NAMA : BAITY JANNATIKA

NIM : L200180211

KELAS : H / PRAKTIKUM ALGORITMA DAN STRUKTUR DATA

Modul 3

Collections, Arrays, and Linked Structures

Soal-soal untuk Mahasaiswa

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```
#Soal-Soal Untuk Mahasiswa

#Nomor 1
x = [[12,7,3],
     [4 ,5,6],
     [1,3,4]]

y = [[5,8,1],
     [6,7,3],
     [2,5,3]]

z = [[12,3,'x','y'],[12,11,4]]

#a. Cek Konsisten
def cekKonsisten(n):
    x = len(n[0])
    z = 0
    for i in range(len(n)):
        if (len(n[i]) == x):
            z+=1
    if(z == len(n)):
        print("Matriks Konsisten")
    else:
        print("Matrik Tidak Konsisten")
```

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```
#b. Ambil Ukuran Matrik
def ambilUkuran(n):
    x = 0
    y = 0
    for i in n:
        for j in i:
            y+=1
            if (str(j).isdigit()==False):
                print("Isi Matriks Tidak Angka")
                break
            else:
                x+=1
    if(x==y):
        print("Isi Matriks Angka")
ambilUkuran(y)
ambilUkuran(z)

#c. tambah Matrik
def tambah(x,y):
    for i in range(len(x)):
        for j in range(len(x[0])):
            print(x[i][j] + y[i][j],end='    ')
        print()

#d. Kali Matrik
def kali(x,y):
    a=[]
    for i in range(0, len(x)):
        row = []
        for j in range(0, len(x[0])):
            total = 0
            for z in range(0, len(x)):
                total = total + (x[i][z] * y[z][j])
            row.append(total)
        a.append(row)
    for i in range(0, len(a)):
        for j in range(0, len(a[0])):
            print (a[i][j], end='  ')
        print ()
kali(x,y)
```

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```
#e. Determinan Matrik
def determinan(x):
        d=(x[0][0]*x[1][1])-(x[0][1]*x[1][0])
        print(d)

a=[[2,3],[4,5]]
determinan(a)

#Nomor 2
def buatnol(x,y):
    a=[[0 for i in range(x)] for j in range(y)]
    print("array: ",a)
    print("matrik:")
    for i in range(len(a)):
        for j in range(len(a[0])):
            print(a[i][j], end='   ')
        print()

def buatnol2(x):
    a=[[0 for i in range(x)] for j in range(x)]
    print("array: ",a)
    print("matrik:")
    for i in range(len(a)):
        for j in range(len(a[0])):
            print(a[i][j], end='   ')
        print()

def identitas(x):
    a=[[1 if j==i else 0 for i in range(x)] for j in range(x)]
    print(a)
    print("============")
    for i in range(len(a)):
        for j in range(len(a[0])):
            print(a[i][j], end='   ')
        print()
identitas(5)
```

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```
#3
class Node():
    def __init__(self,data,next=None):
        self.data=data
        self.next=next

#mencari data
def cari(head,x):
    cnode=head
    position=0
    while cnode is not None:
        position+=1
        if cnode.data == x:
            print(cnode.data," di posisi:",position)
            break
        else:
            cnode = cnode.next

class LinkedList:
    def __init__(self):
        self.head = None

# menambah data menjadi head
    def tambahHead(self, new_data):
        new_node = Node(new_data)
        new_node.next = self.head
        self.head = new_node

# menambah data menjadi tail
    def tambahAkhir(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
```

