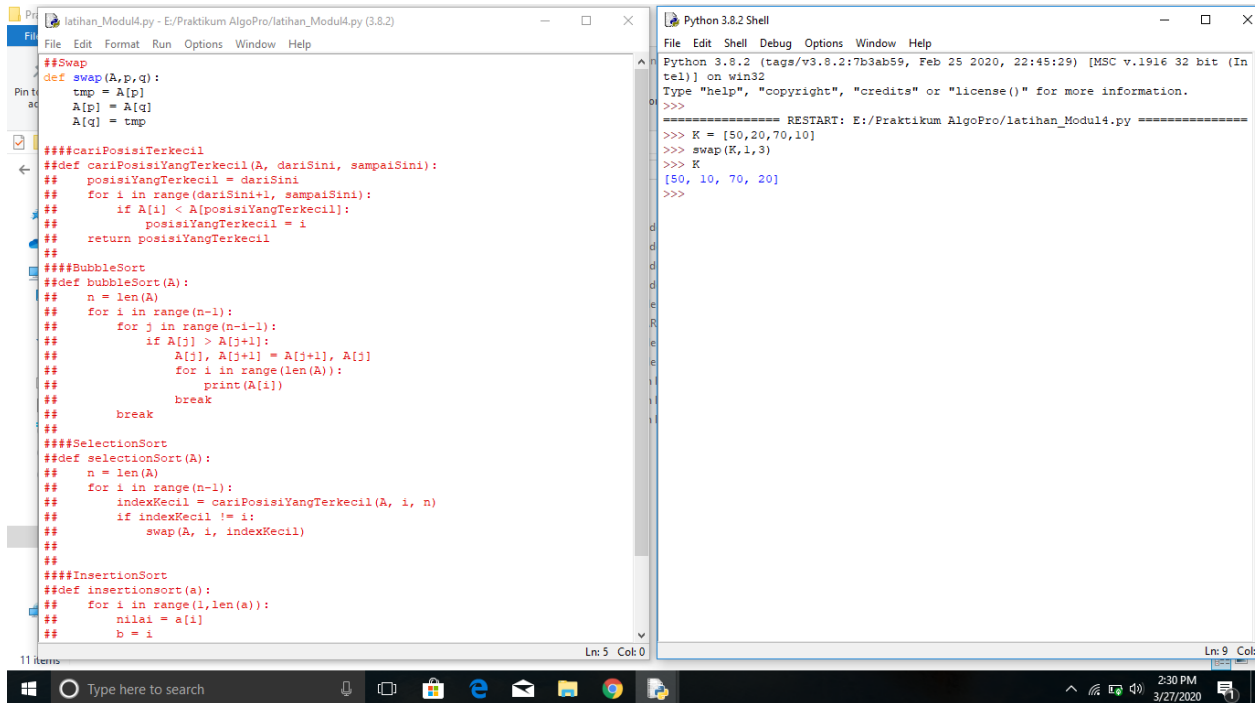


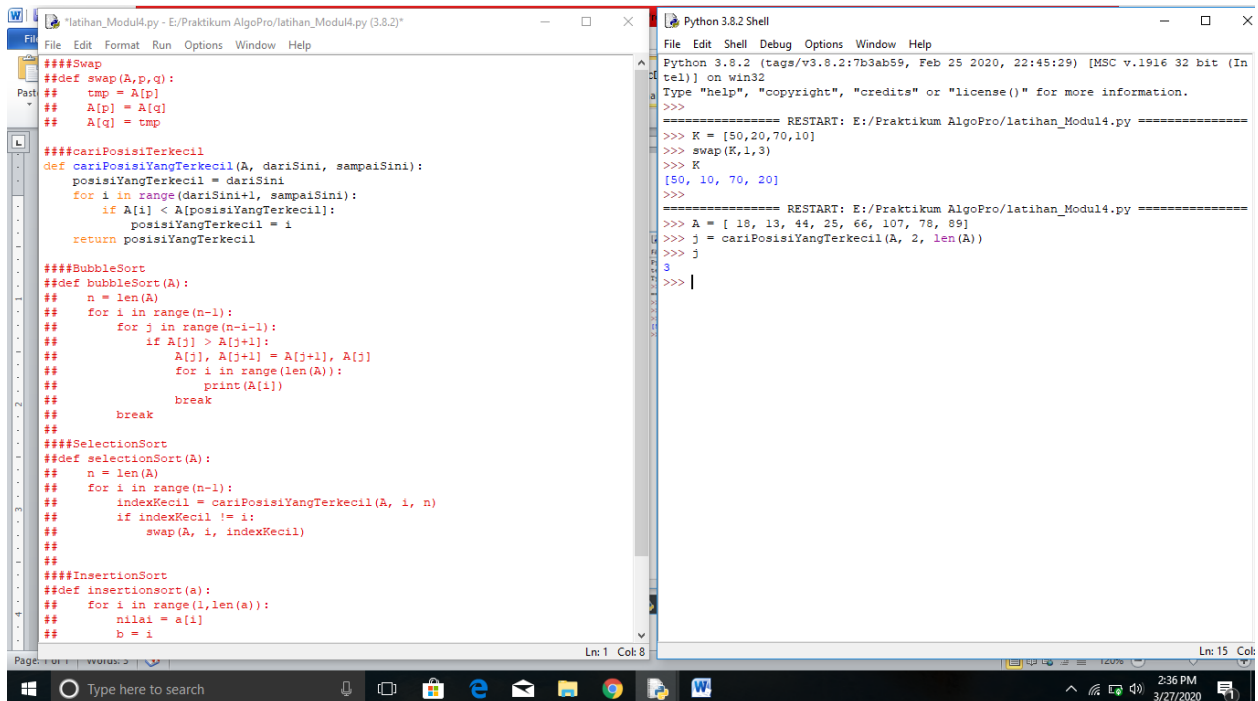
## Latihan Modul 5



The screenshot shows a Python IDE with a file named `latihan_Modul4.py` and a Python 3.8.2 Shell window. The code in the IDE defines several sorting functions: `swap`, `cariPosisiYangTerkecil`, `bubbleSort`, `selectionSort`, and `insertionSort`. The shell window shows the execution of the `swap` function on a list `K`.

