LAPORAN PRAKTIKUM

Modul 5

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Kelas :D

1. Program mengurutkan array dengan NIM

Thonny - C:\Users\hafid\Downloads\Compressed\Modul5_D_130\No_1.py @ 46 : 1

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```python
class MhsTIF(object):
    def __init__(self, nama, umur, kota, NIM):
        self.nama = nama
        self.umur = umur
        self.kotaTinggal = kota
        self.nim = NIM

    def __str__(self):
        x = self.nim
        return x

    def getnim(self):
        return self.nim

a0 = MhsTIF('Hafidz', 19, 'Batang', 'L200170134')
a1 = MhsTIF('ocha', 15, 'Klaten', 'L200170135')
a2 = MhsTIF('Bambang', 12, 'Surakarta', 'L200170187')
a3 = MhsTIF('Supar', 21, 'Wonogiri', 'L200170106')
a4 = MhsTIF('Ningsih', 20, 'Salatiga', 'L200170042')
a5 = MhsTIF('Silvi', 17, 'Purworejo', 'L200170061')
a6 = MhsTIF('Arga', 11, 'Bandung', 'L200170095')
a7 = MhsTIF('Surati', 42, 'Surabaya', 'L200170049')
a8 = MhsTIF('Sukirman', 26, 'Purwodadi', 'L200170079')
a9 = MhsTIF('Danis', 16, 'Salatiga', 'L200170040')
a10 = MhsTIF('Dinsa', 15, 'Purwodadi', 'L200170055')

Daftar = [a0, a1, a2, a3, a4, a5, a6, a7, a8, a9, a10]


Daftar = [a0, a1, a2, a3, a4, a5, a6, a7, a8, a9, a10]


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)

insertionSort(Daftar)
cetakDaftar(Daftar)
```

```
Shell
>>> %Run No_1.py

  L200170040
  L200170042
  L200170049
  L200170055
  L200170061
  L200170079
  L200170095
  L200170106
  L200170134
  L200170135
  L200170187

>>>
```

2. Program menggabungkan array

```
No_1.py   No_2.py   No_3.py

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

A = [1,2,3,4,7,9,11,13,23,90]
B = [2,4,9,10,11,12,14,15,19]
C = []
C.extend(A)
C.extend(B)
print ('Nilai C' , C)
```

OUTPUT

```
>>> %Run No_2.py

  Nilai C [1, 2, 3, 4, 7, 9, 11, 13, 23, 90, 2, 4, 9, 10, 11, 12, 14, 15, 19]

>>> %Run No_2.py

  Nilai C [1, 2, 3, 4, 7, 9, 11, 13, 23, 90, 2, 4, 9, 10, 11, 12, 14, 15, 19]

>>> %Run No_2.py

  Nilai C [1, 2, 3, 4, 7, 9, 11, 13, 23, 90, 2, 4, 9, 10, 11, 12, 14, 15, 19]

>>> %Run No_2.py

  Nilai C [1, 2, 3, 4, 7, 9, 11, 13, 23, 90, 2, 4, 9, 10, 11, 12, 14, 15, 19]

>>>
```

3. Program bubble short

No_1.py | No_2.py | No_3.py

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

def selectionSort(A):
    n = len(A)
    for i in range(n - 1):
        indexKecil = cariPosisiYangTerkecil(A, i, n)
        if indexKecil !=i:
            swap(A, i, indexKecil)

```

No_1.py | No_2.py | No_3.py

```python
    return posisiYangTerkecil

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));

```

OUTPUT

```
========== RESTART ==========
>>> %Run No_3.py

  bubble: 5.81029 detik
  selection: 2.38812 detik
  insertion:2.75762 detik

>>>
```