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Basics of Programming in Python

Cyclic Program Structures: WHILE Cycle

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Example 30

Compose a program that will print the sentence **`Pozdrav svima!`** using a WHILE loop.

program code

```
1 #Zadatak 30
2
3 i=1
4 while (i<=5):
5     print("Pozdrav svima!")
6     i=i+1
```

test program

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

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Example 31

Compose a program that, using a WHILE loop, prints:

a) all numbers of the first ten,
b) only odd numbers of the first ten,
c) all numbers of the first ten in reverse order.

program code

a)

```
#Zadatak 31a

i=1
while (i<=10):
    print("i=",i)
    i=i+1
```

```
i= 1
i= 2
i= 3
i= 4
i= 5
i= 6
i= 7
i= 8
i= 9
i= 10
>>>
```

b

```
#Zadatak 31b

i=2
while (i<=10):
    print("i=",i)
    i=i+2
```

```
i= 1
i= 3
i= 5
i= 7
i= 9
>>>
```

c)

```
#Zadatak 31c

i=10
while (i>0):
    print("i=",i)
    i=i-1
```

```
i= 10
i= 9
i= 8
i= 7
i= 6
i= 5
i= 4
i= 3
i= 2
i= 1
>>>
```

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Example 32

Compose a program to calculate the sum of numbers from 1 to n that are divisible by 6. The number n is entered from the keyboard.

program code

```
1  #Zadatak 32
2
3  n=int(input("n= "))
4  i=1
5  s=0
6  while(i<=n):
7      if(i%6==0):
8          s=s+i
9      i=i+1
10 print("Suma=",s)
```

test program

```
n=70
Suma= 396
>>>
==========
n= 30
Suma= 90
>>>
```

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Example 33

Compose a program that:

a) prints n elements of the Fibonacci sequence;

b) calculates and prints the sum of the first n elements of the Fibonacci sequence.

The Fibonacci sequence is: f1=1, f2=1, fi=fi-1+fi-2, i=3, 4, 5, ...

a) program code

```
1  #Zadatak 33a
2
3  n=int(input("n= "))
4  i=3
5  fpp=1
6  fp=1
7  print("FIBONACIJEVI BROJEVI:")
8  print("f1 = 1\nf2 = 1")
9  while(i<=n):
10     fn=fpp+fp
11     fpp=fp
12     fp=fn
13     print("f",i,sep='',end='')
14     print(" =",fn)
15     i=i+1
```

test program

```
n= 11
FIBONACIJEVI BROJEVI:
f1 = 1
f2 = 1
f3 = 2
f4 = 3
f5 = 5
f6 = 8
f7 = 13
f8 = 21
f9 = 34
f10 = 55
f11 = 89
```

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Example 33

b) program code

```
1  #Zadatak 33b
2
3  n=int(input("n= "))
4  i=3
5  fpp=1
6  fp=1
7  s=2
8  while(i<=n):
9      fn=fpp+fp
10     s=s+fn
11     fpp=fp
12     fp=fn
13     i=i+1
14 print("Suma=",s)
```

test program

```
n= 10
Suma= 143
>>>
==========
n= 6
Suma= 20
>>>
```

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Example 34

Compose a program that will load a series of numbers one after the other. The end of the entry is marked with a zero. Find and print the arithmetic mean of the loaded numbers, taking into account only those numbers that are greater than or equal to 2 and less than or equal to 6. It is assumed that at least one non-zero number is entered.

program code

```
1  #Zadatak 34
2
3  i=0
4  s=0
5  print("Unesite niz realnih brojeva ili 0 za kraj:")
6  while(True):
7      x=float(input())
8      if(x==0):
9          sredina=s/i
10         print("Aritmeticka sredina=", round(sredina,3))
11     if(x>=2 and x<=6):
12         s=s+x
13         i=i+1
```

test program

```
Unesite niz realnih brojeva ili 0 za kraj:
2
3
5
8
7
6
0
Aritmeticka sredina= 4.0
```

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Example 35

Compose a program that calculates the sum for a given integer n: $S = \frac{1}{3^2} + \frac{1}{5^2} + \frac{1}{7^2} + \ldots + \frac{1}{(2n+1)^2}$

program code

```
1 #Zadatak 35
2
3 n=int(input("n= "))
4 i=1
5 s=0
6 while(i<=n):
7     s=s+1/((2*i+1)*(2*i+1))
8     i=i+1
9 print("S=", round(s,5))
```

test program

```
n= 8
S= 0.20595
>>>
==========
n= 3
S= 0.17152
>>>
```

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Example 36

Compose a program that, for an entered natural number, prints a number whose digits are in the reverse order of the entered number.

program code

```
1 #Zadatak 36
2
3 n=int(input("n= "))
4 obrnuti=0
5 while(n>0):
6     obrnuti=obrnuti*10+n%10
7     n=n//10
8 print("Obrnuti=", obrnuti)
```

test program

```
n= 4587
Obrnuti= 7854
>>>
========== RE
n= 42
Obrnuti= 24
>>>
```

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Questions & Answers

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