

LAPORAN UTS PRAKTIKUM



UJIAN TENGAH SEMESTER

Prak Algoritma dan Struktur Data

Semester 4

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KELAS : L

1. Buatlah fungsi untuk menghitung luas bangun datar berikut ini : a) Persegi b) Lingkaran c) Segitiga samasisi d) Belah ketupat

The image shows two side-by-side windows of a Python 3.7.4 Shell. The left window displays the execution of a script that calculates the area of a square, circle, isosceles triangle, and rhombus. The right window shows the source code for these functions, along with a function to calculate the product of two matrices.

```

Python 3.7.4 Shell
File Edit Shell Debug Options Window Help
Python 3.7.4 (tags/v3.7.4:e09359112e, Jul 8 2019, 20:34:20) [MSC v
.1916 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more informa
tion.
>>>
RESTART: C:/Users/ACER ESI-432/AppData/Local/Programs/Python/Pytho
n37/UTS PRAK ASD SMST 4.py
Program menghitung luas Persegi
Masukkan sisi = >? 10
Luas persegi = sisi x sisi. Maka Luasnya = 100 satuan luas
-----
Program menghitung luas Lingkaran
Masukkan jari-jari = >? 10
Luas Lingkaran = phi x r x r. Maka Luasnya = 314.16 satuan luas
-----
Program menghitung luas Segitiga Sama Sisi
Masukkan sisi = >? 10
Luas Segitiga = 1/2 x sisi x sisi. Maka Luasnya = 50.0 satuan luas
-----
Program menghitung luas Belah Ketupat
Masukkan d1 = >? 10
Masukkan d2 = >? 10
Luas Belah Ketupat = 1/2 x d1 x d2. Maka Luasnya = 50.0 satuan luas
-----
>>>

