python-none-objects

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Abstract

A collection of "None" objects compatible with various Python types

Current version: 2024-05-06
Current number of commits: 34
Current git SHA1: cb3f3f3bd253da80ab4a4eea2d0919cd3c5184c3
Code lines: 1710 total lines, 1448 not empty lines, 262 empty lines.

1   Files tree

```
.
├── build_and_checks.sh
├── COPYING
├── COPYING.LESSER
├── dist
│   ├── python_none_objects-1.0.0-py3-none-any.whl
│   ├── python_none_objects-1.0.0.tar.gz
│   ├── python_none_objects-1.0.1-py3-none-any.whl
│   ├── python_none_objects-1.0.1.tar.gz
│   ├── python_none_objects-1.1.0-py3-none-any.whl
│   ├── python_none_objects-1.1.0.tar.gz
│   ├── python_none_objects-1.1.10-py3-none-any.whl
│   ├── python_none_objects-1.1.10.tar.gz
│   ├── python_none_objects-1.1.1-py3-none-any.whl
│   ├── python_none_objects-1.1.1.tar.gz
│   ├── python_none_objects-1.1.2-py3-none-any.whl
│   ├── python_none_objects-1.1.2.tar.gz
│   ├── python_none_objects-1.1.3-py3-none-any.whl
│   ├── python_none_objects-1.1.3.tar.gz
│   ├── python_none_objects-1.1.4-py3-none-any.whl
│   ├── python_none_objects-1.1.4.tar.gz
│   ├── python_none_objects-1.1.5-py3-none-any.whl
```

```
│       ├── python_none_objects-1.1.5.tar.gz
│       ├── python_none_objects-1.1.6-py3-none-any.whl
│       ├── python_none_objects-1.1.6.tar.gz
│       ├── python_none_objects-1.1.7-py3-none-any.whl
│       ├── python_none_objects-1.1.7.tar.gz
│       ├── python_none_objects-1.1.8-py3-none-any.whl
│       ├── python_none_objects-1.1.8.tar.gz
│       ├── python_none_objects-1.1.9-py3-none-any.whl
│       └── python_none_objects-1.1.9.tar.gz
├── .gitignore
├── latex
│   ├── python-none-objects.tex
│   └── python-none-objects.tex.tpl
├── pyproject.toml
├── python-none-objects.pdf
├── README.md
├── README.md.tpl
├── src
│   └── python_none_objects
│       ├── __init__.py
│       └── py.typed
├── typing_test
│   └── __init__.py
└── wget_sha512.sh

6 directories, 40 files

[4.0K May  6 03:58]  ./
├── [1.6K May  6 03:55]  build_and_checks.sh*
├── [ 34K May  2  2018]  COPYING
├── [7.5K Jul 24  2018]  COPYING.LESSER
├── [4.0K May  6 03:40]  dist/
│   ├── [ 20K Nov 10 15:35]
│   python_none_objects-1.0.0-py3-none-any.whl
│   ├── [ 16K Nov 10 15:35]  python_none_objects-1.0.0.tar.gz
│   ├── [ 20K Nov 11 19:04]
│   python_none_objects-1.0.1-py3-none-any.whl
│   ├── [ 17K Nov 11 19:04]  python_none_objects-1.0.1.tar.gz
│   ├── [ 20K Dec 30 21:39]
│   python_none_objects-1.1.0-py3-none-any.whl
│   ├── [ 17K Dec 30 21:39]  python_none_objects-1.1.0.tar.gz
│   ├── [ 21K May  4 03:00]
│   python_none_objects-1.1.10-py3-none-any.whl
│   ├── [ 20K May  4 03:00]  python_none_objects-1.1.10.tar.gz
│   ├── [ 21K Dec 30 22:09]
│   python_none_objects-1.1.1-py3-none-any.whl
```

```
            ├── [ 17K Dec 30 22:09]  python_none_objects-1.1.1.tar.gz
            ├── [ 21K Mar 20 01:19]
            │ python_none_objects-1.1.2-py3-none-any.whl
            ├── [ 18K Mar 20 01:19]  python_none_objects-1.1.2.tar.gz
            ├── [ 21K Mar 20 01:22]
            │ python_none_objects-1.1.3-py3-none-any.whl
            ├── [ 18K Mar 20 01:22]  python_none_objects-1.1.3.tar.gz
            ├── [ 21K Mar 20 02:46]
            │ python_none_objects-1.1.4-py3-none-any.whl
            ├── [ 18K Mar 20 02:46]  python_none_objects-1.1.4.tar.gz
            ├── [ 21K Mar 21 20:36]
            │ python_none_objects-1.1.5-py3-none-any.whl
            ├── [ 18K Mar 21 20:36]  python_none_objects-1.1.5.tar.gz
            ├── [ 21K May  2 00:32]
            │ python_none_objects-1.1.6-py3-none-any.whl
            ├── [ 20K May  2 00:32]  python_none_objects-1.1.6.tar.gz
            ├── [ 21K May  2 00:34]
            │ python_none_objects-1.1.7-py3-none-any.whl
            ├── [ 21K May  2 00:34]  python_none_objects-1.1.7.tar.gz
            ├── [ 21K May  3 03:52]
            │ python_none_objects-1.1.8-py3-none-any.whl
            ├── [ 21K May  3 03:52]  python_none_objects-1.1.8.tar.gz
            ├── [ 21K May  3 04:11]
            │ python_none_objects-1.1.9-py3-none-any.whl
            └── [ 21K May  3 04:11]  python_none_objects-1.1.9.tar.gz
├── [  31 May  4 02:58]  .gitignore
├── [4.0K May  6 03:58]  latex/
│   ├── [3.8K May  6 03:58]  python-none-objects.tex
│   └── [3.8K May  5 13:32]  python-none-objects.tex.tpl
├── [1.3K May  6 03:58]  pyproject.toml
├── [ 76K May  6 03:58]  python-none-objects.pdf
├── [4.6K May  6 03:58]  README.md
├── [4.7K Apr 28 21:25]  README.md.tpl
├── [4.0K Nov 10 15:03]  src/
│   └── [4.0K May  6 03:58]  python_none_objects/
│       ├── [1.8K May  6 03:58]  __init__.py
│       └── [   0 Jul 15  2020]  py.typed
├── [4.0K May  6 03:58]  typing_test/
│   └── [1.7K May  6 03:58]  __init__.py
└── [1.1K May  4 02:54]  wget_sha512.sh

6 directories, 40 files
```

