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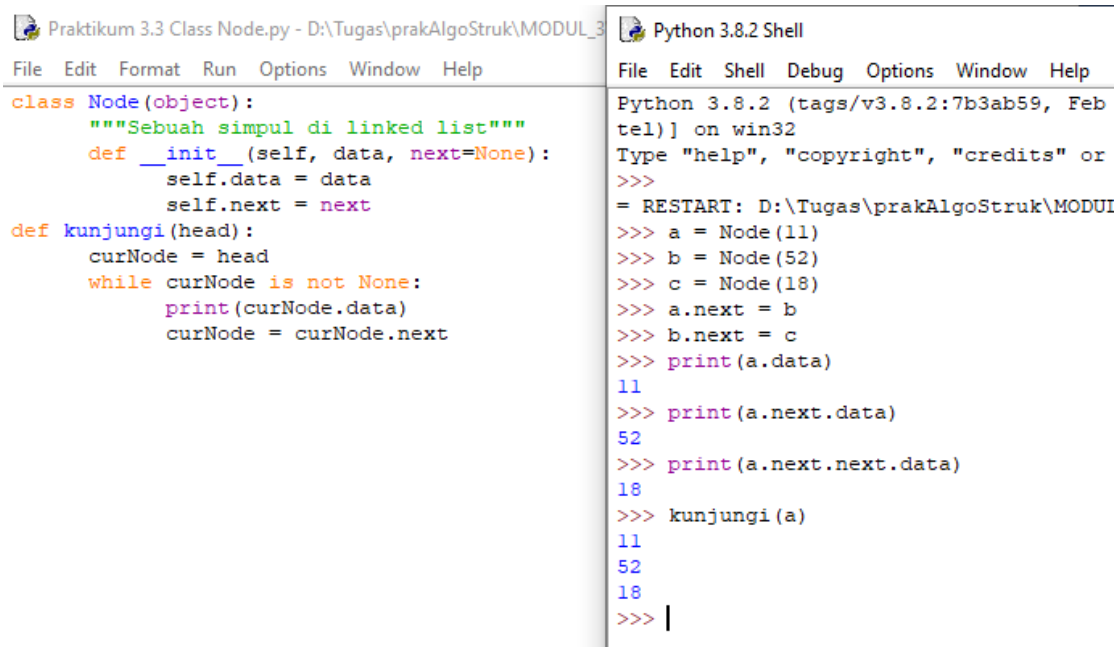
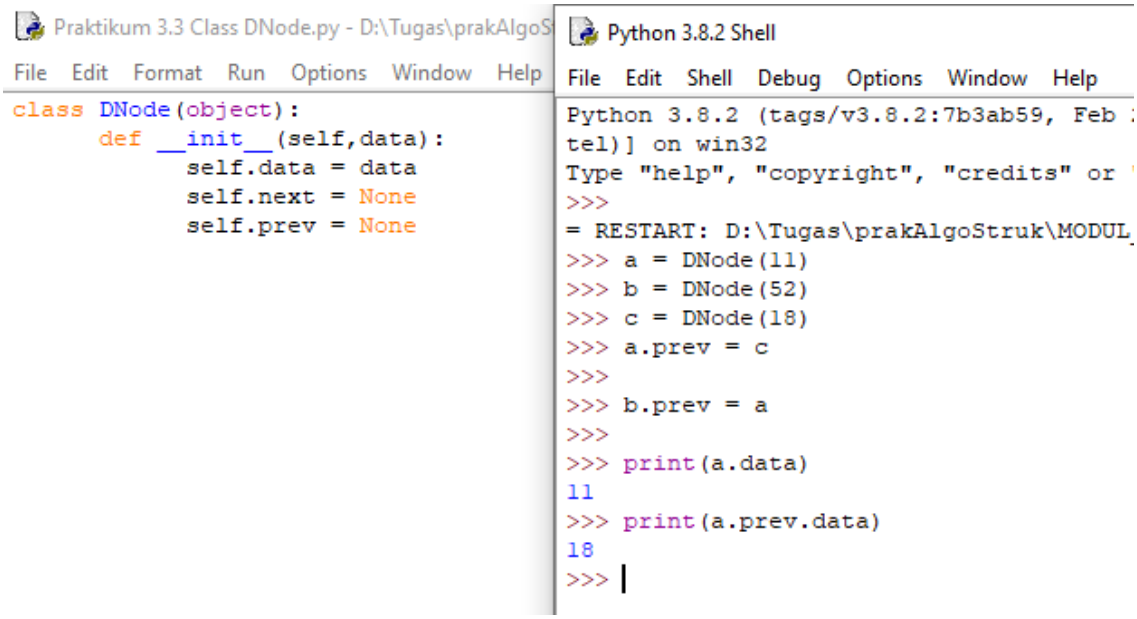
NIM : L200180006

Kelas : A

- Praktikum 3.3 Class Node



- Class DNode



- 3.4 Soal-soal
    1. Soal no 1

1.py - D:\Tugas\prakAlgoStruk\MODUL_3\1.py (3.8.2)

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```
m1 = [[3,5],[6,9]]
m2 = [[8,14],[6,11]]

