




# PYTHON KOD YAZIM TEKNİKLERİ

## USTALAŞMAK İSTEYENLERE KULLANIŞLI PRATİK PYTHON KOD KALIPLARI – HAZIR HAP KODLAR.

Resul CALISKAN

CP CALISKAN PUBLISHING

2020

# Bu Kitap Kim İçin?

**Bir yığın kitap okumadan kısa özet bilgilerle daha kısa sürede seviye atlamak ve python yeteneğini geliştirmek isteyenler içindir. Bu sepeple uzun uzun anlatımlar yerine hap bilgi şeklinde hazırlanmıştır.**

# Kitapta yer alan kod kalıpları

- # Templating strings
- # Concatenating
- # Splitting
- # Reversing
- # Printing out multiples of strings
- # Removing unnecessary characters on strings
- # Anagram Strings
- # Palindrome Strings
- # Frequency of elements in a List - Counter()
- # Using itertools (combinations)
- # Unique elements in a string
- # Swapping values
- # Returning multiple values from a function

# Kitapta yer alan kod kalıpları

- # Ternary operator
- # One line conditional if-else
- # Chained comparison
- # Chained function call
- # Slicing a list
- # Unpacking list
- # Using *args & **kwargs arguments
- # Copying List
- # List of list flattening
- # Min and max index in list
- # Using List Comprehensions
- # Using Dict&Set Comprehensions

# Kitapta yer alan kod kalıpları

- # Merging Dictionaries
- # Iterating over a dictionary
- # Inverting dictionary
- # Sorting dictionary by value
- # Most frequent element in a list or string.
- # Dictionary get method
- # Memory usage of an object.
- # Path of imported modules
- # getpass module
- # Using enumerate to get index/value pairs
- # Zip(*iterables) Function
- # Zip(*iterables) Function

# Kitapta yer alan kod kalıpları

- # Recursive function
- # Calculate the execution time
- # Files, directories of the current working directory.
- # Apply a function to every item in an iterable- map(function, iterable)
- # Lambda expressions-One line function.
- # Sorting with lambda function
- # Reduce function -reduce(function, list)
- # Filter function-filter(function, list)
- # Open two files
- # To query a request service
- # Higher order functions
- # Generator (on the fly iteration)
- # Using coroutine and decorators
- # Error handling "try-except-else-finally" blocks

Python'da ustalaşmak veya ilerlemek isteyen arkadaşlar için, literatürde bulunan python kod kalıplarının çoğunu derledim ve yeniden yazdım. Tabii ki, iyi bir python kodlama ustası olmak istiyorsanız, sadece bu kodları okumakla kalmayın, aynı zamanda bu kod kalıplarının pratiğini yapın..

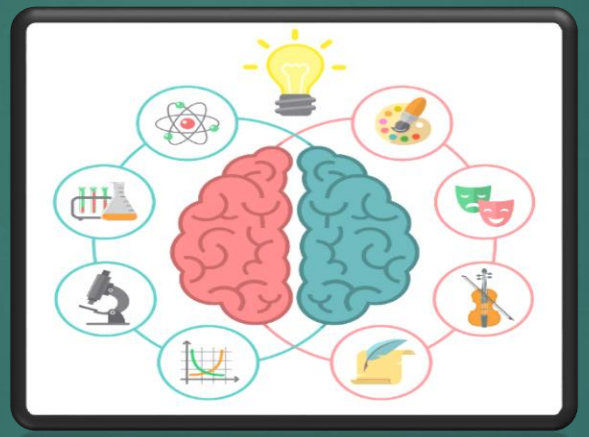
Buradaki kod kalıpları size yetenek vermek için hazırlanmıştır. Bu kod kalıplarını rahatlıkla çalışmalarınızda kullanabilir ve her zaman daha yeni pratik yöntemler geliştirebilirsiniz. Unutmayalım ki her projenin kendine özgü gereksinimleri vardır. Bu nedenle, projelerinize kod yazarken bu proje gereksinimleri dikkate alarak programlama mantığı içinde kod yazmak çok önemlidir.

