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Basics of Programming in Python

Linear Program Structures

Branimir Jakšić

Faculty of Technical Sciences – University of Mitrovica (UPKM)

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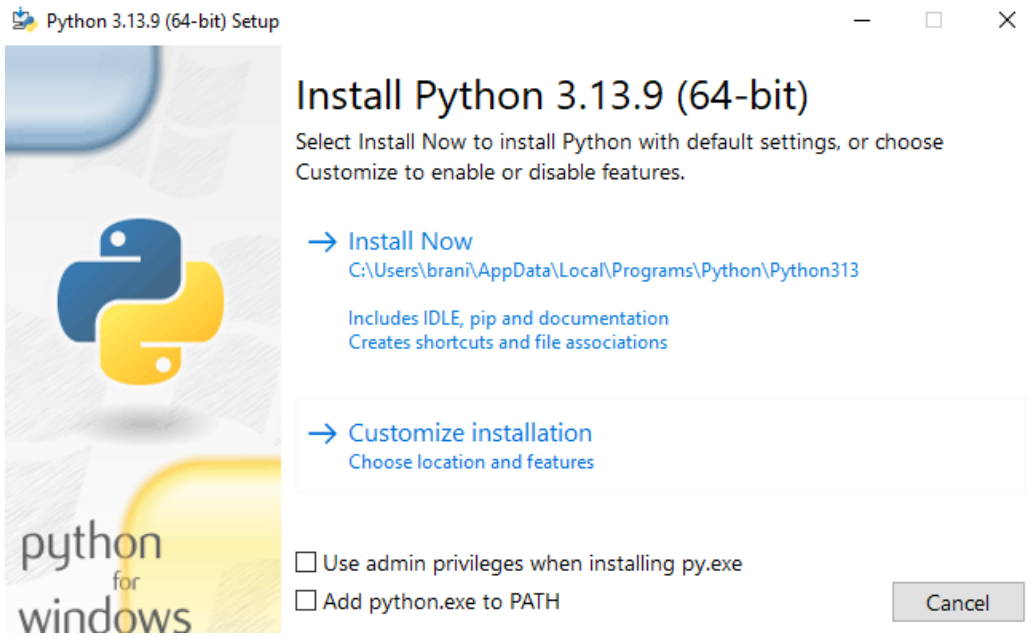
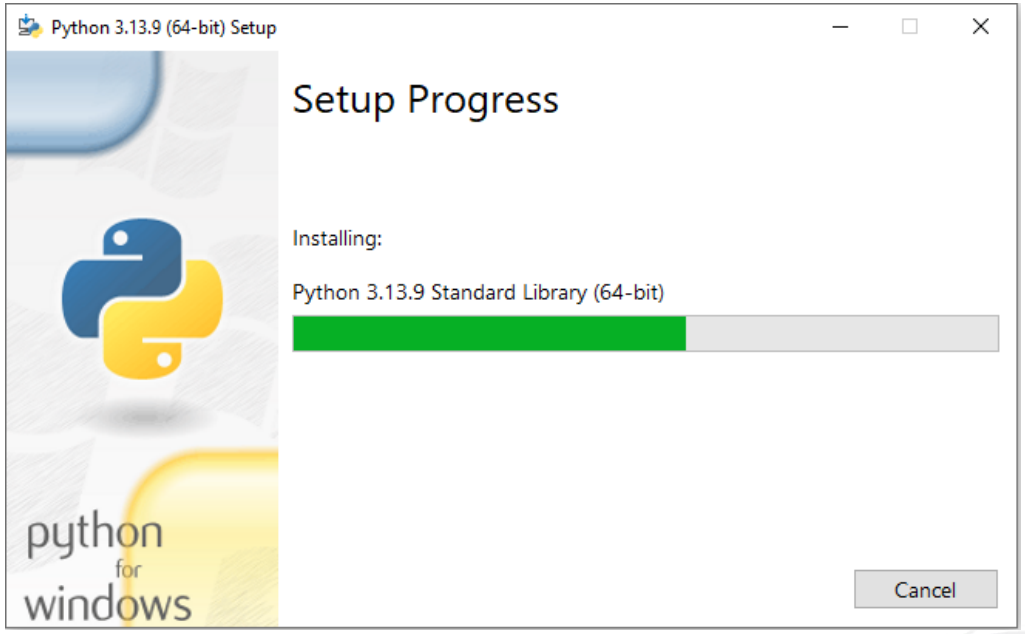
Intraduction

Download the installation file for version 3.13.9 from:
https://www.python.org/downloads/release/python-3139/
Make sure to download the installation file that is compatible with the operating system installed on your computer.