#1A
def cekMat(matrix):
    """memastikan type data Integer"""
    jum = len(matrix)
    hasil = ""
    for x in matrix:
        for i in x:
            assert isinstance(i, int),"Harus Integer bung!!!"
        return True
#1B
def Ukuran(matrix):
    """Mengambil ukuran matriks"""
    return("Ukuran Matrix = "+str(len(matrix))+" x "+str(len(matrix[0])))
#1C
def Jumlah(matrix1,matrix2):
    """Penjumlahan 2 Matrix"""
    if Ukuran(matrix1) == Ukuran(matrix2):
        for x in range(0, len(matrix1)):
            for y in range(0, len(matrix1[0])):
                print(matrix1[x][y] + matrix2[x][y], end=' '),
            print()
    else:
        print("Matriks Tidak Sesuai")
```

Python 3.8.2 Shell

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```
Python 3.8.2 (tags/v3.8.2:7b3ab59, Feb
tel)] on win32
Type "help", "copyright", "credits" or
>>>
========== RESTART: D:\Tugas\pr
True
Ukuran Matrix = 2 x 2
11 19
12 20
54 97
102 183
3

3

>>>
```

```
#1D
def Kali(matrix1,matrix2):
    """Perkalian 2 Matrix"""
    mat3 = []
    if Ukuran(matrix1) == Ukuran(matrix2):
        for x in range(0, len(matrix1)):
            row = []
            for y in range(0, len(matrix1[0])):
                total = 0
                for z in range(0, len(matrix1)):
                    total = total + (matrix1[x][z] * matrix2[z][y])
                row.append(total)
            mat3.append(row)
        for x in range(0, len(mat3)):
            for y in range(0, len(mat3[0])):
                print(mat3[x][y], end=' ')
            print()
    else:
        print("Matriks Tidak Sesuai")
def determinan(matrix):
    """Menghitung Determinan Matrix"""
    if len(matrix) == len(matrix[0]):
        bil = [x for x in range(len(matrix))]
        jum = 0
        for i in range(len(matrix)):
            total = 1
            for x in range(len(matrix)):
                total *= matrix[x][bil[x]]
            bil += [bil.pop(0)]
            jum += total
        bil2 = [x for x in range(len(matrix))]
        bil.reverse()
        jum2 = 0
        for i in range(len(matrix)):
            total2 = 1
            for x in range(len(matrix)):
                total2 *= matrix[x][bil2[x]]
            bil2 += [bil2.pop()]
            jum2 += total2
        print(total-total2)
        return ""
    else:
        print("Matriks Harus Bujursangkar")

print(cekMat(m1))
print(Ukuran(m1))
Jumlah(m1,m2)
Kali(m1,m2)
print(determinan(m1))
print(determinan(m1))
```

```
Python 3.8.2 (tags/v3.8.2:7b3ab59, Feb
tel)] on win32
Type "help", "copyright", "credits" or
>>>
========== RESTART: D:\Tugas\pra
True
Ukuran Matrix = 2 x 2
11 19
12 20
54 97
102 183
3

3

>>>
```

2. Soal nomor 2

2.py - D:\Tugas\prakAlgoStruk\MODUL_3\2.py (3.8.2)

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```
#2A
def buatNol(m, n):
    """Menggunakan dua input"""
    matrix = [[0 for x in range(m)] for i in range(n)]
    print(matrix)

def buatNol2(m):
    """Menggunakan satu input"""
    n = m
    matrix = [[0 for x in range(m)] for i in range(n)]
    print(matrix)

#2B
def buatIdentitas(m):
    n = m
    matrix = [[1 if j == i else 0 for j in range(m)]for i in range(n)]
    print(matrix)

#2
buatNol(2,2)
buatNol2(3)
buatIdentitas(4)
```

Python 3.8.2 Shell

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```
Python 3.8.2 (tags/v3.8.2:7b3ab59, Feb 25 2020, 22:45:29)
tel)] on win32
Type "help", "copyright", "credits" or "license()" for more
>>>
========== RESTART: D:\Tugas\prakAlgoStruk\MODUL_3\2
[[0, 0], [0, 0]]
[[0, 0, 0], [0, 0, 0], [0, 0, 0]]
[[1, 0, 0, 0], [0, 1, 0, 0], [0, 0, 1, 0], [0, 0, 0, 1]]
>>>
```

3. Soal nomor 3

3.py - D:\Tugas\prakAlgoStruk\MODUL_3\3.py (3.8.2)

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```
class Node:
    def __init__(self, data):
        self.data = data
        self.next = None
class LinkedList:
    def __init__(self):
        self.head = None
    def pushAw(self, new_data):
        new_node = Node(new_data)
        new_node.next = self.head
        self.head = new_node
    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 pos==0:
            node.next = self.head
            self.head = node
        else:
            prev = None
            current = self.head
            current_pos = 0
            while(current_pos < pos) and current.
                prev = current
                current = current.next
                current_pos +=1
            prev.next = node
            node.next = current
        return self.head
    def deleteNode(self, position):
```

Python 3.8.2 Shell

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```
Python 3.8.2 (tags/v3.8.2:7b3ab59, Feb
tel)] on win32
Type "help", "copyright", "credits" or
>>>
========== RESTART: D:\Tugas\pr
True
False
16 4 22 12 3 11 4
>>>
```

4. Soal nomor 4

4.py - D:\Tugas\prakAlgoStruk\MODUL_3\4.py (3.8.2)

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```
class Node:
    def __init__(self, data):
        self.data = data
        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("\nDari Belakang :")
        while(last is not None):
            print(" % d" %(last.data))
            last = last.prev
llist = DoublyLinkedList()
```

Python 3.8.2 Shell

File Edit Shell Debug Options Window Help

```
Python 3.8.2 (tags/v3.8.2:7b3ab59, Feb 25
tel)] on win32
Type "help", "copyright", "credits" or "li
>>>
================ RESTART: D:\Tugas\prakAl
menambah pada awal 5
menambah pada awal 7
menambah pada akhir 9
menambah pada akhir 2

Dari Depan :
  7
  5
  9
  2

Dari Belakang :
  2
  9
  5
  7
>>>
```