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MODUL 5

LATIHAN

lat3.py - D:\KULIAH\Semester 4\Prak. Algoritma dan Struktur data\lat3.py (3.8.2)

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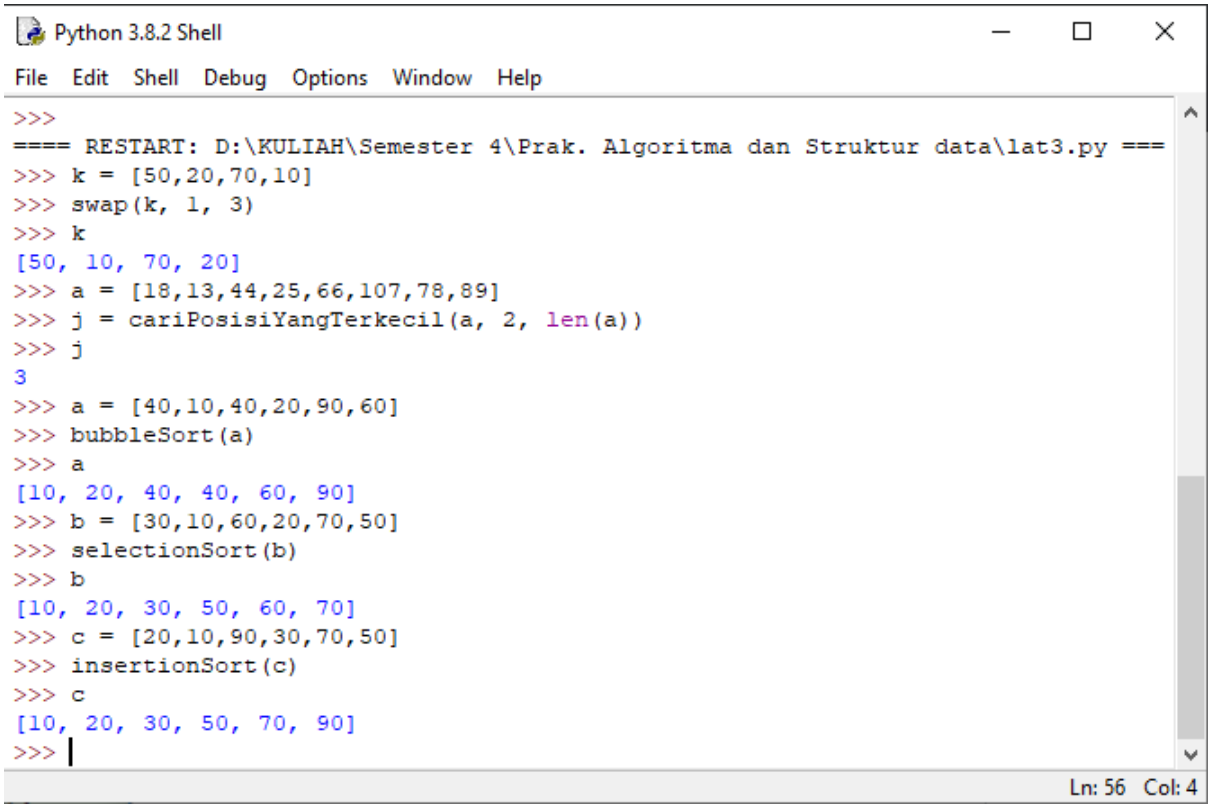
```
def swap(A, p, q):
    tmp = A[p]
    A[p]= A[q]
    A[q]= tmp

def cariPosisiYangTerkecil(A, dariSini, sampaiSini):
    posisiYangTerkecil = dariSini                #->anggap ini yang terkecil
    for i in range(dariSini+1, sampaiSini):      #->cari disisa list
        if A[i] < A[posisiYangTerkecil]:         #->kalau menemukan yang lebih ke
            posisiYangTerkecil = i               #->anggapan dirubah
    return posisiYangTerkecil

#Latihan 5.1
def bubbleSort(A):
    n = len(A)
    for i in range(n-1):
        for j in range(n-i-1):
            if A[j] > A[j+1]:
                swap(A,j,j+1)
#Latihan 5.2
def selectionSort(a):
    n = len(a)
    for i in range(n-1):
        indexKecil=cariPosisiYangTerkecil(a,i,n)
        if indexKecil != i:
            swap(a,i,indexKecil)

#Latihan 5.3
def insertionSort(a):
    n = len(a)
    for i in range(1,n):
        nilai = a[i]
        pos = i
        while pos > 0 and nilai < a[pos-1]:
            a[pos] = a[pos-1]
            pos = pos-1
        a[pos] = nilai
```