Intraduction

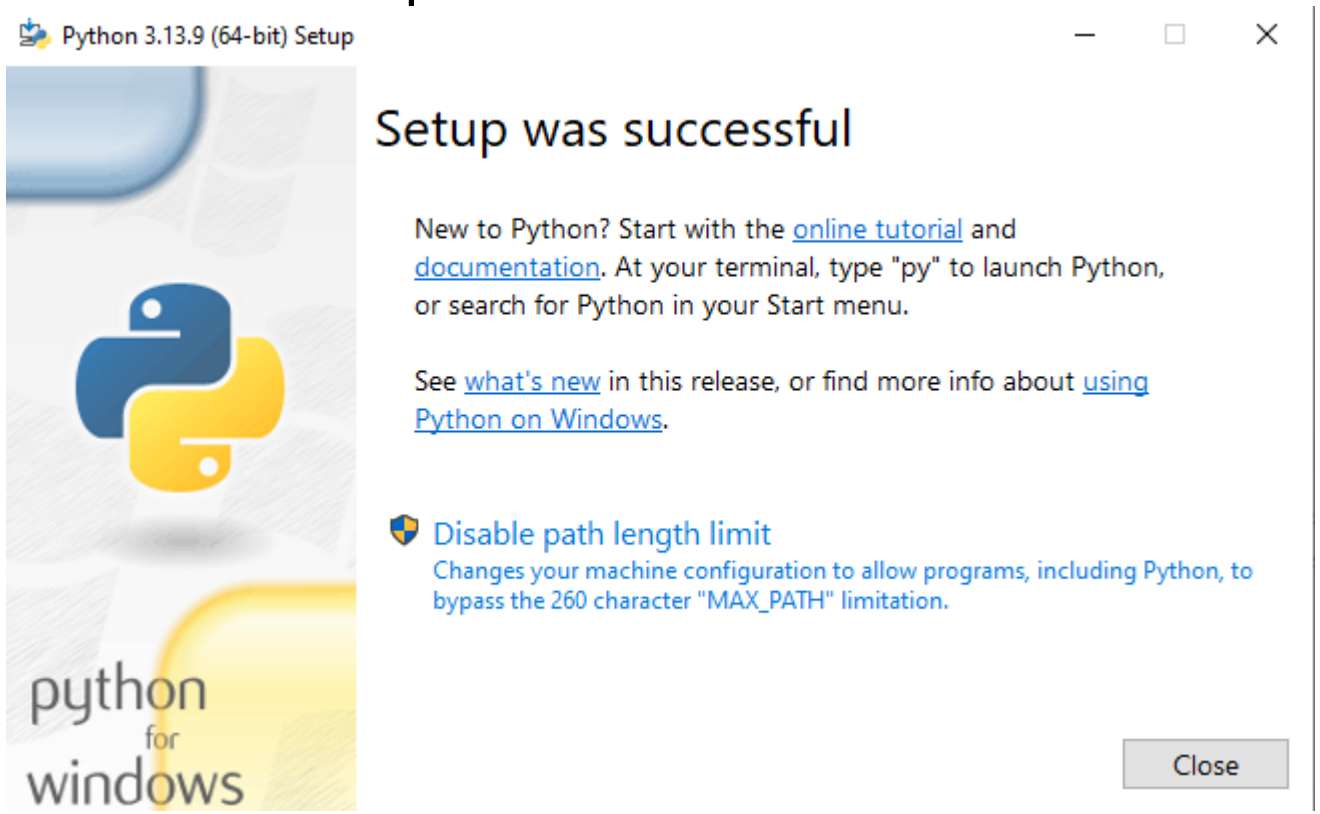
Program installation:





Intraduction

Completing the installation process:



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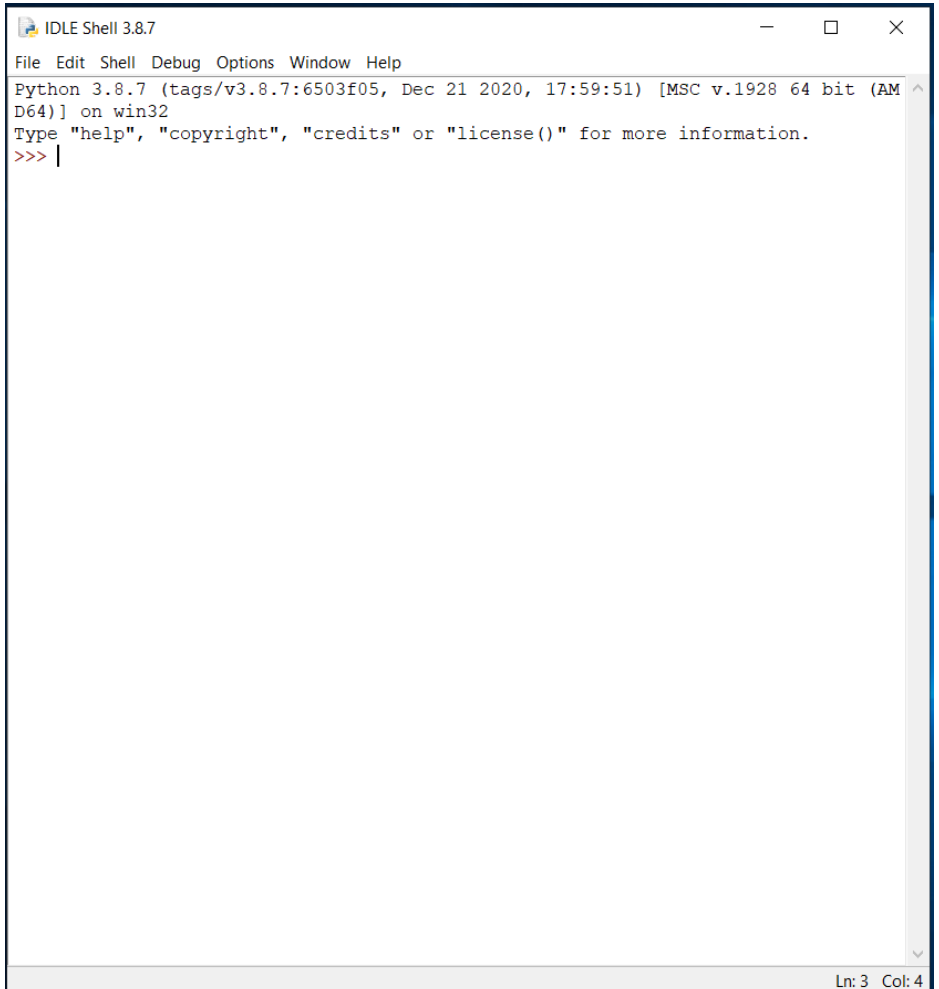
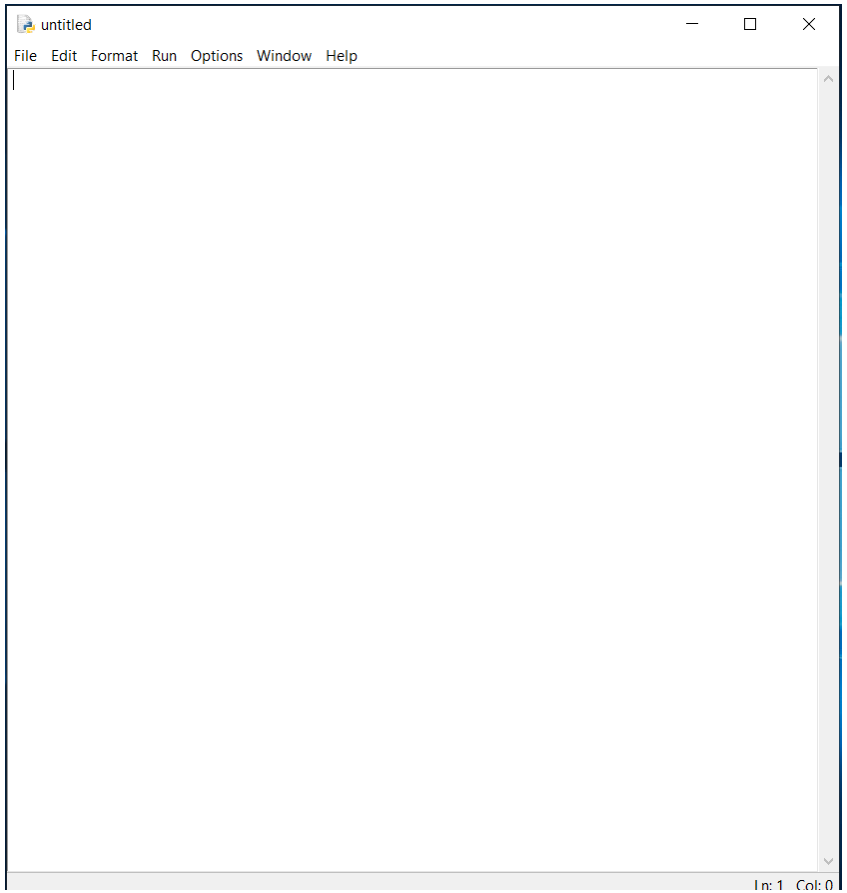
Intraduction