UTS PRAK ASD SMST 4.py - C:/Users/ACER ESI-432/AppData/Local/Programs/Python/Python37/UTS PRAK ASD SMST...
File Edit Format Run Options Window Help
#1
def LuasPersegi():
    print("Program menghitung luas Persegi")
    sisi = int(input("Masukkan sisi = >? "))
    luas = sisi**2
    return "Luas persegi = sisi x sisi. Maka Luasnya = "+str(luas)+" satuan luas"
def LuasLingkaran():
    from math import pi
    print("Program menghitung luas Lingkaran")
    r = int(input("Masukkan jari-jari = >? "))
    luas = (pi*r**2)
    return "Luas Lingkaran = phi x r x r. Maka Luasnya = "+str(luas)+" satuan luas"
def LuasSegitigaSamaSisi():
    print("Program menghitung luas Segitiga Sama Sisi")
    sisi = int(input("Masukkan sisi = >? "))
    luas = (sisi**2)/2
    return "Luas Segitiga = 1/2 x sisi x sisi. Maka Luasnya = "+str(luas)+" satuan luas"
def LuasBelahKetupat():
    print("Program menghitung luas Belah Ketupat")
    d1 = int(input("Masukkan d1 = >? "))
    d2 = int(input("Masukkan d2 = >? "))
    luas = (d1*d2)/2
    return "Luas Belah Ketupat = 1/2 x d1 x d2. Maka Luasnya = "+str(luas)+" satuan luas"

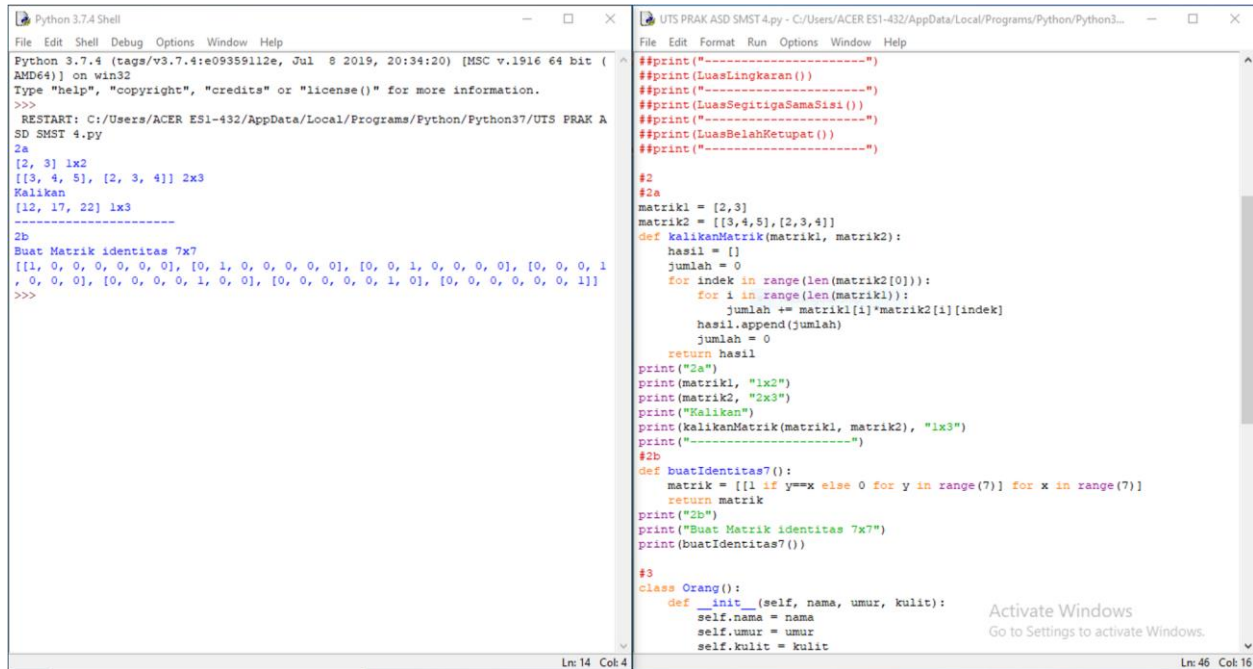
print(LuasPersegi())
print("-----")
print(LuasLingkaran())
print("-----")
print(LuasSegitigaSamaSisi())
print("-----")
print(LuasBelahKetupat())
print("-----")
#2a
matrik1 = [2,3]
matrik2 = [[3,4,5],[2,3,4]]
def kelikanMatrik(matrik1, matrik2):
    hasil = []
    jumlah = 0
    for indek in range(len(matrik2[0])):
        for i in range(len(matrik1)):

