NAMA : NOVERA DYAH A.
NIM : L200180026
KELAS : B

MODUL 5

LATIHAN

*latihan.py - E:\TUGAS TUGAS KULIAH\SEMESTER 4\Praktikum Algoritma Struktur data\MOD...

File Edit Format Run Options Window Help

```
# 5-Pengurutan

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

Ln: 9 Col: 0

Python 3.8.2 Shell

File Edit Shell Debug Options Window Help

```
Python 3.8.2 (tags/v3.8.2:7b3ab59, Feb 25 2020, 22:45:29) [MSC v.1916 32 bit (In
tel)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
= RESTART: E:\TUGAS TUGAS KULIAH\SEMESTER 4\Praktikum Algoritma Struktur data\MO
DUL - 05\latihan.py
>>> K = [10, 11, 12, 13, 14]
>>> swap(K, 1, 3)
>>> K
[10, 13, 12, 11, 14]
>>>
```

Ln: 9 Col: 4

latihan.py - E:\TUGAS TUGAS KULIAH\SEMESTER 4\Praktikum Algoritma Struktur data\MOD...

File Edit Format Run Options Window Help

```
# 5-Pengurutan

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


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

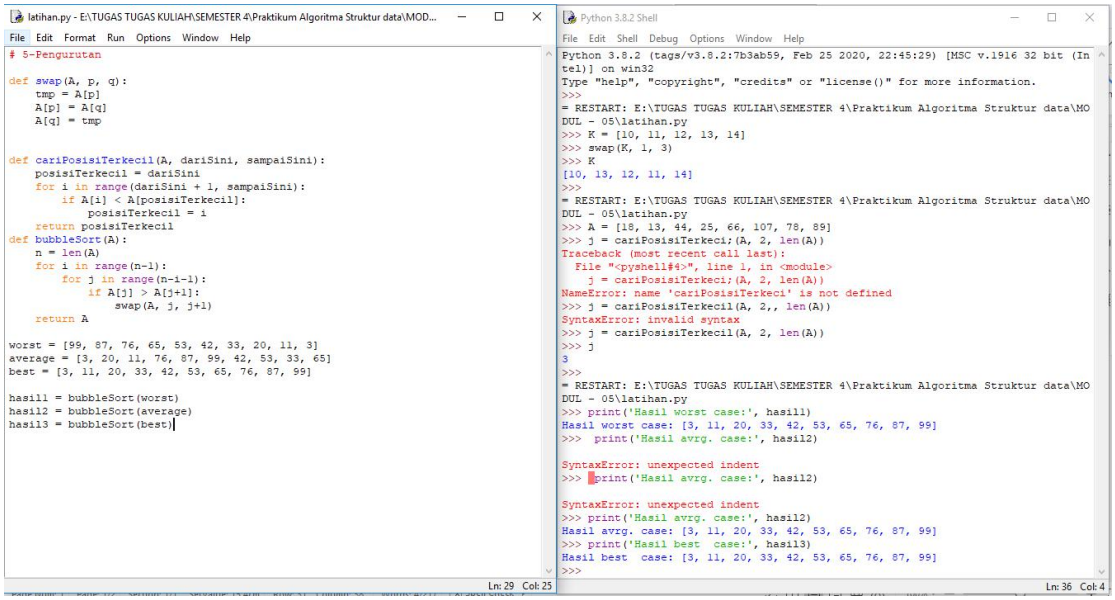
Ln: 14 Col: 25

Python 3.8.2 Shell

File Edit Shell Debug Options Window Help

```
Python 3.8.2 (tags/v3.8.2:7b3ab59, Feb 25 2020, 22:45:29) [MSC v.1916 32 bit (In
tel)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
= RESTART: E:\TUGAS TUGAS KULIAH\SEMESTER 4\Praktikum Algoritma Struktur data\MO
DUL - 05\latihan.py
>>> K = [10, 11, 12, 13, 14]
>>> swap(K, 1, 3)
>>> K
[10, 13, 12, 11, 14]
>>>
= RESTART: E:\TUGAS TUGAS KULIAH\SEMESTER 4\Praktikum Algoritma Struktur data\MO
DUL - 05\latihan.py
>>> A = [18, 13, 44, 25, 66, 107, 78, 89]
>>> j = cariPosisiTerkeci;(A, 2, len(A))
Traceback (most recent call last):
  File "<pyshell#4>", line 1, in <module>
    j = cariPosisiTerkeci;(A, 2, len(A))
NameError: name 'cariPosisiTerkeci' is not defined
>>> j = cariPosisiTerkecil(A, 2, len(A))
SyntaxError: invalid syntax
>>> j = cariPosisiTerkecil(A, 2, len(A))
>>> j
3
>>>
```