Malum kodlama dillerinin neredeyse tamamı İngilizce tabanlıdır. Ortaya tarzanca bir durum çıkmaması için kod kalıplarını İngilizce olarak bıraktım. Daha anlaşılır olması için önemli yerleri vurgulamaya çalıştım. Ayrıca kitabın aynısının İngilizce baskısıda «PYTHON TIPS AND TRICKS» adıyla mevcuttur.

# Gerekli olan yetenekler

Bu kitap okuyucuların Pythona biraz aşina oldukları varsayılarak hazırlanmıştır. Diğer gereken tüm yetenekler zaten sahip olduklarınızdır. Problem çözer gibi oku-anla ve yap.

Okumak



Kavramak

Uygulama Yapmak


Biraz hızlanarak az laf çok iş yapmak istiyorsanız hemen başlayalım.

**Durma! Yazmaya Başla!**

**İyi kodlamalar.**

# System/Pyhon Gereksinimi:3.6+

```
# Before you start check your python version. All the code run well above 3.6+ version.
import sys
!python --version
print(sys.version)
print(sys.version_info)
```

```
Python 3.6.9
3.6.9 (default, Nov  7 2019, 10:44:02)
[GCC 8.3.0]
sys.version_info(major=3, minor=6, micro=9, releaselevel='final', serial=0)
```

# Templating strings

```
print("I love %s with %s" % ("programming", "Python")) # old style

print("{}, {} and {}".format('python','javascript','c++')) #format with defaul order
print("{2}, {0} and {1}".format('python','javascript','c++')) # positional argument
print("{x}, {y} and {z}".format(x='python', y='javascript', z='c++')) # keyword argument
print("|{:<10}|{:^10}|{:>10}|".format('Apple','Melon','Apricot')) #alignment

a=3.0; b=5.0; name="Python"
print(f'I have been developing {name} programs for {sum([a,b])} years.') # New Style
print(f'float format: {a*b:.2f} | {a*b:.5f} aligment:{a*b:>10}') # adjustment
```

```
I love programming with Python
python, javascript and c++
c++, python and javascript
python, javascript and c++
|Apple     |   Melon    |   Apricot|
I have been developing Python programs for 8.0 years.
float format: 15.00 | 15.00000 aligment:       15.0
```

## Concatenating

```
[ ]  words = ['This', 'is', 'python', 'trick']
     sentence = " ".join(words)
     print(sentence)
```

```
This is python trick
```

# Splitting

```
sentence = "This is python trick"
words = sentence.split()
print(words)
```

```
['This', 'is', 'python', 'trick']
```

# Reversing

```
[ ]  word = "python"
     words = ['This', 'is', 'python', 'trick']
     print(word[::-1])
     print(words[::-1])
```

```
     nohtyp
     ['trick', 'python', 'is', 'This']
```

# Printing out multiples of strings

```
print("Hello there! "*2 + "Cool Python.. "*2)
for i in range(4) : print(f' Counter----> {i}'+" Python" *i )
```

```
Hello there! Hello there! Cool Python.. Cool Python..
 Counter----> 0
 Counter----> 1 Python
 Counter----> 2 Python Python
 Counter----> 3 Python Python Python
```

# Removing unnecessary characters on strings

```
name_with_space = "     Resul     "
name_with_slash = "////Resul////"
print(name_with_space.strip())
print( name_with_slash.strip('/'))
```

```
Resul
Resul
```

# Anagram Strings

```
from collections import Counter

str_1 = "listen"
str_2 = "silent"
cnt_1, cnt_2 = Counter(str_1), Counter(str_2)

if cnt_1 == cnt_2:
    print(f'Yeap!, {str_1} and {str_2}  are anagram words.')
else:
    print('Not anagram')
```

```
Yeap!, listen and silent  are anagram words.
```

# Palindrome Strings

```
my_string = "racecar"

if my_string == my_string[::-1]:
  print("yes, it is palindrome")
else:
  print("it is not palindrome")
```

```
yes, it is palindrome
```

