LAPORAN

RENCANA TUGAS MANDIRI (RTM) Ke-4
MATA KULIAH ALGORITMA DAN PEMROGRAMAN DASAR

"Struktur Data Array Berdimensi-1, Berdimensi-2 dan Multidimensi"

DISUSUN OLEH:

Muhammad Aryasatya Nugroho (22083010085)

DOSEN PENGAMPU:

Tresna Maulana Fahrudin S.ST., M.T. (NIP. 199305012022031007)

Kartika Maulida Hindrayani S.Kom., M.Kom. (20219920909201)

PROGRAM STUDI SAINS DATA

FAKULTAS ILMU KOMPUTER

UNIVERSITAS PEMBANGUNAN NASIONAL "VETERAN" JAWA TIMUR

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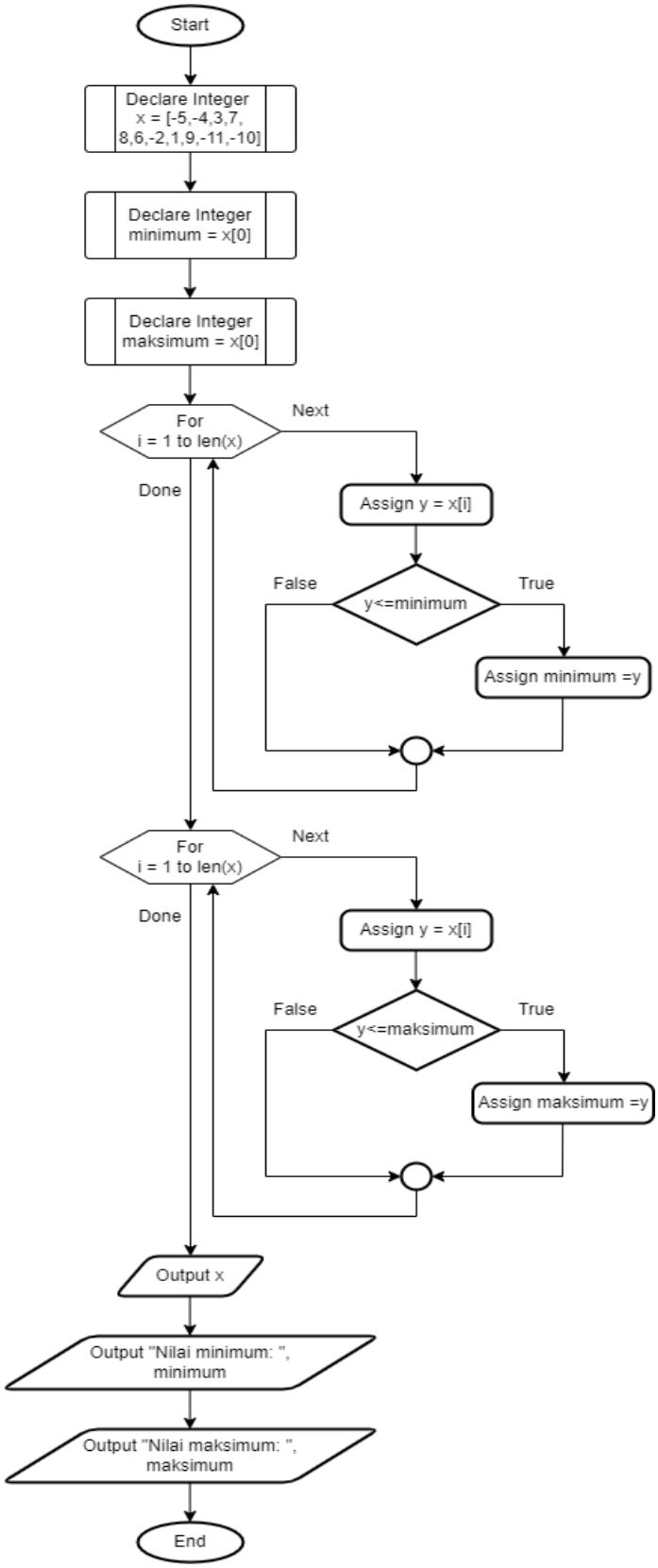
1. Array Berdimensi-1

a. Menentukan nilai minimum dan maksimum

Flowchart :



