Muh. Amri Huda
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Praktikum Algostruk Modul 4

```
Modul4Latihan.py - C:/Users/dakekay/AppData/Local/Programs/Python/Python38-32/Modu...   —   □   ×

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def cariLurus(wadah, target):
    n = len(wadah)
    for i in range(n):
        if wadah[i] == target:
            return True
    return False
```

```
Python 3.8.2 Shell   —   □   ×

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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: C:/Users/dakekay/AppData/Local/Programs/Python/Python38-32/Modul4Lati
han.py
>>> A = [10, 51, 2, 18, 4, 31, 13, 5, 23, 64, 29]
>>> cariLurus(A,31)
True
>>> cariLurus(A,8)
False
>>>
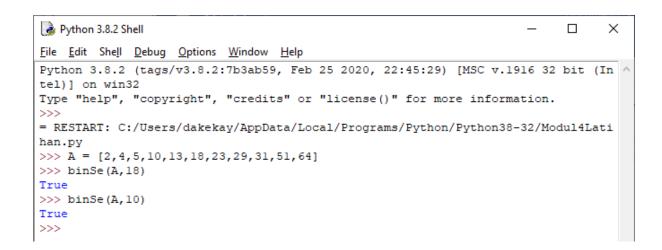```

-

```
class MhsTIF(object) :
    def __init__(self,nama,um,kota,us) :
        self.nama = nama
        self.umur = um
        self.kotaTinggal = kota
        self.uangSaku = us

c0 = MhsTIF('Ika',10,'Sukoharjo', 240000)
c1 = MhsTIF('Budi',51,'Sragen', 230000)
c2 = MhsTIF('Ahmad',2,'Surakarta', 250000)
c3 = MhsTIF('Chandra',18,'Surakarta', 235000)
c4 = MhsTIF('Eka',4,'Boyolali', 240000)
c5 = MhsTIF('Fandi',31,'Salatiga', 250000)
c6 = MhsTIF('Deni',13,'Klaten', 245000)
c7 = MhsTIF('Galuh',5,'Wonogiri', 245000)
c8 = MhsTIF('Janto',23,'Klaten', 245000)
c9 = MhsTIF('Hasan',64,'Karanganyar', 270000)
c10 = MhsTIF('Khalid',29,'Purwodadi', 265000)

Daftar = [c0, c1, c2, c3, c4, c5, c6, c7, c8, c9, c10]
```

```
Python 3.8.2 Shell                                    —    □    ✕

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>>>
= RESTART: C:/Users/dakekay/AppData/Local/Programs/Python/Python38-32/Modul4Lati
han.py
>>> target = 'Klaten'
>>> for i in Daftar:
        if i.kotaTinggal == target:
                print(i.nama + ' tinggal di ' + target)


Deni tinggal di Klaten
Janto tinggal di Klaten
>>>
```

```python
def cariTerkecil(kumpulan):
    n = len(kumpulan)
    terkecil = kumpulan[0]
    for i in range(1,n):
        if kumpulan[i] < terkecil:
            terkecil = kumpulan[i]
    return terkecil
```

```
Python 3.8.2 Shell                                    —    □    ✕

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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: C:/Users/dakekay/AppData/Local/Programs/Python/Python38-32/Modul4Lati
han.py
>>> A = [24, 25, 18, 90, 2]
>>> cariTerkecil(A)
2
>>>
```

```python
def binSe(kumpulan, target):
    low = 0
    high = len(kumpulan) - 1

    while low <= high:
        mid = (high + low) // 2
        if kumpulan[mid] == target:
            return True
        elif target < kumpulan[mid]:
            high = mid -1
        else:
            low = mid + 1
    return False
```

Ln: 28 Col: 34

```
Python 3.8.2 Shell                                        —    □    ✕

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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: C:/Users/dakekay/AppData/Local/Programs/Python/Python38-32/Modul4Lati
han.py
>>> A = [2,4,5,10,13,18,23,29,31,51,64]
>>> binSe(A,18)
True
>>> binSe(A,10)
True
>>>
```

Tugas

```
Modul4Tugas.py - C:/Users/dakekay/AppData/Local/Programs/Python/Python38-32/Modul4...  —  ☐  ✕