Ln: 22 Col: 4



latihan.py - E:\TUGAS TUGAS KULIAH\SEMESTER 4\Praktikum Algoritma Struktur data\MOD...

File Edit Format Run Options Window Help

```
# 5-Pengurutan

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


def cariPosisiTerkecil(A, dariSini, sampaiSini):
    posisiTerkecil = dariSini
    for i in range(dariSini + 1, sampaiSini):
        if A[i] < A[posisiTerkecil]:
            posisiTerkecil = i
    return posisiTerkecil
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)
    return A

worst = [99, 87, 76, 65, 53, 42, 33, 20, 11, 3]
average = [3, 20, 11, 76, 87, 99, 42, 53, 33, 65]
best = [3, 11, 20, 33, 42, 53, 65, 76, 87, 99]

hasil1 = bubbleSort(worst)
hasil2 = bubbleSort(average)
hasil3 = bubbleSort(best)
```

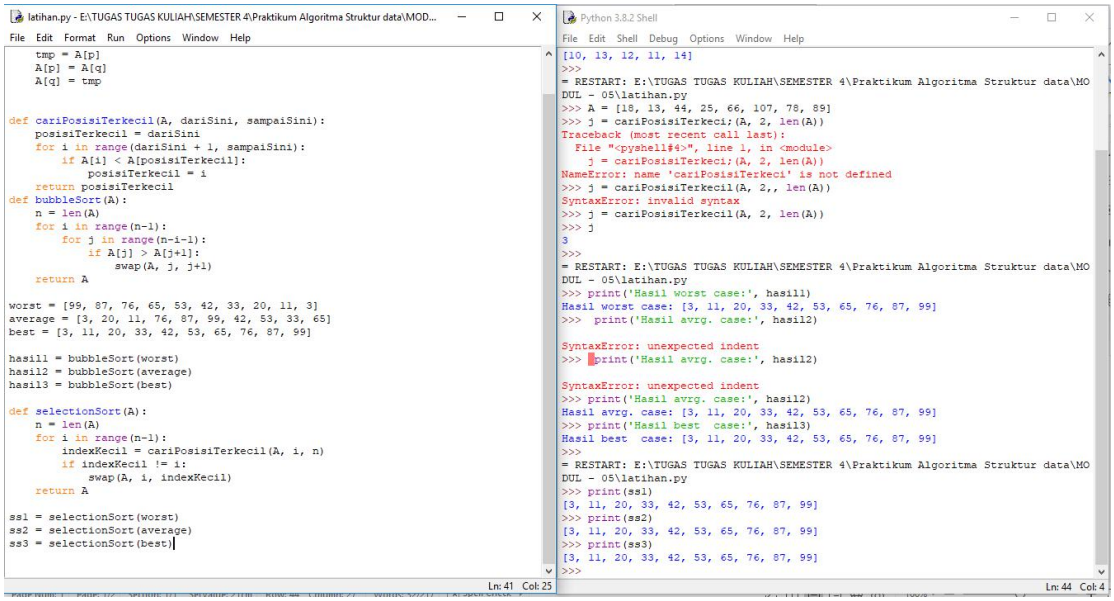
Ln: 29 Col: 25

Python 3.8.2 Shell

File Edit Shell Debug Options Window Help

```
Python 3.8.2 (tags/v3.8.2:7b3ab59, Feb 25 2020, 22:45:29) [MSC v.1916 32 bit (In
tel)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
= RESTART: E:\TUGAS TUGAS KULIAH\SEMESTER 4\Praktikum Algoritma Struktur data\MO
DUL - 05\latihan.py
>>> K = [10, 11, 12, 13, 14]
>>> swap(K, 1, 3)
>>> K
[10, 13, 12, 11, 14]
>>>
= RESTART: E:\TUGAS TUGAS KULIAH\SEMESTER 4\Praktikum Algoritma Struktur data\MO
DUL - 05\latihan.py
>>> A = [18, 13, 44, 25, 66, 107, 78, 89]
>>> j = cariPosisiTerkeci;(A, 2, len(A))
Traceback (most recent call last):
  File "<pyshell#4>", line 1, in <module>
    j = cariPosisiTerkeci;(A, 2, len(A))
NameError: name 'cariPosisiTerkeci' is not defined