# Frequency of elements in a List - Counter()

```
from collections import Counter

my_list = ['apple','apple','banana','banana','apple','apricot','fig','fig']
count = Counter(my_list)

print(count)
print(count['fig'])
print(count.most_common(1))
```

```
Counter({'apple': 3, 'banana': 2, 'fig': 2, 'apricot': 1})
2
[('apple', 3)]
```

# Using itertools (combinations)

```
import itertools
friends = ['Team-A', 'Team-B', 'Team-C', 'Team-D']
list(itertools.combinations(friends, r=2))

#smilarly you can use itertools.permutations()
```

```
[('Team-A', 'Team-B'),
 ('Team-A', 'Team-C'),
 ('Team-A', 'Team-D'),
 ('Team-B', 'Team-C'),
 ('Team-B', 'Team-D'),
 ('Team-C', 'Team-D')]
```

# Unique elements in a string

```
my_string = "the quick brown fox jumps over the lazy dog"

temp_set = set(my_string)
new_string = ''.join(sorted(temp_set))

print(new_string)
```

```
 abcdefghijklmnopqrstuvwxyz
```

# Swapping values

```
x, y = 1, 2
print(x, y)

x, y = y, x # Swapping only values, x != y
print(x, y)
```

```
1 2
2 1
```

# Returning multiple values from a function

```
def my_func():
    Id = 1 ; a = "Hakan"; b = "40" ; c = "Teacher"
    return Id, a, b, c

Id, name, age, job = my_func()

print(f'{Id}th {name} is a {job} and {age} years old.')
```

```
1th Hakan is a Teacher and 40 years old.
```

# Ternary operator

```
y = 30
x = 10 if (y == 30) else 20
print(x)
```

```
10
```

```
[29] for y in [40, -10]:
       x = 10 if (y == 10) else 20 if (y == -10) else 40
       print(x)
```

```
40
20
```

# One line conditional if-else

```
age =int(input("Age :"))
print("old adults" if age >= 60 else "middle-aged" if 40 <= age < 60 else "young adult")
```

```
Age :40
middle-aged
```

# Chained comparison

```
a = 4
b = 8
print(a < b < 10)
print(a == b/2 < 10 > b)
```

```
True
True
```

# Chained function call

```
def multiply(a,b):
    return a*b

def add(a,b):
    return a+b

x = False
print( (multiply if x else add)(3,5) )
```

```
8
```

# Slicing a list

[start : stop : step]

```
num_list = [0, 1, 2, 3, 4, 5, 6, 7, 8, 9]
steps = num_list[0::2]
print(steps)
```

```
[0, 2, 4, 6, 8]
```

# unpacking list

```
num_list = [1, 2, 3, 4, 5, 6, 7, 8, 9]
a, b, c, d = num_list[4:8]
print(f'a = {a}, b = {b}, c = {c}, d = {d}')

a, *b, c, d = num_list
print(f'a = {a}, b = {b}, c = {c}, d = {d}')
```

```
a = 5, b = 6, c = 7, d = 8
a = 1, b = [2, 3, 4, 5, 6, 7], c = 8, d = 9
```

# unpacking list

```
my_list = ["Resul", "is", "a", "python", "developer"]
print(' '.join(str(x) for x in my_list))

print(*my_list, sep=' ') # unpackin the list with *
```

```
Resul is a python developer
Resul is a python developer
```

# Using *args & **kwargs arguments

```
db_tuples = (1,3,5,7,9)

def add_nums(*nums): # Note that *args is just a name.
    sum = 0
    for n in nums:
        sum = sum + n
    print("Sum:",sum , end=" | ")

add_nums(1,2,3)
add_nums(4,5,6,7,8)
add_nums(*db_tuples)
```

```
Sum: 6 | Sum: 30 | Sum: 25 |
```

# Using *args & **kwargs arguments

```
db_dict = {"name":"Kaan", "age":14, "job":"student" }

def my_func(**kwargs): # Note that **kwargs is just a name
  for key, value in kwargs.items():
    print ("%s--> %s" %(key, value), end=", ")
  print()

my_func(name ='Hakan',  age= 18, job='doctor')
my_func(**db_dict)
```

```
name--> Hakan, age--> 18, job--> doctor,
name--> Kaan, age--> 14, job--> student,
```