Kode Script Python

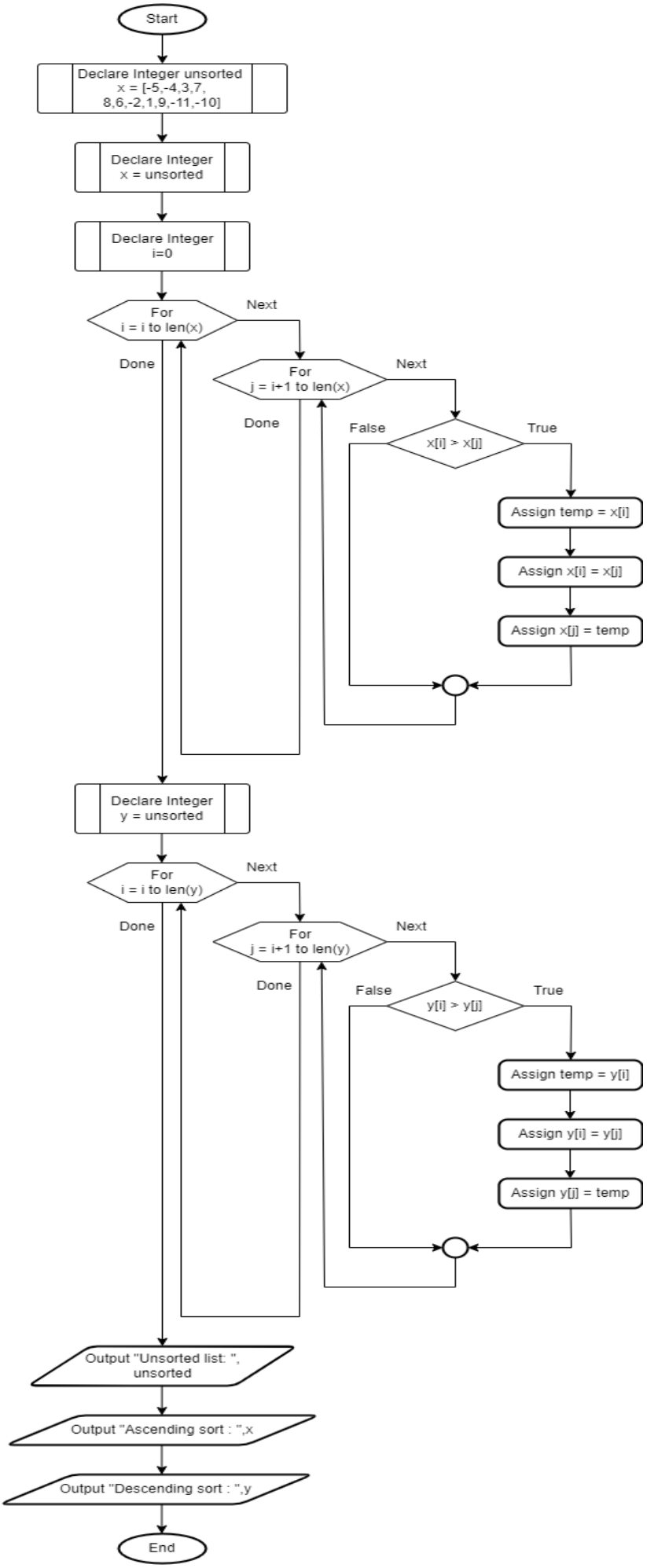
Array dimensi 1 - Menentukan nilai max & min

```python
x = [-5,-4,3,7,8,6,-2,1,9,-11,-10] #list

#minimum
min = x[0]
for i in range(1, len(x)):
    y = x[i]
    if y <= min:
        min = y
#maksimum
max = x[0]
for i in range(1, len(x)):
    y = x[i]
    if y >= max:
        max = y

#eksekusi kode
print(x)
print('Nilai minimum :', min)
print('Nilai maksimum :', max)
```

```
[-5, -4, 3, 7, 8, 6, -2, 1, 9, -11, -10]
Nilai minimum : -11
Nilai maksimum : 9
```

b. Mengurutkan nilai ascending dan descending

Flowchart :


