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**python-2to3.txt**

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ÄM-^Dnderungen Python 2.x --> 3.x  
=====

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Aktivieren von Eigenschaften neuerer Python-Versionen (z.B. Python 3) in Älteren Python-Versionen (z.B. Python2):

```

import __future__           # Alle Eigenschaften
from __future__ import *    # FEHLER!
from __future__ import annotations # STD PEP (Standard ab Version N.M)
from __future__ import generator_stop # 4.0 563 Type annotation
from __future__ import unicode_literals # 3.7 479 Generator stop
from __future__ import print_function # 3.0 3112 Unicode literals in Python 3000
from __future__ import with_statement # 3.0 3105 Make "print" a function
from __future__ import absolute_import # 2.6 343 The "with" statement
from __future__ import division # 3.0 328 Import: multi-line + absolute/Relative
from __future__ import generators # 3.0 238 Changing division operator
from __future__ import nested_scopes # 2.3 255 Simple generators
from __future__ import all_feature_names # ?.? TODO
from __future__ import barry_as_FLUFL # 3.9 TODO Eastereggi (<> statt !=)

```

Die \_\_future\_\_-Imports MÄM-^SSEN am Anfang des Quellcodes als 1. Anweisung stehen (da sie die Verhaltensweise des Python-Interpreters verÄndern).

Ein kleines "Eastereggi" ist auch versteckt (Blockbildung per geschweifte Klammern {...} wird sicher nie implementiert):

```
from __future__ import braces      # --> SyntaxError: not a chance !!!
```

Unterschiede zwischen Python 2.x und Python 3.x:

Python 2.x	Python 3.x	
"Ã¤Ã¶Ã¼" u"Ã¤Ã¶Ã¼" unicode(VAR) unicode basestring	b"abc" str(VAR) str str	(Bytestring)   String (Unicode Std)   String Typ Typ Typ
VAR = raw_input(PROMPT) VAR = input(PROMPT)	VAR = input(PROMPT) VAR = eval(input(PROMPT))	Direkt lesen Interpretiert
print ..., ... (Statement) print >> sys.stderr ... print ... print ... + ... ? "...%d..." % (V1, ...) '...' (Backticks)	print(..., ...) (Funktion) print(..., file=sys.stderr) print(..., end="") print(..., ..., sep="") print(..., flush="False") "...{:d}...".format(V1, ...) repr(...)	Ausgabe Std: sys.stdout Std: "\n" (newline) Std: " " (separator) Nicht piffen Formatieren DatenreprÄsentation
long 0123  sys.maxint 12345L 5 / 4 --- 5.0 / 4 5 / 4.0 5.0 / 4.0 != <>	int 0o123 0b123  sys.maxsize 12345 5 // 4 5 / 4 5.0 / 4 5 / 4.0 5.0 / 4.0 !=	Typ Num. Konstante   " " " " Typ Division " " " " Ungleich
int 1 0	bool True False	Typ Boolean Wert "wahr" Wert "falsch"
xrange() os.getcwd() import Tkinter intern() for X in FILE.xreadlines():	range() os.getcwd() import tkinter sys.intern() for X in FILE:	Umbenennung " " " "
L = list(SEQ); L.sort()	L = sorted(SEQ)	Sortieren
DICT.has_key(KEY) DICT.iteritems() .iterkeys() .itervalues() .viewitems() .viewkeys() .viewvalues()	KEY in DICT DICT.items() .keys() .values() .items() .keys() .values()	Dictionary " " " " " " "

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<code>type(X) == CLASS</code>	<code>isinstance(X, CLASS)</code>	Typvergleich
<code>type(X) is CLASS</code>	<code>isinstance(X, CLASS)</code>	"
<code>except X, T raise Exception, "String" raise Exc, "Str", Traceback StandardError</code>	<code>except X as T raise Exception("String") raise E(S).with_traceback(T) Exception</code>	Ausnahmebehandlung
<code>exec CODE (Statement) execfile(FILE)</code>	<code>exec(CODE) (Funktion) with open(FILE) as fh:     exec(fh.read()) sys.exc_info() (-&gt; Tupel)</code>	exc=Exception
<code>sys.exc_value/type traceback</code>		

Konvertierungs-Programm 2to3 --help

Usage: 2to3 [options] file|dir ...

Options:

`-h, --help` Show this help message and exit  
`-d, --doctests_only` Fix up doctests only  
`-f FIX, --fix=FIX` Each FIX specifies a transformation; default: all  
`-j PROCESSES, --processes=PROCESSES` Run 2to3 concurrently  
`-x NOFIX, --nofix=NOFIX` Prevent a transformation from being run  
`-l, --list-fixes` List available transformations  
`-p, --print-function` Modify the grammar so that print() is a function  
`-v, --verbose` More verbose logging  
`--no-diffs` Don't show diffs of the refactoring  
`-w, --write` Write back modified files  
`-n, --nobackups` Don't write backups for modified files  
`-o OUTPUT_DIR, --output-dir=OUTPUT_DIR` Put output files in this directory instead of overwriting the input files. Requires -n.  
`-W, --write-unchanged-files` Also write files even if no changes were required (useful with --output-dir); implies -w.  
`--add-suffix=ADD_SUFFIX` Append this string to all output filenames. Requires -n if non-empty. ex: --add-suffix='3' will generate .py3 files.

Korrekturen von 2to3 --list-fixes

Available transformations for the -f/--fix option:

```

apply
basestring
buffer
callable
dict
except
exec
execfile
exitfunc
filter
funcattrs
future
getcwdu
has_key
idioms
import
imports
imports2
input
intern
isinstance
itertools
itertools_imports
long
map
metaclass
methodattrs
ne
next
nonzero
numliterals
operator
  
```

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```
paren
print
raise
raw_input
reduce
renames
repr
set_literal
standarderror
sys_exc
throw
tuple_params
types
unicode
urllib
ws_comma
xrange
xreadlines
zip
```

Konvertierungstool "2to3" und Dateien

---

```
/usr/bin/2to3
/usr/bin/2to3-2.7
/usr/bin/2to3-3.2
/usr/share/doc/python2.7/examples/Tools/scripts/2to3
/usr/share/doc/python2.7/html/_sources/library/2to3.txt
/usr/share/doc/python2.7/html/library/2to3.html
/usr/share/doc/python3.2/examples/scripts/2to3
/usr/share/doc/python3.2/html/_sources/library/2to3.txt
/usr/share/doc/python3.2/html/library/2to3.html
/usr/share/man/man1/2to3-2.7.1.gz
/usr/share/man/man1/2to3-3.2.1.gz
/usr/share/man/man1/2to3.1.gz
```