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NIM : L200180145

Modul 5

Latihan.

*L200180123_Algostruk_Modul 5.py - D:/UMS/Semester 4/Praktikum Algostruk

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```
def swap(a,p,q):
    tmp = a[p]
    a[p]=a[q]
    a[q]=tmp
K = [50,20,70,10]
def cariposisiterkecil(a,darisini,sampaisini):
    posisiyangterkecil = darisini
    for i in range(darisini+1,sampaisini):
        if a[i]< a[posisiyangterkecil]:
            posisiyangterkecil = i
    return posisiyangterkecil
A = [18,13,44,25,66,107,78,89]
def kecil(a):
    ter = 0
    for i in range(ter,len(a)):
        if a[i] < a[ter]:
            ter = i
    return ter
def bubblesort(a):
    for buble in range(len(a)-1,0,-1):
        for i in range(buble):
            if a[i]>a[i+1]:
                swap(a,i,i+1)
def selectionsort(a):
    n = len(a)
    for i in range(n-1):
        kecil = cariposisiterkecil(a,i,n)
        if kecil != i:
            swap(a,i,kecil)
def insertionsort(a):
    for i in range(1,len(a)):
        nilai = a[i]
        b = i
        while b >0 and nilai<a[b - 1]:
            a[b]=a[b-1]
            b -=1
        a[b]=nilai
P=[10,51,2,18,4,31,13,5,23,64,29]
```

Python 3.8.2 Shell

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```
Python 3.8.2 (tags/v3.8.2:7b3ab59, Feb 25 2020, 22:45:29) [MSC v.1
el)] on win32
Type "help", "copyright", "credits" or "license()" for more inform
>>>
= RESTART: D:/UMS/Semester 4/Praktikum Algostruk/Modul5/L200180123_
l 5.py
>>> swap(K,1,3)
>>> print(K)
[50, 10, 70, 20]
>>> j = cariposisiterkecil(A,2,len(A))
>>> print(j)
3
>>> f = kecil(A)
>>> print(f)
1
>>> bubblesort(A)
>>> print(A)
[13, 18, 25, 44, 66, 78, 89, 107]
>>> selectionsort(K)
>>> print(K)
[10, 20, 50, 70]
>>> insertionsort(P)
>>> print(P)
[2, 4, 5, 10, 13, 18, 23, 29, 31, 51, 64]
>>>
```

Tugas.

L200180123_Algostruk_Modul 5_Tugas.py - D:/UMS/Semester 4/Praktikum Algostruk/Modu

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```
class MhsTIF(object):
    def __init__(self,nama,nim,tinggal,us):
        self.nama = nama
        self.nim = nim
        self.tinggal = tinggal
        self.us = us

c0 = MhsTIF('Pasha', "L200180123", 'Wonogiri', 150000)
c1 = MhsTIF('Damar', "L200180126", 'Boyolali', 125000)
c2 = MhsTIF('Hanifah', "L200180124", 'Solo', 20500)
c3 = MhsTIF('Rohana', "L200180132", 'Klaten', 350000)
c4 = MhsTIF('Dila', "L200180300", 'Wonogiri', 500000)
c5 = MhsTIF('Anggit', "L200180111", 'Nusa Tenggara', 430000)
c6 = MhsTIF('Saidah', "L200180301", 'Batang', 450000)
c7 = MhsTIF('Siwi', "L200180302", 'Tegal', 430000)
c8 = MhsTIF('Aul', "L200180303", 'Mojokerto', 235000)
c9 = MhsTIF('Ami', "L200180088", 'Sragen', 350000)

Daftar=[c0,c1,c2,c3,c4,c5,c6,c7,c8,c9]

