LAPORAN PRAKTIKUM
ALGORITMA DAN STRUKTUR DATA
MODUL 5
PENGURUTAN

Disusun oleh:

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2022/2023

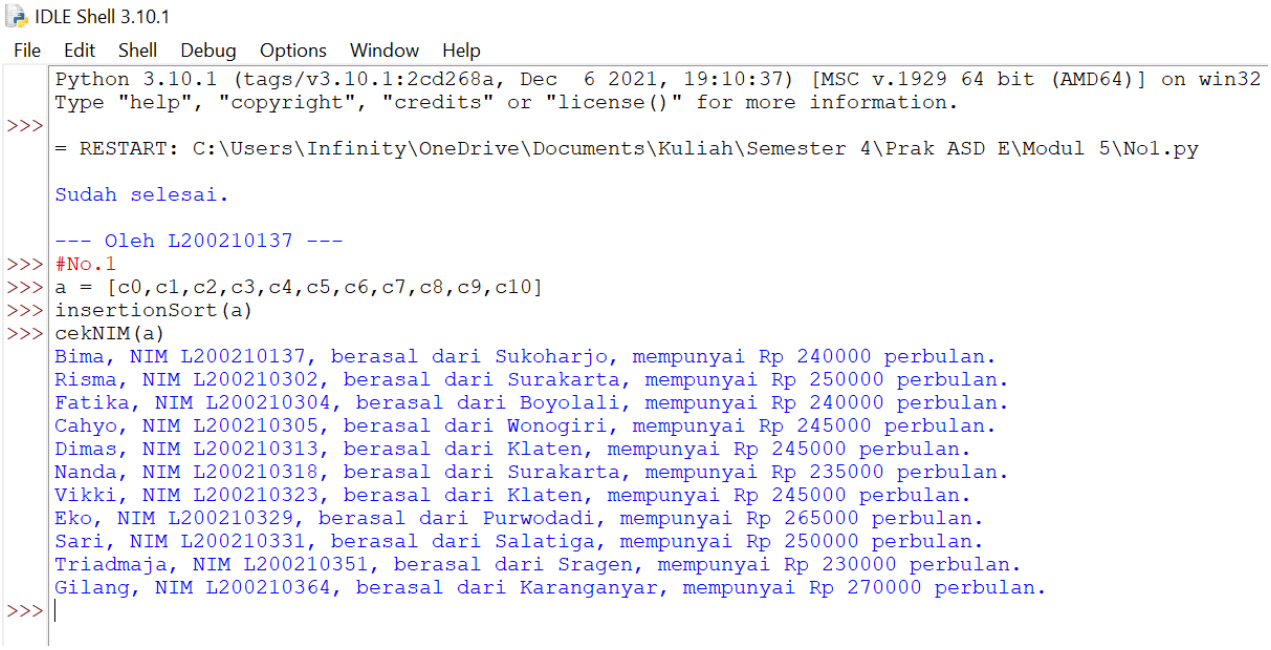
5.4 Soal-soal untuk Mahasiswa

Nomor 1 :

```
#No.1
class Manusia(object):
    keadaan = 'lapar'
    def __init__(self,nama):
        self.nama = nama
    def ucapkanSalam(self):
        print("salaam, namaku",self.nama)
    def makan(self, s):
        print("Saya baru saja makan", s)
        self.keadaan = 'kenyang'
    def olahraga(self,k):
        print("Saya baru saja latihan", k)
        self.keadaan = 'lapar'
    def mengalikanDenganDua(self,n):
        return n*2

class Mahasiswa(Manusia):
    listKuliah = []
    def __init__(self,nama,NIM,kota,us):
        self.nama = nama
        self.NIM = NIM
        self.kotaTinggal = kota
        self.uangSaku = us
    def __str__(self):
        s = self.nama + ', NIM ' + str(self.NIM) \
            + ', berasal dari ' + self.kotaTinggal \
            + ', mempunyai Rp ' + str(self.uangSaku) \
            + ' perbulan.'
        return s
    def ambilNama(self):
        return self.nama
    def ambilNIM(self):
```

