Nama : Dwiky Nugraha

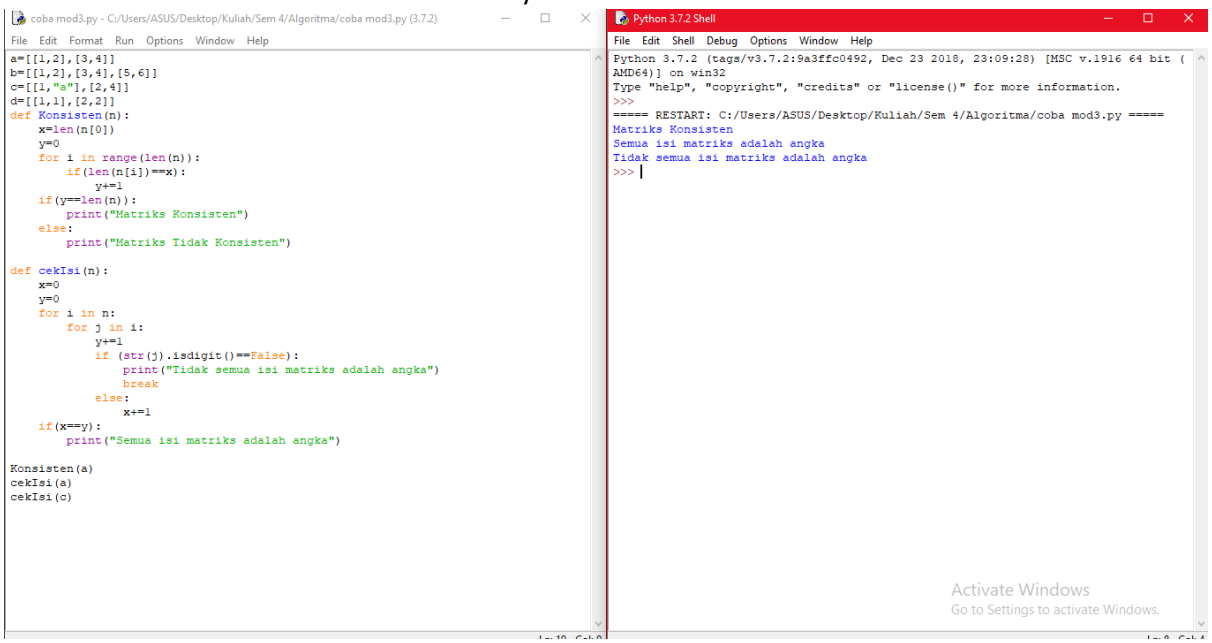
NIM : L200170154

Kelas : D

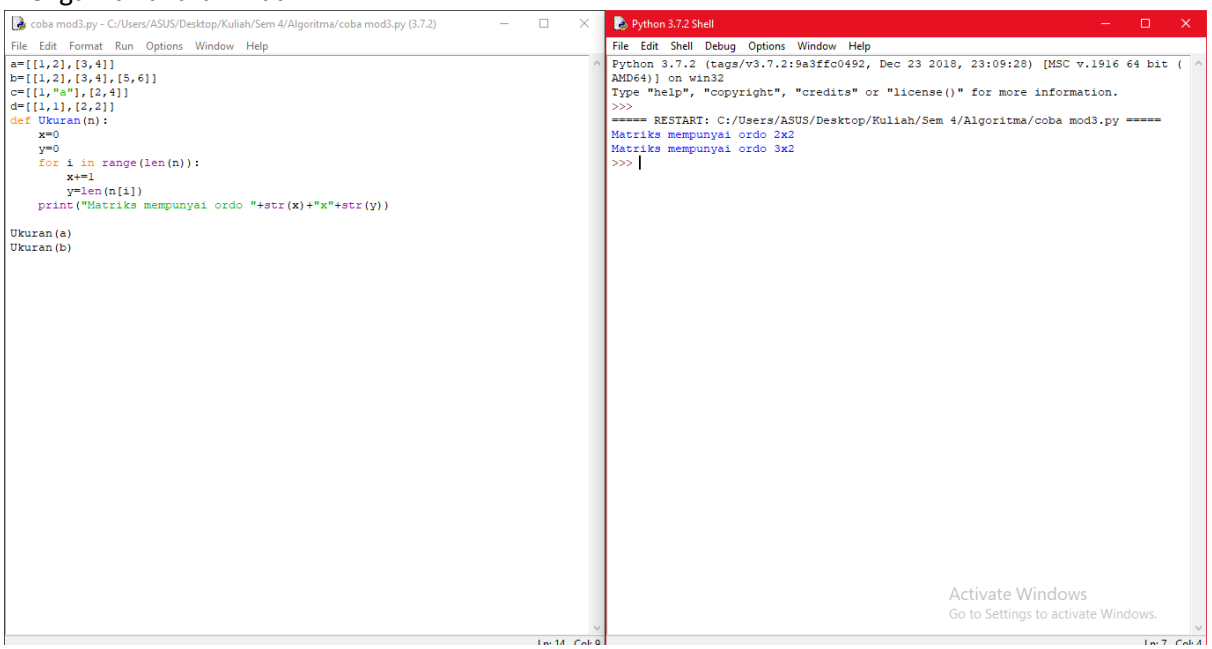
Modul : 3

TUGAS

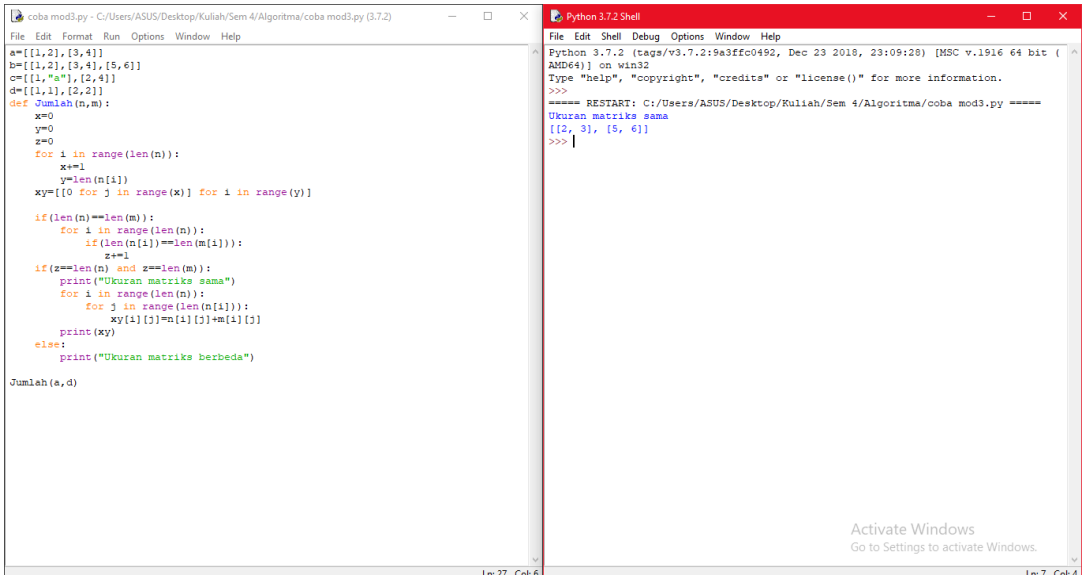
1. Array dua dimensi
   - Memastikan bahwa isi dan ukuran matrix-nya konsisten



