

**PRAKTIKUM
ALGORITMA DAN STRUKTUR DATA
(Algorithm and Data Structure)**

**LAPORAN TUGAS
Ulangan Tengah Semester IV**



**Nama : Shafa Bani Saputra
NIM : L200190151
Kelas : G**

**PROGRAM STUDI INFORMATIKA
FAKULTAS KOMUNIKASI DAN INFORMATIKA
UNIVERSITAS MUHAMMADIYAH
SURAKARTA**

Soal 1

```
*1.py - D:/universitas/kuliah/prakASD/uts/1.py (3.9.0)*
File Edit Format Run Options Window Help

#1
import math
def LuasPersegi():
    print("The program calculates the area of Square")
    sisi = int(input("input the side length of the square => "))
    luas = sisi**2
    return "the formula = S**2.\nthan square area is = "+str(luas)+" unit area"
def LuasLingkaran():
    from math import pi
    print("The program calculates the area of a Circle")
    r = float(input("Enter the radius of the circle => "))
    luas = (pi*r**2)
    return "the format = phi*r**2.\nthan circle area is = "+format(luas, '.2f')+" unit area"
def LuasSegitigaSamaSisi():
    print("The program calculates the area of an equilateral triangle")
    sisi = float(input("Insert the sides of the triangle => "))
    luas = ((sisi**2)/4)*math.sqrt(3)
    return "the format = ((sisi**2)/4)*root of(3).\nthan equilateral triangle is = \"
        +format(luas, '.2f')+" unit area"
def LuasBelahKetupat():
    print("The program calculates the area of a rhombus")
    d1 = float(input("input the first diameter (d1) => "))
    d2 = float(input("input the second diameter (d2) => "))
    luas = (d1*d2)/2
    return "the format = (d1*d2)/2.\nthan rhombus area is = "+format(luas, '.2f')+" unit area"

print(LuasPersegi())
print("==== = *8)
print(LuasLingkaran())
print("==== = *8)
print(LuasSegitigaSamaSisi())
print("==== = *8)
print(LuasBelahKetupat())
print("==== = *8)

Python 3.9.0 Shell
File Edit Shell Debug Options Window Help
Python 3.9.0 (tags/v3.9.0:9cf6752, Oct 5 2020, 15:34:40) [MSC v.1927 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: D:/universitas/kuliah/prakASD/uts/1.py =====
The program calculates the area of Square
input the side length of the square => 8
the formula = S**2.
than square area is = 64 unit area
==== = *8)
The program calculates the area of a Circle
Enter the radius of the circle => 14
the format = phi*r**2.
than circle area is = 615.75 unit area
==== = *8)
The program calculates the area of an equilateral triangle
Insert the sides of the triangle => 5
the format = ((sisi**2)/4)*root of(3).
than equilateral triangle is = 10.83 unit area
==== = *8)
The program calculates the area of a rhombus
input the first diameter (d1) => 12
input the second diameter (d2) => 16
the format = (d1*d2)/2.
than rhombus area is = 96.00 unit area
==== = *8)
>>> |
```

Soal 2

```
2.py - D:/universitas/kuliah/prakASD/uts/2.py (3.9.0)
File Edit Format Run Options Window Help

#2
#2a
matrik1 = [2,3]
matrik2 = [[3,4,5],[2,3,4]]
def kalikanMatrik(matrik1, matrik2):
    hasil = []
    jumlah = 0
    for indeks in range(len(matrik2[0])):
        for i in range(len(matrik1)):
            jumlah += matrik1[i]*matrik2[i][indeks]
        hasil.append(jumlah)
        jumlah = 0
    return hasil
def cetak(self):
    for i in self:
        print(i)
print("soal 2a")
print(matrik1, "=> matrik 1x2")
print(matrik2, "=> matrik 2x3")
print("dikalikan menjadi")
print(kalikanMatrik(matrik1, matrik2), "=> matrik 1x3")
print("==== = *6)
##2b
def buatIdentitas(n):
    matrik = [[1 if y==x else 0 for y in range(n)] for x in range(n)]
    return cetak(matrik)
print("soal 2b")
print("Membuat Matrik identitas 7x7")
print(buatIdentitas(7))

Python 3.9.0 Shell
File Edit Shell Debug Options Window Help
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>>>
===== RESTART: D:/universitas/kuliah/prakASD/uts/2.py =====
soal 2a
[2, 3] => matrik 1x2
[[3, 4, 5], [2, 3, 4]] => matrik 2x3
dikalikan menjadi
[12, 17, 22] => matrik 1x3
==== = *6)
soal 2b
Membuat 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]
None
>>> |
```

