

TUGAS PRAKTIKUM

ALGORITMA DAN STRUKTUR DATA

MODUL 3. COLLECTIONS, ARRAYS, AND LINKED STRUCTURES

3.4 Soal-soal untuk Mahasiswa

1.

```
Tugas 1.py - A:\P_ASD\Modul 3\Kode\Tugas 1.py (3.8.1)
File Edit Format Run Options Window Help
m1 = [[2,3],[4,5]]
m2 = [[10,20],[5,6]]

#1A cekMat(matrix):
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"
        return True

#1B def Ukuran(matrix):
def Ukuran(matrix):
    """Mengambil ukuran matriks"""
    return ("Ukuran Matriks = " + str(len(matrix)) + " x " + str(len(matrix[0])))

#1C def Jumlah(matrix1,matrix2):
def Jumlah(matrix1,matrix2):
    """Penjumlahan 2 Matriks"""
    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")

#1D def Kali(matrix1,matrix2):
def Kali(matrix1,matrix2):
    """Perkalian 2 Matriks"""
    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[0])):
                    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 Matriks"""
    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 3.8.1 Shell
File Edit Shell Debug Options Window Help
Python 3.8.1 (tags/v3.8.1:1b293b6, Dec 18 2019, 22:39:24) [MSC v.1916 32 bit (Int
el)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: A:\P_ASD\Modul 3\Kode\Tugas 1.py =====
True
Ukuran Matriks = 2 x 2
12 23
9 11
35 58
65 110
2
2
>>>
```

2.

```

Tugas 2.py - A:\P_ASD\Modul 3\Kode\Tugas 2.py (3.8.1)
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def buatNo1(m, n):
    """Menggunakan dua input"""
    matrik = [[0 for x in range(m)] for i in range(n)]
    print(matrik)

def buatNo12(m):
    """Menggunakan satu input"""
    n = m
    matrik = [[0 for x in range(m)] for i in range(n)]
    print(matrik)

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

#2
buatNo1(3,3)
buatNo12(3)
buatIdentitas(4)

```

```

Python 3.8.1 Shell
File Edit Shell Debug Options Window Help

Python 3.8.1 (tags/v3.8.1:1b293b6, Dec 18 2019, 22:39:24) [MSC v.1916 32 bit (Int
el)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
----- RESTART: A:\P_ASD\Modul 3\Kode\Tugas 2.py -----
>>>
[[0, 0, 0], [0, 0, 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.

```

Tugas 3.py - A:\P_ASD\Modul 3\Kode\Tugas 3.py (3.8.1)
File Edit Format Run Options Window Help

#3
class Node():
    def __init__(self, data, nextNode=None):
        self.data = data
        self.nextNode = nextNode
    def cetak(head):
        curr = head
        while curr != None:
            print(curr.data)
            curr = curr.nextNode
    def cari(head, cari):
        curr = head
        while curr != None:
            if curr.data == cari:
                print("Data ditemukan!")
            else:
                print("Check data!")
            curr = curr.nextNode
    def tambahDepan(head):
        newNode = Node(1)
        newNode.nextNode = head
        head = newNode
        return head
    def tambahAkhir(head):
        curr = head
        while curr is not None:
            if curr.nextNode == None:
                newNode = Node(25)
                curr.nextNode = newNode
                return curr
            else:
                pass
            curr = curr.nextNode
        return curr

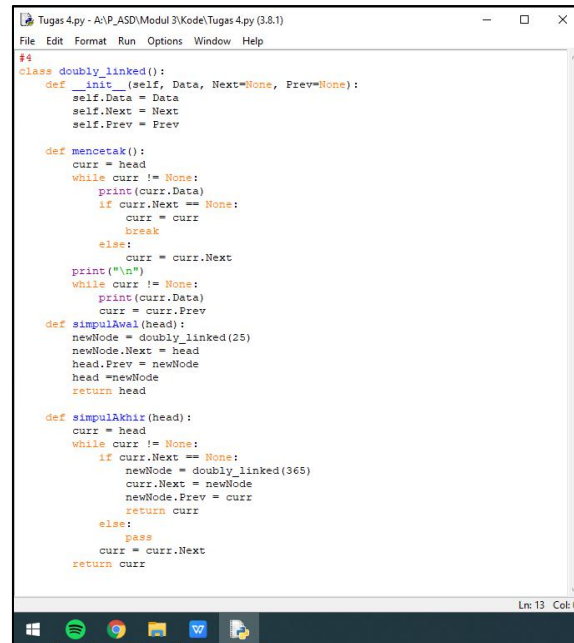
def tambah(head, posisi):
    newNode = Node(8)
    newNode.nextNode = posisi.nextNode
    posisi.nextNode = newNode
    head.head = posisi
    return head

def hapus(head, posisi):
    curr = head
    while curr != None:
        if curr.nextNode.data == posisi:
            curr.nextNode = curr.nextNode.nextNode
            return curr
        else:
            pass
        curr = curr.nextNode
    return curr

```

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4.



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Tugas 4.py - A:\P_ASD\Modul 3\Kode\Tugas 4.py (3.8.1)
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#4
class doubly_linked():
    def __init__(self, Data, Next=None, Prev=None):
        self.Data = Data
        self.Next = Next
        self.Prev = Prev

    def mencetak():
        curr = head
        while curr != None:
            print(curr.Data)
            if curr.Next == None:
                curr = curr
                break
            else:
                curr = curr.Next
        print("\n")
        while curr != None:
            print(curr.Data)
            curr = curr.Prev

    def simpulAwal(head):
        newNode = doubly_linked(25)
        newNode.Next = head
        head.Prev = newNode
        head = newNode
        return head

    def simpulAkhir(head):
        curr = head
        while curr != None:
            if curr.Next == None:
                newNode = doubly_linked(365)
                curr.Next = newNode
                newNode.Prev = curr
                return curr
            else:
                pass
        curr = curr.Next
        return curr
```

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