   - Mengambil ukuran matrix



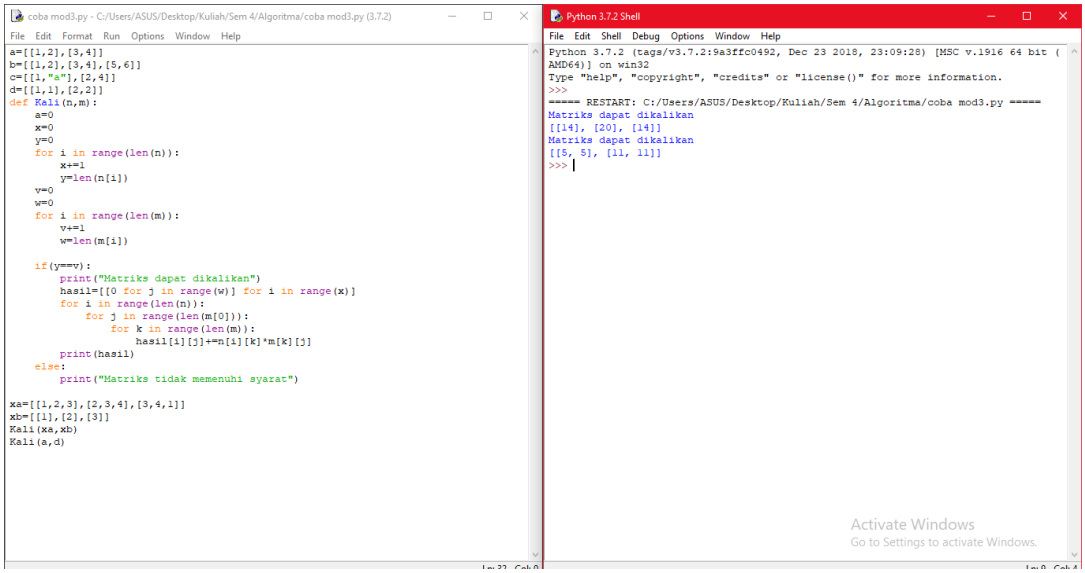
- Menjumlahkan dua matrix



```
a=[[1,2],[3,4]]
b=[[1,2],[3,4],[5,6]]
c=[[1,"a"],[2,4]]
d=[[1,1],[2,2]]
def Jumlah(n,m):
    x=0
    y=0
    z=0
    for i in range(len(n)):
        x+=1
        y=len(n[i])
    xy=[[0 for j in range(x)] for i in range(y)]

    if(len(n)==len(m)):
        for i in range(len(n)):
            if(len(n[i])==len(m[i])):
                z+=1
    if(z==len(n) and z==len(m)):
        print("Ukuran matriks sama")
        for i in range(len(n)):
            for j in range(len(n[i])):
                xy[i][j]=n[i][j]+m[i][j]
        print(xy)
    else:
        print("Ukuran matriks berbeda")

Jumlah(a,d)
```

```
Python 3.7.2 (tags/v3.7.2:9a3ffc0492, Dec 23 2018, 23:09:28) [MSC v.1916 64 bit (
AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: C:/Users/ASUS/Desktop/Kuliah/Sem 4/Algoritma/coba mod3.py =====
Ukuran matriks sama
[[2, 3], [5, 6]]
>>>
```