2 Listing of files

The following source code is covered by LGPLv3+. The text of the license is available at: `https://www.gnu.org/licenses/`. The git repository of this source code is also available at: `https://github.com/LLyaudet/python-none-objects/`.

2.1 build_and_checks.sh

```bash
#!/usr/bin/env bash
# This file is part of python-none-objects library.
#
# python-none-objects is free software:
# you can redistribute it and/or modify it under the terms
# of the GNU Lesser General Public License
# as published by the Free Software Foundation,
# either version 3 of the License,
# or (at your option) any later version.
#
# python-none-objects is distributed in the hope
# that it will be useful,
# but WITHOUT ANY WARRANTY;
# without even the implied warranty of
# MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.
# See the GNU Lesser General Public License for more details.
#
# You should have received a copy of
# the GNU Lesser General Public License
# along with python-none-objects.
# If not, see <https://www.gnu.org/licenses/>.
#
# ©Copyright 2023-2024 Laurent Lyaudet

source ./wget_sha512.sh

mkdir -p build_and_checks_dependencies
subdir="build_and_checks_dependencies"

personal_github="https://raw.githubusercontent.com/LLyaudet/"
dependencies="DevOrSysAdminScripts/main/build_and_checks_dependencies"
URL_beginning="$personal_github$dependencies"

script="$URL_beginning/common_build_and_checks.sh"
correct_sha512='a46cd00d7b2d90fa1a3c7923244879fad28e789ff7dda791a0bd0'
correct_sha512+='c723848c12cb73ccf2c4c5875cdb674237da9696ef9e4deac07d'
correct_sha512+='c2b04aed6d90ffb98b9b0c4'
wget_sha512 "./$subdir/common_build_and_checks.sh" "$script"\
```

```
39    "$correct_sha512"
40  chmod +x "./$subdir/common_build_and_checks.sh"

41
42  cwd="."
43  if [[ -n "$1" ]];
44  then
45    cwd="$1"
46  fi

47
48  ./build_and_checks_dependencies/common_build_and_checks.sh "$cwd"

49
50  echo "Running pylint"
51  pylint src/python_none_objects/
52  pylint typing_test/
```

