PRAKTIKUM ALGORITMA DAN STRUKTUR DATA

Modul 5

Pengurutan

Disusun oleh:

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G

PROGRAM STUDI TEKNIK INFORMATIKA

FAKULTAS KOMUNIKASI DAN INFORMATIKA

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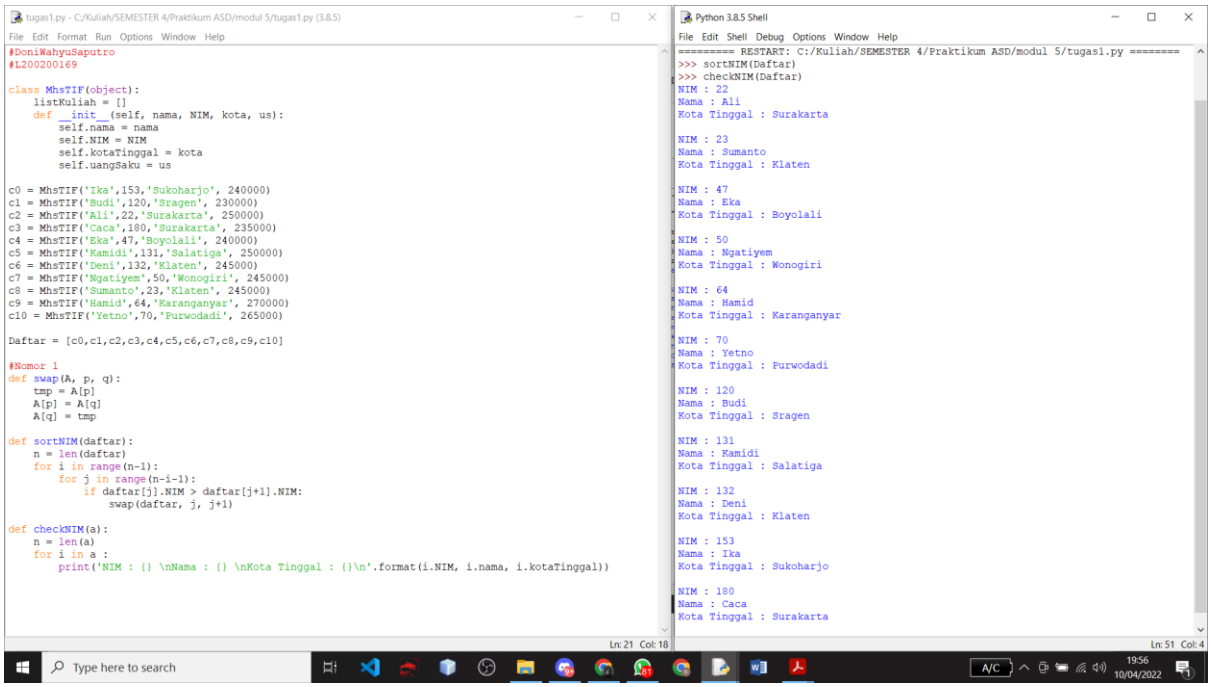
TUGAS