The working environment is obtained by clicking the IDLE Python icon:

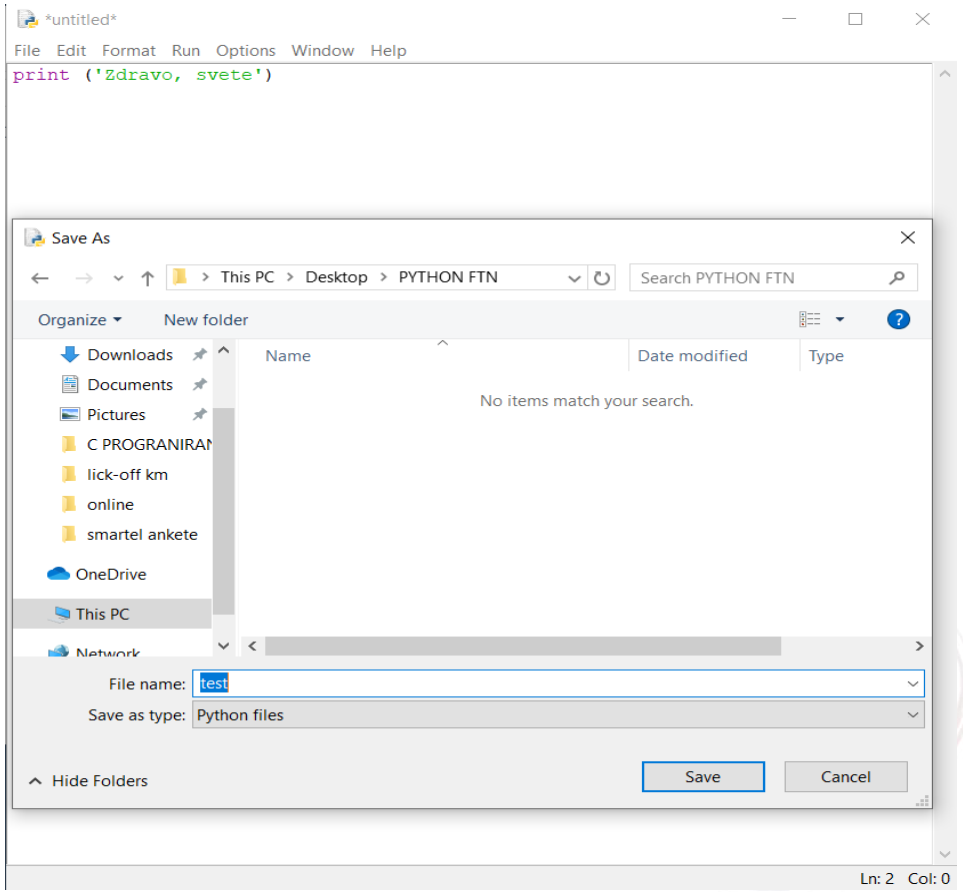


Intraduction

Starting a new file: File – New –File.