```

2.

a) Seperti kita tahu, perkalian dua matriks (misal matriks A dikali matriks B) dapat dilakukan jika jumlah kolom A sama dengan jumlah baris B. Buatlah program fungsi perkalian dua buah matriks! Matrik A dengan ordo (1x2) dan matriks B dengan ordo (2x3) maka hasilnya matriks C dengan ordo (1x3)

b) Buatlah program matriks identitas dengan ordo (7 x 7)



```
Python 3.7.4 Shell
File Edit Shell Debug Options Window Help
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Type "help", "copyright", "credits" or "license()" for more information.
>>>
RESTART: C:\Users\ACER ES1-432\AppData\Local\Programs\Python\Python37\UTS PRAK ASD SMST 4.py
2a
[2, 3] 1x2
[[3, 4, 5], [2, 3, 4]] 2x3
Kalikan
[12, 17, 22] 1x3
-----
2b
Buat Matrik identitas 7x7
[[1, 0, 0, 0, 0, 0, 0], [0, 1, 0, 0, 0, 0, 0], [0, 0, 1, 0, 0, 0, 0], [0, 0, 0, 1, 0, 0, 0], [0, 0, 0, 0, 1, 0, 0], [0, 0, 0, 0, 0, 1, 0], [0, 0, 0, 0, 0, 0, 1]]
>>>
```

```
UTS PRAK ASD SMST 4.py - C:/Users/ACER ES1-432/AppData/Local/Programs/Python/Python3...
File Edit Format Run Options Window Help
#####
#print(LuasLingkaran())
#print(LuasSegitigaSamaSisi())
#####
#2
#2a
matrik1 = [2,3]
matrik2 = [[3,4,5],[2,3,4]]
def kalikanMatrik(matrik1, matrik2):
    hasil = []
    jumlah = 0
    for indek in range(len(matrik2[0])):
        for i in range(len(matrik1)):
            jumlah += matrik1[i]*matrik2[i][indek]
        hasil.append(jumlah)
        jumlah = 0
    return hasil
print("2a")
print(matrik1, "1x2")
print(matrik2, "2x3")
print("Kalikan")
print(kalikanMatrik(matrik1, matrik2), "1x3")
print("-----")
#2b
def buatIdentitas7():
    matrik = [[1 if y==x else 0 for y in range(7)] for x in range(7)]
    return matrik
print("2b")
print("Buat Matrik identitas 7x7")
print(buatIdentitas7())

#3
class Orang():
    def __init__(self, nama, umur, kulit):
        self.nama = nama
        self.umur = umur
        self.kulit = kulit
```

