

PYTHON OPTIMIZATIONS

PEEPHOLE

This is another variety of optimizations that can occur at compile time.

Constant expressions

numeric calculations

`24 * 60`

Python will actually pre-calculate `24 * 60` → `1440`

short sequences length < 20

`(1, 2) * 5`

→ `(1, 2, 1, 2, 1, 2, 1, 2, 1, 2)`

`'abc' * 3`

→ `abccabccabc`

`'hello' + ' world'`

→ `hello world`

but not `'the quick brown fox' * 10`

(more than 20 characters)

Membership Tests: Mutables are replaced by Immutables

When membership tests such as:

```
if e in [1, 2, 3]:
```

are encountered, the `[1, 2, 3]` **constant**, is replaced by its immutable counterpart

```
(1, 2, 3)    tuple
```

- lists → tuples
- sets → frozensets

Set membership is much **faster** than list or tuple membership (sets are basically like dictionaries)

So, instead of writing:

```
if e in [1, 2, 3]:    or    if e in (1, 2, 3):
```

```
write    if e in {1, 2, 3}:
```