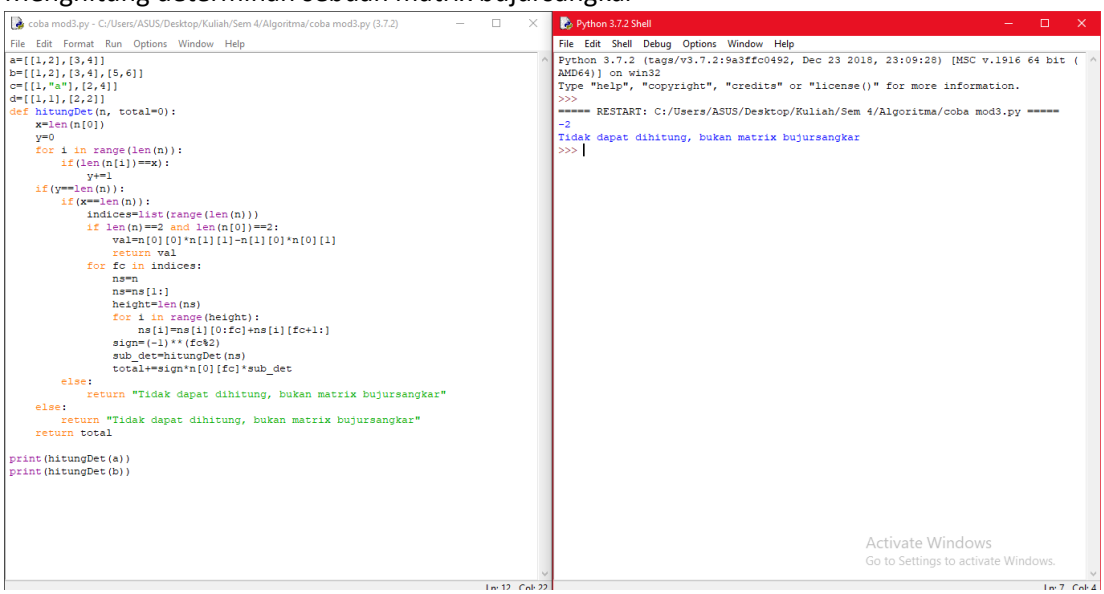
- Mengalikan dua matrix



```
a=[[1,2],[3,4]]
b=[[1,2],[3,4],[5,6]]
c=[[1,"a"],[2,4]]
d=[[1,1],[2,2]]
def Kali(n,m):
    a=0
    x=0
    y=0
    for i in range(len(n)):
        x+=1
        y=len(n[i])
    v=0
    w=0
    for i in range(len(m)):
        v+=1
        w=len(m[i])

    if(y==v):
        print("Matriks dapat dikalikan")
        hasil=[[0 for j in range(w)] for i in range(x)]
        for i in range(len(n)):
            for j in range(len(m[0])):
                for k in range(len(m)):
                    hasil[i][j]+=n[i][k]*m[k][j]
        print(hasil)
    else:
        print("Matriks tidak memenuhi syarat")

xa=[[1,2,3],[2,3,4],[3,4,1]]
xb=[[1],[2],[3]]
Kali(xa,xb)
Kali(a,d)
```

```
Python 3.7.2 (tags/v3.7.2:9a3ffc0492, Dec 23 2018, 23:09:28) [MSC v.1916 64 bit (
AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: C:/Users/ASUS/Desktop/Kuliah/Sem 4/Algoritma/coba mod3.py =====
Matriks dapat dikalikan
[[14], [20], [14]]
Matriks dapat dikalikan
[[5, 5], [11, 11]]
>>>
```