2.2 .gitignore

```
1  build_and_checks_dependencies/
```

2.3 latex/python-none-objects.tex.tpl

```
1  %!/usr/bin/env bash
2  % This file is part of python-none-objects library.
3  %
4  % python-none-objects is free software:
5  % you can redistribute it and/or modify it under the terms
6  % of the GNU Lesser General Public License
7  % as published by the Free Software Foundation,
8  % either version 3 of the License,
9  % or (at your option) any later version.
10  %
11  % python-none-objects is distributed in the hope
12  % that it will be useful,
13  % but WITHOUT ANY WARRANTY;
14  % without even the implied warranty of
15  % MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.
16  % See the GNU Lesser General Public License for more details.
17  %
18  % You should have received a copy of
19  % the GNU Lesser General Public License
20  % along with python-none-objects.
21  % If not, see <https://www.gnu.org/licenses/>.
22  %
23  % ©Copyright 2023-2024 Laurent Lyaudet
24
25  \documentclass{article}
```

```latex
\usepackage[utf8]{inputenc}
\usepackage{subfigure}
\usepackage{amsmath}
\usepackage{amssymb}
\usepackage{amsthm}
\usepackage[pdftex]{hyperref}
\usepackage{tikz}
\usepackage{caption}
\usepackage[round]{natbib}
\usepackage{fancyhdr}
\usepackage{amsfonts}
\usepackage{times}
\usepackage{ifpdf}
\usepackage{latexsym}
\usepackage{graphicx}
\usepackage{enumerate}
\usepackage{pmboxdraw}
\usepackage{fancyvrb}

% *** les environnements ***
%\theoremstyle{break}
\newtheorem{definition}{Definition}[section]
\newtheorem{proposition}[definition]{Proposition}
\newtheorem{theorem}[definition]{Theorem}
\newtheorem{lemma}[definition]{Lemma}
\newtheorem{corollary}[definition]{Corollary}
\newtheorem{remark}[definition]{Remark}
\newtheorem{openproblem}[definition]{Open problem}

\begin{document}

\author{
  Laurent Lyaudet\\
  \url{https://lyaudet.eu/laurent/}\\
  laurent.lyaudet@gmail.com
}
\title{python-none-objects}

\maketitle
\begin{abstract}
A collection of "None" objects
compatible with various Python types
\end{abstract}

Current version: @current_date@
```

```
72
73  Current number of commits: @number_of_commits@
74
75  Current git SHA1: @current_git_SHA1@
76
77  Code lines: @number_of_lines@
78
79  \section{Files tree}
80  \label{section:tree}
81
82  \begin{verbatim}
83  @current_tree_light@
84  \end{verbatim}
85
86  \begin{verbatim}
87  @current_tree@
88  \end{verbatim}
89
90  \section{Listing of files}
91  \label{section:listing}
92
93  The following source code is covered by LGPLv3+.
94  The text of the license is available at:
95  \url{https://www.gnu.org/licenses/}.
96  The git repository of this source code is also available at:
97  \url{https://github.com/LLyaudet/python-none-objects/}.
98
99
100 \subsection{
101   build\_and\_checks.sh
102 }
103 \label{
104   build_and_checkssh
105 }
106
107 \VerbatimInput[numbers=left,xleftmargin=-5mm]{
108   build_and_checks.sh
109 }
110
111
112 \subsection{
113   .gitignore
114 }
115 \label{
116   gitignore
117 }
```

```
118
119  \VerbatimInput[numbers=left,xleftmargin=-5mm]{
120     .gitignore
121  }
122
123
124  \subsection{
125     latex/python-none-objects.tex.tpl
126  }
127  \label{
128     latex:python-none-objectstextpl
129  }
130
131  \VerbatimInput[numbers=left,xleftmargin=-5mm]{
132     latex/python-none-objects.tex.tpl
133  }
134
135
136  \subsection{
137     pyproject.toml
138  }
139  \label{
140     pyprojecttoml
141  }
142
143  \VerbatimInput[numbers=left,xleftmargin=-5mm]{
144     pyproject.toml
145  }
146
147
148  \subsection{
149     README.md.tpl
150  }
151  \label{
152     READMEmdtpl
153  }
154
155  \VerbatimInput[numbers=left,xleftmargin=-5mm]{
156     README.md.tpl
157  }
158
159
160  \subsection{
161     src/python\_none\_objects/\_\_init\_\_.py
162  }
163  \label{
```

```
  164    src:python_none_objects:__init__py
  165  }

  166
  167  \VerbatimInput[numbers=left,xleftmargin=-5mm]{
  168    src/python_none_objects/__init__.py
  169  }

  170

  171
  172  \subsection{
  173    src/python\_none\_objects/py.typed
  174  }
  175  \label{
  176    src:python_none_objects:pytyped
  177  }

  178
  179  \VerbatimInput[numbers=left,xleftmargin=-5mm]{
  180    src/python_none_objects/py.typed
  181  }

  182

  183
  184  \subsection{
  185    typing\_test/\_\_init\_\_.py
  186  }
  187  \label{
  188    typing_test:__init__py
  189  }

  190
  191  \VerbatimInput[numbers=left,xleftmargin=-5mm]{
  192    typing_test/__init__.py
  193  }

  194

  195
  196  \subsection{
  197    wget\_sha512.sh
  198  }
  199  \label{
  200    wget_sha512sh
  201  }

  202
  203  \VerbatimInput[numbers=left,xleftmargin=-5mm]{
  204    wget_sha512.sh
  205  }

  206

  207
  208  Merci Dieu ! Merci P\`ere ! Merci Seigneur ! Merci Saint Esprit !

  209
```

```
210  \end{document}
```