Ln: 14 Col: 4

Ln: 46 Col: 16

Activate Windows
Go to Settings to activate Windows.

3.

Lihatlah orang-orang yang ada di sekeliling kalian. Buatlah sebuah program class yang bisa menampung data-data personal seperti :

Nama	Umur	Warna kulit (misalnya sawo matang, kuning langsung, atau putih)
------	------	--

Tambahkan 3 metode / fungsi untuk menampilkan dataNama, dataUmur, dan data warnaKulit. Dari class tersebut, tambahkan minimal 10 objek (data personal).

The image shows two side-by-side windows of a Python 3.7.4 Shell. The left window displays the output of a script named 'SD SMST 4.py', which lists 10 people with their names, ages, and skin colors. The right window shows the source code of the script, which defines a class 'Orang' with methods for accessing attributes and a list of 10 objects.

```

Python 3.7.4 Shell
File Edit Shell Debug Options Window Help
Python 3.7.4 (tags/v3.7.4:e09359112e, Jul 8 2019, 20:34:20) [MSC v.1916 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
RESTART: C:/Users/ACER E51-432/AppData/Local/Programs/Python/Python37/UTS PRAK A
SD SMST 4.py
Jarot 20 Sawo Matang
Budi 22 Kuning Langsat
Tito 21 Putih
Riski 18 Sawo Matang
Akbar 17 Kuning Langsat
Doni 23 Putih
Dapa 16 Kuning Langsat
Adit 24 Sawo Matang
Agil 15 Kuning Langsat
Guntur 16 Putih
>>>

UTS PRAK ASD SMST 4.py - C:/Users/ACER E51-432/AppData/Local/Programs/Python/Python3...
File Edit Format Run Options Window Help
matrik = [[1 if y==x else 0 for y in range(7)] for x in range(7)]
return matrik
#print("2b")
#print("Buat Matrik identitas 7x7")
#print(buatIdentitas7())

#3
class Orang():
    def __init__(self, nama, umur, kulit):
        self.nama = nama
        self.umur = umur
        self.kulit = kulit
    def dataNama(self):
        return self.nama
    def dataUmur(self):
        return self.umur
    def warnaKulit(self):
        return self.kulit

data1 = Orang("Jarot",20,"Sawo Matang")
data2 = Orang("Budi",22,"Kuning Langsat")
data3 = Orang("Tito",21,"Putih")
data4 = Orang("Riski",18,"Sawo Matang")
data5 = Orang("Akbar",17,"Kuning Langsat")
data6 = Orang("Doni",23,"Putih")
data7 = Orang("Dapa",16,"Kuning Langsat")
data8 = Orang("Adit",24,"Sawo Matang")
data9 = Orang("Agil",15,"Kuning Langsat")
data10 = Orang("Guntur",16,"Putih")

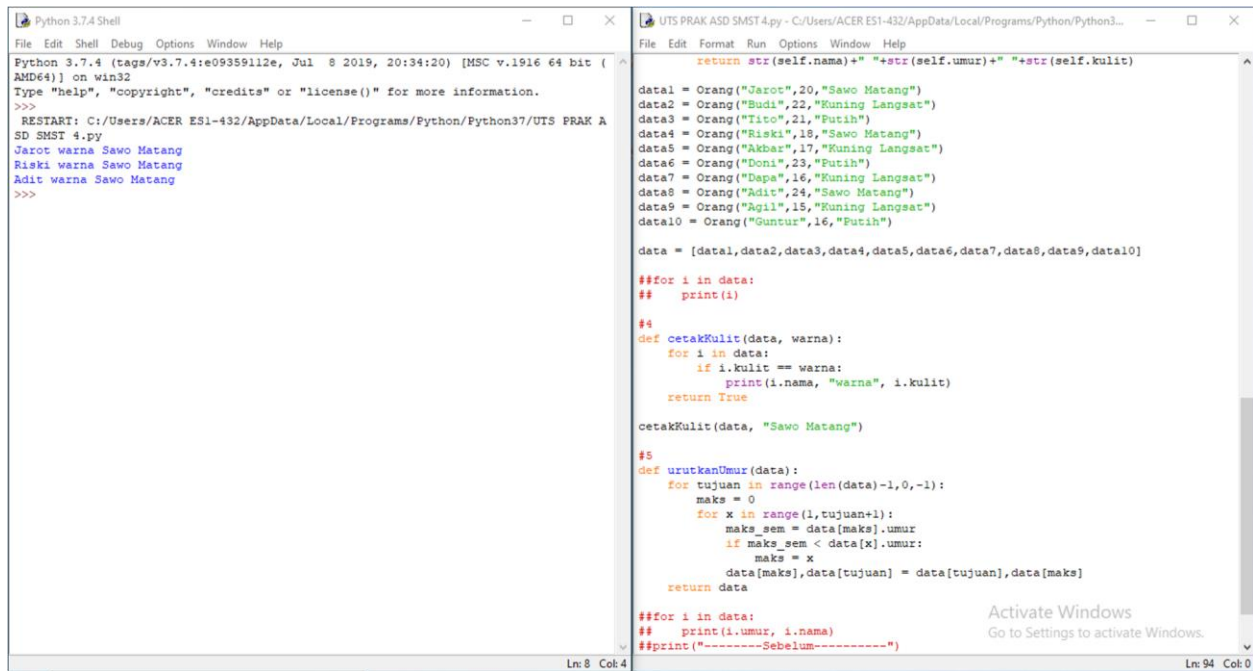
data = [data1,data2,data3,data4,data5,data6,data7,data8,data9,data10]

for i in data:
    print(i.dataNama(), i.dataUmur(), i.warnaKulit())

#4
def cetakKulit(data, warna):
    for i in data:
        if i.kulit == warna:
            print(i.nama, "warna", i.kulit)
    return True
  
```

4.

Berdasarkan soal No.3, buatlah program untuk menampilkan daftar orang yang mempunyai kulit sawo matang (gunakan algoritma pencarian)!