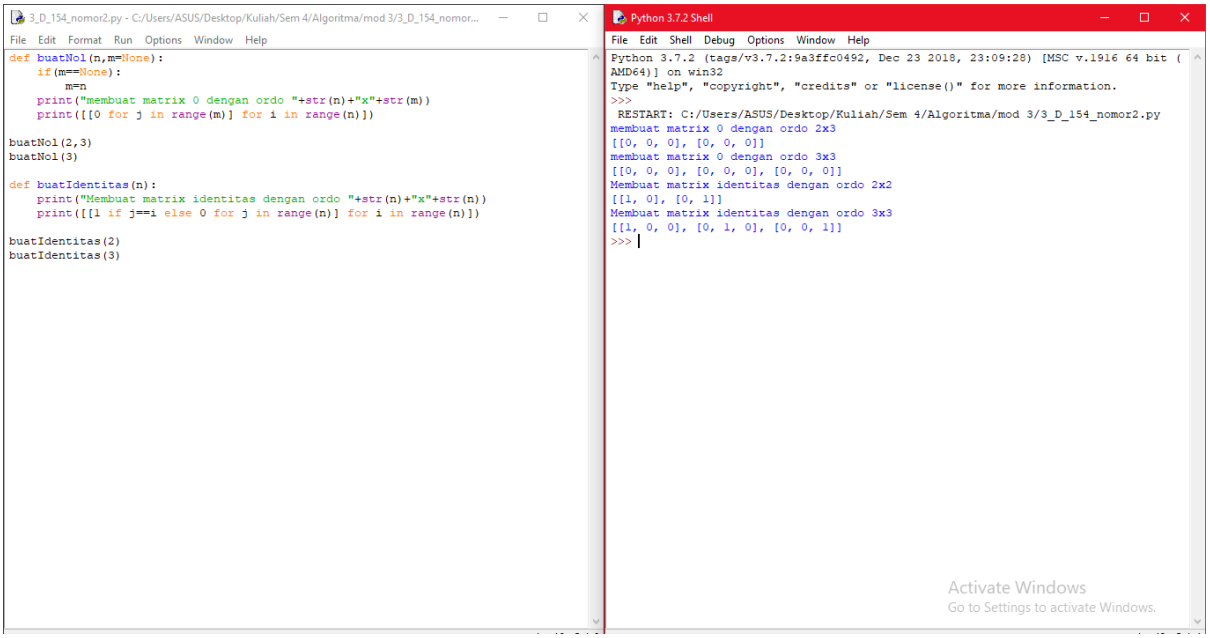
- Menghitung determinan sebuah matrix bujursangkar



```
a=[[1,2],[3,4]]
b=[[1,2],[3,4],[5,6]]
c=[[1,"a"],[2,4]]
d=[[1,1],[2,2]]
def hitungDet(n, total=0):
    x=len(n[0])
    y=0
    for i in range(len(n)):
        if(len(n[i])==x):
            y+=1
    if(y==len(n)):
        if(x==len(n)):
            indices=list(range(len(n)))
            if len(n)==2 and len(n[0])==2:
                val=n[0][0]*n[1][1]-n[1][0]*n[0][1]
                return val
            for fc in indices:
                ns=n
                ns=ns[1:]
                height=len(ns)
                for i in range(height):
                    ns[i]=ns[i][0:fc]+ns[i][fc+1:]
                sign=(-1)**(fc%2)
                sub_det=hitungDet(ns)
                total+=sign*n[0][fc]*sub_det
        else:
            return "Tidak dapat dihitung, bukan matrix bujursangkar"
    else:
        return "Tidak dapat dihitung, bukan matrix bujursangkar"
    return total

print(hitungDet(a))
print(hitungDet(b))
```

```
Python 3.7.2 (tags/v3.7.2:9a3ffc0492, Dec 23 2018, 23:09:28) [MSC v.1916 64 bit (
AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: C:/Users/ASUS/Desktop/Kuliah/Sem 4/Algoritma/coba mod3.py =====
-2
Tidak dapat dihitung, bukan matrix bujursangkar
>>>
```

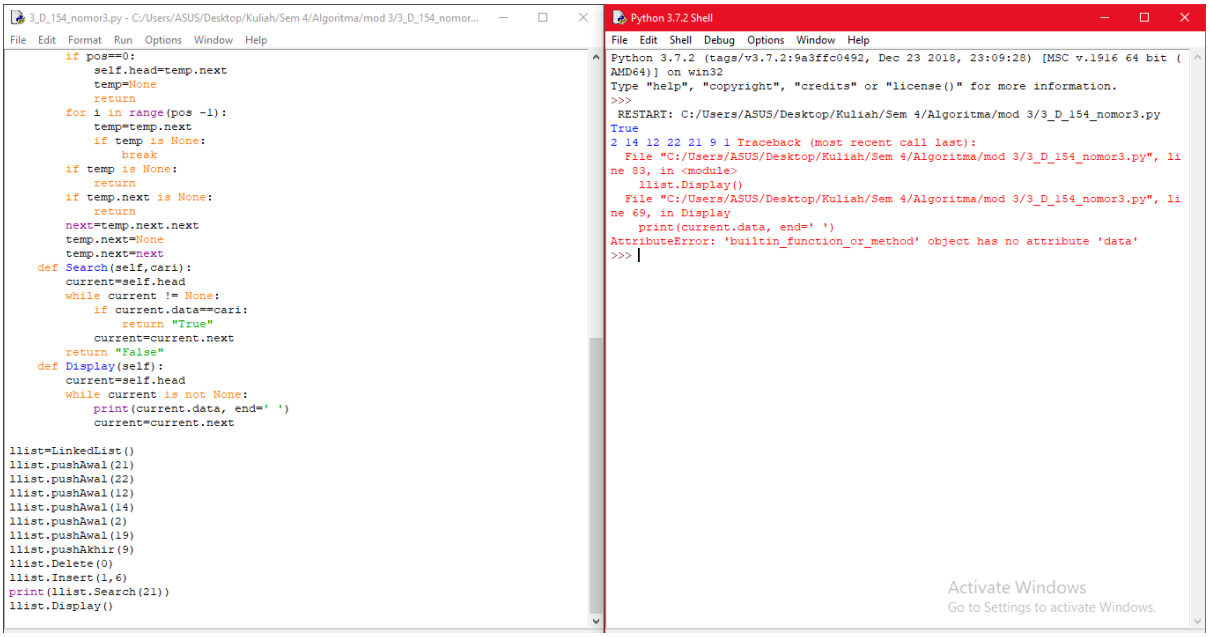
2. Matrix dan list comprehension. Buat matrix nol dan identitas



```
def buatNol(n,m=None):
    if(m==None):
        m=n
    print("membuat matrix 0 dengan ordo "+str(n)+"x"+str(m))
    print([[0 for j in range(m)] for i in range(n)])

buatNol(2,3)
buatNol(3)

def buatIdentitas(n):
    print("Membuat matrix identitas dengan ordo "+str(n)+"x"+str(n))
    print([[1 if j==i else 0 for j in range(n)] for i in range(n)])

buatIdentitas(2)
buatIdentitas(3)
```

```
Python 3.7.2 (tags/v3.7.2:9a3ffc0492, Dec 23 2018, 23:09:28) [MSC v.1916 64 bit (
AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
 RESTART: C:/Users/ASUS/Desktop/Kuliah/Sem 4/Algoritma/mod 3/3_D_154_nomor2.py
membuat matrix 0 dengan ordo 2x3
[[0, 0, 0], [0, 0, 0]]
membuat matrix 0 dengan ordo 3x3
[[0, 0, 0], [0, 0, 0], [0, 0, 0]]
Membuat matrix identitas dengan ordo 2x2
[[1, 0], [0, 1]]
Membuat matrix identitas dengan ordo 3x3
[[1, 0, 0], [0, 1, 0], [0, 0, 1]]
>>>
```

