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Basics of Programming in Python

Matrices

Branimir Jakšić

Faculty of Technical Sciences – University of Mitrovica (UPKM)

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Example 58

Compose a program that prints the generated 3x3 matrix.

program code

```
1  #Zadatak 58
2
3  mat=[[1,2,3], [4,5,6], [7,8,9]]
4
5  print("\nMATRICA") #prvi nacin
6  print(mat)
7
8  print("\nMATRICA") #drugi nacin
9  for i in range(0,3):
10     print(mat[i])
11
12 print("\nMATRICA") #treci nacin
13 for red in mat:
14     for element in red:
15         print(element,' ',end='')
16     print()
17
18 print("\nMATRICA") #cetvrti nacin
19 for i in range(0,3):
20     for j in range(0,3):
21         print(mat[i][j],' ',end='')
22     print()
```

test program

```
MATRICA
[[1, 2, 3], [4, 5, 6], [7, 8, 9]]

MATRICA
[1, 2, 3]
[4, 5, 6]
[7, 8, 9]

MATRICA
1  2  3
4  5  6
7  8  9

MATRICA
1  2  3
4  5  6
7  8  9
>>>
```

another way zapisa matrice:

```
3  mat=[]
4  mat.append([1,2,3])
5  mat.append([4,5,6])
6  mat.append([7,8,9])
```

Example 59

Compose a program that loads and then prints the elements of the matrix mxn. The elements of the matrix are integers.

program code

```
1  #Zadatak 59
2
3  mat=list()
4  m=int(input("Broj vrsta m= "))
5  n=int(input("Broj kolona n= "))
6  print("Unesite elemente matrice A:")
7  for i in range(0,m):
8      red=list()
9      for j in range(0,n):
10         print("A",i,j,"= ",end='')
11         red.append(int(input()))
12     mat.append(red)
13
14 print("\nMATRICA") #prvi nacin
15 print(mat)
16
17 print("\nMATRICA") #drugi nacin
18 for i in range(0,m):
19     print(mat[i])
20
21 print("\nMATRICA") #treci nacin
22 for red in mat:
23     for element in red:
24         print(element,' ',end='')
25     print()
26
27 print("\nMATRICA") #cetvrti nacin
28 for i in range(0,m):
29     for j in range(0,n):
30         print(mat[i][j],' ',end='')
31     print()
```

another way unosa matrice:

```
7  for i in range(0,m):
8      mat.append([])
9      for j in range(0,n):
10         print("A",i,j,"= ",end='')
11         mat[i].append(int(input()))
```

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Example 59

test program

```
Broj vrsta m= 3
Broj kolona n= 4
Unesite elemente matrice A:
A 0 0 = 2
A 0 1 = 3
A 0 2 = 4
A 0 3 = 8
A 1 0 = 9
A 1 1 = 0
A 1 2 = 8
A 1 3 = 5
A 2 0 = 6
A 2 1 = 7
A 2 2 = 7
A 2 3 = 7

MATRICA
[[2, 3, 4, 8], [9, 0, 8, 5], [6, 7, 7, 7]]

MATRICA
[2, 3, 4, 8]
[9, 0, 8, 5]
[6, 7, 7, 7]

MATRICA
2  3  4  8
9  0  8  5
6  7  7  7

MATRICA
2  3  4  8
9  0  8  5
6  7  7  7
>>>
```

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Example 60

Compose a program that loads the matrix of whole dimensions mhn, and then adds the positive and negative elements.

program code

```
1  #Zadatak 60
2
3  mat=list()
4  m=int(input("Broj vrsta m= "))
5  n=int(input("Broj kolona n= "))
6  print("Unesite elemente matrice A:")
7  for i in range(0,m):
8      red=list()
9      for j in range(0,n):
10         print("A",i,j,"= ",end='')
11         red.append(int(input()))
12     mat.append(red)
13 print("\nMATRICA")
14 for i in range(0,m):
15     for j in range(0,n):
16         print(mat[i][j],' ',end='')
17     print()
18 sp=sn=0
19 for i in range(0,m):
20     for j in range(0,n):
21         if mat[i][j]>0:
22             sp=sp+mat[i][j]
23         else:
24             sn=sn+mat[i][j]
25 print("Suma pozitivnih:",sp)
26 print("Suma negativnih:",sn)
```

test program

```
Broj vrsta m= 3
Broj kolona n= 2
Unesite elemente matrice A:
A 0 0 = 1
A 0 1 = 4
A 1 0 = 7
A 1 1 = -2
A 2 0 = 6
A 2 1 = -6

MATRICA
1  4
7  -2
6  -6
Suma pozitivnih: 18
Suma negativnih: -8
>>>
```