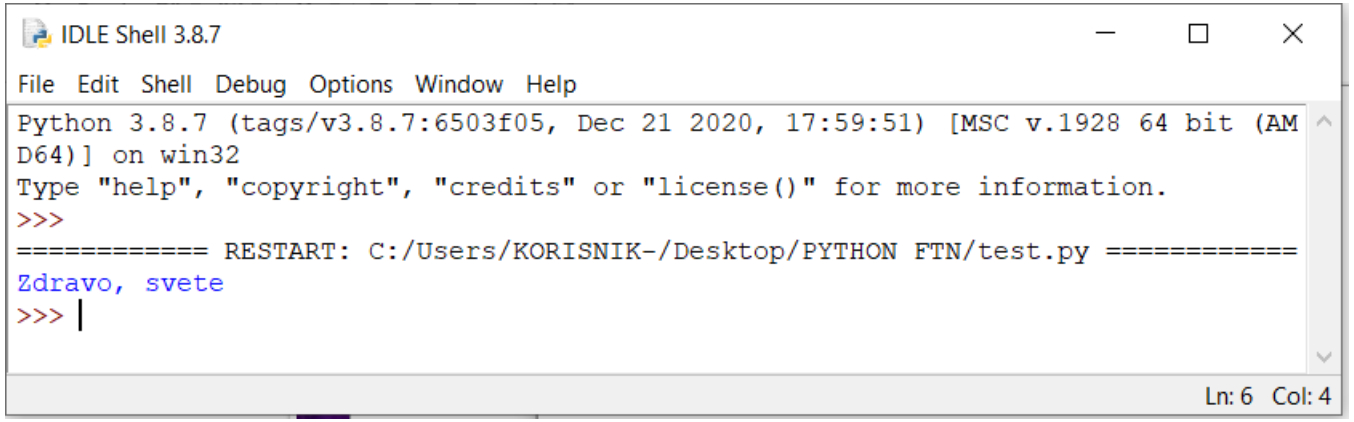


Saving programs: File – Save As...

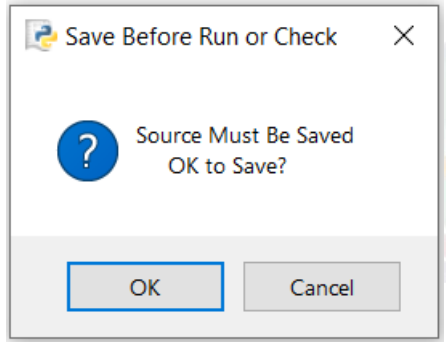


Intraduction

Program execution: Run – Run Module (F5).
The application is executed in the IDLE environment.



If the program has not been recorded before, or if it has been recorded and changes have been made afterwards, Python will require recording the changes before starting the application execution.



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Example 1

Compose a program that prints text on the screen:
Od danas programiramo u jeziku Python.

program code

```
1 #Zadatak 1
2
3 print("Od danas programiramo u jeziku Python.")
```

test program

```
Od danas programiramo u jeziku Python.
>>>
```

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Example 2

What is printed on the screen after executing the following program codes:

a) program code

```
1 #Zadatak 2a
2
3 print("Pozdrav svima!")
4 print()
5 print("Pozdrav svima!\n")
6 print("Pozdrav \nsvima!")
7 print("Pozdrav svima!")
8 print("Pozdrav svima!")
```

test program

```
Pozdrav svima!

Pozdrav svima!

Pozdrav
svima!
Pozdrav svima!
Pozdrav svima!
>>>
```

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Example 2

b) program code

```
1  #Zadatak 2b
2
3  print("Pozdrav svima!",end='')
4  print("Pozdrav svima!")
5  print()
6  print("Pozdrav svima!",end=' ')
7  print("Pozdrav svima!")
8  print()
9  print("Pozdrav svima!",end='...')
10 print("Pozdrav svima!")
```

test program

```
Pozdrav svima!Pozdrav svima!

Pozdrav svima! Pozdrav svima!

Pozdrav svima!...Pozdrav svima!
>>>
```

