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Praktikum Algostruk Modul 5

pengurutan.py - C:/Users/dakekay/Documents/pengurutan.py (3.8.2)

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

Python 3.8.2 Shell

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```
tel)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
========== RESTART: C:/Users/dakekay/Documents/pengurutan.py ==========
>>> K = [50, 20, 70, 10]
>>> swap(K, 1, 3)
>>> K
[50, 10, 70, 20]
>>>
```

-

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

```
========== RESTART: C:/Users/dakekay/Documents/pengurutan.py ==========
>>> A = [18, 13, 44, 25, 66, 107, 78, 89]
>>> j = cariPosisiYangTerkecil(A, 2, len(A))
>>> j
3
>>>
```

-

```
L = [10, 51, 2, 18, 4, 31, 13, 5, 23, 64, 29]

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
```

Ln: 38 Col: 0

```
=============== RESTART: C:/Users/dakekay/Documents/pengurutan.py ==============
>>> bubbleSort(L)
>>> L
[2, 4, 5, 10, 13, 18, 23, 29, 31, 51, 64]
>>>
```

Jawaban : banyak nya operasi adalah melakukan 10 perbandingan dalam 1 putaran karena jika n = 11 maka n – 1 = 10, total semua operasi 55 perbandingan dalam 11 putaran.

```
=============== RESTART: C:/Users/dakekay/Documents/pengurutan.py ==============
>>> selectionSort(L)
>>> L
[2, 4, 5, 10, 13, 18, 23, 29, 31, 51, 64]
>>>
```

Jawaban : banyak nya operasi adalah melakukan 10 perbandingan hanya dalam 1 putaran, karena setiap melakukan perbandingan langsung mencari angka terkecil lalu diurutkan dengan cara swaping.

```
=============== RESTART: C:/Users/dakekay/Documents/pengurutan.py ==============
>>> insertionSort(L)
>>> L
[2, 4, 5, 10, 13, 18, 23, 29, 31, 51, 64]
>>>
```

Ln: 24 Col: 41

TUGAS

1.

Modul5Tugas.py - C:/Users/dakekay/Documents/Modul5Tugas.py (3.8.2)

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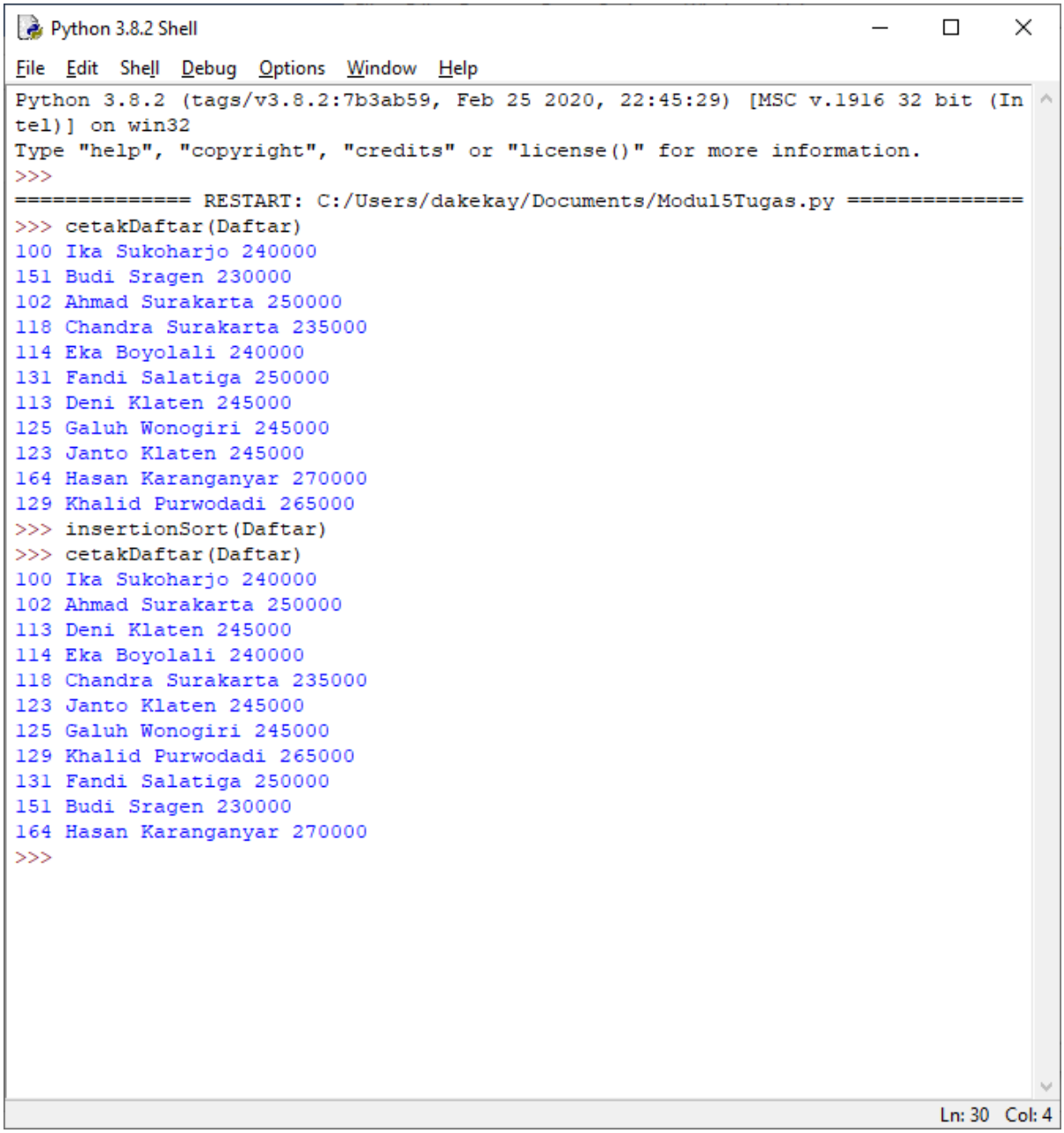
```
class MhsTIF(object) :
    def __init__(self, nama, nim, kota, us) :
        self.nama = nama
        self.nim = nim
        self.kotaTinggal = kota
        self.uangSaku = us

