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TUGAS

1.

```python
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.uangSaku)
        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)
```

```
File  Edit  Shell  Debug  Options  Window  Help
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 infor
mation.
>>>
======== RESTART: C:/Users/AJI TOSKA/Music/algo/Modul5/mo
dul5tugas.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
...
```

2.

```python
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]
```

```
Type "copyright", "credits" or "license()" for more information.
>>>
======== RESTART: C:/Users/AJI TOSKA/Music/algo/Modul5/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
>>> 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.

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

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

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))
>>>
======= RESTART: C:/Users/AJI TOSKA/Music/algo/Modul5/modul5tugas2.py =======
bubble: 22.5373 detik
selection: 7.23046 detik
insertion: 10.7407 detik
>>>
```