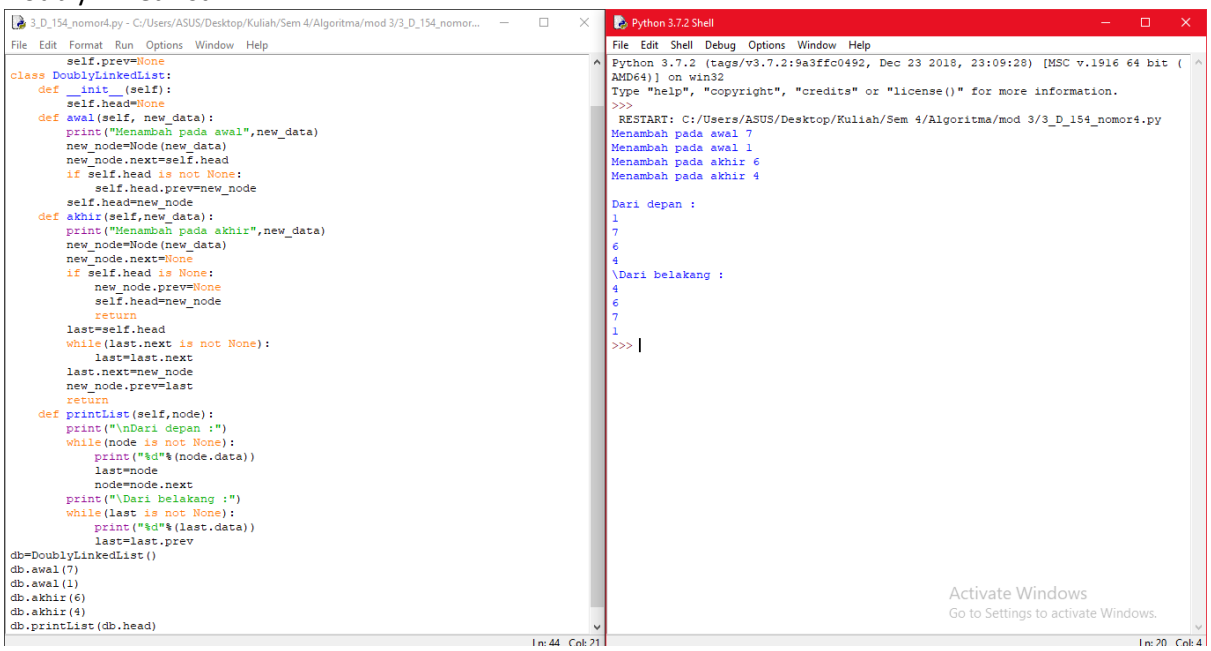
3. Linked list (belum bisa memperbaiki error)



```
        if pos==0:
            self.head=temp.next
            temp=None
            return
        for i in range(pos -1):
            temp=temp.next
            if temp is None:
                break
        if temp is None:
            return
        if temp.next is None:
            return
        next=temp.next.next
        temp.next=None
        temp.next=next
    def Search(self,cari):
        current=self.head
        while current != None:
            if current.data==cari:
                return "True"
            current=current.next
        return "False"
    def Display(self):
        current=self.head
        while current is not None:
            print(current.data, end=' ')
            current=current.next

llist=LinkedList()
llist.pushAwal(21)
llist.pushAwal(22)
llist.pushAwal(12)
llist.pushAwal(14)
llist.pushAwal(2)
llist.pushAwal(19)
llist.pushAkhir(9)
llist.Delete(0)
llist.Insert(1,6)
print(llist.Search(21))
llist.Display()
```

```
Python 3.7.2 (tags/v3.7.2:9a3ffc0492, Dec 23 2018, 23:09:28) [MSC v.1916 64 bit (
AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
 RESTART: C:/Users/ASUS/Desktop/Kuliah/Sem 4/Algoritma/mod 3/3_D_154_nomor3.py
True
2 14 12 22 21 9 1 Traceback (most recent call last):
  File "C:/Users/ASUS/Desktop/Kuliah/Sem 4/Algoritma/mod 3/3_D_154_nomor3.py", li
ne 83, in <module>
    llist.Display()
  File "C:/Users/ASUS/Desktop/Kuliah/Sem 4/Algoritma/mod 3/3_D_154_nomor3.py", li
ne 69, in Display
    print(current.data, end=' ')
AttributeError: 'builtin_function_or_method' object has no attribute 'data'
>>>
```