Start
Declare Integer unsorted
x = [-5,-4,3,7,
8,6,-2,1,9,-11,-10]
Declare Integer
x = unsorted
Declare Integer
i=0
For
i = i to len(x)
Next
Done
For
j = i+1 to len(x)
Next
Done
False
x[i] > x[j]
True
Assign temp = x[i]
Assign x[i] = x[j]
Assign x[j] = temp
Declare Integer
y = unsorted
For
i = i to len(y)
Next
Done
For
j = i+1 to len(y)
Next
Done
False
y[i] > y[j]
True
Assign temp = y[i]
Assign y[i] = y[j]
Assign y[j] = temp
Output "Unsorted list: ",
unsorted
Output "Ascending sort : ",x
Output "Descending sort : ",y
End

Kode Script Python

Array dimensi 1 - Mengurutkan nilai ascending & descending

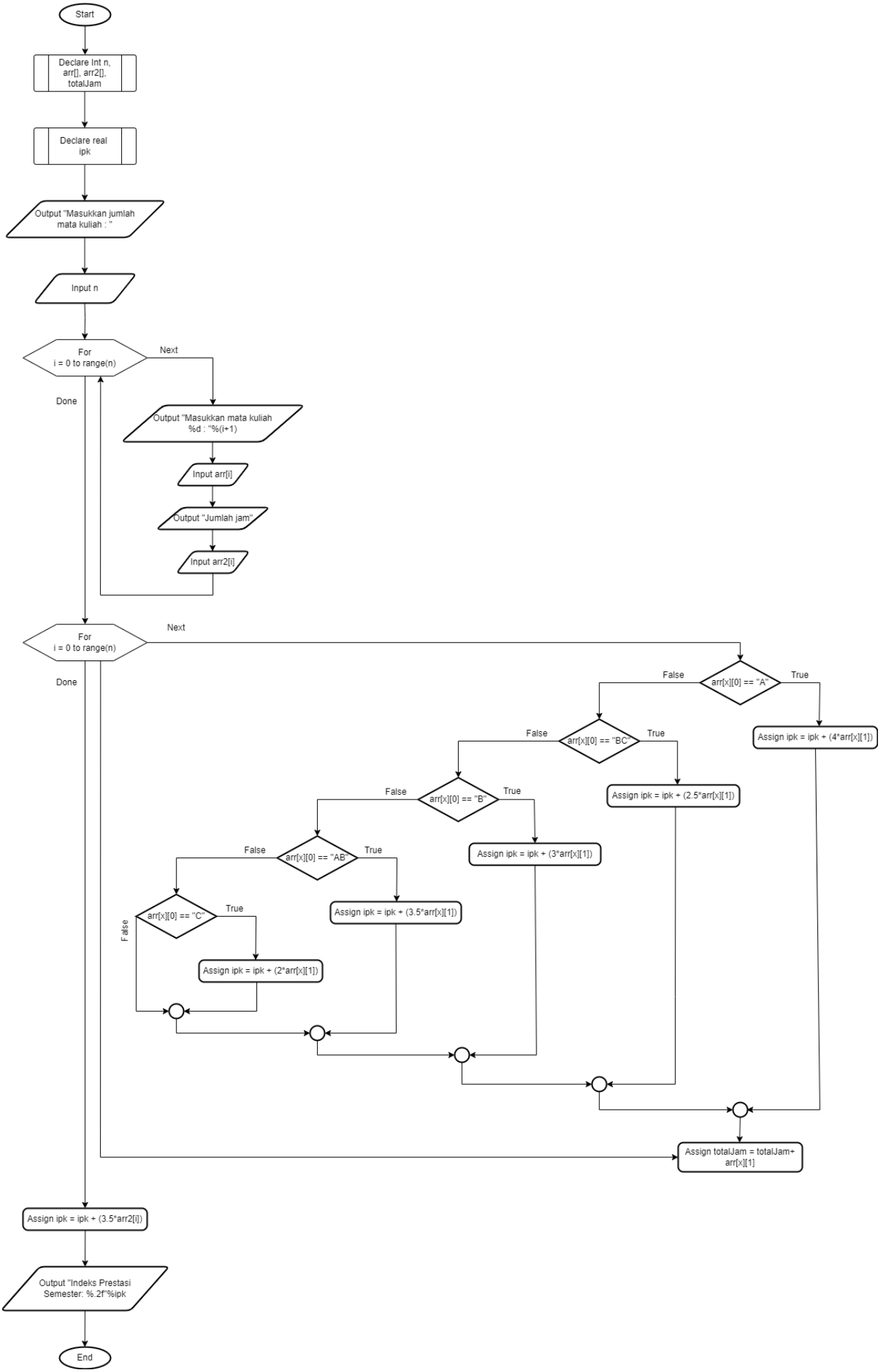
```python
unsorted = [-5,-4,3,7,8,6,-2,1,9,-11,-10]

#ascending
x = [-5,-4,3,7,8,6,-2,1,9,-11,-10]
i=0
for i in range(i, len(x)):
    for j in range(i+1, len(x)):
        if (x[i] > x[j]):
            temp = x[i]
            x[i] = x[j]
            x[j] = temp

#descending
y = [-5,-4,3,7,8,6,-2,1,9,-11,-10]
i=0
for i in range(i, len(x)):
    for j in range(i+1, len(x)):
        if (y[i] < y[j]):
            temp = y[i]
            y[i] = y[j]
            y[j] = temp

#eksekusi
print('Unsorted list :', unsorted)
print('Ascending sort :', x)
print('Descending sort :', y)
```

```
Unsorted list : [-5, -4, 3, 7, 8, 6, -2, 1, 9, -11, -10]
Ascending sort : [-11, -10, -5, -4, -2, 1, 3, 6, 7, 8, 9]
Descending sort : [9, 8, 7, 6, 3, 1, -2, -4, -5, -10, -11]
```