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```
#menghapus data
    def hapusNode(self, position):
        if self.head == None:
            return
        temp = self.head
        if position == 0:
            self.head = temp.next
            temp = None
            return
        for i in range(position -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
```

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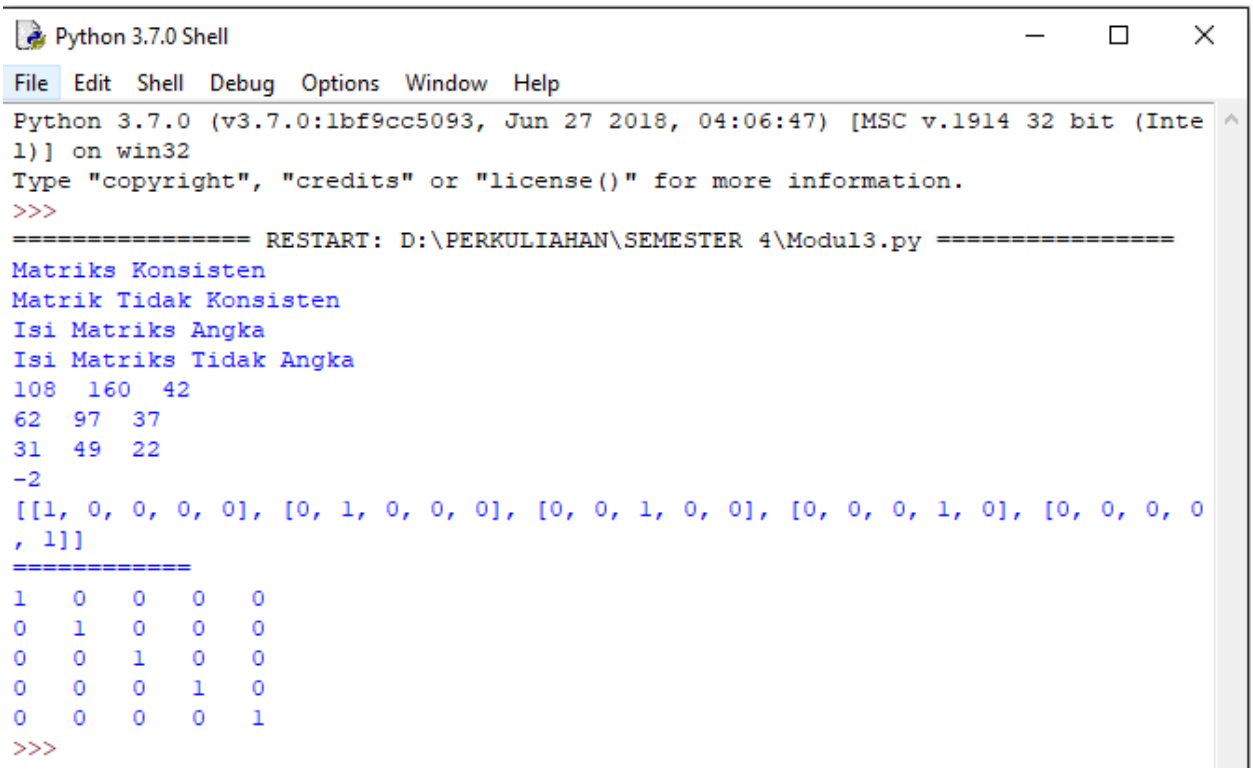
```
#Nomor4
class Node:
    def __init__(self, data):
        self.data = data
        self.prev = None

class DoublyLinkedList:

    def __init__(self):
        self.head = None

    def tambahawal(self, x):
        new = Node(x)
        new.next = self.head
        if self.head is not None:
            self.head.prev = new
        self.head = new

    def tambahakhir(self, x):
        new = Node(x)
        new.next = None
        if self.head is None:
            new.prev = None
            self.head = new
            return
        last = self.head
        while(last.next is not None):
            last = last.next
        last.next = new
        new.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
```


Python 3.7.0 Shell
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Python 3.7.0 (v3.7.0:1bf9cc5093, Jun 27 2018, 04:06:47) [MSC v.1914 32 bit (Inte
l)] on win32
Type "copyright", "credits" or "license()" for more information.
>>>
========== RESTART: D:\PERKULIAHAN\SEMESTER 4\Modul3.py ==========
Matriks Konsisten
Matrik Tidak Konsisten
Isi Matriks Angka
Isi Matriks Tidak Angka
108 160 42
62 97 37
31 49 22
-2
[[1, 0, 0, 0, 0], [0, 1, 0, 0, 0], [0, 0, 1, 0, 0], [0, 0, 0, 1, 0], [0, 0, 0, 0
, 1]]
==========
1 0 0 0 0
0 1 0 0 0
0 0 1 0 0
0 0 0 1 0
0 0 0 0 1
>>>