

Nama : Rayhan Nurfalah Lukman  
NIM : L200180100  
Kelas : D

## Modul 5

### Tugas

#### 1.

```
Python 3.7.0 Shell
File Edit Shell Debug Options Window Help
Python 3.7.0 (v3.7.0:1bf9cc5093, Jun 27 2018, 04:59:51) [MSC v.1914 64 bit (AMD64)] on win32
Type "copyright", "credits" or "license()" for more information.
>>>
= RESTART: E:/TUGAS INFORMATIKA/SEMESTER 4/Prak_Algostruk/Modul_5/TUGAS_py =
>>> cekNIM(Daftar)
L200180087
L200180100
L200180097
L200180101
L200180079
L200180078
L200180069
L200180066
L200180088
L200180084
>>> urutNIM(Daftar)
L200180066
L200180069
L200180078
L200180079
L200180084
L200180087
L200180088
L200180097
L200180100
L200180101
>>> |

TUGAS_py - E:/TUGAS INFORMATIKA/SEMESTER 4/Prak_Algostruk/Modul_5/TUGAS_py (3.7.0)
File Edit Format Run Options Window Help
class MhsTIF(object):
    def __init__(self, nama, NIM, alamat, us):
        self.nama = nama
        self.NIM = NIM
        self.alamat = alamat
        self.us = us

    def __str__(self):
        s = self.nama + "NIM" + str(self.NIM)\
            + ". Tinggal di " + self.alamat\
            + ". Uang Saku Rp. " + str(self.us)\
            + " Tiap Bulannya."

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

Daftar = [MhsTIF('Rey', "L200180087", 'Surakarta', 500000),
          MhsTIF('Rayhan', "L200180100", 'Karanganyar', 1000000),
          MhsTIF('Dika', "L200180097", 'Bekasi', 800000),
          MhsTIF('Irlu', "L200180101", 'Riau', 300000),
          MhsTIF('Beny', "L200180079", 'Karanganyar', 1200000),
          MhsTIF('Akhar', "L200180078", 'Madiun', 1130000),
          MhsTIF('Taufiq', "L200180069", 'Pacitan', 750000),
          MhsTIF('Annisa', "L200180066", 'Surakarta', 830000),
          MhsTIF('Aprinta', "L200180088", 'Sragen', 780000),
          MhsTIF('Sindhi', "L200180084", 'Klaten', 650000)]

def cekNIM(object):
    for i in object:
        print(i.NIM)

def urutNIM(object):
    n = len(object)
    for i in range(n-1):
        for j in range(n-i-1):
            if object[j].NIM > object[j+1].NIM:
                swap(object, j, j+1)
```

#### 2.

```
Python 3.7.0 Shell
File Edit Shell Debug Options Window Help
Python 3.7.0 (v3.7.0:1bf9cc5093, Jun 27 2018, 04:59:51) [MSC v.1914 64 bit (AMD64)] on win32
Type "copyright", "credits" or "license()" for more information.
>>>
= RESTART: E:/TUGAS INFORMATIKA/SEMESTER 4/Prak_Algostruk/Modul_5/TUGAS_py =
>>> combine(list1, list2)
[1, 2, 3, 4, 5, 6, 7, 8, 9, 10]
>>>

TUGAS_py - E:/TUGAS INFORMATIKA/SEMESTER 4/Prak_Algostruk/Modul_5/TUGAS_py (3.7.0)
File Edit Format Run Options Window Help
list1 = [1, 6, 7, 8, 10]
list2 = [2, 3, 4, 5, 9]

def combine(A, B):
    la = len(A)
    lb = len(B)
    c = list()
    i = 0
    j = 0
    while i < la and j < lb:
        if A[i] < B[j]:
            c.append(A[i])
            i += 1
        else:
            c.append(B[j])
            j += 1
    while i < la:
        c.append(A[i])
        i += 1
    while j < lb:
        c.append(B[j])
        j += 1
    return c
```

### 3.

The image shows two windows from a Python 3.7.0 environment. The left window is a shell showing the execution of a script and its output. The right window is a text editor showing the source code of the script.

**Python 3.7.0 Shell Output:**

```
>>>
= RESTART: E:/TUGAS INFORMATIKA/SEMESTER 4/Prak_Algostruk/Modul_5/TUGAS_.py =
Bubble : 3.21161 detik
Selection : 1.02169 detik
Insertion : 1.57581 detik
>>>
```

**Python Script Code (TUGAS\_.py):**

```
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[:]

aw = detik(); bubbleSort(u_bub); ak=detak(); print("Bubble : %g detik"%(ak-aw));
aw = detik(); selectionSort(u_sel); ak=detak(); print("Selection : %g detik"%(ak-aw));
aw = detik(); insertionSort(u_ins); ak=detak(); print("Insertion : %g detik"%(ak-aw));
```