2. Array Berdimensi-2

a. Menghitung nilai ips

Flowchart:


Start
Declare Int n, arr[], arr2[], totalJam
Declare real ipk
Output "Masukkan jumlah mata kuliah : "
Input n
For i = 0 to range(n)
Next
Done
Output "Masukkan mata kuliah %d : "%(i+1)
Input arr[i]
Output "Jumlah jam"
Input arr2[i]
For i = 0 to range(n)
Next
Done
arr[x][0] == "A"
False
True
Assign ipk = ipk + (4*arr[x][1])
arr[x][0] == "BC"
False
True
Assign ipk = ipk + (2.5*arr[x][1])
arr[x][0] == "B"
False
True
Assign ipk = ipk + (3*arr[x][1])
arr[x][0] == "AB"
False
True
Assign ipk = ipk + (3.5*arr[x][1])
arr[x][0] == "C"
True
False
Assign ipk = ipk + (2*arr[x][1])
Assign totalJam = totalJam+ arr[x][1]
Assign ipk = ipk + (3.5*arr2[i])
Output "Indeks Prestasi Semester: %.2f"%ipk
End

Kode Script Python

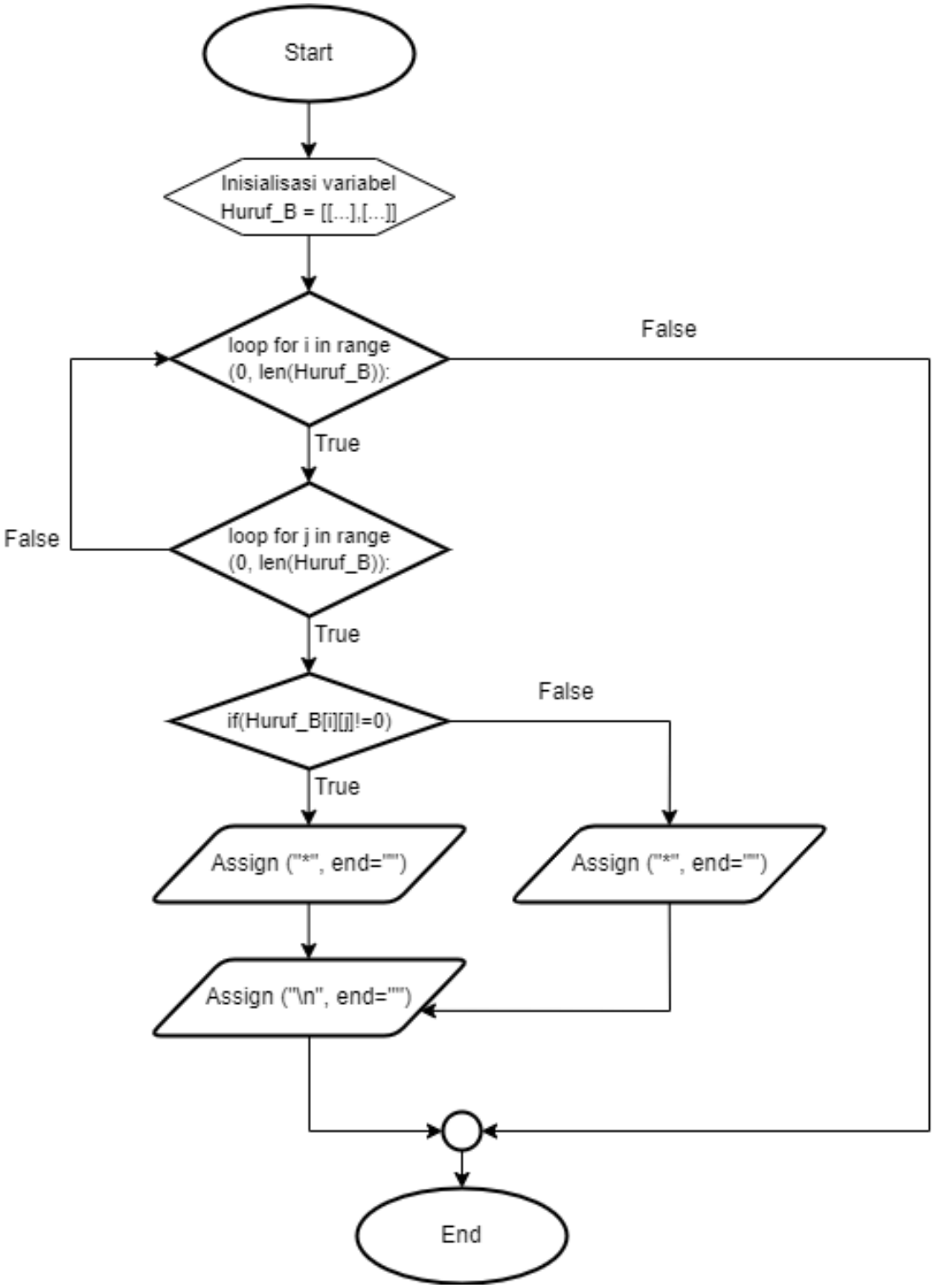
Array dimensi 2 - Menghitung ipk

```python
n = int(input("Masukkan jumlah mata kuliah : "))#input jumlah matkul
arr = []#list grading
for i in range(n):#loop sebanyak matkul
    arr2 = []#list matkul, jam
    arr2.append(input("Masukkan mata kuliah %d : "%(i+1)))#input grade ke list