The image shows two side-by-side windows from a Python IDE. The left window is titled 'Python 3.7.4 Shell' and shows the execution output of a script. The right window is titled 'UTS PRAK ASD SMST 4.py' and shows the source code of the script. The code defines an 'Orang' class, creates a list of 10 people with various attributes, and implements two methods: 'cetakKulit' to filter people by skin color and 'urutkanUmur' to sort them by age. The output in the shell window shows the results of these operations.

```
Python 3.7.4 Shell
File Edit Shell Debug Options Window Help
Python 3.7.4 (tags/v3.7.4:09359112e, Jul 8 2019, 20:34:20) [MSC v.1916 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
RESTART: C:/Users/ACER E51-432/AppData/Local/Programs/Python/Python37/UTS PRAK ASD SMST 4.py
Jarot warna Sawo Matang
Riski warna Sawo Matang
Adit warna Sawo Matang
>>>
```

```
UTS PRAK ASD SMST 4.py - C:/Users/ACER E51-432/AppData/Local/Programs/Python/Python3...
File Edit Format Run Options Window Help
    return str(self.nama)+" "+str(self.umur)+" "+str(self.kulit)

data1 = Orang("Jarot",20,"Sawo Matang")
data2 = Orang("Budi",22,"Kuning Langsat")
data3 = Orang("Tito",21,"Putih")
data4 = Orang("Riski",18,"Sawo Matang")
data5 = Orang("Akbar",17,"Kuning Langsat")
data6 = Orang("Doni",23,"Putih")
data7 = Orang("Dapa",16,"Kuning Langsat")
data8 = Orang("Adit",24,"Sawo Matang")
data9 = Orang("Agil",15,"Kuning Langsat")
data10 = Orang("Guntur",16,"Putih")

data = [data1,data2,data3,data4,data5,data6,data7,data8,data9,data10]

##for i in data:
##    print(i)

#4
def cetakKulit(data, warna):
    for i in data:
        if i.kulit == warna:
            print(i.nama, "warna", i.kulit)
    return True

cetakKulit(data, "Sawo Matang")

#5
def urutkanUmur(data):
    for tujuan in range(len(data)-1,0,-1):
        maks = 0
        for x in range(1,tujuan+1):
            maks_sen = data[maks].umur
            if maks_sen < data[x].umur:
                maks = x
        data[maks],data[tujuan] = data[tujuan],data[maks]
    return data

##for i in data:
##    print(i.umur, i.nama)
##print("-----Sebelum-----")
```

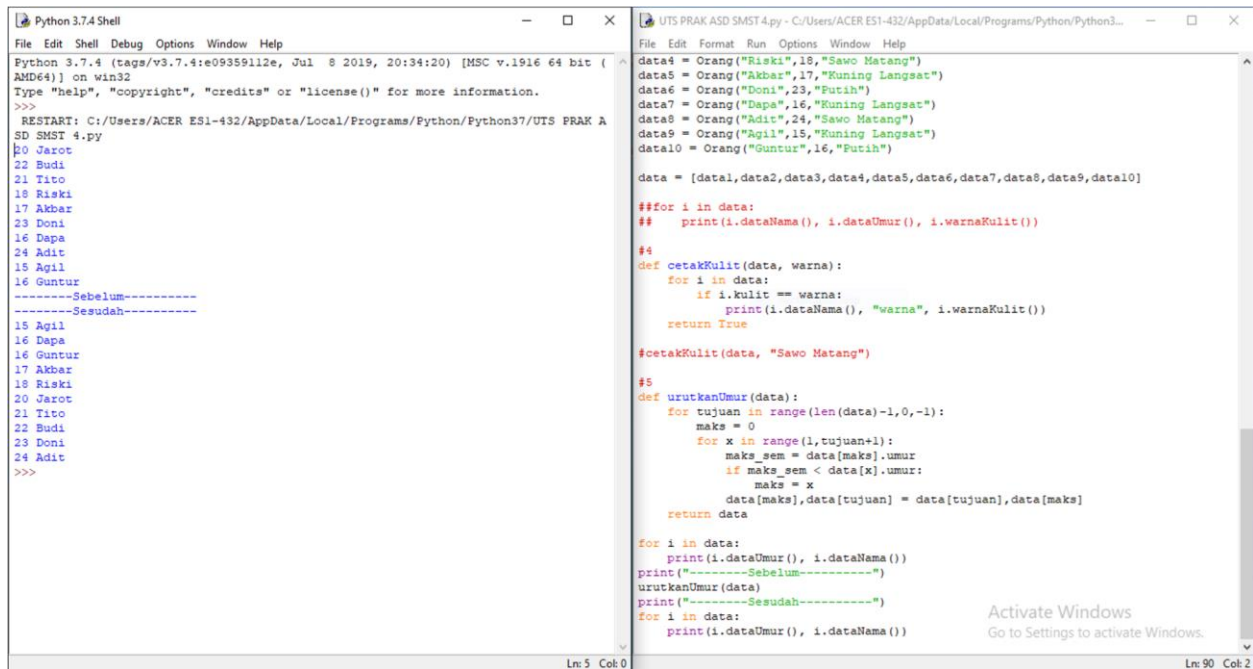
Ln: 8 Col: 4

Ln: 94 Col: 0

Activate Windows
Go to Settings to activate Windows.

