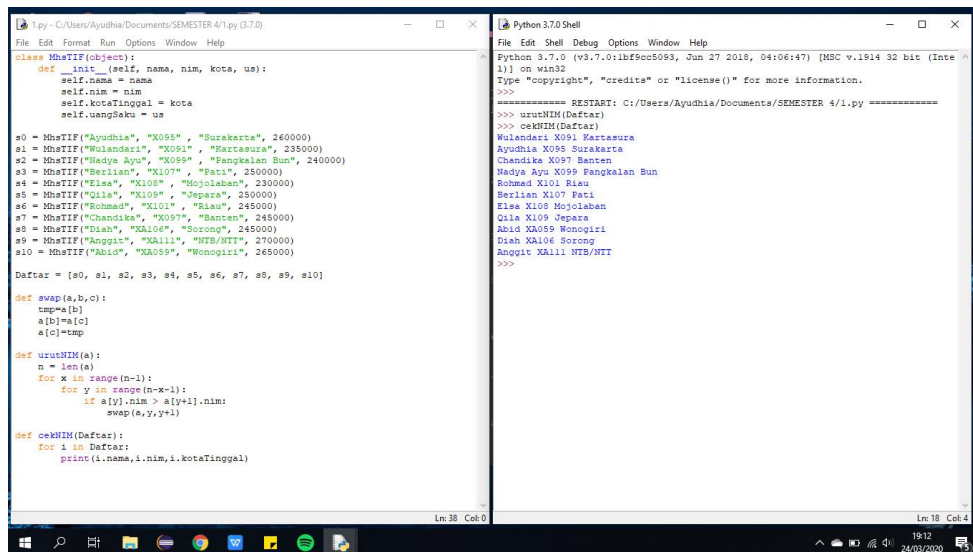


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PRAKTIKUM ALGORITMA DAN STRUKTUR DATA MODUL 5

5.4 Soal-soal untuk Mahasiswa

1.



```
1.py - C:/Users/Ayudhia/Documents/SEMESTER 4/1.py (3.7.0)
class Mahasiswa(object):
    def __init__(self, nama, nim, kota, us):
        self.nama = nama
        self.nim = nim
        self.kotaTinggal = kota
        self.uangSaku = us

s0 = Mahasiswa("Ayudhia", "X095", "Surakarta", 260000)
s1 = Mahasiswa("Wulandari", "X091", "Kartasura", 235000)
s2 = Mahasiswa("Nadya Ayu", "X099", "Pangkalen Bun", 240000)
s3 = Mahasiswa("Berlian", "X107", "Pati", 250000)
s4 = Mahasiswa("Elsa", "X108", "Mojolaban", 230000)
s5 = Mahasiswa("Qila", "X109", "Jepara", 250000)
s6 = Mahasiswa("Rohmad", "X101", "Riau", 245000)
s7 = Mahasiswa("Chandika", "X097", "Banten", 245000)
s8 = Mahasiswa("Diah", "X106", "Sorong", 245000)
s9 = Mahasiswa("Anggit", "X111", "NTB/NTT", 270000)
s10 = Mahasiswa("Abid", "XA059", "Wonorejo", 265000)

Daftar = [s0, s1, s2, s3, s4, s5, s6, s7, s8, s9, s10]

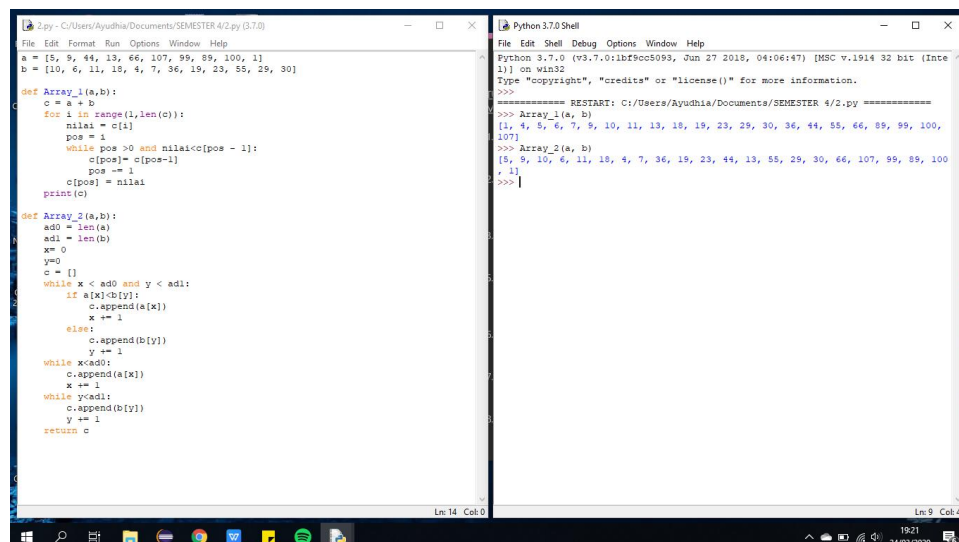
def swap(a,b,c):
    tmp=a[b]
    a[b]=a[c]
    a[c]=tmp

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)

def cekNIM(Daftar):
    for i in Daftar:
        print(i.nama,i.nim,i.kotaTinggal)

Python 3.7.0 Shell
Python 3.7.0 (v3.7.0:1bf9cc5093, Jun 27 2018, 04:06:47) [MSC v.1914 32 bit (Intel)] on win32
Type "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: C:/Users/Ayudhia/Documents/SEMESTER 4/1.py =====
>>> urutNIM(Daftar)
Wulandari X091 Kartasura
Ayudhia X095 Surakarta
Chandika X097 Banten
Nadya Ayu X099 Pangkalen Bun
Rohmad X101 Riau
Berlian X107 Pati
Elsa X108 Mojolaban
Qila X109 Jepara
Abid XA059 Wonorejo
Diah XA106 Sorong
Anggit X111 NTB/NTT
>>>
```