>>> j = cariPosisiTerkecil(A, 2,, len(A))
SyntaxError: invalid syntax
>>> j = cariPosisiTerkecil(A, 2, len(A))
>>> j
3
>>>
= RESTART: E:\TUGAS TUGAS KULIAH\SEMESTER 4\Praktikum Algoritma Struktur data\MO
DUL - 05\latihan.py
>>> print('Hasil worst case:', hasil1)
Hasil worst case: [3, 11, 20, 33, 42, 53, 65, 76, 87, 99]
>>>  print('Hasil avrg. case:', hasil2)

SyntaxError: unexpected indent
>>> print('Hasil avrg. case:', hasil2)

SyntaxError: unexpected indent
>>> print('Hasil avrg. case:', hasil2)
Hasil avrg. case: [3, 11, 20, 33, 42, 53, 65, 76, 87, 99]
>>> print('Hasil best  case:', hasil3)
Hasil best  case: [3, 11, 20, 33, 42, 53, 65, 76, 87, 99]
>>>
```

Ln: 36 Col: 4



latihan.py - E:\TUGAS TUGAS KULIAH\SEMESTER 4\Praktikum Algoritma Struktur data\MOD...

File Edit Format Run Options Window Help

```
    tmp = A[p]
    A[p] = A[q]
    A[q] = tmp


def cariPosisiTerkecil(A, dariSini, sampaiSini):
    posisiTerkecil = dariSini
    for i in range(dariSini + 1, sampaiSini):
        if A[i] < A[posisiTerkecil]:
            posisiTerkecil = i
    return posisiTerkecil
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)
    return A

worst = [99, 87, 76, 65, 53, 42, 33, 20, 11, 3]
average = [3, 20, 11, 76, 87, 99, 42, 53, 33, 65]
best = [3, 11, 20, 33, 42, 53, 65, 76, 87, 99]

hasil1 = bubbleSort(worst)
hasil2 = bubbleSort(average)
hasil3 = bubbleSort(best)

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

ss1 = selectionSort(worst)
ss2 = selectionSort(average)
ss3 = selectionSort(best)
```