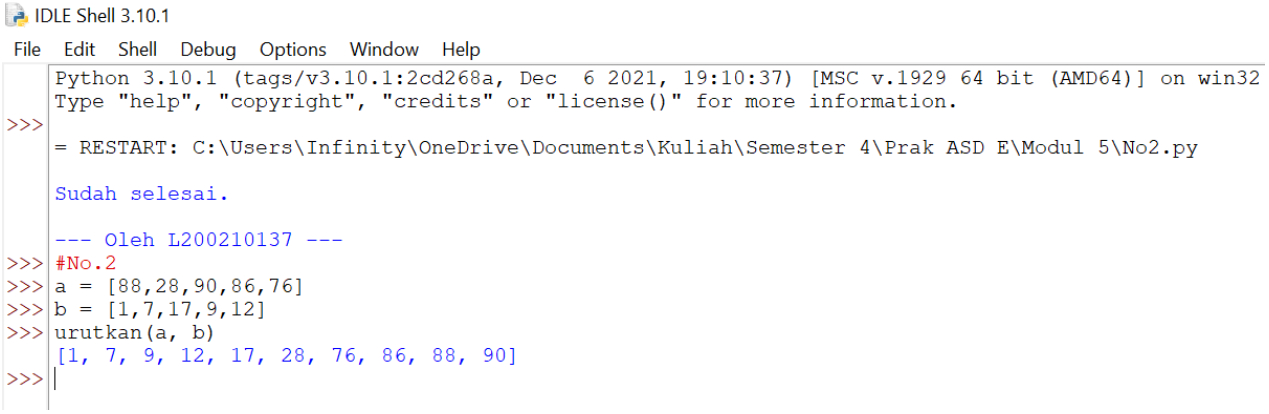
```
        return self.NIM
    def ambilUangSaku(self):
        return self.uangSaku
    def makan(self,s):
        print("Saya baru saja makan",s)
        self.keadaan = 'kenyang'
    def ambilKotaTinggal(self):
        return self.kotaTinggal
    def perbaruiKotaTinggal(self,kota):
        self.kotaTinggal = kota
    def tambahUangSaku(self,nom):
        self.uangSaku += nom
    def ambilKuliah(self, matkul):
        self.listKuliah.append(matkul)
    def hapusMatkul(self, matkul):
        self.listKuliah.remove(matkul)

class MhsTIF(Mahasiswa):
    def katakanPy(self):
        print('Python is cool.')

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 cekNIM(a):
    for i in a:
        print(i)
```

```
c0 = Mahasiswa('Bima','L200210137','Sukoharjo', 240000)
c1 = Mahasiswa('Triadmaja','L200210351','Sragen', 230000)
c2 = Mahasiswa('Risma','L200210302','Surakarta', 250000)
c3 = Mahasiswa('Nanda','L200210318','Surakarta', 235000)
c4 = Mahasiswa('Fatika','L200210304','Boyolali', 240000)
c5 = Mahasiswa('Sari','L200210331','Salatiga', 250000)
c6 = Mahasiswa('Dimas','L200210313','Klaten', 245000)
c7 = Mahasiswa('Cahyo','L200210305','Wonogiri', 245000)
c8 = Mahasiswa('Vikki','L200210323','Klaten', 245000)
c9 = Mahasiswa('Gilang','L200210364','Karanganyar', 270000)
c10 = Mahasiswa('Eko','L200210329','Purwodadi', 265000)

print('')
print('Sudah selesai.')

print('\n--- Oleh L200210137 ---')
```



Nomor 2 :

```
#No.2
def urutkan(a,b):
    c = a + b
    for x in range(len(c)):
        terkecil = x
        for y in range(x+1, len(c)):
            if c[terkecil] > c[y]:
                terkecil = y
        c[x], c[terkecil] = c[terkecil], c[x]
    return c

print('')
print('Sudah selesai.')

print('\n--- Oleh L200210137 ---')
```



Nomor 3 :

```
#No.3
from time import time as waktu
from random import shuffle as acak

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 cariPosisiTerkecil(A, x, y):
    posisiTerkecil = x
    for i in range(x+1, y):
        if A[1] < A[posisiTerkecil]:
            posisiTerkecil = 1
    return posisiTerkecil

def selectionSort(A):
    n = len(A)
    for i in range(n-1):
        indexKecil = cariPosisiTerkecil(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]
        posisi = i
        while posisi > 0 and nilai < A[posisi-1]:
            A[posisi] = A[posisi-1]
            posisi = posisi-1
        A[posisi] = nilai


ac = [i for i in range(1,6001)]
acak(ac)
```

```
u_bubble = ac[:]
u_select = ac[:]
u_insert = ac[:]

a = waktu();bubbleSort(u_bubble);b=waktu();print("~~~Bubble
: %g detik~~~"%(b-a));
a =
waktu();selectionSort(u_select);b=waktu();print("~~~Selection
: %g detik~~~"%(b-a));
a =
waktu();insertionSort(u_insert);b=waktu();print("~~~Insertion
: %g detik~~~"%(b-a));

print('')
print('Sudah selesai.')

print('\n--- Oleh L200210137 ---')
```