

Ejercicio Funciones

Question 1:

A robot moves in a plane starting from the original point (0,0). The robot can move toward UP, DOWN, LEFT and RIGHT with a given steps. The trace of robot movement is shown as the following:

UP 5

DOWN 3

LEFT 3

RIGHT 2

i-

The numbers after the direction are steps. Please write a program to compute the distance from current position after a sequence of movement and original point. If the distance is a float, then just print the nearest integer.

Example:

If the following tuples are given as input to the program:

UP 5

DOWN 3

LEFT 3

RIGHT 2

Then, the output of the program should be:

2

Hints:

In case of input data being supplied to the question, it should be assumed to be a console input.

Question 2:

Write a method which can calculate square value of number

Hints:

Using the `**` operator

Question 3:

Python has many built-in functions, and if you do not know how to use it, you can read document online or find some books. But Python has a built-in document function for every built-in functions.

Please write a program to print some Python built-in functions documents, such as `abs()`, `int()`, `raw_input()`

And add document for your own function

Hints:

The built-in document method is `__doc__`

Question 4:

Define a function that can receive two integral numbers in string form and compute their sum and then print it in console.

Hints:

Use `int()` to convert a string to integer.

Question 5:

Define a function that can accept two strings as input and concatenate them and then print it in console.

Hints:

Use `+` to concatenate the strings

Question 6:

Define a function that can accept two strings as input and print the string with maximum length in console. If two strings have the same length, then the function should print all strings line by line.

Hints:

Use `len()` function to get the length of a string

Question 7:

Question:

Define a function which can print a dictionary where the keys are numbers between 1 and 3 (both included) and the values are square of keys.

Hints:

Use dict[key]=value pattern to put entry into a dictionary.

Use ** operator to get power of a number.

Question 8:

Question:

Define a function which can print a dictionary where the keys are numbers between 1 and 20 (both included) and the values are square of keys.

Hints:

Use dict[key]=value pattern to put entry into a dictionary.

Use ** operator to get power of a number.

Use range() for loops.

Question 9:

Define a function which can generate a dictionary where the keys are numbers between 1 and 20 (both included) and the values are square of keys. The function should just print the values only.

Hints:

Use dict[key]=value pattern to put entry into a dictionary.

Use ** operator to get power of a number.

Use range() for loops.

Use keys() to iterate keys in the dictionary. Also we can use item() to get key/value pairs.

Question 10:

Define a function which can generate and print a list where the values are square of numbers between 1 and 20 (both included).

Hints:

Use `**` operator to get power of a number.

Use `range()` for loops.

Use `list.append()` to add values into a list.

Question 11:

Define a function which can generate a list where the values are square of numbers between 1 and 20 (both included). Then the function needs to print the first 5 elements in the list.

Hints:

Use `**` operator to get power of a number.

Use `range()` for loops.

Use `list.append()` to add values into a list.

Use `[n1:n2]` to slice a list

Question 12:

With a given tuple (1,2,3,4,5,6,7,8,9,10), write a program to print the first half values in one line and the last half values in one line.

Hints:

Use `[n1:n2]` notation to get a slice from a tuple.

Question 13:

Write a program which accepts a string as input to print "Yes" if the string is "yes" or "YES" or "Yes", otherwise print "No".

Hints:

Use if statement to judge condition.

Question 14:

Write a program to compute:

$f(n)=f(n-1)+100$ when $n>0$

and $f(0)=1$

with a given n input by console ($n>0$).

Example:

If the following n is given as input to the program:

5

Then, the output of the program should be:

500

In case of input data being supplied to the question, it should be assumed to be a console input.

Hints:

We can define recursive function in Python.

Question 15:

Please write assert statements to verify that every number in the list [2,4,6,8] is even.

Hints:

Use "assert expression" to make assertion.

Question 16:

Please write a program which accepts basic mathematic expression from console and print the evaluation result.

Example:

If the following string is given as input to the program:

35+3

Then, the output of the program should be:

38

Hints:

Use eval() to evaluate an expression.

Question 17:

Please write a binary search function which searches an item in a sorted list. The function should return the index of element to be searched in the list.

Hints:

Use if/elif to deal with conditions.

Question 18:

Please write a program to generate all sentences where subject is in ["I", "You"] and verb is in ["Play", "Love"] and the object is in ["Hockey", "Football"].

Hints:

Use list[index] notation to get a element from a list.

Question 19:

With a given list [12,24,35,24,88,120,155,88,120,155], write a program to print this list after removing all duplicate values with original order reserved.

Hints:

Use set() to store a number of values without duplicate.

Question 20:

Please write a program which count and print the numbers of each character in a string input by console.

Example:

If the following string is given as input to the program:

abcdefgabc

Then, the output of the program should be:

a,2

c,2

b,2

e,1

d,1

g,1

f,1

Hints:

Use dict to store key/value pairs.

Use dict.get() method to lookup a key with default value.

Question 21:

Please write a program which accepts a string from console and print it in reverse order.

Example:

If the following string is given as input to the program:

rise to vote sir

Then, the output of the program should be:

ris etov ot esir

Hints:

Use list[::-1] to iterate a list in a reverse order.

Question 22:

Write a program to solve a classic ancient Chinese puzzle:

We count 35 heads and 94 legs among the chickens and rabbits in a farm. How many rabbits and how many chickens do we have?

Hint:

Use for loop to iterate all possible solutions.