#####################################nomer1
def swap(a,b,c):
    tmp=a[b]
    a[b]=a[c]
    a[c]=tmp

def ceknim(Daftar):
    for i in Daftar:
        print(i.nama,i.nim,i.tinggal)

def urutnim(a):
    n = len(a)
    for x in range(n-1):
        for y in range(n-x-1):
            if a[y].nim > a[y+1].nim:
                swap(a,y,y+1)
```

Python 3.8.2 Shell

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```
Python 3.8.2 (tags/v3.8.2:7b3ab59,
el)] on win32
Type "help", "copyright", "credits"
>>>
= RESTART: D:/UMS/Semester 4/Prakti
l 5_Tugas.py
>>> urutnim(Daftar)
>>> ceknim(Daftar)
Ami L200180088 Sragen
Anggit L200180111 Nusa Tenggara
Pasha L200180123 Wonogiri
Hanifah L200180124 Solo
Damar L200180126 Boyolali
Rohana L200180132 Klaten
Dila L200180300 Wonogiri
Saidah L200180301 Batang
Siwi L200180302 Tegal
Aul L200180303 Mojokerto
>>>
```

L200180123_Algostruk_Modul 5_Tugas.py - D:/UMS/Semester 4/

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```
# Nomor 2
a = [13, 18, 25, 44, 66, 78, 89, 107]
b = [2, 4, 5, 10, 13, 18, 23, 29]

#versi1
def urutC(a,b):
    c = a +b
    for i in range(1,len(c)):
        nilai = c[i]
        pos = i
        while pos >0 and nilai<c[pos - 1]:
            c[pos]=c[pos-1]
            pos -=1
        c[pos]=nilai
    print(c)

#versi2
def urutc(a,b):
    pan1=len(a)
    pan2 = len(b)
    x= 0
    y=0
    c = []
    while x< pan1 and y<pan2:
        if a[x]<b[y]:
            c.append(a[x])
            x+=1
        else:
            c.append(b[y])
            y+=1
    while x<pan1:
        c.append(a[x])
        x+=1
    while y<pan2:
        c.append(b[y])
        y+=1
    return c
```

Python 3.8.2 Shell

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```
Python 3.8.2 (tags/v3.8.2:7b3ab59, Feb 25 2020, 22:45:29) [MSC v.19
tel)] on win32
Type "help", "copyright", "credits" or "license()" for more informa
>>>
= RESTART: D:/UMS/Semester 4/Praktikum Algostruk/Modul5/L200180123_
ul 5_Tugas.py
>>> # Versi 1
>>> urutC(a,b)
[2, 4, 5, 10, 13, 13, 18, 18, 23, 25, 29, 44, 66, 78, 89, 107]
>>> # Versi 2
>>> urutC(a,b)
[2, 4, 5, 10, 13, 13, 18, 18, 23, 25, 29, 44, 66, 78, 89, 107]
>>>
```

L200180123_Algostruk_Modul 5_Tugas.py - D:/UMS/Semester 4/Praktikum Algostruk

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```
# Nomor 3
def swap(A,p,q):
    tmp = A[p]
    A[p] = A[q]
    A[q] = tmp

def cariPosisiYangTerkecil(A, dariSini, sampaiSini):
    posisiTerkecil = dariSini
    for i in range(dariSini+1, sampaiSini):
        if A[i] < A[posisiTerkecil]:
            posisiTerkecil = i
    return posisiTerkecil

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)

def selectionSort(A):
    n = len(A)
    for i in range(n-1):
        indexKecil = cariPosisiYangTerkecil(A, i, n)
        if indexKecil != i:
            swap(A, i, indexKecil)

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

from time import time as detak
from random import shuffle as kocok
```

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 (Intel)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
= RESTART: D:/UMS/Semester 4/Praktikum Algostruk/Modul5/L200180123_Algostruk_Modul 5_Tugas.py
Bubble     : 13.0616 detik
Selection : 5.0621 detik
Insertion : 6.36582 detik
>>> # Lebih cepat selection, menurut saya karena ia menggunakan 2 fungsi
>>> # sekaligus sehingga mempercepat perulangan daripada bubble atau insertion
```

```
k = [i for i in range(1,6001)]
kocok(k)
u_bub = k[:]
u_sel = k[:]
u_ins = k[:]

aw = detak();bubbleSort(u_bub);ak=detak();print("Bubble     : %g detik"%(ak-aw));
aw = detak();selectionSort(u_sel);ak=detak();print("Selection : %g detik"%(ak-aw));
aw = detak();insertionSort(u_ins);ak=detak();print("Insertion : %g detik"%(ak-aw));
```