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Гордият човек е като локва - хвърли в нея камък и ще опръска всичко наоколо с мръсотия. А смиреният е като море - ще погълне безследно всеки камък и даже кръгове по водата няма да се образуват.

Дядо Добри

# Fundamentals

## Number Beggars - Lists\_Basics

# W:\1\_Python\1-Training\1\_Projects\1st\_Project

\02\_Fundamentals\_with\_Python

\03\_Lists\_Basics\Exercises\04\_number\_beggars\_a.py

W:\1\_Python\1-Training\1\_Projects\1st\_Project\02\_Fundamentals\_with\_Python\03\_Lists\_Basics\Exercises\04\_number\_beggars\_a.py

**4. Number Beggars**

You will receive **2 lines** of input. On the first line, you will receive a **single string of integers**, separated by a comma and a space **", "**. On the **second line,** you will receive a **count of beggars.** Your job is to print a **list with the sum** of what **each beggar** brings home, assuming they all take **regular turns**, from the first to the last number in the list.

For example: **[1, 2, 3, 4, 5]** for **2** beggars will return a result of **9** and **6**, as the first one takes **[1, 3, 5]**, the second one collects **[2, 4]**. The same list with **3 beggars** would produce a better outcome for the **second** beggar: **5**, **7** and **3**, as they will respectively take **[1, 4]**, **[2, 5]**, and **[3]**.

Also, note that not all beggars have to take the same amount of "offers", meaning that the length of the list is **not** necessarily a **multiple of n**. The list length could be even shorter - i.e., the last beggars will take nothing (0).

Example

|  |  |
| --- | --- |
| **Input** | **Output** |
| 1, 2, 3, 4, 5  2 | [9, 6] |
| 3, 4, 5, 1, 29, 4  6 | [3, 4, 5, 1, 29, 4] |
| 100, 94, 24, 99  5 | [100, 94, 24, 99, 0] |

## Hkvh

# Advanced

## Paint Colors - Exercise: Stacks, Queues, Tuples, and Sets

G:\Other computers\My Computer\1-Training\1\_Projects\1st\_Project\03\_Advanced\03\_Stacks\_Queues\_Tuples\_and\_Sets\_Exercise\Recapitulate\Exercises\06\_paint\_colors\_c.py

**6. Paint Colors**

*You will have to find all possible color combinations that can be used.*

Write a program that finds colors in a string. You will be given a string on a **single line** containing **substrings** (separated by a **single space**) from which you will be able to form the following colors:

Main colors: **"red"**, **"yellow"**, **"blue"**

Secondary colors: **"orange"**, **"purple"**, **"green"**

To form a color, you should concatenate the **first** and the **last** **substrings** and check if you can get **any** of the **above colors'** **names**. If there is **only one substring left**, you should **use it** to do the same check.

You can only **keep** a **secondary color** if the **two main colors needed** for its creation could be **formed from the given substrings**:

* **orange** **= red + yellow**
* **purple = red + blue**
* **green = yellow + blue**

**Note:** You could find some of the main colors needed to keep a secondary color **after** it is found.

When you form a color, **remove both** substrings. Otherwise, you should **remove the last character** of **each** substring and **return** them in the **middle** of the **original string**. If the string contains an **odd number of substrings**, you should put the substrings **one position ahead**.

For example, if you are given the string **"re yellow bye"** you could not form a color with the substring **"re"** and **"bye"**, so you should remove the last character and return them in the middle of the string: **"r by yellow"**.

In the end, **print out the list with colors** in the order in which they are found.

