Exercise 1

'''

A simple program to calculate GST

'''

amountSpent = 100

gstRate = 7

gstTax = amountSpent\*gstRate/100

print("You spent:", amountSpent)

print(gstTax)

grandTotal= amountSpent+gstTax

print(grandTotal)

print(amountSpent + gstTax)

You spent: 100

7.0

107.0

107.0

#input statement allow you to read input

#from the keyboard.input

#The value is read as a string

v=input("Enter a number")

print (v)

print(type(v))

Enter a number 90

90

<class 'str'>

'''

A simple program to calculate GST

'''

#input statement allow you to read input

#from the keyboard.input

#The value is read as a string

amount=input("Enter the amount spent")

#Convert input value from string to number

amountSpent = float(amount)

gstRate = 7

gstTax = amountSpent\*gstRate/100

print("You spent:", amountSpent)

print(gstTax)

grandTotal= amountSpent+gstTax

print(grandTotal)

print(amountSpent + gstTax)

Enter the amount spent 90

You spent: 90.0

6.3

96.3

96.3

'''

Covert fahrenheit to centigrade

'''

tempF = float(input("Enter temperature in fahrenheit"))

tempC = 5 / 9 \* (tempF - 32)

print("Result is", tempC)

Enter temperature in fahrenheit 40

Result is 4.444444444444445

'''

Read 3 numbers to sum up and average

'''

n1, n2, n3 = eval(input("Enter number"))

print(n1, n2, n3)

print((n1 + n2 + n3)/3)

Enter number 12, 20, 20

12 20 20

17.333333333333332

n1 = float(input("Enter number"))

n2 = float(input("Enter number"))

n3 = float(input("Enter number"))

sum = n1 + n2 + n3

print(sum)

avg = (sum/3)

print(avg)

Enter number 12

Enter number 12

Enter number 20

44.0

14.666666666666666

Q3

Eg. n = 145: 1 4 5

n//100 :1

n%10 : 5

n2 = n//10: 145//10 -> 14.5 -> 14

n2%10: 14%10 -> 4

'''

Read a 3-digit numbers, break it down to individual digits and sum them

'''

num = int(input("Enter a 3-digit number"))

#451

d1 = num // 100

d3 = num % 10

num2 = num // 10 # Reduce to 2-digit number

d2 = num2 % 10

print(d1,d2,d3)

**or** d2 = num // 10 % 10 # Reduce to 2-digit number

Enter a 3-digit number 521

5 2 1

'''

Input: How many cupcakes

Process: Calculate how many boxes needed

Output: Number of boxes and left over

'''

cakes = int(input("How many cakes"))

boxSize = int(input("How many cakes in 1 box?"))

boxes = cakes // boxSize

leftOver = cakes % boxSize

print("Number of boxes is", boxes)

print("Number of left over is", leftOver)

How many cakes 500

How many cakes in 1 box? 6

Number of boxes is 83

Number of left over is 2

'''

Input: How many cupcakes

Process: Calculate how many boxes needed (6)

Output: Number of boxes and left over

'''

cakes = int(input("How many cakes"))

boxes = cakes // 6

leftOver = cakes % 6

print("Number of boxes is", boxes)

print("Number of left over is", leftOver)

How many cakes 500

Number of boxes is 83

Number of left over is 2

#Using // (integer division) and % (remainder) to break down number

#input

timeInSec = int(input("Enter time in seconds")) #Read and convert in one step

#Processing

#3600 second in one hour, so divide by 3600 to get number of hours

hours = timeInSec // 3600 # // means integer part only

mins = timeInSec // 60 % 60 # Number of minutes

secs = timeInSec % 60 # Number of seconds

#Output

print(hours, "Hours", mins, "Minutes", secs, "Seconds")

'''

This question is similar to the cupcake question we did in class.input

Also similar to the question 3 (break a 3-digit number down to 3 parts)

'''

Enter time in seconds 500

0 Hours 8 Minutes 20 Seconds

'''

New Question

Ask user to enter 3 integer numbers: hours, minutes, seconds

Add 1 to seconds

Print the updated time.

Example:

User enters: 1 59 59 (That is 1 hour, 59 minutes, 59 seconds)

After adding 1, the program print: 2 0 0 (2 hours 0 minutes 0 seconds)

'''

#Input: read 3 numbers into 3 variables

hours = int(input("Enter hours"))

minutes = int(input("Enter minutes"))

seconds = int(input("Enter seconds"))

#Processing

seconds = seconds + 1

#If seconds is 60, then need to add 1 to minute.

extraMinute = seconds // 60 # If seconds is 60, we will get 1, else 0

seconds = seconds % 60 # Don’t forget this step

#Now adjust the minutes (if necessary)

minutes = minutes + extraMinute #Remember: extraMinute is either 0 or 1

extraHour = minutes // 60 #In case minutes become 60

minutes = minutes % 60 # same logic as previous step

hours = hours + extraHour #extraHour is either 0 or 1

#Output

print(hours, "Hours", minutes, "Minutes", seconds, "Seconds")

Enter hours 1

Enter minutes 59

Enter seconds 59

2 Hours 0 Minutes 0 Seconds

'''

Get 3 numbers

Calculate: square root of (s\*(s-a)\*(s-b)\*(s-c))

Print area

Notes:

I use \* to indicate multiplication.

We need to use math library to calculate the square root.

Typo in the question, it should be Area = square root of (...) and NOT S = square root of (...)

'''

import math #This is to bring in all the code in the math library

# Input

a = float(input("Triangle side a?")) #Not recommended to use a,b,c as names. Just following the question to make it easier to understand

b = float(input("Triangle side b?"))

c = float(input("Triangle side c?"))

# Processing

s = (a + b + c)/2

area = math.sqrt(s\*(s-a)\*(s-b)\*(s-c))

#sqrt is the name of function for calculating square root

# Output

print ("Area is", area)

Triangle side a? 3

Triangle side b? 4

Triangle side c? 5

Area is 6.0

'''

Ask user to enter the radius of a circle

Calculate the Area

Print the Area

Have you found how to perform square and the value of the constant: PI (3.14..)

They can be found in the math library

'''

import math #This is to bring all the code from the math library

#Input

radius = float(input("Enter the radius"))

#Calculation

area = math.pi \* radius \* radius

#or

area = math.pi \* radius \*\* 2 #2 \* with no space in between them

#or

area = math.pi\*math.pow(radius, 2) # radius to the power of 2

#Output

print("Area of the circle is", area)

Enter the radius 10

Area of the circle is 314.1592653589793

Understanding Eval

'''

The function eval(...) is to evaluate/calculate the result of something

Sometimes, it can be a bit confusing as to whether to use eval(..) or other functions like int(..)float(...) which convert string to numbers

A few examples of int() and float, then few examples on eval() to Sometimes

'''

value1 = int("123")

print(value1)

value2 = float("12.34")

print(value2)

value3 = eval("123")

print(value3)

#In those example, eval and int/float are equally good to convert string to numbers

#The example below work only if you use eval

value4 = eval("1 + 2 + 3")

print (value4)

#We can use eval(...) to get multiple input values in 1 input statement because eval() can break the input into multiple parts

#Assuming i want user to enter length and width of a rectangle

length, width = eval(input("Enter length and width"))

print(length)

print(width)

area = length \* width

print (area)

#Just an example, take note when i enter the values, i use, to separate them

123

12.34

123

6

Enter length and width 6,7

6

7

42