

**TUGAS PRAKTIKUM  
ALGORITMA DAN STRUKTUR DATA  
MODUL 5 “PENGURUTAN”**

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1. Berikut screenshot programnya :

```
#Nomor 1
class Mahasiswa(object):
    def __init__(self,nim) :
        self.nim = nim

a1= "L200170156"
a2= "L200170152"
a3= "L200170155"
a4= "L200170147"
a5= "L200170143"

Daftar = [a1,a2,a3,a4,a5]

print("Nomor 1")
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

insertionSort(Daftar)
print("Berikut adalah NIM Mahasiswa secara urut :", "\n",Daftar, "\n")
```

- Berikut output programnya :

```
Python 3.7.2 (tags/v3.7.2:9a3ffc0492, Dec 23 2018, 23:09:28) [MSC v.1916 64 k
(AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: D:/Senester 4/Prak ALGOSTRUK/COBA_MODUL5.py =====
Nomor 1
Berikut adalah NIM Mahasiswa secara urut :
['L200170143', 'L200170147', 'L200170152', 'L200170155', 'L200170156']
```

**Muhibah Fata Tika**

**L200170156**

**D**

2. Berikut screenshot programnya :

```
#Nomor 2
print("Nomor 2")
A = ["A100", "B200", "C300", "D400", "E500"]
B = ["F600", "G700", "H700", "I800", "J900"]
C = []
C.extend(A)
C.extend(B)
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
insertionSort(C)
print("Nilai C yang telah urut seperti dibawah ini : ", "\n", C, "\n")
```

Berikut output programnya :

```
Nomor 2
Nilai C yang telah urut seperti dibawah ini :
['A100', 'B200', 'C300', 'D400', 'E500', 'F600', 'G700', 'H700', 'I800', 'J900']
```

3. Berikut screenshot programnya :

```
#Nomor 3
print("Nomor 3")
from time import time as detik
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)

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

aw = detik();bubbleSort(u_bub);ak=detak();print("bubble : %g detik" %(ak-aw));
aw = detik();selectionSort(u_bub);ak=detak();print("selection: %g detik" %(ak-aw));
aw = detik();insertionSort(u_bub);ak=detak();print("insertion : %g detik" %(ak-aw));
```

Berikut output programnya :

```
Nomor 3
bubble : 1.70601 detik
selection: 1.2361 detik
insertion : 0 detik
```