# Lab – 5 For loop

Tasks:

1. Consider the program segment below:

low = int(input("Input a smaller number: "))

high = int(input("Input a larger number: "))

sum = 0

for i in range(low, high+1):

sum = sum + i

print ("Sum of number within", low, "and", high, "=", sum)

1. Fill in the blanks below:
2. If low = 2, high = 4, sum = 9
3. If low = 4, high = 2, sum =0
4. If low = 2, high = 2, sum = 2
5. If low > high, sum = 0
6. If low <= high, sum equals to sum of all integers in between low and high .
7. Convert the for loop in the above program segment to a while loop

Answer:

low = int(input("Input a smaller number: "))

high = int(input("Input a larger number: "))

sum = 0

print ("Sum of number within", low, "and", high, "=", sum)

1. Write a program to compute the product of all even integers in between 50 and 60 using for loop

Output:

Product of all the even integers in between 50 and 60 = 27361152000

Answer:

x = range(50,61,+2)

print(list(x))

z = 1

for y in x:

    z = z\*y

    print(z)

1. Write a program to construct the following pattern based on user’s input (integer 1 to 9) using for loop with range function.

Output:

Input the value n: 6

1

22

333

4444

55555

666666

Hints: "A" \* 3 is a valid statement and will give "AAA"

Answer:

n = int(input("Input the value n"))

x = range(1,n+1)

for y in x:

    print(str(y)\*y)

1. Write a program to sum up all the integers up to user’s input n using for loop with range function.

(i.e. 1 + 2 + 3 + … + n)

Output:

Input the value n: 10

Sum of sequence 1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 10 = 55

Hints: A string variable, e.g. word, can be used to store the intermediate values or prepare the output string. The  
print ( ) method can be called after the output string is prepared.

Answer:

n = int(input("Input the value n:"))

x = range(1,n+1)

sumx = 0

list = []

for y in x:

sumx=sumx+y

list.append(str(y))

#print(y)

print(' + '.join(list)+" = "+str(sumx))

1. Write a program to accumulate all even numbers in between 1 and 1000. Your program should display all even numbers from 1 to 1000, forty numbers per line and the sum of these numbers. A sample output is shown below:

Output:

2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40

42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, 78, 80

…

922, 924, 926, 928, 930, 932, 934, 936, 938, 940, 942, 944, 946, 948, 950, 952, 954, 956, 958, 960

962, 964, 966, 968, 970, 972, 974, 976, 978, 980, 982, 984, 986, 988, 990, 992, 994, 996, 998, 1000

Sum of all even numbers within 1 and 1000 = 250500

Answer:

n = int(input("Input the value n:"))

x = range(2,n+1,+2)

sumx = 0

list = []

for y in x:

sumx=sumx+y

list.append(str(y))

#print(y)

print(",".join(list))

print("Sum of all even numbers within 1 and "+str(n)+" = "+str(sumx))

1. Write a program to ask user enter three integers: low, high and divisor. Your program will then display the sum of all numbers divisible by divisor within low and high inclusively. If low > high, you should swap these two values before using a for loop to compute the required sum.Output:

Input lower limit: 15

Input upper limit: 7

Input divisor (n): 3

i = 9 sum = 9

i = 12 sum = 21

i = 15 sum = 36

Sum of all numbers divisible by n: 36

Answer:

lower\_limit = int(input("Input lower limit:"))

upper\_limit = int(input("Input upper limit:"))

n = int(input("Input divisor (n):"))

sumx=0

if lower\_limit>upper\_limit:

new\_lower\_limit = lower\_limit

lower\_limit = upper\_limit

upper\_limit = new\_lower\_limit

elif lower\_limit==upper\_limit:

print("==?")

else:

pass

x = range(lower\_limit,upper\_limit+1)

for y in x:

if (y%n)==0:

sumx+=y

print("i =",y,"sum =",sumx)

print("Sum of all numbers divisible by n:",sumx)

Input lower limit:7

Input upper limit:15

Input divisor (n):3

i = 9 sum = 9

i = 12 sum = 21

i = 15 sum = 36

Sum of all numbers divisible by n: 36

1. Write a program that uses a nested loop to display the following pattern:

Output:

1-1 1-2 1-3 1-4 1-5

2-1 2-2 2-3 2-4 2-5

3-1 3-2 3-3 3-4 3-5

Hints: \t can be used in strings to add tab spaces

Answer:

list = []

for i in range(1,4):

for n in range(1,6):

list.append((str(i)+"-"+str(n)))

print("\t".join(list))

list = []

1-1 1-2 1-3 1-4 1-5

2-1 2-2 2-3 2-4 2-5

3-1 3-2 3-3 3-4 3-5

1. Write a program that prompts the user to input an integer n. It then displays a multiplication table from 1 to n

Output:

Input table size n: 4

1 2 3 4

1 1 2 3 4

2 2 4 6 8

3 3 6 9 12

4 4 8 12 16

Answer:

list = []

n = int(input("Input table size n:"))

x = range(1,n+1)

for i in x:

list.append(str(i))

print("\t","\t ".join(list))

print("")

for i in x:

print(i,"\t",i,"\t",i\*2,"\t",i\*3,"\t",i\*4)

Input table size n:4

1 2 3 4

1 1 2 3 4

2 2 4 6 8

3 3 6 9 12

4 4 8 12 16

1. Write a program to ask user to input an integer. It then displays a message to indicate whether the given integer is a prime number. A prime number is an integer that is not divisible by any number other than itself and 1. By definition, 0 and 1 are not prime number. For example, 2, 3, 5 and 7 are prime numbers.

Output:

Input an integer: 6

6 is not a prime number!

Input an integer: 11

11 is a prime number!

Answer:

n = int(input("Input an integer: "))

if n > 1:

for i in range(2, int(n/2)+1):

if (n % i) == 0:

print(n, "is not a prime number")

break

else:

print(n, "is a prime number")

else:

print(n, "is not a prime number")

https://www.geeksforgeeks.org/python-program-to-check-whether-a-number-is-prime-or-not/

PS C:\Users\User\Documents> python lab5\_9.py

Input table size n:2

PS C:\Users\User\Documents> python lab5\_9.py

11 is a prime number

PS C:\Users\User\Documents> python lab5\_9.py

Input an integer: 2

2 is a prime number

PS C:\Users\User\Documents> python lab5\_9.py

Input an integer: 3

3 is a prime number

PS C:\Users\User\Documents> python lab5\_9.py

Input an integer: 5

5 is a prime number

PS C:\Users\User\Documents> python lab5\_9.py

Input an integer: 7

7 is a prime number