    arr2.append(int(input("Jumlah jam : ")))#input jam ke list
    arr.append(arr2)

ipk = 0#inisasi ipk & totaljam
totalJam = 0

for x in range(n):
    for i in range(n):#loop sebanyak matkul
        if arr[x][0] == "A":#kalau arr[i] sama dengan "A" maka
            ipk = ipk + (4*arr[x][1])#tambah ipk dengan arr[i]*4
        elif arr[x][0] == "BC":
            ipk = ipk + (2.5*arr[x][1])
        elif arr[x][0] == "B":
            ipk = ipk + (3*arr[x][1])
        elif arr[x][0] == "AB":
            ipk = ipk + (3.5*arr[x][1])
        elif arr[x][0] == "C":
            ipk = ipk + (2*arr[x][1])

        totalJam = totalJam + arr[x][1] #totalin jam

ipk = ipk / totalJam #ipk dibagi jam biar dapet rata-rata
print("Indeks Prestasi Semeseter : %.2f"%ipk)#cetak ipk
```

```
Masukkan jumlah mata kuliah : 5
Masukkan mata kuliah 1 : A
Jumlah jam : 2
Masukkan mata kuliah 2 : BC
Jumlah jam : 2
Masukkan mata kuliah 3 : B
Jumlah jam : 3
Masukkan mata kuliah 4 : AB
Jumlah jam : 3
Masukkan mata kuliah 5 : C
Jumlah jam : 3
Indeks Prestasi Semeseter : 2.96
```