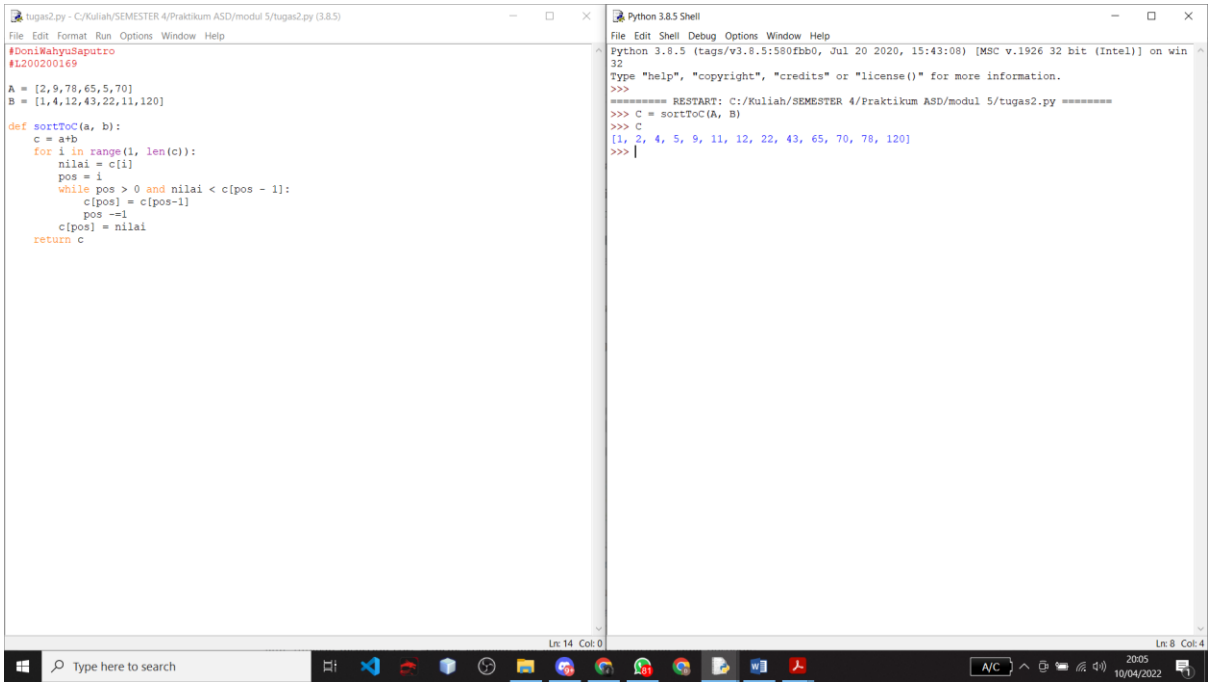
1.



```
#DoniWahyuSaputro
#L200200169

class MhsTIF(object):
    listKuliah = []
    def __init__(self, nama, NIM, kota, us):
        self.nama = nama
        self.NIM = NIM
        self.kotaTinggal = kota
        self.uangSaku = us

c0 = MhsTIF('Ika',153,'Sukoharjo', 240000)
c1 = MhsTIF('Budi',120,'Sragen', 230000)
c2 = MhsTIF('Ali',22,'Surakarta', 250000)
c3 = MhsTIF('Caca',180,'Surakarta', 235000)
c4 = MhsTIF('Eka',47,'Boyolali', 240000)
c5 = MhsTIF('Kamidi',131,'Salatiga', 250000)
c6 = MhsTIF('Deni',132,'Klaten', 245000)
c7 = MhsTIF('Ngatiyem',50,'Wonogiri', 245000)
c8 = MhsTIF('Sumanto',23,'Klaten', 245000)
c9 = MhsTIF('Hamid',64,'Karanganyar', 270000)
c10 = MhsTIF('Yetno',70,'Purwodadi', 265000)

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

#Nomor 1
def swap(A, p, q):
    tmp = A[p]
    A[p] = A[q]
    A[q] = tmp

def sortNIM(daftar):
    n = len(daftar)
    for i in range(n-1):
        for j in range(n-i-1):
            if daftar[j].NIM > daftar[j+1].NIM:
                swap(daftar, j, j+1)

def checkNIM(a):
    n = len(a)
    for i in a :
        print('NIM : {} \nNama : {} \nKota Tinggal : {}\n'.format(i.NIM, i.nama, i.kotaTinggal))
```

```
========= RESTART: C:/Kuliah/SEMESTER 4/Praktikum ASD/modul 5/tugas1.py ========
>>> sortNIM(Daftar)
>>> checkNIM(Daftar)
NIM : 22
Nama : Ali
Kota Tinggal : Surakarta

NIM : 23
Nama : Sumanto
Kota Tinggal : Klaten

NIM : 47
Nama : Eka
Kota Tinggal : Boyolali

NIM : 50
Nama : Ngatiyem
Kota Tinggal : Wonogiri

NIM : 64
Nama : Hamid
Kota Tinggal : Karanganyar

NIM : 70
Nama : Yetno
Kota Tinggal : Purwodadi

NIM : 120
Nama : Budi
Kota Tinggal : Sragen

NIM : 131
Nama : Kamidi
Kota Tinggal : Salatiga

NIM : 132
Nama : Deni
Kota Tinggal : Klaten

NIM : 153
Nama : Ika
Kota Tinggal : Sukoharjo

NIM : 180
Nama : Caca
Kota Tinggal : Surakarta
```

2.



```
#DoniWahyuSaputro
#L200200169

A = [2,9,78,65,5,70]
B = [1,4,12,43,22,11,120]

def sortToC(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
    return c
```

```
Python 3.8.5 (tags/v3.8.5:580fbb0, Jul 20 2020, 15:43:08) [MSC v.1926 32 bit (Intel)] on win
32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
========= RESTART: C:/Kuliah/SEMESTER 4/Praktikum ASD/modul 5/tugas2.py ========
>>> C = sortToC(A, B)
>>> C
[1, 2, 4, 5, 9, 11, 12, 22, 43, 65, 70, 78, 120]
>>>
```

3.

tugas3.py - C:/Kuliah/SEMESTER 4/Praktikum ASD/modul 5/tugas3.py (3.8.5)

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```
#DoniWahyuSaputro
#L200200169

from time import time as detak
from random import shuffle as acak

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
```

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

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));
```

Output:

Python 3.8.5 Shell

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```
Python 3.8.5 (tags/v3.8.5:580fbb0, Jul 20 2020, 15:43:08) [MSC v.1926 32 bit (In
tel)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
========== RESTART: C:/Kuliah/SEMESTER 4/Praktikum ASD/modul 5/tugas3.py ========
bubble: 4.57141 detik
selection: 1.6838 detik
insertion: 2.01285 detik
>>>
```