# Lab – 2 Literals, Variables and Arithmetic Operations

Tasks:

1. Write a program to obtain two integers from user, and then display their sum ,average, quotient and remainder obtained from using the first number as the dividend and the second number as the divisor. Save the program as **lab02\_q1.py**

Output:

Input first integer (Dividend): 9

User’s input

Input second integer (Divisor): 4

Sum: 13

Average: 6.5

Quotient: 2

Remainder: 1

Answer:

integer1 = int(input("Input first integer(Dividend): "))

integer2 = int(input("Input second integer(Divisor): "))

sum = integer1 + integer2

average = sum / 2

quotient = int(integer1 / integer2)

remainder = integer1 % integer2

print ("Sum: ", sum)

print ("Sum: ", average)

print ("Sum: ", quotient)

print ("Sum: ", remainder)

Hints:

* ( / ) is a float division operator, use it with int ( … ) function to convert a value to integer

1. Write a program that converts Fahrenheit to Celsius. The formula for the conversion is as follows:

Celsius = ( 5 / 9 ) \* ( Fahrenheit – 32 )

Save the program as **lab02\_q2.py**

Output:

User’s input

Input Temperature in Fahrenheit: 100

Equivalent Temperature in Celsius: 37.7777777778

Answer:

fahrenheit = int(input("Input temperature in fahrenheit: "))

celsius = (5 / 9) \* (fahrenheit - 32)

print ("Equivalent Temperature in Celsius:", celsius)

1. In Hong Kong, we have several kinds of coins, i.e. 10-dollar, 5-dollar, 2-dollar, and 1-dollar coins. Write a program to let users input an amount, and then calculate the minimum number of coins for corresponding amounts of dollars. Save the program as **lab02\_q3.py**

For example, if the input is 19, the output is as follows:

Output:

User’s input

Input an amount: 19

The minimum numbers of coins for 19 dollars are:

1 10-dollar coin(s)

1 5-dollar coin(s)

2 2-dollar coin(s)

0 1-dollar coin(s)

Hints:

* ( / ) is a float division operator, use it with int ( … ) function to convert a value to integer
* use remainder operator ( % )

Answer:

amount = int(input("Input an amount: "))

coins10 = int(amount / 10)

coins5 = int((amount % 10) / 5)

coins2 = int((amount % 5) / 2)

coins1 = amount - (10 \* coins10) - (5 \* coins5) - (2 \* coins2);

print("The minimum numbers of coins for",amount,"dollars are:")

print(coins10, "10-dollar coin(s)")

print(coins5, "5-dollar coin(s)")

print(coins2, "2-dollar coin(s)")

print(coins1, "1-dollar coin(s)")

1. Write a program to calculate the Sum of a Geometric Series by the formula, . Save the program as **lab02\_q4.py**

Output:

Input the value a: 2

User’s input

Input the value r: 10

Input the value n: 4

Sum of G.S. is 2222.0

Hints: Use the operator ( \*\* )

Answer:

a = float(input("Input the value a: "))

r = float(input("Input the value r: "))

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

s = (a \* ((r \*\* n) - 1)) / (r - 1)

print ("Sum of G.S. is", s)

1. Write a program to calculate the two roots of a quadratic equation () by the formulas:

Save the program as **lab02\_q5.py**

Output:

Input the value a: 1

User’s input

Input the value b: 5

Input the value c: 4

x1 = -1.0, x2 = -4.0

Hints:

* Method 1 - Use the ( \*\* ) operator to calculate the square root. i.e. 9 \*\* 0.5 is equals to 3
* Method 2 - import math library and use the sqrt function by calling math.sqrt( … )

Answer:

a = float(input("Input the value a: "))

b = float(input("Input the value b: "))

c = float(input("Input the value c: "))

discriminant = (b \* b - 4 \* a \* c)

x1= (-b + discriminant \*\* 0.5) / (2 \* a)

x2= (-b - discriminant \*\* 0.5) / (2 \* a)

print ("x1=",x1,", x2=",x2)