b. Membuat karakter huruf B

Flowchart:


Start
Inisialisasi variabel
Huruf_B = [[...],[...]]
loop for i in range
(0, len(Huruf_B)):
False
True
loop for j in range
(0, len(Huruf_B)):
False
True
if(Huruf_B[i][j]!=0)
False
True
Assign ("*", end="")
Assign ("*", end="")
Assign ("\n", end="")
End

Kode Script Python

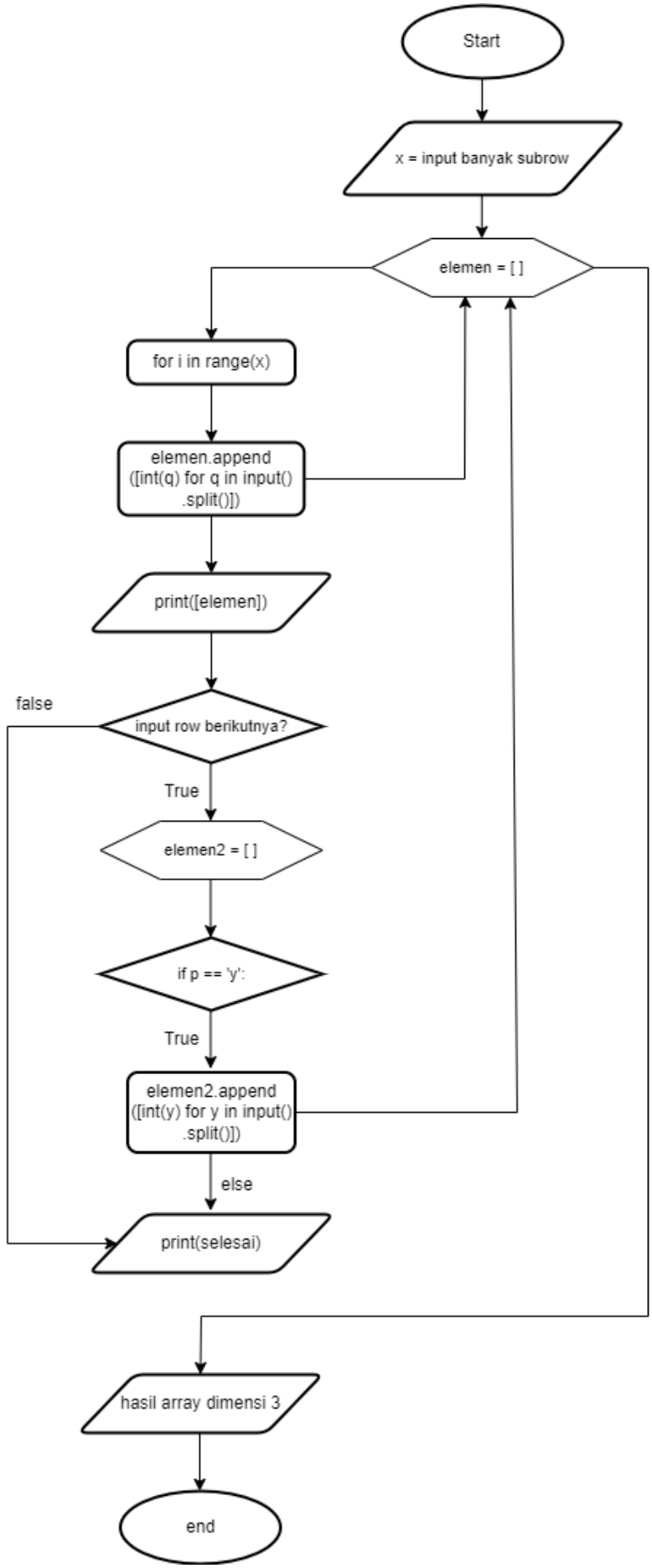
Array dimensi 2 - Membentuk karakter B

```
#matriks uk. 8x8
huruf_B=[[0, 1, 1, 1, 1, 1, 1, 0],
         [0, 1, 0, 0, 0, 0, 1, 0],
         [0, 1, 0, 0, 0, 0, 1, 0],
         [0, 1, 1, 1, 1, 1, 1, 1],
         [0, 1, 1, 0, 0, 0, 0, 1],
         [0, 1, 1, 0, 0, 0, 0, 1],
         [0, 1, 1, 1, 1, 1, 1, 1],
         [0, 0, 0, 0, 0, 0, 0, 0]]

for i in range(0,len(huruf_B)):
    for j in range(0,len(huruf_B)):
        if(huruf_B[i][j]!=0):
            print('*',end='')
        else:
            print (' ',end='')
    print('\n',end='')
```

```
******
*    *
*    *
*******
**    *
**    *
*******
```

3. **Array Multi dimensi**

   Flowchart:


Start
x = input banyak subrow
elemen = [ ]
for i in range(x)
elemen.append
([int(q) for q in input()
.split()])
