"Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union. Neither the European Union nor the granting authority can be held responsible for them."

Co-funded by the European Union

Basics of Programming in Python

Functions

Branimir Jakšić

Faculty of Technical Sciences – University of Mitrovica (UPKM)

Co-funded by the European Union

Example 46

Compose a function to add two integers and display the result. Then call the function n times in the main program.

program code

```
1  #Zadatak 46
2
3  #deklaracija funkcije
4  def zbir():
5      a=int(input("a= "))
6      b=int(input("b= "))
7      c=a+b
8      print("Zbir =",c)
9
10 #glavni deo programa
11 n=int(input("n= "))
12 print()
13 for i in range(1,n+1):
14     zbir()
15     print("---------------")
```

test program

```
n= 4

a= 3
b= 3
Zbir = 6
---------------
a= 2
b= 6
Zbir = 8
---------------
a= 88
b= 4
Zbir = 92
---------------
a= 23
b= 99
Zbir = 122
---------------
>>>
```

Example 47

Compose functions for calculating the sum, difference, product and quotient of two real numbers, as well as functions for calculating the square and cube of a real number. Then compile a program to calculate the expressions $z1 = x + y^2$, $z2 = x^3 - \frac{x}{y}$ and $z3 = (x * y) + (5 - y)$, using previously formed functions. The variables x and u are entered from the keyboard. Print the results.

Co-funded by the European Union

Example 47

program code

```
#Zadatak 47

#funkcija zbira
def zbir(a,b):
    return a+b

#funkcija razlike
def razlika(a,b):
    return a-b

#funkcija proizvoda
def proizvod(a,b):
    return a*b

#funkcija kolicnika
def kolicnik(a,b):
    if(b==0): return 0
    else: return(a/b)

#funkcija kvadrata
def kvadrat(a):
    return a*a

#funkcija kuba
def kub(a):
    return a*a*a

#glavni deo programa
x=float(input("x= "))
y=float(input("y= "))
z1=zbir(x,kvadrat(y))
z2=razlika(kub(x),kolicnik(x,y))
z3=zbir(proizvod(x,y),razlika(5,y))
print("z1 =", round(z1,3))
print("z2 =", round(z2,3))
print("z3 =", round(z3,3))
```

test program

```
x= 4.55
y= 2.62
z1 = 11.414
z2 = 92.46
z3 = 14.301
>>>
```

Co-funded by the European Union

Example 48

Compose a function for determining the parity of an integer and a function for determining the negativity of an integer, and then compile a program that will check the parity and negativity of the entered integer.

program code

```
1  #Zadatak 48
2
3  def paran(n):
4      if n%2==0:
5          print("Broj je paran.")
6      else:
7          print("Broj je neparan.")
8
9  def negativan(n):
10     if n<0:
11         print("Broj je negativan.")
12     elif n>0:
13         print("Broj je pozitivan.")
14     else:
15         print("Broj je nula.")
16
17 #glavni deo programa
18 x=int(input("x = "))
19 paran(x)
20 negativan(x)
```

test program

```
x = 23
Broj je neparan.
Broj je pozitivan.
>>>
```

Co-funded by the European Union

Example 49

Compose a function to calculate factorials, then write a program that calculates and prints the number of combinations $C_{n,k} = \binom{n}{k} = \frac{n!}{k!(n-k)!}$, for given n and k using the function to calculate factorials.

program code

```
1  #Zadatak 49
2
3  def fakt(x):
4      f=1
5      for i in range(1,x+1):
6          f=f*i
7      return f
8
9  n=int(input("n= "))
10 k=int(input("k= "))
11 c=fakt(n)//(fakt(k)*fakt(n-k))
12 print("c =",c)
```

test program

```
n= 6
k= 2
c = 15
>>>
```

Example 50

Compose a program that calculates the sum $S = 1 - \frac{1}{2!!} + \frac{1}{3!!} - \frac{1}{4!!} + \ldots \frac{1}{n!!}$ for a given n.

Calculate the double factorial using the function: $dfakt(n) = n!! = \begin{cases} n \cdot (n-2) \cdot \ldots \cdot 3 & \text{n neparno} \\ n \cdot (n-2) \cdot \ldots \cdot 4 \cdot 2 & \text{n parno} \end{cases}$

program code

```
1  #Zadatak 50
2
3  def dfakt(n):
4      f=1
5      while(n>=2):
6          f=f*n
7          n=n-2
8      return f
9
10 n=int(input("n= "))
11 s=0
12 znak=1
13 for i in range(1,n+1):
14     s=s+znak*1/dfakt(i)
15     znak=-znak
16 print("S =",round(s,4))
```

test program

```
n= 5
S = 0.775
>>>
```

WBnet

Co-funded by the European Union

Questions & Answers

"Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union. Neither the European Union nor the granting authority can be held responsible for them."

Network of centers for regional short study programs in the countries of the Western Balkans

Call: ERASMUS-EDU-2023-CBHE

Project number: 101128813

ATYCC

UNIVERSITY OF L]UBL]ANA
Faculty of Electrical Engineering

POLITÉCNICA

University of Pristina
Kosovska Mitrovica