File  Edit  Format  Run  Options  Window  Help

class MhsTIF(object) :
    def __init__(self,nama,um,kota,us) :
        self.nama = nama
        self.umur = um
        self.kotaTinggal = kota
        self.uangSaku = us

class Array(object) :
    internal_data = 11 * [None]

    def __getitem__(self, item) :
        return self.internal_data[item]
    def __setitem__(self, key, value) :
        self.internal_data[key] = value
## 1
    def indexKota(self, data) :
        d = []
        t = 0
        for i in self :
            if i.kotaTinggal == data :
                d.append(t)
            t += 1
        return d
## 2
    def uangTerkecil(self) :
        terkecil = self[0].uangSaku
        for i in self :
            if i.uangSaku < terkecil :
                terkecil = i.uangSaku
        return terkecil
## 3
    def uangTerkecil3(self) :
        terkecil = self[0].uangSaku
        d = []
        for i in self :
            if i.uangSaku < terkecil :
                d.append((i.nama, i.umur, i.kotaTinggal, i.uangSaku))
        return d
## 4
    def uangTerkecil4(self) :

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```

1.

```
Python 3.8.2 Shell                                  —  ☐  ✕

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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: C:/Users/dakekay/AppData/Local/Programs/Python/Python38-32/Modul4Tuga
s.py
>>> c.indexKota('Klaten')
[6, 8]
>>> c.uangTerkecil()
230000
>>> c.uangTerkecil2()
[('Budi', 51, 'Sragen', 230000), ('Chandra', 18, 'Surakarta', 235000)]
```

2.

3.

```
## 4
    def uangTerkecil3(self) :
        terkecil = 250000
        d = []
        for i in self :
            if i.uangSaku < 250000 :
                d.append((i.nama, i.umur, i.kotaTinggal, i.uangSaku))
        for i in d :
            print (i)

c = Array()
c[0] = MhsTIF('Ika',10,'Sukoharjo', 240000)
c[1] = MhsTIF('Budi',51,'Sragen', 230000)
c[2] = MhsTIF('Ahmad',2,'Surakarta', 250000)
c[3] = MhsTIF('Chandra',18,'Surakarta', 235000)
c[4] = MhsTIF('Eka',4,'Boyolali', 240000)
c[5] = MhsTIF('Fandi',31,'Salatiga', 250000)
c[6] = MhsTIF('Deni',13,'Klaten', 245000)
c[7] = MhsTIF('Galuh',5,'Wonogiri', 245000)
c[8] = MhsTIF('Janto',23,'Klaten', 245000)
c[9] = MhsTIF('Hasan',64,'Karanganyar', 270000)
c[10] = MhsTIF('Khalid',29,'Purwodadi', 265000)
```

```
>>> c.uangTerkecil3()
('Ika', 10, 'Sukoharjo', 240000)
('Budi', 51, 'Sragen', 230000)
('Chandra', 18, 'Surakarta', 235000)
('Eka', 4, 'Boyolali', 240000)
('Deni', 13, 'Klaten', 245000)
('Galuh', 5, 'Wonogiri', 245000)
('Janto', 23, 'Klaten', 245000)
>>>
```

4.

```python
## 5
class Node:
    def __init__(self,data):
        self.data = data
        self.next = None
class LinkedList:
    def __init__(self):
        self.head = None
    def pushAw(self, data_baru):
        node_baru = Node(data_baru)
        node_baru.next = self.head
        self.head = node_baru
    def pushAk(self, data):
        if(self.head == None):
            self.head = Node(data)
        else:
            current = self.head
            while (current.next != None):
                current = current.next
            current.next = Node(data)
        return self.head
    def insert(self, data, pos):
        node = Node(data)
        if not self.head:
            self.head = node
        elif posisi == 0:
            node.next = self.head
            self.head = node
        else:
            prev = None
            current = self.head
            current_pos = 0
            while(current_pos < pos) and current.next:
                prev = current
                current = current.next
                current_pos +=1
            prev.next = node
            node.next = current
        return self.head
    def search(self, v):
        current = self.head
        while current != None:
            if current.data == v:
                return "True"
            current = current.next
        return "False"
    def display(self):
        current = self.head
        while current != None:
            print(current.data)
            current = current.next
```