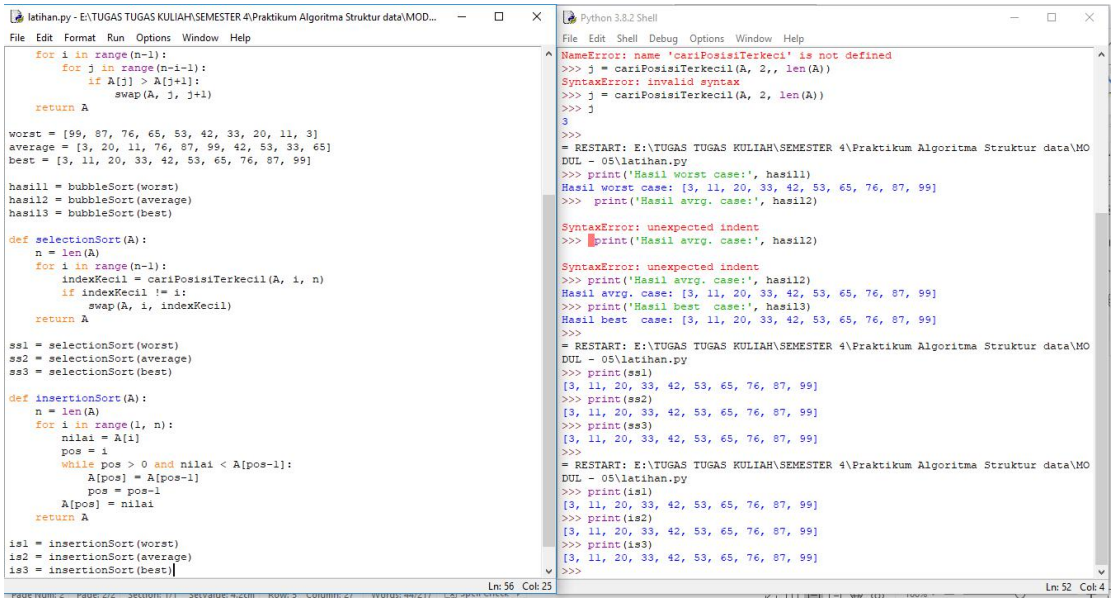
Ln: 41 Col: 25

Python 3.8.2 Shell

File Edit Shell Debug Options Window Help

```
[10, 13, 12, 11, 14]
>>>
= RESTART: E:\TUGAS TUGAS KULIAH\SEMESTER 4\Praktikum Algoritma Struktur data\MO
DUL - 05\latihan.py
>>> A = [18, 13, 44, 25, 66, 107, 78, 89]
>>> j = cariPosisiTerkeci;(A, 2, len(A))
Traceback (most recent call last):
  File "<pyshell#4>", line 1, in <module>
    j = cariPosisiTerkeci;(A, 2, len(A))
NameError: name 'cariPosisiTerkeci' is not defined
>>> j = cariPosisiTerkecil(A, 2,, len(A))
SyntaxError: invalid syntax
>>> j = cariPosisiTerkecil(A, 2, len(A))
>>> j
3
>>>
= RESTART: E:\TUGAS TUGAS KULIAH\SEMESTER 4\Praktikum Algoritma Struktur data\MO
DUL - 05\latihan.py
>>> print('Hasil worst case:', hasil1)
Hasil worst case: [3, 11, 20, 33, 42, 53, 65, 76, 87, 99]
>>>  print('Hasil avrg. case:', hasil2)

SyntaxError: unexpected indent
>>> print('Hasil avrg. case:', hasil2)

SyntaxError: unexpected indent
>>> print('Hasil avrg. case:', hasil2)
Hasil avrg. case: [3, 11, 20, 33, 42, 53, 65, 76, 87, 99]
>>> print('Hasil best  case:', hasil3)
Hasil best  case: [3, 11, 20, 33, 42, 53, 65, 76, 87, 99]
>>>
= RESTART: E:\TUGAS TUGAS KULIAH\SEMESTER 4\Praktikum Algoritma Struktur data\MO
DUL - 05\latihan.py
>>> print(ss1)
[3, 11, 20, 33, 42, 53, 65, 76, 87, 99]
>>> print(ss2)
[3, 11, 20, 33, 42, 53, 65, 76, 87, 99]
>>> print(ss3)
[3, 11, 20, 33, 42, 53, 65, 76, 87, 99]
>>>
```

Ln: 44 Col: 4



latihan.py - E:\TUGAS TUGAS KULIAH\SEMESTER 4\Praktikum Algoritma Struktur data\MOD...

File Edit Format Run Options Window Help

```
    for i in range(n-1):
        for j in range(n-i-1):
            if A[j] > A[j+1]:
                swap(A, j, j+1)
    return A

worst = [99, 87, 76, 65, 53, 42, 33, 20, 11, 3]
average = [3, 20, 11, 76, 87, 99, 42, 53, 33, 65]
best = [3, 11, 20, 33, 42, 53, 65, 76, 87, 99]

hasil1 = bubbleSort(worst)
hasil2 = bubbleSort(average)
hasil3 = bubbleSort(best)

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

ss1 = selectionSort(worst)
ss2 = selectionSort(average)
ss3 = selectionSort(best)

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
    return A

is1 = insertionSort(worst)
is2 = insertionSort(average)
is3 = insertionSort(best)
```