Ln: 18 Col: 0


Python 3.8.2 Shell
File Edit Shell Debug Options Window Help
>>>
==== RESTART: D:\KULIAH\Semester 4\Prak. Algoritma dan Struktur data\lat3.py ===
>>> k = [50,20,70,10]
>>> swap(k, 1, 3)
>>> k
[50, 10, 70, 20]
>>> a = [18,13,44,25,66,107,78,89]
>>> j = cariPosisiYangTerkecil(a, 2, len(a))
>>> j
3
>>> a = [40,10,40,20,90,60]
>>> bubbleSort(a)
>>> a
[10, 20, 40, 40, 60, 90]
>>> b = [30,10,60,20,70,50]
>>> selectionSort(b)
>>> b
[10, 20, 30, 50, 60, 70]
>>> c = [20,10,90,30,70,50]
>>> insertionSort(c)
>>> c
[10, 20, 30, 50, 70, 90]
>>>
Ln: 56 Col: 4

TUGAS

Tugas.py - D:/KULIAH/Semester 4/Prak. Algoritma dan Struktur data/Tugas.py (3.8.2)

File Edit Format Run Options Window Help

```
#1
class MhsTIF(object):

    def __init__(self,nama,NIM,asal,saku):
        self.nama = nama
        self.NIM = NIM
        self.asal = asal
        self.saku = saku

c0 = MhsTIF ('Ika','L200180001','Sukoharjo', 240000)
c1 = MhsTIF ('Budi','L200180010','Sragen', 230000)
c2 = MhsTIF ('Ahmad','L200180002','Surakarta', 250000)
c3 = MhsTIF ('Chandra','L200180004','Surakarta', 230000)
c4 = MhsTIF ('Eka','L200180005','Boyolali', 240000)
c5 = MhsTIF ('Fandi','L20018006','Salatiga', 250000)
c6 = MhsTIF ('Deni','L200180007','Klaten', 245000)
c7 = MhsTIF ('Galuh','L20018008','Wonogiri', 245000)
c8 = MhsTIF ('Janto','L200180009','Klaten', 245000)
c9 = MhsTIF ('Hasan','L2001800011','Karanganyar', 270000)
c10 = MhsTIF ('Khalid','L200180012','Purwodadi', 265000)
Mhs = [c0, c1, c2, c3, c4, c5, c6, c7, c8, c9, c10]

def urutkan(A):
    baru = {}
    for i in range(len(A)):
        baru[A[i].nama] = A[i].NIM
    listofTuples = sorted(baru.items(), key = lambda x: x[1])
    for elemen in listofTuples :
        print(elemen[0], ":", elemen[1])
```

Python 3.8.2 Shell

File Edit Shell Debug Options Window Help

```
Python 3.8.2 (tags/v3.8.2:7b3ab59, Feb 25 2020, 22:45:29) [MSC v.1916 32 bit (Inte
l)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
=== RESTART: D:/KULIAH/Semester 4/Prak. Algoritma dan Struktur data/Tugas.py ===
>>> urutkan(Mhs)
Ika : L200180001
Hasan : L2001800011
Ahmad : L200180002
Chandra : L200180004
Eka : L200180005
Deni : L200180007
Janto : L200180009
Budi : L200180010
Khalid : L200180012
Fandi : L20018006
Galuh : L20018008
```

```
#2
def bubbleSort(arr):
    n = len(arr)
    for i in range (n):
        for j in range(0, n-i-1):
            if arr[j] > arr[j+1] :
                arr[j], arr[j+1] = arr[j+1], arr[j]

    return arr
def gabung(a,b):
    c = []
    c = a+b
    n = len(c)
    for i in range(n):
        for j in range(0, n-i-1):
            if c[j] > c[j+1] :
                c[j], c[j+1] = c[j+1], c[j]
    return c
```

```
>>> a = [2, 23, 25, 12, 33, 10, 9]
>>> b = [45, 37, 66, 88, 98, 54]
>>> a, b = bubbleSort(a), bubbleSort(b)
>>> gabung(a,b)
[2, 9, 10, 12, 23, 25, 33, 37, 45, 54, 66, 88, 98]
```

```
#3
from time import time as detak
from random import shuffle as kocok
k = [i for i in range(1,6001)]
kocok(k)
def u_bub(arr):
    n = len (arr)
    for i in range (n):
        for j in range(0, n-i-1):
            if arr[j] > arr[j+1] :
                arr[j], arr[j+1] = arr[j+1], arr[j]
def u_sel(A):
    for i in range(len(A)):
        min_in = i
        for j in range(i+1, len (A)):
            if A[min_in] > A[j]:
                    min_in = j
        A[i], A[min_in] = A[min_in], A[i]
def u_ins(arr):
    for i in range(1, len(arr)):
        key = arr[i]
        j = i-1
        while j >= 0 and key < arr[j]:
                arr[j+1] = arr[j]
                j -= 1
        arr[j+1] = key
```

```
>>> bub = k[:]
>>> sel = k[:]
>>> ins = k[:]
>>> aw = detak();u_bub(bub);ak = detak();print('bubble : %g detik' %(ak-aw));
bubble : 4.92884 detik
>>> aw = detak();u_sel(sel);ak = detak();print('bubble : %g detik' %(ak-aw));
bubble : 2.30996 detik
>>> aw = detak();u_ins(ins);ak = detak();print('bubble : %g detik' %(ak-aw));
bubble : 2.44311 detik
>>>
```