```
def swap(A,p,q):  
    tmp = A[p]  
    A[p] = A[q]  
    A[q] = tmp  
  
###cariPosisiYangTerkecil  
def cariPosisiYangTerkecil(A, dariSini, sampaiSini):  
    # posisiYangTerkecil = dariSini  
    for i in range(dariSini+1, sampaiSini):  
        if A[i] < A[posisiYangTerkecil]:  
            posisiYangTerkecil = i  
    return posisiYangTerkecil  
  
###BubbleSort  
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]:  
                A[j], A[j+1] = A[j+1], A[j]  
            for i in range(len(A)):  
                print(A[i])  
            break  
  
###SelectionSort  
def selectionSort(A):  
    n = len(A)  
    for i in range(n-1):  
        indexKecil = cariPosisiYangTerkecil(A, i, n)  
        if indexKecil != i:  
            swap(A, i, indexKecil)  
  
###InsertionSort  
def insertionSort(a):  
    for i in range(1, len(a)):  
        nilai = a[i]  
        b = i
```

```
Python 3.8.2 Shell  
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:/Praktikum AlgoPro/latihan_Modul4.py =====  
>>> K = [50,20,70,10]  
>>> swap(K,1,3)  
>>> K  
[50, 10, 70, 20]  
>>>
```



The screenshot shows the same Python IDE with the same code as the first screenshot. The shell window shows the execution of the `selectionSort` function on a list `A`.

```
def swap(A,p,q):  
    tmp = A[p]  
    A[p] = A[q]  
    A[q] = tmp  
  
###cariPosisiYangTerkecil  
def cariPosisiYangTerkecil(A, dariSini, sampaiSini):  
    posisiYangTerkecil = dariSini  
    for i in range(dariSini+1, sampaiSini):  
        if A[i] < A[posisiYangTerkecil]:  
            posisiYangTerkecil = i  
    return posisiYangTerkecil  
  
###BubbleSort  
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]:  
                A[j], A[j+1] = A[j+1], A[j]  
            for i in range(len(A)):  
                print(A[i])  
            break  
  
###SelectionSort  
def selectionSort(A):  
    n = len(A)  
    for i in range(n-1):  
        indexKecil = cariPosisiYangTerkecil(A, i, n)  
        if indexKecil != i:  
            swap(A, i, indexKecil)  
  
###InsertionSort  
def insertionSort(a):  
    for i in range(1, len(a)):  
        nilai = a[i]  
        b = i
```

```
Python 3.8.2 Shell  
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:/Praktikum AlgoPro/latihan_Modul4.py =====  
>>> K = [50,20,70,10]  
>>> swap(K,1,3)  
>>> K  
[50, 10, 70, 20]  
>>>  
===== RESTART: E:/Praktikum AlgoPro/latihan_Modul4.py =====  
>>> A = [18, 13, 44, 25, 66, 107, 78, 89]  
>>> j = cariPosisiYangTerkecil(A, 2, len(A))  
>>> j  
3  
>>>
```

```
latihan_Modul4.py - E:\Praktikum AlgoPro\latihan_Modul4.py (3.8.2)
File Edit Format Run Options Window Help
####Swap
def swap(A,p,q):
    tmp = A[p]
    A[p] = A[q]
    A[q] = tmp

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

####BubbleSort
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]:
                A[j], A[j+1] = A[j+1], A[j]
                for i in range(len(A)):
                    print(A[i])
            break
    break

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

####InsertionSort
def insertionsort(a):
    for i in range(1, len(a)):
        nilai = a[i]
        b = i
```

The image shows a Windows desktop with two open applications. The left application is a text editor titled 'latihan\_Modul4.py - E:\Praktikum AlgoPro\latihan\_Modul4.py (3.8.2)'. It contains Python code for three sorting algorithms: bubbleSort, cariPosisiYangTerkecil, and selectionSort. The right application is the 'Python 3.8.2 Shell' window, which shows the execution of the bubbleSort(L) function on a list [51, 64, 29, 2, 4, 5, 10, 13, 18, 23, 31, 51, 29, 64]. The output shows the list being sorted step by step, with the final sorted list being [2, 4, 5, 10, 13, 18, 23, 29, 31, 51, 64, 64].

