

예제로 살펴보는 PEP20

출처

https://artifex.org/~hblanks/talks/2011/pep20_by_example.pdf

한글로
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아름다운 것이 추한 것보다 낫다.
Beautiful is better than ugly.

Ugly

```
halve_evens_only = lambda nums: map(lambda i: i/2, filter(lambda i: not i%2, nums))
```

Beautiful

```
def halve_evens_only(nums):  
    return [i/2 for i in nums if not i % 2]
```

명시적인 것이 암시적인 것보다 낫다.
Explicit is better than implicit.

Implicit

```
def load():  
    from menagerie.cat.models import *  
    from menagerie.dog.models import *  
    from menagerie.mouse.models import *
```

Explicit

```
def load():  
    from menagerie.models import cat as cat_models  
    from menagerie.models import dog as dog_models  
    from menagerie.models import mouse as mouse_models
```

단순한 것이 복잡한 것보다 낫다.

Simple is better than complex.

```
measurements = [  
    {'weight': 392.3, 'color': 'purple', 'temperature': 33.4},  
    {'weight': 34.0, 'color': 'green', 'temperature': -3.1},  
]
```

Complex

```
def store(measurements):  
    import MySQLdb  
    db = MySQLdb.connect(user='user', passwd="password", host='localhost', db="db")  
  
    c = db.cursor()  
    c.execute("""  
        CREATE TABLE IF NOT EXISTS measurements  
            id int(11) NOT NULL auto_increment,  
            weight float,  
            temperature float,  
            color varchar(32)  
        PRIMARY KEY id  
        ENGINE=InnoDB CHARSET=utf8  
        """)  
  
    insert_sql = (  
        "INSERT INTO measurements (weight, temperature, color) "  
        "VALUES (%s, %s, %s)"  
    )  
  
    for measurement in measurements:  
        c.execute(insert_sql,  
            (measurement['weight'], measurement['temperature'], measurement['color'])  
        )
```

Simple

```
def store(measurements):  
    import json  
    with open('measurements.json', 'w') as f:  
        f.write(json.dumps(measurements))
```

복합적인 것이 얇힌 것보다 낫다. Complex is better than complicated.

Complicated

```
def store(measurements):
    import sqlalchemy
    import sqlalchemy.types as sqltypes

    db = create_engine(
        'mysql://user:password@localhost/db?charset=utf8&use_unicode=1')
    db.echo = False
    metadata = sqlalchemy.MetaData(db)
    table = sqlalchemy.Table('measurements', metadata,
        sqlalchemy.Column('id', sqltypes.Integer, primary_key=True),
        sqlalchemy.Column('weight', sqltypes.Float),
        sqlalchemy.Column('temperature', sqltypes.Float),
        sqlalchemy.Column('color', sqltypes.String(32)),
    )
    table.create(checkfirst=True)

    for measurement in measurements:
        i = table.insert()
        i.execute(**measurement)
```

Complex

```
def store(measurements):
    import MySQLdb
    db = MySQLdb.connect(user='user', passwd="password", host='localhost', db="db")

    c = db.cursor()
    c.execute("""
        CREATE TABLE IF NOT EXISTS measurements
            id int(11) NOT NULL auto_increment,
            weight float,
            temperature float,
            color varchar(32)
        PRIMARY KEY id
        ENGINE=InnoDB CHARSET=utf8
    """)

    insert_sql = (
        "INSERT INTO measurements (weight, temperature, color) "
        "VALUES (%s, %s, %s)"
    )

    for measurement in measurements:
        c.execute(insert_sql,
            (measurement['weight'], measurement['temperature'], measurement['color'])
        )
```

평평한 것이 중첩된 것보다 낫다. Flat is better than nested.

Nested

```
def identify(animal):  
    if animal.is_vertebrate():  
        noise = animal.poke()  
        if noise == 'moo':  
            return 'cow'  
        elif noise == 'woof':  
            return 'dog'  
    else:  
        if animal.is_multicellular():  
            return 'Bug!'  
        else:  
            if animal.is_fungus():  
                return 'Yeast'  
            else:  
                return 'Amoeba'
```

Flat

```
def identify(animal):  
    if animal.is_vertebrate():  
        return identify_vertebrate()  
    else:  
        return identify_invertebrate()  
  
def identify_vertebrate(animal):  
    noise = animal.poke()  
    if noise == 'moo':  
        return 'cow'  
    elif noise == 'woof':  
        return 'dog'  
  
def identify_invertebrate(animal):  
    if animal.is_multicellular():  
        return 'Bug!'  
    else:  
        if animal.is_fungus():  
            return 'Yeast'  
        else:  
            return 'Amoeba'
```

성긴 것이 뽁뽁한 것보다 낫다.

Sparse is better than dense.