# Copying List

```
# Fast way of copying -- shallow copy
list_1 = [1,2,3,4]
new_list = list_1 # new_list = list_1.copy() also smilar.

print(new_list)
print(new_list == list_1)
print(new_list is list_1)
print(id(new_list), "=", id(list_1))
```

```
[1, 2, 3, 4]
True
True
140138799980360 = 140138799980360
```

# Copying List

```
# using list() or slicing.
list_1 = [1,2,3,4]
new_list = list_1[:] # new_list = list(list_1) also smilar.

print(new_list)
print(new_list == list_1)
print(new_list is list_1)
print(id(new_list), "!=", id(list_1))
```

```
[1, 2, 3, 4]
True
False
140138789686856 != 140138791173000
```

# Copying List

```
# using deepcopy() to copy nested list.
from copy import deepcopy

list_1 = [[1,2],[3,4],[5,[6,7],8]]
new_list = deepcopy(list_1)

print(new_list)
print(new_list == list_1)
print(new_list is list_1)
print(id(new_list), "!=", id(list_1))
```

```
[[1, 2], [3, 4], [5, [6, 7], 8]]
True
False
140138789346440 != 140138799978504
```

# List of list flattening

```
my_list = [[1, 2, 3], [4, 5], [6], [7, 8, 9]]
sum(my_list, [])
```

```
[1, 2, 3, 4, 5, 6, 7, 8, 9]
```

# Min and max index in list

```
my_list = [4,5,1,3,2]
print(f'index of MIN. number in my_list is : {min(range(len(my_list)), key=my_list.__getitem__)}')
print(f'index of MAX. number in my_list is : {max(range(len(my_list)), key=my_list.__getitem__)}')
```

```
index of MIN. number in my_list is : 2
index of MAX. number in my_list is : 1
```

# Using List Comprehensions

[ expression for item in list if conditional ]

```
# Old way of doing list
def square(a):
    return a**2

my_list = [1, 2, 3, 4, 5, 6, 7, 8]
new_list = []
for x in my_list:
    if x % 2 != 0:
        new_list.append(square(x))
print(new_list)
```

```
[1, 9, 25, 49]
```

# Using List Comprehensions

[ expression for item in list if conditional ]

```
# Doing the same list with list comprehension is olny one line.

mylist = [i**2 for i in range(8) if i % 2 !=0 ]
print(mylist)
```

```
[1, 9, 25, 49]
```

# Using List Comprehensions

[ expression for item in list if conditional ]

```
another_comp_list = [i for i in range(50) if i%2==0 and i%5==0]
print(another_comp_list)
```

```
[0, 10, 20, 30, 40]
```

# Using Dict&Set Comprehensions

{ expression for item in list if conditional }

```
set_comph = {i**2 for i in range(5)}
print(set_comph)

dict_comph = {k: v**2 for k,v in zip('abcde',range(5))}
print(dict_comph)
```

```
{0, 1, 4, 9, 16}
{'a': 0, 'b': 1, 'c': 4, 'd': 9, 'e': 16}
```

# Merging Dictionaries

```
x = {'a': 1, 'b': 2}
y = {'c': 3, 'd': 4}
z = {'e': 5, 'f': 6}
merged = {**x, **y, **z}
print(merged)
```

```
{'a': 1, 'b': 2, 'c': 3, 'd': 4, 'e': 5, 'f': 6}
```

# Iterating over a dictionary

```
dict1 = {'one': 1, 'two': 2, 'three': 3}
for key, value in dict1.items():
    print('{0:>5}: {1:<2}'.format(key, value))
```

```
  one: 1
  two: 2
three: 3
```

# Inverting dictionary

```
dict1 = {'one': 1, 'two': 2, 'tree': 3, 'four': 4}
dict2 = { v: k  for k, v in dict1.items() }
print(dict2)
```

```
{1: 'one', 2: 'two', 3: 'tree', 4: 'four'}
```

# Sorting dictionary by value

```
d = {"jacket":50, "bag":20, "hat":10, "tshirt":30, "shoes":40}
print(sorted(d.items(), key=lambda x:x[1]))
```

```
[('hat', 10), ('bag', 20), ('tshirt', 30), ('shoes', 40), ('jacket', 50)]
```

