties? Exceptions?

# Category structure and benchmarks

## Categories (tentative)

- ▶ Type-specific tasks. Focusing on Python's dynamic typing nature.
- ▶ Semantic tests. Python is known to have many tweaks in its semantics.
- ▶ Real-world projects. One subcategory per project.
- ▶ Data science?

Tasks specify Python's minor version. Lower bound is 3.8?

## Benchmarks

No dependencies for first edition? Multiple real-world sources:

- ▶ [python/pyperformance](#)
- ▶ [facebook/PathPicker](#)
- ▶ [openai/human-eval](#)
- ▶ [jkoppel/QuixBugs](#)
- ▶ [nus-apr/refactory-benchmark](#)
- ▶ [soarsmu/BugsInPy](#)
- ▶ [secure-software-eng.../TypeEvalPy](#)

- ▶ Demo mode
- ▶ Extend format to `python_expression`
- ▶ `waypoint.type` extension to handle specific control-flow operators (exceptions, generators, ...)?

## Tentative timeline

- ▶ Apr. 2026: Python track officialized?
- ▶ Apr. 2026: properties validated as baseline
- ▶ Jul. 2026:  $\geq 3$  benchmarks MRs open, category structure, first verifiers
- ▶ Sep. 2026: witness format and validators
- ▶ Oct. 2026: submission deadline for verification tasks