5.

Berdasarkan soal No.3, buatlah program untuk mengurutkan data tersebut dari umur yang termuda sampai tertua menggunakan algoritma pengurutan!



```
Python 3.7.4 Shell
File Edit Shell Debug Options Window Help
Python 3.7.4 (tags/v3.7.4:09359112e, Jul 8 2019, 20:34:20) [MSC v.1916 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
RESTART: C:/Users/ACER E51-432/AppData/Local/Programs/Python/Python37/UTS PRAK ASD SMST 4.py
data = [data1, data2, data3, data4, data5, data6, data7, data8, data9, data10]
data1 = Orang("Riski", 18, "Sawo Matang")
data2 = Orang("Akbar", 17, "Kuning Langsat")
data3 = Orang("Doni", 23, "Putih")
data4 = Orang("Dapa", 16, "Kuning Langsat")
data5 = Orang("Adit", 24, "Sawo Matang")
data6 = Orang("Agil", 15, "Kuning Langsat")
data7 = Orang("Guntur", 16, "Putih")
data8 = Orang("Riski", 18, "Sawo Matang")
data9 = Orang("Akbar", 17, "Kuning Langsat")
data10 = Orang("Doni", 23, "Putih")

# Urut dari umur termuda sampai tertua
def urutkanUmur(data):
    for tujuan in range(len(data)-1, 0, -1):
        maks = 0
        for x in range(1, tujuan+1):
            maks_sml = data[maks].umur
            if maks_sml < data[x].umur:
                maks = x
        data[maks], data[tujuan] = data[tujuan], data[maks]
    return data

for i in data:
    print(i.dataUmur(), i.dataNama())
print("-----Sebelum-----")
urutkanUmur(data)
print("-----Setelah-----")
for i in data:
    print(i.dataUmur(), i.dataNama())

>>>
18 Agil
16 Dapa
16 Guntur
17 Akbar
18 Riski
20 Jarot
21 Tito
22 Budi
23 Doni
24 Adit
>>>
```

```
UTS PRAK ASD SMST 4.py - C:/Users/ACER E51-432/AppData/Local/Programs/Python/Python3...
File Edit Format Run Options Window Help
data4 = Orang("Riski", 18, "Sawo Matang")
data5 = Orang("Akbar", 17, "Kuning Langsat")
data6 = Orang("Doni", 23, "Putih")
data7 = Orang("Dapa", 16, "Kuning Langsat")
data8 = Orang("Adit", 24, "Sawo Matang")
data9 = Orang("Agil", 15, "Kuning Langsat")
data10 = Orang("Guntur", 16, "Putih")

data = [data1, data2, data3, data4, data5, data6, data7, data8, data9, data10]

##for i in data:
##    print(i.dataNama(), i.dataUmur(), i.warnaKulit())

#4
def cetakKulit(data, warna):
    for i in data:
        if i.kulit == warna:
            print(i.dataNama(), "warna", i.warnaKulit())
    return True

#cetakKulit(data, "Sawo Matang")

#5
def urutkanUmur(data):
    for tujuan in range(len(data)-1, 0, -1):
        maks = 0
        for x in range(1, tujuan+1):
            maks_sml = data[maks].umur
            if maks_sml < data[x].umur:
                maks = x
        data[maks], data[tujuan] = data[tujuan], data[maks]
    return data

for i in data:
    print(i.dataUmur(), i.dataNama())
print("-----Sebelum-----")
urutkanUmur(data)
print("-----Setelah-----")
for i in data:
    print(i.dataUmur(), i.dataNama())

Ln: 5 Col: 0
```