# Most frequent element in a list or string.

```
numbers = [1, 2, 3, 4, 2, 2, 3, 1, 4, 4, 2, 4, 4]
chars = "xxxyyzzzz"
words = ["book","phone","e-reader","tablet","phone"]
print(max(set(numbers), key = numbers.count))
print(max(set(chars), key = chars.count))
print(max(set(words), key = words.count))
```

```
4
z
phone
```

# Dictionary get method

```
dict1 = dict(zip('abc','123'))
print(dict1)
print(dict1.get("c", 4))
print(dict1.get("d", 4)) # if key is not in dict return default value.
# print(dict1["d"])   it results -> KeyError: 'd'
```

```
{'a': '1', 'b': '2', 'c': '3'}
3
4
```

# Memory usage of an object.

```
import sys
obj = [i**2 for i in range(100)]
print(sys.getsizeof(obj))
```

```
912
```

# Path of imported modules

```
import os, socket
print(os)
print(socket)
```

```
<module 'os' from '/usr/lib/python3.6/os.py'>
<module 'socket' from '/usr/lib/python3.6/socket.py'>
```

# getpass module

```
import getpass

users_name_pswd = {"root":"adminpassword"}

user = getpass.getuser()
password = getpass.getpass() # hides input passwords

if users_name_pswd[user] ==   password:
   print("You are logged in.")
else:
   print("Access Denied")
```

```
.........
You are logged in.
```

# Using enumerate to get index/value pairs

```
my_list = ['item1', 'item2', 'item3', 'item4', 'item5']

for index, value in enumerate(my_list):
  print('{0}: {1}'.format(index+1, value))
```

```
1: item1
2: item2
3: item3
4: item4
5: item5
```

# Zip(*iterables) Function

```
first_names = ["Hakan", "Kaan", "Asiye"]
>>> last_names = ["Caliskan", "Aslan", "Yıldız"]
>>> print([' '.join(x) for x in zip(first_names, last_names)])
```

```
['Hakan Caliskan', 'Kaan Aslan', 'Asiye Yıldız']
```

# Zip(*iterables) Function

```
id_list = [1, 2, 3, 4]
name_list = ['Hakan', 'Kaan', 'Asiye', 'Resul']
job_list = ['Doctor', 'Lawyer', 'Teacher', 'Engineer']

print(list(zip(id_list, name_list, job_list)))

for id, name, job in zip(id_list, name_list, job_list):
    print(f'{id}. {name} is a {job}.')
```

```
[(1, 'Hakan', 'Doctor'), (2, 'Kaan', 'Lawyer'), (3, 'Asiye', 'Teacher'), (4, 'Resul', 'Engineer')]
1. Hakan is a Doctor.
2. Kaan is a Lawyer.
3. Asiye is a Teacher.
4. Resul is a Engineer.
```

# Recursive function

```
def recursive_func(n):
    # Base case: 1! = 1
    if n == 1:
        return 1

    # Recursive case: n! = n * (n-1)!
    else:
        return n * recursive_func(n-1)

print(recursive_func(9))
```

```
362880
```

# Calculate the execution time

```
import time
# using time() method
start_time = time.time()
some_of_list = sum([num for num in range(1_000_000)])
end_time = time.time()

time_diff = (end_time - start_time)

print("Total process time: {0:.4} ms".format(time_diff))
```

```
Total process time: 0.1248 ms
```

# Calculate the execution time

```
import time
# using clock() method
start = time.clock()
sum((i * i for i in range(1, 1_000_000)))
stop = time.clock()
time_diff = stop - start
print(f"It took {time_diff:.4} Secs to execute this method")
```

```
It took 0.08644 Secs to execute this method
```

# Files, directories of the current working directory.

```
import os
cwd = os.getcwd()
for dir_path, dir_names, file_names in os.walk(cwd):
    for f in file_names[:2]: # only two of files in every directory
        print(f)
```

```
.last_update_check.json
.last_survey_prompt.yaml
18.36.45.012839.log
18.36.32.968039.log
config_default
README.md
anscombe.json
```

