# Lab – 4 While loop

1. Write a program to compute and display the sum of all integers within 1 and 10 inclusive

Output:

Sum of all integers within 1 and 10 = 55

Answer:

i = 1

n = 10

sum = 0

while i<=n:

sum += i;

i += 1

print ("Sum of all integers within 1 and 10 = ", sum)

1. Modify the program to display the output below:

Output:

sum = 0, i = 1, sum + i = 1

sum = 1, i = 2, sum + i = 3

sum = 3, i = 3, sum + i = 6

sum = 6, i = 4, sum + i = 10

sum = 10, i = 5, sum + i = 15

sum = 15, i = 6, sum + i = 21

sum = 21, i = 7, sum + i = 28

sum = 28, i = 8, sum + i = 36

sum = 36, i = 9, sum + i = 45

sum = 45, i = 10, sum + i = 55

Sum of all integers within 1 and 10 = 55

Answer:

i = 1

n = 10

sum = 0

while i<=n:

print ("sum="+str(sum)+", i="+str(i)+", sum+i="+str(sum+i))

sum += i

i += 1

print ("Sum of all integers within 1 and 10 =", sum)

1. Write a program to compute and display the sum of the odd integers within 10 and 100 inclusive

Output:

Sum of the odd integers within 10 and 100 = 2475

Answer:

|  |  |
| --- | --- |
| i = 10  n = 100  sum = 0  while i <= n:  if i % 2 == 1:  sum += i  i += 1 | i = 11  n = 100  sum = 0  while i <= n:  sum += i  i += 2 |

print ("Sum of the odd integers within 10 and 100 =", sum)

1. Write a program to compute and display the sum of all multiples of 5 within 100 and 200 inclusive

Output:

Sum of all multiples of 5 within 100 and 200 = 3150

Answer:

|  |  |
| --- | --- |
| i = 100  n = 200  sum = 0  while i <= n:  if i%5 == 0:  sum += i  i += 1 | i = 100  n = 200  sum = 0  while i <= n:  sum += i  i += 5 |

print ("Sum of all multiples of 5 within 100 and 200 =", sum)

1. Write a loop that repeats 5 times, asking the user to enter a number from the console. Display the sum of all numbers and their average entered after the loop

Important note: only **ONE** input statement is allowed to use for this program

Output:

Input a number: 9

User’s input

Input a number: 5

Input a number: 8

Input a number: 1

Input a number: 7

Sum of all number = 30

Average = 6.0

Answer:

i = 1

n = 5

sum = 0

while i <= n:

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

sum += number

i += 1

average = sum / n

print ("Sum of all number =", sum)

print ("Average =", str(average))

1. Write a loop to find the smallest integer n such that the sum of all integers from 1 to **i** is greater than user input n received. Display the value **i**.

Output:

User’s input

Enter a number please: 100

Sum of 1 to 14 = 105

Answer:

n = int(input("Enter a number please: "))

i = 0

sum = 0

while sum <= n:

i += 1

sum += i

print ("Sum of 1 to",i,"=", sum)

1. Write a program that uses a loop to keep asking the user to enter an integer until the user enter a “0”. The program displays the sum and average of all input numbers when the loop stops.

Output:

This program adds all the number you entered. It stops when you enter 0

Enter a number please: 6

User’s input

Enter a number please: 8

Enter a number please: 4

Enter a number please: 6

Enter a number please: 12

Enter a number please: 0

You have entered 5 numbers

Sum = 36.0

average = 7.2

Answer:

print ("This program adds all the number you entered. It stops when you enter 0")

i = 0

number = 0

sum = 0

while True:

number = float(input("Enter a number please: "))

if number == 0:

break

sum += number

i += 1

print ("You have entered",i,"numbers")

print ("Sum =", sum)

print ("average =", str(sum/i))

Or

print ("This program adds all the number you entered. It stops when you enter 0")

i = -1

number = -1

sum = 0

while number != 0:

number = float(input("Enter a number please: "))

sum += number

i += 1

print ("You have entered",i,"numbers")

print ("Sum =", sum)

print ("average =", str(sum/i))