4. Doubly linked list



3_D_154_nomor4.py - C:/Users/ASUS/Desktop/Kuliah/Sem 4/Algoritma/mod 3/3_D_154_nomor...

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```
        self.prev=None
class DoublyLinkedList:
    def __init__(self):
        self.head=None
    def awal(self, new_data):
        print("Menambah pada awal",new_data)
        new_node=Node(new_data)
        new_node.next=self.head
        if self.head is not None:
            self.head.prev=new_node
        self.head=new_node
    def akhir(self,new_data):
        print("Menambah pada akhir",new_data)
        new_node=Node(new_data)
        new_node.next=None
        if self.head is None:
            new_node.prev=None
            self.head=new_node
            return
        last=self.head
        while(last.next is not None):
            last=last.next
        last.next=new_node
        new_node.prev=last
        return
    def printList(self,node):
        print("\nDari depan :")
        while(node is not None):
            print("%d"%(node.data))
            last=node
            node=node.next
        print("\Dari belakang :")
        while(last is not None):
            print("%d"%(last.data))
            last=last.prev
db=DoublyLinkedList()
db.awal(7)
db.awal(1)
db.akhir(6)
db.akhir(4)
db.printList(db.head)
```

Ln: 44 Col: 21

Python 3.7.2 Shell

File Edit Shell Debug Options Window Help

```
Python 3.7.2 (tags/v3.7.2:9a3ffc0492, Dec 23 2018, 23:09:28) [MSC v.1916 64 bit (
AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
 RESTART: C:/Users/ASUS/Desktop/Kuliah/Sem 4/Algoritma/mod 3/3_D_154_nomor4.py
Menambah pada awal 7
Menambah pada awal 1
Menambah pada akhir 6
Menambah pada akhir 4

Dari depan :
1
7
6
4
\Dari belakang :
4
6
7
1
>>>
```


Ln: 20 Col: 4