    def __str__(self):
        x = str(self.nim) +' '+ self.nama +' '+ self.kotaTinggal +' '+ str(self.
        return x

c0 = MhsTIF('Ika',100,'Sukoharjo', 240000)
c1 = MhsTIF('Budi',151,'Sragen', 230000)
c2 = MhsTIF('Ahmad',102,'Surakarta', 250000)
c3 = MhsTIF('Chandra',118,'Surakarta', 235000)
c4 = MhsTIF('Eka',114,'Boyolali', 240000)
c5 = MhsTIF('Fandi',131,'Salatiga', 250000)
c6 = MhsTIF('Deni',113,'Klaten', 245000)
c7 = MhsTIF('Galuh',125,'Wonogiri', 245000)
c8 = MhsTIF('Janto',123,'Klaten', 245000)
c9 = MhsTIF('Hasan',164,'Karanganyar', 270000)
c10 = MhsTIF('Khalid',129,'Purwodadi', 265000)

Daftar = [c0, c1, c2, c3, c4, c5, c6, c7, c8, c9, c10]

def insertionSort(A):
    n = len(A)
    for i in range(1, n):
        nilai = A[i]
        pos = i
        while pos > 0 and nilai.nim < A[pos - 1].nim:
            A[pos] = A[pos - 1]
            pos = pos - 1
        A[pos] = nilai

def cetakDaftar(d):
    for i in d:
        print (i)
```

Ln: 9 Col: 70


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: C:/Users/dakekay/Documents/Modul5Tugas.py ==========
>>> cetakDaftar(Daftar)
100 Ika Sukoharjo 240000
151 Budi Sragen 230000
102 Ahmad Surakarta 250000
118 Chandra Surakarta 235000
114 Eka Boyolali 240000
131 Fandi Salatiga 250000
113 Deni Klaten 245000
125 Galuh Wonogiri 245000
123 Janto Klaten 245000
164 Hasan Karanganyar 270000
129 Khalid Purwodadi 265000
>>> insertionSort(Daftar)
>>> cetakDaftar(Daftar)
100 Ika Sukoharjo 240000
102 Ahmad Surakarta 250000
113 Deni Klaten 245000
114 Eka Boyolali 240000
118 Chandra Surakarta 235000
123 Janto Klaten 245000
125 Galuh Wonogiri 245000
129 Khalid Purwodadi 265000
131 Fandi Salatiga 250000
151 Budi Sragen 230000
164 Hasan Karanganyar 270000
>>>
Ln: 30 Col: 4

2.

Modul5Tugas.py - C:/Users/dakekay/Documents/Modul5Tugas.py (3.8.2)

File Edit Format Run Options Window Help

```
#2
def penggabungan(x, y):
    z = []
    z.extend(x)
    z.extend(y)
    n = len(z)
    for i in range(1, n):
        nilai = z[i]
        pos = i
        while pos > 0 and nilai < z[pos - 1]:
            z[pos] = z[pos - 1]
            pos = pos - 1
        z[pos] = nilai
    print ('Nilai C' , z)

A = [1,3,5,7,9,11,13,15,17]
B = [2,4,6,8,10,12,14,16,18]
```

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 (In
tel)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
============== RESTART: C:/Users/dakekay/Documents/Modul5Tugas.py ==============
>>> A
[1, 3, 5, 7, 9, 11, 13, 15, 17]
>>> B
[2, 4, 6, 8, 10, 12, 14, 16, 18]
>>> penggabungan(A,B)
Nilai C [1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18]
>>>
```

3.

