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Modul : 5

Praktikum Algoritma Struktur Data

MODUL 5

No 1

```
1.py - F:\KULIAH\PRAK ASD\Modul5\1.py (3.10.2)                                         □   ×
File  Edit  Format  Run  Options  Window  Help

class MhsTIF(object):
    def __init__(self,nama,NIM,kota,us):
        self.nama = nama
        self.NIM = NIM
        self.kotaTinggal = kota
        self.uangSaku = us
    def ambilNama(self):
        return self.nama
    def ambilNIM(self):
        return self.NIM
    def ambilKota(self):
        return self.kota
    def ambilUangSaku(self):
        return self.uangSaku

c0 = MhsTIF('Ika',10,'Sukoharjo',240000)
c1 = MhsTIF('Budi',51,'Sragen', 230000)
c2 = MhsTIF('Ahmad',2,'Surakarta',250000)
c3 = MhsTIF('Chandra',18,'Surakarta',235000)
c4 = MhsTIF('Eka',4,'Boyolali',240000)
c5 = MhsTIF('Fandi',31,'Salatiga',250000)
c6 = MhsTIF('Deni',13,'Klaten', 240000)
c7 = MhsTIF('Galuh',5,'Wonogiri',245000)
c8 = MhsTIF('Janto',23,'Klaten',245000)
c9 = MhsTIF('Hasan',64,'Karanganyar',270000)
c10 = MhsTIF('Khalid',29,'Purwodadi',265000)

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

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

def NIM_MHS(data):
    for i in data:
        print(i.NIM)

def Bubble_Sort(data):
    x = len(data)
    for i in range (x-1):
        for a in range(x-i-1):
            if data[a].NIM > data[a+1].NIM:
                swap(data,a,a+1)
```

```
IDLE Shell 3.10.2
File  Edit  Shell  Debug  Options  Window
>>> NIM_MHS(Daftar)
    10
    51
    2
    18
    4
    31
    13
    5
    23
    64
    29
>>>
```

No 2

```
X = [2,3,6,7,8,9,11,15,16]
Y = [20,22,45,66,77]
C = X + Y

def mengurutkan(a):
    q = len(a)
    for i in range (q-1):
        for j in range(q-i-1):
            if a[j]> a[j+1]:
                swap(a,j,j+1)
```

```
IDLE Shell 3.10.2
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>>> mengurutkan(C)
>>> C
    [2, 3, 6, 7, 8, 9, 11, 15, 16, 20, 22, 45, 66, 77]
>>>
```

No 3

```python
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[1] < A[posisiTerkecil]:
            posisiTerkecil = 1
    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

k = [i for i in range(1,6001)]
kocok(k)
u_bub = k[:]
u_sel = k[:]
u_ins = k[:]
```
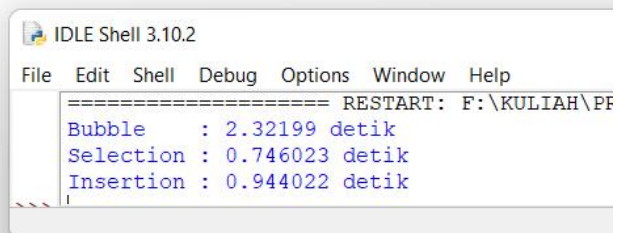
IDLE Shell 3.10.2

File Edit Shell Debug Options Window Help

```
==================== RESTART: F:\KULIAH\PF
Bubble    : 2.32199 detik
Selection : 0.746023 detik
Insertion : 0.944022 detik
>>>
```