2.



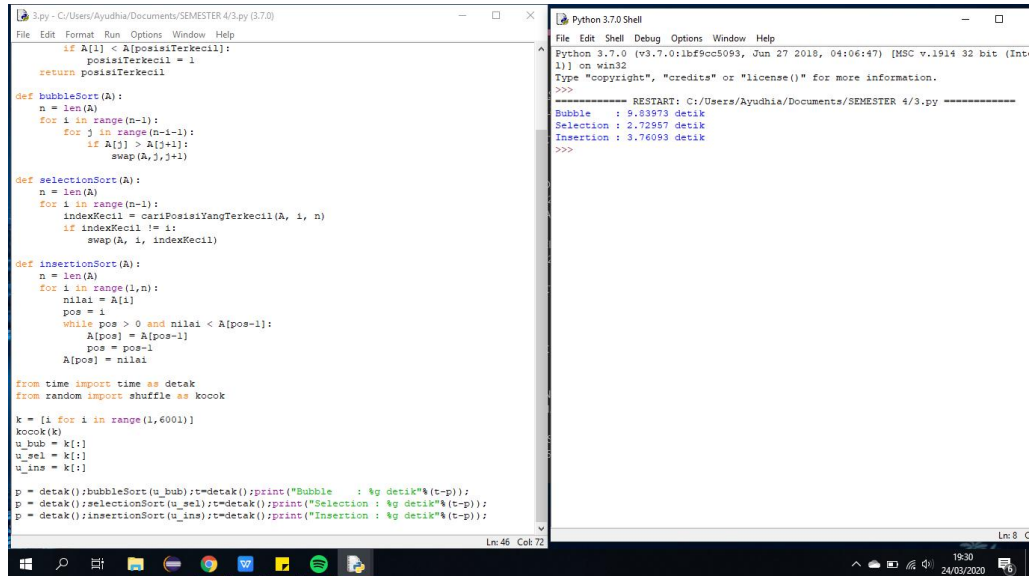
```
2.py - C:/Users/Ayudhia/Documents/SEMESTER 4/2.py (3.7.0)
a = [5, 9, 44, 13, 66, 107, 99, 89, 100, 1]
b = [10, 6, 11, 18, 4, 7, 36, 19, 23, 55, 29, 30]

def Array_1(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)

def Array_2(a,b):
    ad0 = len(a)
    ad1 = len(b)
    x = 0
    y = 0
    c = []
    while x < ad0 and y < ad1:
        if a[x] < b[y]:
            c.append(a[x])
            x += 1
        else:
            c.append(b[y])
            y += 1
    while x < ad0:
        c.append(a[x])
        x += 1
    while y < ad1:
        c.append(b[y])
        y += 1
    return c

Python 3.7.0 Shell
Python 3.7.0 (v3.7.0:1bf9cc5093, Jun 27 2018, 04:06:47) [MSC v.1914 32 bit (Intel)] on win32
Type "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: C:/Users/Ayudhia/Documents/SEMESTER 4/2.py =====
>>> Array_1(a, b)
[5, 9, 6, 11, 18, 4, 7, 36, 19, 23, 55, 29, 30, 66, 89, 99, 100, 107]
>>> Array_2(a, b)
[5, 9, 10, 6, 11, 18, 4, 7, 36, 19, 23, 44, 13, 55, 29, 30, 66, 107, 99, 89, 100, 1]
>>>
```

3.



```
2.py - C:/Users/Ayudhia/Documents/SEMESTER 4/3.py (3.7.0)
File Edit Format Run Options Window Help
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 detik
from random import shuffle as kocok

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

p = detik();bubbleSort(u_bub);t=detik();print("Bubble : %g detik"%(t-p));
p = detik();selectionSort(u_sel);t=detik();print("Selection : %g detik"%(t-p));
p = detik();insertionSort(u_ins);t=detik();print("Insertion : %g detik"%(t-p));

Python 3.7.0 Shell
File Edit Shell Debug Options Window Help
Python 3.7.0 (tags/v3.7.0:1bf9cc5093, Jun 27 2018, 04:06:47) [MSC v.1914 32 bit (Int
1)] on win32
Type "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: C:/Users/Ayudhia/Documents/SEMESTER 4/3.py =====
>>>
Bubble : 9.89973 detik
Selection : 2.72957 detik
Insertion : 3.76093 detik
>>>
```