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Example 61

Compose a program that loads two matrices of integers, A and V, both of dimension mhn, and then adds these two matrices and outputs a new matrix C. Matrices are added by adding the elements of the matrices with the same indices.

test program

```
Broj vrsta m= 3
Broj kolona n= 3
Unesite elemente matrice A:
A 0 0 = 2
A 0 1 = 3
A 0 2 = 4
A 1 0 = 7
A 1 1 = 8
A 1 2 = 0
A 2 0 = 9
A 2 1 = 2
A 2 2 = 4
Unesite elemente matrice B:
B 0 0 = 6
B 0 1 = 8
B 0 2 = 0
B 1 0 = 0
B 1 1 = 3
B 1 2 = 2
B 2 0 = 1
B 2 1 = 3
B 2 2 = 1
```

```
MATRICA A
2  3  4
7  8  0
9  2  4

MATRICA B
6  8  0
0  3  2
1  3  1

MATRICA C
8  11  4
7  11  2
10  5  5
>>>
```

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Example 61

program code

```
#Zadatak 61

matA=list()
matB=list()
matC=list()
m=int(input("Broj vrsta m= "))
n=int(input("Broj kolona n= "))

print("Unesite elemente matrice A:")
for i in range(0,m):
    red=list()
    for j in range(0,n):
        print("A",i,j,"= ",end='')
        red.append(int(input()))
    matA.append(red)

print("Unesite elemente matrice B:")
for i in range(0,m):
    red=list()
    for j in range(0,n):
        print("B",i,j,"= ",end='')
        red.append(int(input()))
    matB.append(red)

for i in range(0,m):
    red=list()
    for j in range(0,n):
        red.append(matA[i][j]+matB[i][j])
    matC.append(red)

print("\nMATRICA A")
for i in range(0,m):
    for j in range(0,n):
        print(matA[i][j],' ',end='')
    print()

print("\nMATRICA B")
for i in range(0,m):
    for j in range(0,n):
        print(matB[i][j],' ',end='')
    print()

print("\nMATRICA C")
for i in range(0,m):
    for j in range(0,n):
        print(matC[i][j],' ',end='')
    print()
```

Example 62

Compose a program that will load a matrix of integers of dimension nxn, print the matrix in the form of a table, and then the sum of the elements on the main, minor, above the main and below the main diagonal.

program code

```
#Zadatak 62

mat=list()
n=int(input("n= "))
print("Unesite elemente matrice:")
for i in range(0,n):
    red=list()
    for j in range(0,n):
        print("A",i,j,"= ",end='')
        red.append(int(input()))
    mat.append(red)
print("\nMATRICA")
for i in range(0,n):
    for j in range(0,n):
        print(mat[i][j],' ',end='')
    print()
sg=ss=iznad=ispod=0
for i in range(0,n):
    for j in range(0,n):
        if i==j: sg=sg+mat[i][j]
        if i+j==n-1: ss=ss+mat[i][j]
        if i<j: iznad=iznad+mat[i][j]
        if i>j: ispod=ispod+mat[i][j]
print("Suma na glavnoj dijagonali:",sg)
print("Suma na sporednoj dijagonali:",ss)
print("Suma iznad glavne dijagonale:",iznad)
print("Suma ispod glavne dijagonale:",ispod)
```

test program

```
n= 3
Unesite elemente matrice:
A 0 0 = 2
A 0 1 = 3
A 0 2 = 4
A 1 0 = 1
A 1 1 = 7
A 1 2 = 8
A 2 0 = 9
A 2 1 = 0
A 2 2 = 2

MATRICA
2  3  4
1  7  8
9  0  2
Suma na glavnoj dijagonali: 11
Suma na sporednoj dijagonali: 20
Suma iznad glavne dijagonale: 15
Suma ispod glavne dijagonale: 10
>>>
```

WBnet

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Questions & Answers

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