print([elemen])
false
input row berikutnya?
True
elemen2 = [ ]
if p == 'y':
True
elemen2.append
([int(y) for y in input()
.split()])
else
print(selesai)
hasil array dimensi 3
end

Kode Script Python

```python
print('Masukkan row pertama')
print('Masukkan banyak subrow tiap row')
x = int(input())
elemen = []
for i in range(x):
    print('Masukkan elemen')
    elemen.append([int(q) for q in input().split()])
print(elemen)
while True:
    print('Ingin input row selanjutnya? (y/t):')
    p = str(input())
    if p == 'y':
        elemen2 =[]
        for u in range(a):
            print('masukkan elemen')
            elemen2.append([int(q) for q in input().split()])
    else:
        print('selesai')
        break
print()
print('hasil array berdimensi-3')
print([elemen,elemen2])
```

```
Masukkan row pertama
Masukkan banyak subrow tiap row
2
Masukkan elemen
1 1 1
Masukkan elemen
2 2 2
[[1, 1, 1], [2, 2, 2]]
Ingin input row selanjutnya? (y/t):
y
masukkan elemen
4 4 4
masukkan elemen
5 5 5
Ingin input row selanjutnya? (y/t):
t
selesai

hasil array berdimensi-3
[[[1, 1, 1], [2, 2, 2]], [[4, 4, 4], [5, 5, 5]]]
```