# Apply a function to every item in an iterable

map(function, iterable)

```
num_list = [1, 2, 3, 4, 5]

def square(num):
    return num*num

print(list(map(square, num_list)))
```

```
[1, 4, 9, 16, 25]
```

# Lambda expressions-One line function.

```
square = lambda num: num * num
print(square(5))

x = [1, 2, 3, 4, 5]
print(list(map(lambda num: num * num, x)))
```

```
25
[1, 4, 9, 16, 25]
```

# Sorting with lambda function

```
my_list = [10, -20, 30, 40, -5]

print(sorted(my_list, key = lambda x : abs(x)))
```

```
[-5, 10, -20, 30, 40]
```

# Reduce function

reduce(function, list)

```
from functools import reduce

product = reduce((lambda x, y: x * y),[1, 2, 3, 4])
# smilar sum([1,4,9,16])

print(product)
```

```
24
```

# Filter function

filter(function, list)

```
list_nums = list(range(100))

all_full_division_by_5 = list(filter(lambda num:num % 5 == 0, list_nums))

print(all_full_division_by_5)
```

```
[0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95]
```

# Open two files

```
with open("first.txt") as my_file, open("second.txt") as second_file:
  for line_number, (line1, line2) in enumerate(zip(my_file, second_file)):
    print(line_number, (line1, line2))
```

```
0 (' Sentence in first file.\n', ' Sentence in second file.\n')
1 (' Sentence in first file.\n', ' Sentence in second file.\n')
```

# To query a request service

```
import requests
url = 'http://www.example.com/'
response = requests.get(url).text
print(response[:55])
```

```
<!doctype html>
<html>
<head>
    <title>Example Domain
```

# Higher order functions

take a **function as an argument, or return a function**

```
def sum_of_nums(nums):
    return sum(nums)

def power_of_nums(nums):
    return [i**2 for i in nums]

def high_order_func(func, num_list):
    return func(num_list)

print(high_order_func(sum_of_nums, [1, 2, 3, 4]))
print(high_order_func(power_of_nums, [1, 2, 3, 4]))
```

```
10
[1, 4, 9, 16]
```

# Generator (on the fly iteration)

```
def num_generator(num):
  """ an infinite sequence generator that generates integers >= n"""
  while True:
    yield num
    num += 1

plus_one = num_generator(4)      # starts at 4
for _ in range(4):
  print(next(plus_one))
```

```
4
5
6
7
```

# Using coroutine and decorators

```
#@title Power function. { vertical-output: true }
import math
""" This program has two function first one is couroutine
    and the latter is decorator.
    It produces the power of given number """
def coroutine(gen_fn):
    def inner(*args, **kwargs):
        gen = gen_fn(*args, **kwargs)
        next(gen)
        return gen
    return inner

@coroutine
def power(p):
    result = None
    while True:
        received = yield result
        result = math.pow(received, p)

squares = power(2); cubes = power(3); quadro = power(4); quintic = power(5)
for power in [squares,cubes,quadro,quintic]: print(power.send(4))
```

Power function.

```
16.0
64.0
256.0
1024.0
```

# Error handling "try-except-else-finally" blocks

```
try:
    file = open("file.txt")
    new_file = file.readline()
except FileNotFoundError:        # exception raised when file.txt is absent.
    print('File not found, and a new "file.txt" file is created.')
    file = open("file.txt", 'w')
else:                            # this runs only in the absence of exceptions.
    new_file = open("file.txt")
    data = new_file.read()
finally:                         # this finally part always run.
    file.close()
```

```
File not found, and a new "file.txt" file is created.
```

# References

- 3.8.1 Documentation
- The Python Language Reference
- https://stackoverflow.com/
- experimenting patiently..


Tebrikler!
Artık sende bir python ustasısın.

# TEŞEKKÜRLER

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# PYTHON KOD YAZIM TEKNİKLERİ

## USTALAŞMAK İSTEYENLERE KULLANIŞLI PRATİK PYTHON KOD KALIPLARI – HAZIR HAP KODLAR.

Resul CALISKAN

CP CALISKAN PUBLISHING

2020