5.

```
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: C:/Users/dakekay/AppData/Local/Programs/Python/Python38-32/Modul4Tuga
s.py
>>> A = LinkedList()
>>> A.pushAk(23)
<__main__.Node object at 0x03A1B5F8>
>>> A.pushAk(24)
<__main__.Node object at 0x03A1B5F8>
>>> A.display()
23
24
>>> A.pushAw(12)
>>> A.search(23)
'True'
>>>  A.search(24)

SyntaxError: unexpected indent
>>> A.search(24)
'True'
>>> A.search(15)
'False'
>>>
```

```python
## 6
def binSe(Daftar, Target) :
    low = 0
    high = len(Daftar) - 1

    while low <= high :
        mid = (high + low) // 2
        if Daftar [mid] == Target :
            return "Target berada pada index" + str(mid)
            break
        elif Target < Daftar [mid] :
            high = mid - 1
        else :
            low = mid + 1
    return False

listA = [12, 25, 34, 36, 57, 85, 90, 91]
Target1 = 29
Target2 = 57
print("\n6. List nya adalah", listA, "Nilai Target adalah ", Target1, "Hasil nya
print("List nya adalah", listA, "Nilai Target adalah ", Target2, "Hasil nya" , b
```

6.

```
= RESTART: C:/Users/dakekay/AppData/Local/Programs/Python/Python38-32/Modul4Tuga
s.py

6. List nya adalah [12, 25, 34, 36, 57, 85, 90, 91] Nilai Target adalah  29 Hasi
l nya False
List nya adalah [12, 25, 34, 36, 57, 85, 90, 91] Nilai Target adalah  57 Hasil n
ya Target berada pada index4
>>>
```

```
## 7
def binSe2(Daftar, Target) :
    loww = 0
    highh = len(Daftar) - 1
    listx = []

    while loww <= highh :
        if Daftar[loww] == Target :
            listx.append(loww)
            loww += 1
        else :
            loww += 1
    return listx

A = [2,3,5,6,6,6,8,9,9,10,11,12,13,13,14]
cari = 6

print ("\n7. Posisi data", cari, "pada list", A, "adalah", binSe2(A, cari))
```

7.

Python 3.8.2 Shell   —   □   ×

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Python 3.8.2 (tags/v3.8.2:7b3ab59, Feb 25 2020, 22:45:29) [MSC v.1916 32 bit (In
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Type "help", "copyright", "credits" or "license()" for more information.
>>>
= RESTART: C:/Users/dakekay/AppData/Local/Programs/Python/Python38-32/Modul4Tuga
s.py

7. Posisi data 6 pada list [2, 3, 5, 6, 6, 6, 8, 9, 9, 10, 11, 12, 13, 13, 14] a
dalah [3, 4, 5]
>>> |

8.

```
Modul4Tugas.py - C:/Users/dakekay/AppData/Local/Programs/Python/Python38-32/Modul4...

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A = [2,3,5,6,6,6,8,9,9,10,11,12,13,13,14]
cari = 6

##print ("\n7. Posisi data", cari, "pada list", A, "adalah", binSe2(A, cari))

## 8
def binSearch(kumpulan, target):
    """Mulai dari seluruh runtutan elemen"""
    low = 0
    high = len(kumpulan) -1
    """Secara berulang belah runtutan itu menjadi separuhnya"""
    """sampai targetnya ditemukan"""
    while low <= high:
        """Temukan pertengahan runtut itu"""
        mid = (high + low) //2
        """Apakah pertengahannya memuat target?"""
        if kumpulan[mid] == target:
            return mid
        elif kumpulan[mid] < target:
            high = mid +1
        else :
            low = mid -1

    return -1

b = [1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20]

"""
untuk mencari berapa jumlah tebakan yang digunakan oleh Binary Search
yaitu dengan menggunakan Logaritma basis 2 (log2(n))
misalkan :
    // apabila terdapat elemen array berjumlah 100 maka memiliki maksimal 7 kali
        itu dikarenakan log2(100) = 6.643856189774725 sehingga diperoleh angka 7
        dapat juga diperoleh dari log2(128) = 7 karena yang mendekati dari 100 a
    // apabila terdapat elemen array berjumlah 1000 maka memiliki maksimal 10 ka
        itu dikarenakan log2(1000) = 9.965784284662087 sehingga diperoleh angka
        dapat juga diperoleh dari log2(1024) = 10 karena yang mendekati dari 100
"""

Ln: 188  Col: 0
```