Soal 3

```
3.py - D:/universitas/kuliah/prakASD/uts/3.py (3.9.0)
File Edit Format Run Options Window Help

#3
class teman():
    def __init__(self, nama, umur, kulit):
        self.nama = nama
        self.umur = umur
        self.kulit = kulit
    def __str__(self):
        return str(self.nama)+" , "+str(self.umur)+" th => "+str(self.kulit)

tmn1 = teman("Joko", 20, "Sawo Matang")
tmn2 = teman("Bobo", 22, "Kuning Langsat")
tmn3 = teman("Tina", 21, "Putih")
tmn4 = teman("Risiko", 18, "Sawo Matang")
tmn5 = teman("Anton", 17, "Kuning Langsat")
tmn6 = teman("Doni", 23, "Putih")
tmn7 = teman("Riyan", 16, "Kuning Langsat")
tmn8 = teman("Adit", 24, "Sawo Matang")
tmn9 = teman("Arik", 15, "Kuning Langsat")
tmn10 = teman("Gunawan", 16, "Putih")

listTmn = [tmn1, tmn2, tmn3, tmn4, tmn5, tmn6, tmn7, tmn8, tmn9, tmn10]

def cetakList(self):
    for i in self:
        print(i)
def ListNama(self):
    for i in self:
        print(i.nama)
def ListUmur(self):
    for i in self:
        print(i.umur)
def ListKulit(self):
    for i in self:
        print(i.kulit)

print("==== Daftar Teman ====")
cetakList(listTmn)
print("==== Daftar Nama ====")
ListNama(listTmn)
print("==== Daftar Umur ====")
ListUmur(listTmn)
print("==== Daftar Warna Kulit ====")
ListKulit(listTmn)

Ln: 42 Col: 32

Python 3.9.0 Shell
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>>>
===== RESTART: D:/universitas/kuliah/prakASD/uts/3.py =====
==== Daftar Teman ====
Joko , 20 th => Sawo Matang
Bobo , 22 th => Kuning Langsat
Tina , 21 th => Putih
Risiko , 18 th => Sawo Matang
Anton , 17 th => Kuning Langsat
Doni , 23 th => Putih
Riyan , 16 th => Kuning Langsat
Adit , 24 th => Sawo Matang
Arik , 15 th => Kuning Langsat
Gunawan , 16 th => Putih
==== Daftar Nama ====
Joko
Bobo
Tina
Risiko
Anton
Doni
Riyan
Adit
Arik
Gunawan
==== Daftar Umur ====
20
22
21
18
17
23
16
24
15
16
==== Daftar Warna Kulit ====
Sawo Matang
Kuning Langsat
Putih
Sawo Matang
Kuning Langsat
Putih
Kuning Langsat
Sawo Matang
Kuning Langsat
Putih
>>>

Ln: 130 Col: 2
```

Soal 4

```
no4.py - D:\universitas\kuliah\prakASD\uts\no4.py (3.9.0)
File Edit Format Run Options Window Help

#4
from no3 import *
def cetakKulit(data, warna):
    for i in data:
        if i.kulit == warna:
            print(i.nama, "warna Kulit", i.kulit)
    return True

cetakKulit(listTmn, "Sawo Matang")

Python 3.9.0 Shell
File Edit Shell Debug Options Window Help

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>>>
===== RESTART: D:\universitas\kuliah\prakASD\uts\no4.py =====
Joko warna Kulit Sawo Matang
Risiko warna Kulit Sawo Matang
Adit warna Kulit Sawo Matang
>>> |
```

Soal 5

no5.py - D:/universitas/kuliah/prakASD/uts/no5.py (3.9.0)

File Edit Format Run Options Window Help

```
#5
from no3 import *
def sortUmur(data):
    n = len(data)
    for i in range(1,n):
        value = data[i].umur
        pos = i
        while pos > 0 and value < data[pos-1].umur:
            v = data[pos]
            data[pos] = data[pos-1]
            data[pos-1] = v
            pos = pos-1

print("=== == Before Sorted == ===")
cetakList(listTmn)
print("=== == After Sorted == ===")
sortUmur(listTmn)
cetakList(listTmn)
```

Python 3.9.0 Shell

File Edit Shell Debug Options Window Help

```
Python 3.9.0 (tags/v3.9.0:9cf6752, Oct 5 2020, 15:34:40) [MSC v.1927 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: D:/universitas/kuliah/prakASD/uts/no5.py =====
=== == Before Sorted == ===
Joko , 20 th => Sawo Matang
Bobi , 22 th => Kuning Langsat
Tina , 21 th => Putih
Riski , 18 th => Sawo Matang
Anton , 17 th => Kuning Langsat
Doni , 23 th => Putih
Riyan , 16 th => Kuning Langsat
Adit , 24 th => Sawo Matang
Arik , 15 th => Kuning Langsat
Gunawan, 16 th => Putih
=== == After Sorted == ===
Arik , 15 th => Kuning Langsat
Riyan , 16 th => Kuning Langsat
Gunawan, 16 th => Putih
Anton , 17 th => Kuning Langsat
Riski , 18 th => Sawo Matang
Joko , 20 th => Sawo Matang
Tina , 21 th => Putih
Bobi , 22 th => Kuning Langsat
Doni , 23 th => Putih
Adit , 24 th => Sawo Matang
>>> |
```