Ln: 56 Col: 25

Python 3.8.2 Shell

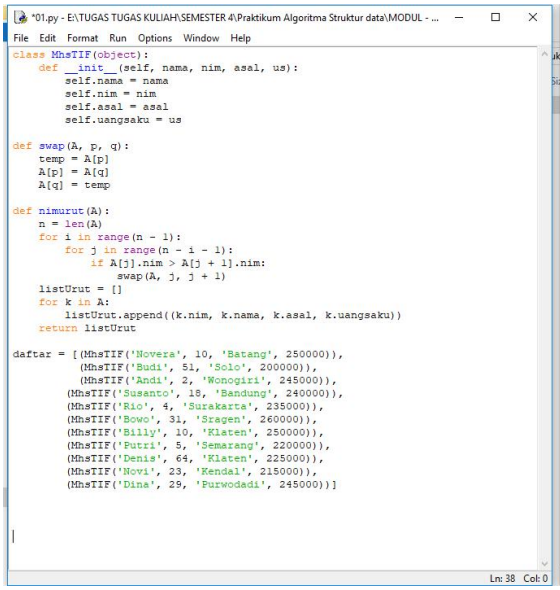
File Edit Shell Debug Options Window Help

```
NameError: name 'cariPosisiTerkeci' is not defined
>>> j = cariPosisiTerkecil(A, 2,, len(A))
SyntaxError: invalid syntax
>>> j = cariPosisiTerkecil(A, 2, len(A))
>>> j
3
>>>
= RESTART: E:\TUGAS TUGAS KULIAH\SEMESTER 4\Praktikum Algoritma Struktur data\MO
DUL - 05\latihan.py
>>> print('Hasil worst case:', hasil1)
Hasil worst case: [3, 11, 20, 33, 42, 53, 65, 76, 87, 99]
>>>  print('Hasil avrg. case:', hasil2)

SyntaxError: unexpected indent
>>> print('Hasil avrg. case:', hasil2)

SyntaxError: unexpected indent
>>> print('Hasil avrg. case:', hasil2)
Hasil avrg. case: [3, 11, 20, 33, 42, 53, 65, 76, 87, 99]
>>> print('Hasil best  case:', hasil3)
Hasil best  case: [3, 11, 20, 33, 42, 53, 65, 76, 87, 99]
>>>
= RESTART: E:\TUGAS TUGAS KULIAH\SEMESTER 4\Praktikum Algoritma Struktur data\MO
DUL - 05\latihan.py
>>> print(ss1)
[3, 11, 20, 33, 42, 53, 65, 76, 87, 99]
>>> print(ss2)
[3, 11, 20, 33, 42, 53, 65, 76, 87, 99]
>>> print(ss3)
[3, 11, 20, 33, 42, 53, 65, 76, 87, 99]
>>>
= RESTART: E:\TUGAS TUGAS KULIAH\SEMESTER 4\Praktikum Algoritma Struktur data\MO
DUL - 05\latihan.py
>>> print(is1)
[3, 11, 20, 33, 42, 53, 65, 76, 87, 99]
>>> print(is2)
[3, 11, 20, 33, 42, 53, 65, 76, 87, 99]
>>> print(is3)
[3, 11, 20, 33, 42, 53, 65, 76, 87, 99]
>>>
```