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Example 2

c) program code

```
1 #Zadatak 2c
2
3 print("Pozdrav svima!","Pozdrav svima!")
4 print()
5 print("Pozdrav svima!","Pozdrav svima!",sep='')
6 print()
7 print("Pozdrav svima!","Pozdrav svima!",sep='...')
```

test program

```
Pozdrav svima! Pozdrav svima!

Pozdrav svima!Pozdrav svima!

Pozdrav svima!...Pozdrav svima!
>>>
```

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Example 3

Compose a program that loads and displays one integer and one real number.

program code

```
1 #Zadatak 3a
2
3 print("Unesite jedan ceo broj:")
4 a=int(input())
5 print("Unesite jedan realan broj:")
6 b=float(input())
7 print("Uneli ste sledece brojeve: ",a," i ",b)
```

test program

```
Unesite jedan ceo broj:
5
Unesite jedan realan broj:
7.99
Uneli ste sledece brojeve:  5  i  7.99
>>>
```

program code (another way)

```
1 #Zadatak 3b
2
3 a=int(input("Unesite jedan ceo broj: "))
4 b=float(input("Unesite jedan realan broj: "))
5 print("Uneli ste sledece brojeve: ",a," i ",b)
```

test program

```
Unesite jedan ceo broj: 5
Unesite jedan realan broj: 7.99
Uneli ste sledece brojeve:  5  i  7.99
>>>
```

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Example 4

Compose a program that loads two integers from the keyboard and prints their sum.

program code

```
1 #Zadatak 4a
2
3 a=int(input("Unesite jedan ceo broj a= "))
4 b=int(input("Unesite jedan ceo broj b= "))
5 c=a+b
6 print("Suma je",c)
```

test program

```
Unesite jedan ceo broj a= 5
Unesite jedan ceo broj b= 9
Suma je 14
>>>
```

```
1 #Zadatak 4b
2
3 a=int(input("Unesite jedan ceo broj a= "))
4 b=int(input("Unesite jedan ceo broj b= "))
5 print("Suma je",a+b)
```

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Example 5

Compose a program that loads two integers and prints their sum, difference, product, integer quotient, real quotient and remainder when dividing by integers.

program code

```
#Zadatak 5a

a=int(input("Unesite jedan ceo broj a= "))
b=int(input("Unesite jedan ceo broj b= "))
zbir=a+b
raz=a-b
pro=a*b
kol1=a/b
kol2=a//b
ost=a%b
print("Suma =",zbir)
print("Razlika =",raz)
print("Proizvod =",pro)
print("Realni kolicnik =",kol1)
print("Celobrojni kolicnik =",kol2)
print("Ostatak pri celobrojnom deljenju =",ost)
```

program code (short version)

```
#Zadatak 5b

a=int(input("Unesite jedan ceo broj a= "))
b=int(input("Unesite jedan ceo broj b= "))
print("Suma =",a+b)
print("Razlika =",a-b)
print("Proizvod =",a*b)
print("Realni kolicnik =",a/b)
print("Celobrojni kolicnik =",a//b)
print("Ostatak pri celobrojnom deljenju =",a%b)
```

test program

```
Unesite jedan ceo broj a= 7
Unesite jedan ceo broj b= 2
Suma = 9
Razlika = 5
Proizvod = 14
Realni kolicnik = 3.5
Celobrojni kolicnik = 3
Ostatak pri celobrojnom deljenju = 1
>>>
```

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Example 6

Compose a program that loads an integer and prints its cube and square root.

program code

```
#Zadatak 6

a=int(input("Unesite jedan ceo broj a= "))
b=a*a*a #Prvi nacin
c=a**3 #Drugi nacin
import math
d=math.pow(a,3) #Treci nacin
koren=math.sqrt(a)
print("Kub =",b)
print("Kub =",c)
print("Kub =",d)
print("Koren =",koren)
```

test program

```
Unesite jedan ceo broj a= 3
Kub = 27
Kub = 27
Kub = 27.0
Koren = 1.7320508075688772
>>>
```

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Example 7

Compose a program that, for the entered value in dollars and the exchange rate, converts the value of dollars into dinars.