2.4 pyproject.toml

```
1   # pyproject.toml
2
3   [build-system]
4   requires = ["hatchling"]
5   build-backend = "hatchling.build"
6
7   [project]
8   name = "python-none-objects"
9   version = "1.1.11"
10  description = """\
11  Add more constant \"None\" objects to Python \
12  to avoid boilerplate code\
13  """
14  readme = "README.md"
15  authors = [
16      { name = "Laurent Lyaudet", email = "laurent.lyaudet@gmail.com" },
17  ]
18  maintainers = [
19      { name = "Laurent Lyaudet", email = "laurent.lyaudet@gmail.com" },
20  ]
21  license = { file = "COPYING.LESSER" }
22  classifiers = [
23      "Development Status :: 5 - Production/Stable",
24      "Intended Audience :: Developers",
25      """\
26  License :: OSI Approved :: \
27  GNU Lesser General Public License v3 or later (LGPLv3+)\
28  """,
29      "Operating System :: OS Independent",
30      "Programming Language :: Python",
31      "Programming Language :: Python :: 3",
32      "Topic :: Software Development :: Libraries :: Python Modules",
33      "Typing :: Typed",
34  ]
35  keywords = ["Python", "None", "Immutable", "Default values"]
36  dependencies = [
37  ]
38  requires-python = ">=3.11"
39
40  [project.optional-dependencies]
41  dev = [
42      "black",
```

```
43    "isort",
44    "mypy",
45    "pylint",
46  ]
47
48  [project.urls]
49  "Homepage" = "https://github.com/LLyaudet/python-none-objects"
50  "Bug Tracker" = """\
51  https://github.com/LLyaudet/python-none-objects/issues\
52  """
53
54  [tool.black]
55  line-length = 70
56
57  [tool.isort]
58  profile = "black"
59  line_length = 70
```