```
latihan_Modul4.py - E:/Praktikum AlgoPro/latihan_Modul4.py (3.8.2)
File Edit Format Run Options Window Help

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

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

####BubbleSort
def bubbleSort(A):
    n = len(A)
    for i in range(n-1):
        for j in range(n-1-i):
            if A[j] > A[j+1]:
                A[j], A[j+1] = A[j+1], A[j]
                for i in range(len(A)):
                    print(A[i])
                break
        break

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

####InsertionSort
def insertionsort(a):
    for i in range(1,len(a)):
        nilai = a[i]
        b = i

Python 3.8.2 Shell
File Edit Shell Debug Options Window Help

4
5
10
13
18
23
29
31
51
64
>>>
===== RESTART: E:/Praktikum AlgoPro/latihan_Modul4.py =====
>>> K = [10, 51, 2, 18, 4, 31, 13, 5, 23, 64, 29]
>>> selectionSort(K)
>>> selectionSort(A)
Traceback (most recent call last):
  File "<pyshell#34>", line 1, in <module>
    selectionSort(A)
NameError: name 'A' is not defined
>>> A = [10, 51, 2, 18, 4, 31, 13, 5, 23, 64, 29]
>>> selectionSort(A)
>>>
===== RESTART: E:/Praktikum AlgoPro/latihan_Modul4.py =====
>>> K = [10, 51, 2, 18, 4, 31, 13, 5, 23, 64, 29]
>>> indexKecil
Traceback (most recent call last):
  File "<pyshell#38>", line 1, in <module>
    indexKecil
NameError: name 'indexKecil' is not defined
>>> selectionSort(K)
>>> indexKecil
Traceback (most recent call last):
  File "<pyshell#40>", line 1, in <module>
    indexKecil
NameError: name 'indexKecil' is not defined
>>> selectionSort(K)
>>> K
[2, 4, 5, 10, 13, 18, 23, 29, 31, 51, 64]
>>>
```

```
latihan_Modul4.py - E:/Praktikum AlgoPro/latihan_Modul4.py (3.8.2)
File Edit Format Run Options Window Help

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

####BubbleSort
def bubbleSort(A):
    n = len(A)
    for i in range(n-1):
        for j in range(n-1-i):
            if A[j] > A[j+1]:
                A[j], A[j+1] = A[j+1], A[j]
                for i in range(len(A)):
                    print(A[i])
                break
        break

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

####InsertionSort
def insertionsort(a):
    for i in range(1,len(a)):
        nilai = a[i]
        b = i
        while b > 0 and nilai < a[b-1]:
            a[b] = a[b-1]
            b -= 1
        a[b] = nilai
    print(a)

Python 3.8.2 Shell
File Edit Shell Debug Options Window Help

>>> selectionSort(A)
Traceback (most recent call last):
  File "<pyshell#34>", line 1, in <module>
    selectionSort(A)
NameError: name 'A' is not defined
>>> A = [10, 51, 2, 18, 4, 31, 13, 5, 23, 64, 29]
>>> selectionSort(A)
>>>
===== RESTART: E:/Praktikum AlgoPro/latihan_Modul4.py =====
>>> K = [10, 51, 2, 18, 4, 31, 13, 5, 23, 64, 29]
>>> indexKecil
Traceback (most recent call last):
  File "<pyshell#38>", line 1, in <module>
    indexKecil
NameError: name 'indexKecil' is not defined
>>> selectionSort(K)
>>> indexKecil
Traceback (most recent call last):
  File "<pyshell#40>", line 1, in <module>
    indexKecil
NameError: name 'indexKecil' is not defined
>>> selectionSort(K)
>>> K
[2, 4, 5, 10, 13, 18, 23, 29, 31, 51, 64]
>>>
===== RESTART: E:/Praktikum AlgoPro/latihan_Modul4.py =====
>>> p
Traceback (most recent call last):
  File "<pyshell#43>", line 1, in <module>
    p
NameError: name 'p' is not defined
>>>
===== RESTART: E:/Praktikum AlgoPro/latihan_Modul4.py =====
>>> a = [10, 51, 2, 18, 4, 31, 13, 5, 23, 64, 29]
>>> insertionsort(a)
>>> a
[2, 4, 5, 10, 13, 18, 23, 29, 31, 51, 64]
>>>
===== RESTART: E:/Praktikum AlgoPro/latihan_Modul4.py =====
>>>
```