Modul5Tugas_no3.py - C:/Users/dakekay/Documents/Modul5Tugas_no3.py (3.8.2)

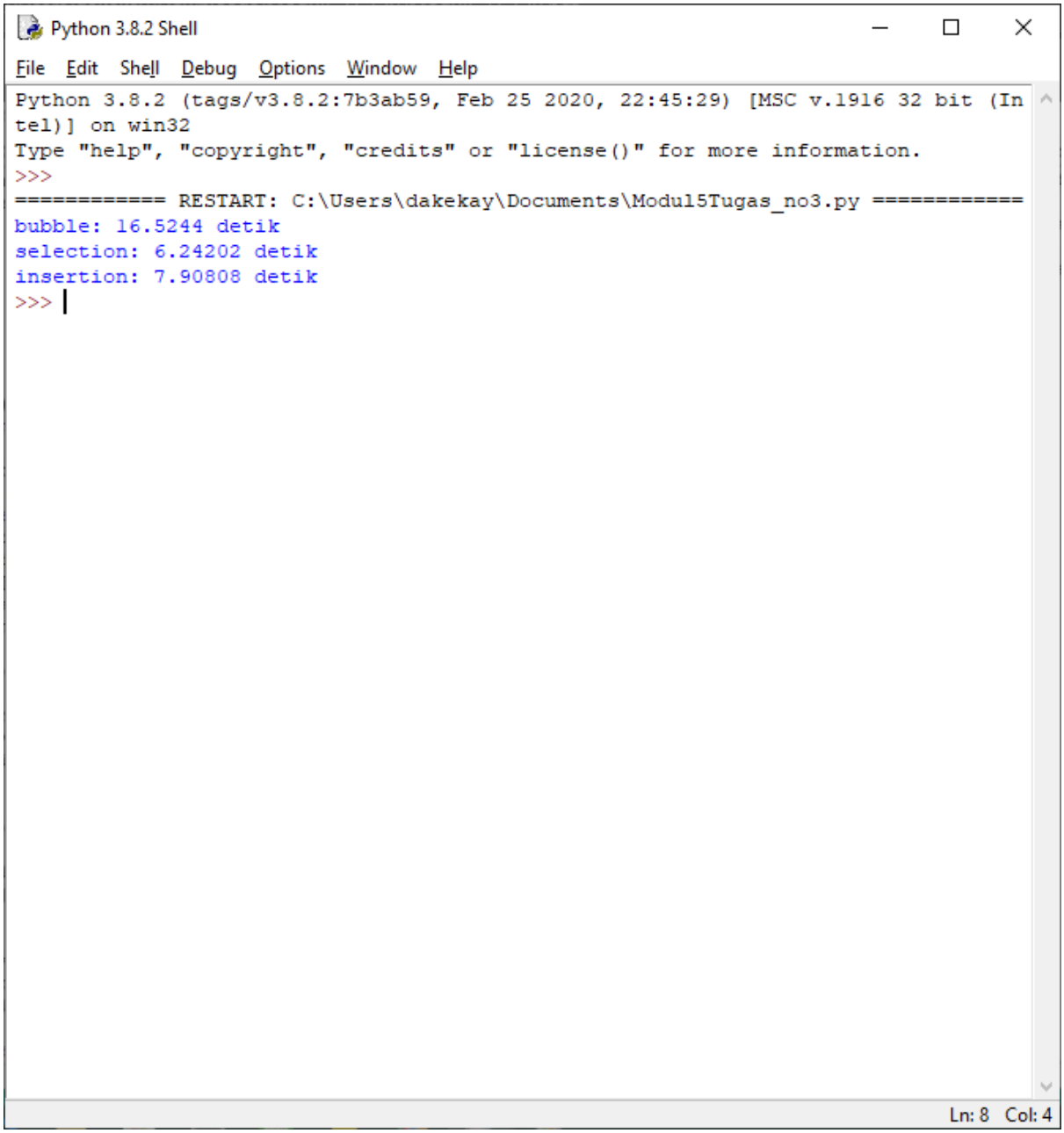
File Edit Format Run Options Window Help

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

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

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

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
```

Ln: 49 Col: 80

```
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))
```

Ln: 49 Col: 81


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: C:\Users\dakekay\Documents\Modul5Tugas_no3.py ==========
bubble: 16.5244 detik
selection: 6.24202 detik
insertion: 7.90808 detik
>>>
Ln: 8 Col: 4