2.5   README.md.tpl

```
1   # python-none-objects
2
3   [![PyPI-version-badge]][PyPI-package-page]
4   [![Downloads-badge]][PyPIStats-package-page]
5   [![Code-style:black:badge]][Black-GitHub.com]
6   [![Imports:isort:badge]][Isort-GitHub.io]
7   [![Typecheck:mypy:badge]][Typecheck-mypy-lang.org]
8   [![Linting:pylint:badge]][Pylint-GitHub.com]
9   [![CodeFactor-badge]][CodeFactor-package-page]
10  [![CodeClimateMaintainability-badge]][CodeClimateM13y-package-page]
11  [![Codacy-badge]][Codacy-package-page]
12  ![GitHub-top-language-badge]
13  ![GitHub-license-badge]
14  ![PyPI-python-version-badge]
15  ![GitHub-code-size-in-bytes-badge]
16
17  |     **A collection of "None" objects**     |
18  |:-------------------------------------:|
19  | **compatible with various Python types** |
20
21
22  The following code yields warning
23  for "Default argument value is mutable".
24
25  ```python3
26  from typing import List, Dict
```

11

```python3
def foo(some: int, other: List = [], thing: Dict = {}):
    for o in other:
        bar(some, o, thing)
```

It is usually recommended to use None instead
(<https://stackoverflow.com/questions/41686829>
/why-does-pycharm-warn-about-mutable-default-arguments-
how-can-i-work-around-the):

```python3
from typing import List, Dict, Optional

def foo(
    some: int,
    other: Optional[List] = None,
    thing: Optional[Dict] = None,
):
    if other is None:
        other = []
    if thing is None:
        thing = {}
    for o in other:
        bar(some, o, thing)
```

But I prefer less boilerplate code like this:

```python3
from typing import Iterable, Mapping
from types import MappingProxyType

def foo(
    some: int,
    other: Iterable = (),
    thing: Mapping = MappingProxyType({}),
):
    for o in other:
        bar(some, o, thing)
```