Dense

```
def process(response):
    selector = lxml.cssselect.CSSSelector('#main > div.text')
    lx = lxml.html.fromstring(response.body)
    title = lx.find('./head/title').text
    links = [a.attrib['href'] for a in lx.find('./a') if 'href' in a.attrib]
    for link in links:
        yield Request(url=link)
    divs = selector(lx)
    if divs: yield Item(utils.lx_to_text(divs[0]))
```

Sparse

```
def process(response):
    lx = lxml.html.fromstring(response.body)

    title = lx.find('./head/title').text

    links = [a.attrib['href'] for a in lx.find('./a') if 'href' in a.attrib]
    for link in links:
        yield Request(url=link)

    selector = lxml.cssselect.CSSSelector('#main > div.text')
    divs = selector(lx)
    if divs:
        bodytext = utils.lx_to_text(divs[0])
        yield Item(bodytext)
```


가독성이 중요하다. Readability counts.

```
def factorial(n):  
    """  
    Return the factorial of n, an exact integer >= 0.  
  
    >>> [factorial(n) for n in range(6)]  
    [1, 1, 2, 6, 24, 120]  
  
    >>> factorial(30)  
    2652528598121910586363084800000000L  
  
    >>> factorial(-1)  
    Traceback (most recent call last):  
        ...  
    ValueError: n must be >= 0  
    """  
    pass  
  
if __name__ == '__main__' and '--test' in sys.argv:  
    import doctest  
    doctest.testmod()
```

```
import unittest  
  
def factorial(n):  
    pass  
  
class FactorialTests(unittest.TestCase):  
    def test_ints(self):  
        self.assertEqual(  
            [factorial(n) for n in range(6)], [1, 1, 2, 6, 24, 120])  
  
    def test_long(self):  
        self.assertEqual(  
            factorial(30), 2652528598121910586363084800000000L)  
  
    def test_negative_error(self):  
        with self.assertRaises(ValueError):  
            factorial(-1)  
  
if __name__ == '__main__' and '--test' in sys.argv:  
    unittest.main()
```


실용성이 순수함보다 중요하더라도
특수한 경우는 규칙을 깰만큼 특별하지 않다.
Special cases aren't special enough to break the rules.
Although practicality beats purity.

```
def make_counter():
    i = 0
    def count():
        """ Increments a count and returns it. """
        i += 1
        return i
    return count

count = make_counter()
assert hasattr(count, '__name__') # No anonymous functions!
assert hasattr(count, '__doc__')
```



```
assert float('0.20000000000000007') == 1.1 - 0.9 # (this is platform dependent)
assert 0.2 != 1.1 - 0.9 # Not special enough to break the rules of floating pt.
assert float(repr(1.1 - 0.9)) == 1.1 - 0.9
```

```
def make_adder(addend):
    return lambda i: i + addend # But lambdas, once in a while, are practical.

assert str(1.1 - 0.9) == '0.2' # as may be rounding off floating point errors
assert round(0.2, 15) == round(1.1 - 0.9, 15)
```

명시적으로 조용히 하게 만들지 않았다면
오류들은 절대로 조용하게 넘어가면 안 된다.
Errors should never pass silently
Unless explicitly silenced.

```
try:
    import json
except ImportError:
    try:
        import simplejson as json
    except:
        print 'Unable to find json module!'
        raise
```

애매함과 마주할 땐, 추측하려는 유혹을 떨쳐라.
In the face of ambiguity, refuse the temptation to guess.

```
def process(response):  
    db.store(url, response.body)
```

DO NOT GUESS

```
def process(response):  
    charset = detect_charset(response)  
    db.store(url, response.body.decode(charset))
```

여러분이 네덜란드 사람¹이 아니라면 이런 방식이 처음엔 분명하지 않을 것이지만,
특정 일을 할 때는 한 가지 방법만으로 해야 한다.

There should be one, and preferably only one way to do it.
Although that way may not be obvious at first unless you're Dutch.

```
def fibonacci_generator():
    prior, current = 0, 1
    while current < 100:
        yield prior + current
        prior, current = current, current + prior

sequences = [
    range(20),
    {'foo': 1, 'fie': 2},
    fibonacci_generator(),
    (5, 3, 3)
]

for sequence in sequences:
    for item in sequence: # all sequences iterate the same way
        pass
```

1 파이썬 창시자(Guido van Rossum)는 네덜란드 사람.

종종 결코 하지 않는 것이 *지금 당장*하는 것보다 낫기도 하지만
지금 하는 것이 결코 하지 않는 것보다 낫다.

Now is better than never.

Although never is often better than *right* now.

```
def obsolete_func():  
    raise PendingDeprecationWarning  
  
def deprecated_func():  
    raise DeprecationWarning
```

구현한 것을 설명하기 어렵다면, 안 좋은 구현이다.
구현한 것을 설명하기 쉽다면, 좋은 구현일 것이다.
If the implementation is hard to explain, it's a bad idea.
If the implementation is easy to explain, it may be a good idea.

```
def hard():

    # Example 1
    try:
        import twisted
        help(twisted) # (this may not be as hard as I think, though)
    except:
        pass

    # Example 2
    import xml.dom.minidom
    document = xml.dom.minidom.parseString(
        '''<menagerie><cat>Fluffers</cat><cat>Cisco</cat></menagerie>''')
    menagerie = document.childNodes[0]
    for node in menagerie.childNodes:
        if node.childNodes[0].nodeValue == 'Cisco' and node.tagName == 'cat':
            return node
```

```
def easy(maybe):

    # Example 1
    try:
        import gevent
        help(gevent)
    except:
        pass

    # Example 2
    import lxml
    menagerie = lxml.etree.fromstring(
        '''<menagerie><cat>Fluffers</cat><cat>Cisco</cat></menagerie>''')
    for pet in menagerie.find('./cat'):
        if pet.text == 'Cisco':
            return pet
```