Ln: 52 Col: 4

TUGAS

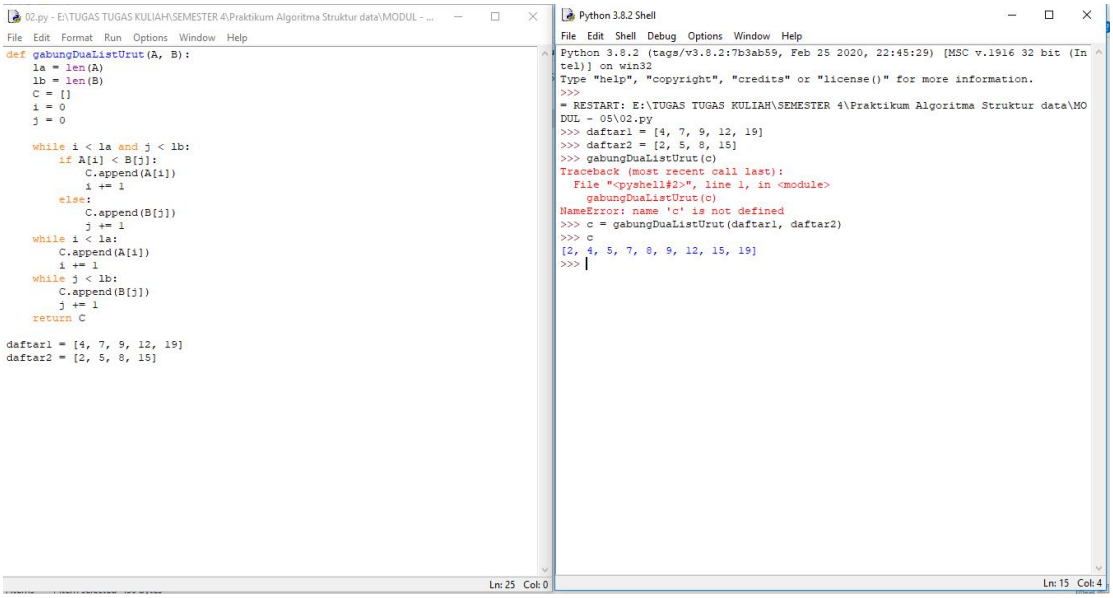
1.



```
class MhsTIF(object):
    def __init__(self, nama, nim, asal, us):
        self.nama = nama
        self.nim = nim
        self.asal = asal
        self.uangsaku = us

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

def nimurut(A):
    n = len(A)
    for i in range(n - 1):
        for j in range(n - i - 1):
            if A[j].nim > A[j + 1].nim:
                swap(A, j, j + 1)
    listUrut = []
    for k in A:
        listUrut.append((k.nim, k.nama, k.asal, k.uangsaku))
    return listUrut

daftar = [(MhsTIF('Novera', 10, 'Batang', 250000)),
          (MhsTIF('Budi', 51, 'Solo', 200000)),
          (MhsTIF('Andi', 2, 'Wonogiri', 245000)),
         (MhsTIF('Susanto', 18, 'Bandung', 240000)),
         (MhsTIF('Rio', 4, 'Surakarta', 235000)),
         (MhsTIF('Bowo', 31, 'Sragen', 260000)),
         (MhsTIF('Billy', 10, 'Klaten', 250000)),
         (MhsTIF('Putri', 5, 'Semarang', 220000)),
         (MhsTIF('Denis', 64, 'Klaten', 225000)),
         (MhsTIF('Novi', 23, 'Kendal', 215000)),
         (MhsTIF('Dina', 29, 'Purwodadi', 245000))]
```

```
Python 3.8.2 (tags/v3.8.2:7b3ab59, Feb 25 2020, 22:45:29) [MSC v.1916 32 bit (Intel)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
= RESTART: E:\TUGAS TUGAS KULIAH\SEMESTER 4\Praktikum Algoritma Struktur data\MODUL - 05\01.py
>>> nimurut(daftar)
[(2, 'Andi', 'Wonogiri', 245000), (4, 'Rio', 'Surakarta', 235000), (5, 'Putri', 'Semarang', 220000), (10, 'Novera', 'Batang', 250000), (10, 'Billy', 'Klaten', 250000), (18, 'Susanto', 'Bandung', 240000), (23, 'Novi', 'Kendal', 215000), (29, 'Dina', 'Purwodadi', 245000), (31, 'Bowo', 'Sragen', 260000), (51, 'Budi', 'Solo', 200000), (64, 'Denis', 'Klaten', 225000)]
>>>
```