This package introduces constants to make the code more readable:

```python3
from typing import Iterable, Mapping
```

```
73  from python_none_objects import NoneIterable, NoneMapping
74
75  def foo(
76      some: int,
77      other: Iterable = NoneIterable,
78      thing: Mapping = NoneMapping,
79  ):
80      for o in other:
81          bar(some, o, thing)
82  ```
83
84  Be sure to look at the discussions on GitHub:
85  <https://github.com/LLyaudet/python-none-objects/discussions>.
86
87  There is a poll on the naming convention you would prefer:
88  <https://github.com/LLyaudet/python-none-objects/discussions/2>.
89
90  And there is a discussion on various ideas
91  to optimize the code with these constants:
92  <https://github.com/LLyaudet/python-none-objects/discussions/3>.
93
94  I think it would be better to have this kind of constants
95  in the standard library.
96  If you think after reading everything, that it is indeed a good idea,
97  add a star to this repository to let the rest
98  of the Python community
99  know that you would like to see such constant objects
100 in the language :).
101 <https://github.com/LLyaudet/python-none-objects/>
102 If the project gains popularity, I'll try to propose it officially.
103
104 [PyPI-version-badge]: https://img.shields.io/pypi/v/\
105 python-none-objects.svg
106
107 [PyPI-package-page]: https://pypi.org/project/\
108 python-none-objects/
109
110 [Downloads-badge]: https://img.shields.io/pypi/dm/\
111 python-none-objects
112
113 [PyPIStats-package-page]: https://pypistats.org/packages/\
114 python-none-objects
115
116 [Code-style:black:badge]: https://img.shields.io/badge/\
117 code%20style-black-000000.svg
118
```

```
119   [Black-GitHub.com]: https://github.com/psf/black

120
121   [Imports:isort:badge]: https://img.shields.io/badge/\
122   %20imports-isort-%231674b1?style=flat&labelColor=ef8336

123
124   [Isort-GitHub.io]: https://pycqa.github.io/isort/

125
126   [Typecheck:mypy:badge]: https://www.mypy-lang.org/static/\
127   mypy_badge.svg

128
129   [Typecheck-mypy-lang.org]: https://mypy-lang.org/

130
131   [Linting:pylint:badge]: https://img.shields.io/badge/\
132   linting-pylint-yellowgreen

133
134   [Pylint-GitHub.com]: https://github.com/pylint-dev/pylint

135
136   [CodeFactor-badge]: https://www.codefactor.io/repository/github/\
137   llyaudet/python-none-objects/badge

138
139   [CodeFactor-package-page]: https://www.codefactor.io/repository/\
140   github/llyaudet/python-none-objects

141
142   [CodeClimateMaintainability-badge]: https://api.codeclimate.com/v1/\
143   badges/266efb337cabd7d7941e/maintainability

144
145   [CodeClimateM13y-package-page]: https://codeclimate.com/github/\
146   LLyaudet/python-none-objects/maintainability

147
148   [Codacy-badge]: https://app.codacy.com/project/badge/Grade/\
149   4be488463e31459bb2ba02794091610d

150
151   [Codacy-package-page]: https://app.codacy.com/gh/LLyaudet/\
152   python-none-objects/dashboard?utm_source=gh\
153   &utm_medium=referral&utm_content=&utm_campaign=Badge_grade

154
155   [GitHub-top-language-badge]: https://img.shields.io/github/\
156   languages/top/llyaudet/python-none-objects

157
158   [GitHub-license-badge]: https://img.shields.io/github/license/\
159   llyaudet/python-none-objects

160
161   [PyPI-python-version-badge]: https://img.shields.io/pypi/pyversions/\
162   python-none-objects

163
164   [GitHub-code-size-in-bytes-badge]: https://img.shields.io/github/\
```

2.6   src/python_none_objects/__init__.py

```
1    """
2    This file is part of python-none-objects library.
3
4    python-none-objects is free software:
5    you can redistribute it and/or modify it under the terms
6    of the GNU Lesser General Public License
7    as published by the Free Software Foundation,
8    either version 3 of the License,
9    or (at your option) any later version.
10
11   python-none-objects is distributed in the hope
12   that it will be useful,
13   but WITHOUT ANY WARRANTY;
14   without even the implied warranty of
15   MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.
16   See the GNU Lesser General Public License for more details.
17
18   You should have received a copy of
19   the GNU Lesser General Public License
20   along with python-none-objects.
21   If not, see <https://www.gnu.org/licenses/>.
22
23   ©Copyright 2023-2024 Laurent Lyaudet
24   --------------------------------------------------------------------
25   The empty tuple is really useful.
26   But it is implementation dependent for it to be a constant:
27   https://docs.python.org/3.12/reference/expressions.html
28   #parenthesized-forms
29   https://stackoverflow.com/questions/41983180
30   /is-the-empty-tuple-in-python-a-constant
31   https://stackoverflow.com/questions/8185776
32   /compare-object-to-empty-tuple-with-the-is-operator-in-python-2-x
33   https://stackoverflow.com/questions/38328857
34   /why-does-is-return-true-when-is-and-is-return-false
35   https://stackoverflow.com/questions/14135542
36   /how-is-tuple-implemented-in-cpython
37   I'm wondering if there would be additional efficiency gains
38   to treat the empty tuple and the constants here differently
39   at execution of Python scripts.
40   """
41
42   from types import MappingProxyType
```

