Functions and collections

* Write a function called calc\_box\_surface\_and\_volume(a, b, c), that gets the three edges of a box (a, b & c), and returns the surface area of teh box (given by 𝑆=2×(𝑎𝑏+𝑏𝑐+𝑎𝑐)) and the volume of the box (given by 𝑉=𝑎×𝑏×𝑐).

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* Write a function called is\_common(s1, s2), that gets two strings s1 and s2 and returns whether s1 and s2 have a common letter or not.

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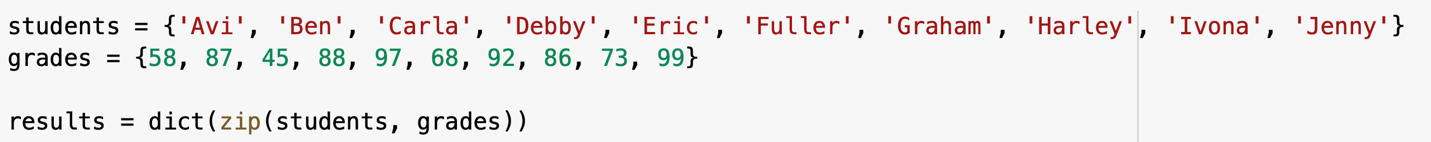
* Write a function that gets a string and returns a reversed string.
* Use the previous function and write a function that gets a string and returns True if the string is a palindrome and False otherwise.
* Write a code that asks the user to enter a word, and then prints whether the word is a [palindrome](https://en.wikipedia.org/wiki/Palindrome) or not

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* Write a function that receives an integer n and returns the number of primes up to n.

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* Write a function called analyze\_class(results, fail=65, excel=95) which accepts a dictionary results of the form {student: grade} and returns three lists of names for failed students, excel students and others



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* In each round of the game Rock-Paper-Scissors each player chooses randomly a weapon, either Rock (‘R’), Paper (‘P’) or Scissors (‘S’), and the winner is based on the chosen weapon; ‘R’ smashes ‘S’, ‘S’ tear ‘P’, and ‘P’ wraps ‘S’.

1. Write a function that receives the choices of two players and returns the winner (1 or 2, and 0 for a tie)
2. Generate manually a list of tuples for simulating the results of 10 rounds (e.g. [(‘R’, ‘S’), (‘P’, ‘S’), …], and use map() to derive a list of the winners in those 10 rounds.

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* The dictionary below contains some information about several cities in the world. The data is a list containing the population, and then a tuple with geographical N-coordinate and E-coordinate (for this exercise consider the world as flat)

Text

Description automatically generated with medium confidence

* Part 1 - Iterate the dictionary to create a list containing all the inner-most items of the dictionary.
  + For reference, an exemplary element of the list is ('Madrid', [3165000, ((40, 23), (-3, -43))])
* Part 2 - Sort the list items by the following criterions:
  + By name (alphabetically)
  + By population
  + From south to north
  + From north to south
  + From east to west
* Part 3 - Jerusalem is located at ((31, 47), (35, 13)). Sort the cities by their distance from Jerusalem.

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* The three lists below describe the details of 10 customers, and the same index in each list refers to the same customer (for example Zed is from TLV and is 26 years old).

Calendar

Description automatically generated

* Part 1 - Create a list with the names of the customers from Jerusalem
* Part 2 - Create a list with the ages of the people from Haifa
* Part 3 - Create a list with the names of the customers below 30

Timeline

Description automatically generated with medium confidence

A monotonic number is a number whose digits only go higher when read from left to right. 1357, 25678 & 23679 are monotonic, while 1231, 3777 & 3902 are not. How many monotonic numbers exist?

Give a number a and an iterable lst, write a function to find in lst the closest numebr to a

Write a function to find the two closest elements within a set of numbers

Find a numebr which is the sum of factorials of its digits (i.e. 24≠2!+4!=2+24=26)