program code

```
1 #Zadatak 7
2
3 dolar=float(input("Unesite vrednost dolara: "))
4 kurs=float(input("Unesite vrednost kursa: "))
5 dinar=dolar*kurs
6 dinar=round(dinar,3)
7 print("Vrednost",dolar,"dolara iznosi",dinar,"dinara")
```

test program

```
Unesite vrednost dolara: 120
Unesite vrednost kursa: 105.113
Vrednost 120.0 dolara iznosi 12613.56 dinara
>>>
```

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Example 8

Compose a program that, for the entered sides of a rectangle, prints its perimeter and area.

program code

```
1 #Zadatak 8
2
3 a=float(input("Страница a= "))
4 b=float(input("Страница b= "))
5 O=2*a+2*b
6 P=a*b
7 print("Обим = ",O)
8 print("Површина = ",P)
```

test program

```
Страница a= 3
Страница b= 5
Обим =  16.0
Површина =  15.0
>>>
```

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Example 9

Compose a program that, given the entered radius of a circle, prints its circumference and area.

program code

```
#Zadatak 9

r=float(input("Unesite poluprecnik kruga = "))
from math import pi
O=2*r*pi
P=r*r*pi
print("Obim = ",O)
print("Povrsina = ",P)
```

test program

```
Unesite poluprecnik kruga = 2.4
Obim =  15.079644737231007
Povrsina =  18.09557368467721
>>>
```

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Example 10

Compose a program to calculate the expression $S = e^{2x}\sqrt{x^3 + \frac{y^2}{2+x}}$ for the entered value x and y.

program code

```
1 #Zadatak 10
2
3 x=float(input("x = "))
4 y=float(input("y = "))
5 import math
6 S=math.exp(2*x)*math.sqrt(x**3+y*y/(2+x))
7 print("S =",S)
8 Sz=round(S,3)
9 print("Zaokruzeno S =",Sz)
```

test program

```
x = 3.2
y = 1.6
S = 3470.945667335211
Zaokruzeno S = 3470.946
>>>
```

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Example 11

Compose a program that loads the coordinates of two points M1(x1,y1) and M2(x2,y2) and calculates the distance between the points.

program code

```
1 #Zadatak 11
2
3 import math
4 x1=float(input("Unesite koordinate tacke M1= "))
5 y1=float(input("Unesite koordinate tacke M1= "))
6 x2=float(input("Unesite koordinate tacke M2= "))
7 y2=float(input("Unesite koordinate tacke M2= "))
8 d=math.sqrt((x1-x2)*(x1-x2) + (y1-y2)*(y1-y2))
9 print("Rastojanje =",d)
```

test program

```
Unesite koordinate tacke M1= 3
Unesite koordinate tacke M1= 5
Unesite koordinate tacke M2= 2
Unesite koordinate tacke M2= 7
Rastojanje = 2.23606797749979
>>>
```

Example 12

Compose a program that prints its digits and the sum of the digits for an entered three-digit number.

program code

```
1 #Zadatak 12
2
3 broj=int(input("Unesite trocifreni broj: "))
4 x=broj//100
5 y=(broj//10)%10
6 z=broj%10
7 print("Cifre broja",broj,"su",x,",",y,"i",z)
8 print("Suma cifara je:",x+y+z)
```

test program

```
Unesite trocifreni broj: 367
Cifre broja 367 su 3 , 6 i 7
Suma cifara je: 16
>>>
```

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Example 13

Compose a program that loads the value of the product in dinars, and then calculates and displays how many 500 dinar, 100 dinar and 1 dinar bills are needed to pay for that product.

program code

```
#Zadatak 13

cena=int(input("Unesite cenu proizvoda: "))
n500=cena//500
n100=(cena%500)//100
n1=(cena%500)%100
print("Br.novcanica od 500 dinara:",n500)
print("Br.novcanica od 100 dinara:",n100)
print("Br.novcanica od 1 dinar:",n1)
```

test program

```
Unesite cenu proizvoda: 1435
Br.novcanica od 500 dinara: 2
Br.novcanica od 100 dinara: 4
Br.novcanica od 1 dinar: 35
>>>
```

WBnet

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Questions & Answers

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