15

```
43  from typing import (
44      Any,
45      Collection,
46      Container,
47      Iterable,
48      Mapping,
49      Never,
50  )
51
52  NoneCollection: Collection[Never] = ()
53  NoneIterable: Iterable[Never] = NoneCollection
54  NoneContainer: Container[Never] = NoneCollection
55  NoneMapping: Mapping[Any, Never] = MappingProxyType({})
```

2.7   src/python_none_objects/py.typed

2.8   typing_test/__init__.py

```
1   """
2   This file is part of python-none-objects library.
3
4   python-none-objects is free software:
5   you can redistribute it and/or modify it under the terms
6   of the GNU Lesser General Public License
7   as published by the Free Software Foundation,
8   either version 3 of the License,
9   or (at your option) any later version.
10
11  python-none-objects is distributed in the hope
12  that it will be useful,
13  but WITHOUT ANY WARRANTY;
14  without even the implied warranty of
15  MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.
16  See the GNU Lesser General Public License for more details.
17
18  You should have received a copy of
19  the GNU Lesser General Public License
20  along with python-none-objects.
21  If not, see <https://www.gnu.org/licenses/>.
22
23  ©Copyright 2023-2024 Laurent Lyaudet
24  """
25
26  import sys
27  from typing import Collection, Container, Iterable, Mapping
```

16

```python
sys.path.insert(0, "../src/")
# pylint: disable-next=wrong-import-position
from python_none_objects import (
    NoneCollection,
    NoneContainer,
    NoneIterable,
    NoneMapping,
)


def foo_collection(x: Collection[str] = NoneCollection) -> bool:
    """
    Check typing for NoneCollection.
    """
    for y in x:
        print(f"foo {y}")
    return "toto" in x


def foo_iterable(x: Iterable[str] = NoneIterable) -> None:
    """
    Check typing for NoneIterable.
    """
    for y in x:
        print(f"foo {y}")


def foo_container(x: Container[str] = NoneContainer) -> bool:
    """
    Check typing for NoneContainer.
    """
    return "toto" in x


def foo_mapping(x: Mapping[str, str] = NoneMapping) -> None:
    """
    Check typing for NoneMapping.
    """
    for y, z in x.items():
        print(f"foo {y} bar {z}")


foo_collection()
foo_iterable()
foo_container()
```

```
74  foo_mapping()
```

2.9   wget_sha512.sh

```
1   #!/usr/bin/env bash
2   # This file is part of DevOrSysAdminScripts library.
3   #
4   # DevOrSysAdminScripts is free software:
5   # you can redistribute it and/or modify it under the terms
6   # of the GNU Lesser General Public License
7   # as published by the Free Software Foundation,
8   # either version 3 of the License,
9   # or (at your option) any later version.
10  #
11  # DevOrSysAdminScripts is distributed in the hope
12  # that it will be useful,
13  # but WITHOUT ANY WARRANTY;
14  # without even the implied warranty of
15  # MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.
16  # See the GNU Lesser General Public License for more details.
17  #
18  # You should have received a copy of
19  # the GNU Lesser General Public License
20  # along with DevOrSysAdminScripts.
21  # If not, see <https://www.gnu.org/licenses/>.
22  #
23  # ©Copyright 2023-2024 Laurent Lyaudet
24
25  wget_sha512(){
26    # $1 filename
27    # $2 download_URL
28    # $3 correct_sha512
29    if [[ ! -f "$1" ]];
30    then
31      wget -O "$1" "$2"
32    fi
33    present_sha512=$(sha512sum "$1" | cut -f1 -d' ')
34    if [[ "$present_sha512" != "$3" ]];
35    then
36      echo "$1 does not have correct sha512"
37      echo "wanted $3"
38      echo "found $present_sha512"
39      exit
40    fi
41  }
```

Merci Dieu ! Merci Père ! Merci Seigneur ! Merci Saint Esprit !