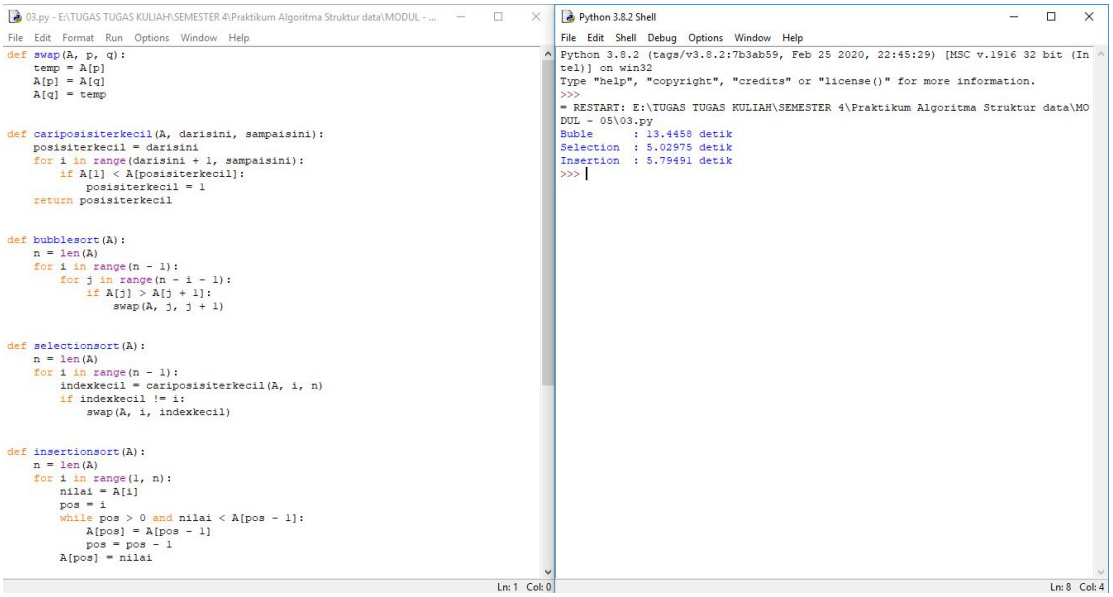
2.



```
def gabungDuaListUrut(A, B):
    la = len(A)
    lb = len(B)
    C = []
    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

daftar1 = [4, 7, 9, 12, 19]
daftar2 = [2, 5, 8, 15]
```

```
Python 3.8.2 (tags/v3.8.2:7b3ab59, Feb 25 2020, 22:45:29) [MSC v.1916 32 bit (Intel)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
= RESTART: E:\TUGAS TUGAS KULIAH\SEMESTER 4\Praktikum Algoritma Struktur data\MODUL - 05\02.py
>>> daftar1 = [4, 7, 9, 12, 19]
>>> daftar2 = [2, 5, 8, 15]
>>> gabungDuaListUrut(c)
Traceback (most recent call last):
  File "<pyshell#2>", line 1, in <module>
    gabungDuaListUrut(c)
NameError: name 'c' is not defined
>>> c = gabungDuaListUrut(daftar1, daftar2)
>>> c
[2, 4, 5, 7, 8, 9, 12, 15, 19]
>>>
```

3.


03.py - E:\TUGAS TUGAS KULIAH\SEMESTER 4\Praktikum Algoritma Struktur data\MODUL - ...
File Edit Format Run Options Window Help
def swap(A, p, q):
temp = A[p]
A[p] = A[q]
A[q] = temp
def cariposisiterkecil(A, darisini, sampaisini):
posisiterkecil = darisini
for i in range(darisini + 1, sampaisini):
if A[i] < A[posisiterkecil]:
posisiterkecil = i
return posisiterkecil
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 = 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]
pos = i
while pos > 0 and nilai < A[pos - 1]:
A[pos] = A[pos - 1]
pos = pos - 1
A[pos] = nilai
Ln: 1 Col: 0
Python 3.8.2 Shell
File Edit Shell Debug Options Window Help
Python 3.8.2 (tags/v3.8.2:7b3ab59, Feb 25 2020, 22:45:29) [MSC v.1916 32 bit (Intel)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
= RESTART: E:\TUGAS TUGAS KULIAH\SEMESTER 4\Praktikum Algoritma Struktur data\MODUL - 05\03.py
Buble : 13.4458 detik
Selection : 5.02975 detik
Insertion : 5.79491 detik
>>>
Ln: 8 Col: 4