Input

* Single line **string**

Output

* The **list** with the collected colors

Constrains

* You will not receive an empty string
* Please consider only the colors mentioned above
* There won't be any cases with repeating colors

Examples

|  |  |
| --- | --- |
| **Input** | **Output** |
| d yel blu e low redd | ['yellow', 'blue', 'red'] |
| **Comment** | |
| First, we take "**d"** and "**redd"**. After combining those substrings, we don't get any of the needed colors, so we remove the last characters from both substrings and return them in the middle of the original string, and it becomes "**yel blu red e low"**.  After that, we take "**yel"** and "**low"** so the first color we add to our list is yellow, and the string we are searching in looks as follows: "**blu red e"**  Then we take "**blu"** and "**e"**, and since this color is one of the searched ones (blue), we add it to our collection, and the state of the string is now "**red"**.  We should take the last substring and check if it matches some of the colors, and since it does, we add it (red) to our colors collection.  Finally, we print all the colors found: yellow, blue, and red in the format shown above. | |
| **Input** | **Output** |
| r ue nge ora bl ed | ['red', 'blue'] |
| **Comment** | |
| We don't keep orange because we don't have yellow in the final list with colors (combining red and yellow gives us orange). | |
| **Input** | **Output** |
| re ple blu pop e pur d | ['red', 'purple', 'blue'] |

## Summation Pairs - 02\_Tuples\_and\_Sets

W:\1\_Python\1-Training\1\_Projects\1st\_Project\03\_Advanced

\02\_Tuples\_and\_Sets\Lab\6\_summation\_pairs.py

**6. Summation Pairs**

***The task is not included in the Judge system.***

On the first line, you will receive a sequence of **numbers** separated by space. On the second line, you'll receive a **target** number. Your task is to **find** the **pairs of numbers** whose **sum** **equals** the **target number**. For each found pair print **"{number} + {number} = {target\_number}"**. You may **NOT** use the **same element twice to fulfill the condition above**.

Can you come up with an algorithm that has less time complexity?

Examples

|  |  |
| --- | --- |
| **Input** | **Output** |
| 1 5 4 2 2 3 1 3 2  4 | 1 + 3 = 4  1 + 3 = 4  2 + 2 = 4 |
| 11 8 5 6 9 2 9 7 3 4  11 | 8 + 3 = 11  5 + 6 = 11  9 + 2 = 11  7 + 4 = 11 |

## Present Delivery – List Multidimensional

03\_Advanced\04\_Multidimensional\_Lists\Exercises\_2\07\_present\_delivery\_a.py

**7. Present Delivery**

*The presents are ready, and Santa has to deliver them to the kids.*

You will receive an integer **m** for the **number** of **presents** Santa has and an integer **n** for the **size** of the **neighborhood** with a **square** shape. On the following lines, you will receive the **matrix**, which represents the neighborhood.

Santa will be in a **random** **cell**, marked with the letter **"S"**. Each cell stands for a house where children may live. If the cell has **"X"** on it, that means there lives a **naughty** kid. Otherwise, if a **nice** kid lives there, the cell is marked by **"V"**. There can also be cells marked with **"C"** for cookies. **All of the empty positions** will be marked with **"-"**.

Santa can move "**up**", **"down"**, **"left"**, **"right"** with **one position** each time. These will be the **commands** that you receive. If he moves to a house with a **nice** kid, the kid **receives a present**, but if Santa reaches a house with a **naughty** kid, he **doesn't** drop a present. If the command sends Santa to a cell marked with **"C"**, Santa eats cookies and becomes happy and extra generous to **all the kids around him**\* (meaning all of them will receive presents - it doesn't matter if naughty or nice). If Santa has been to a house, the cell becomes **"-"**.

**Note**: \*around him means on his left, right, upwards, and downwards by one cell. In this case, **Santa** doesn't move to these cells, or if he does, he **returns** to the **cell** where the **cookie** was.

If Santa runs out of presents **or** receives the command "**Christmas morning**", you should end the program.

Keep in mind that you should check whether all the nice kids received presents.

**Input**

* On the first line, you are given the integer **m** - the count of presents
* On the second - integer **n** - the size of the neighborhood
* The **following n lines** hold the values for every **row**
* On each of the following lines you will get a command

**Output**

On the first line:

If Santa runs out of presents, **but** there are still some **nice** kids left print: "**Santa ran out of presents!**"

Next, print the matrix.

In the end, print one of these messages:

If he manages to give **all** the nice kids presents, print:  
"**Good job, Santa! {count\_nice\_kids} happy nice kid/s.**"

Otherwise, print:   
**"No presents for {count nice kids} nice kid/s."**

**Constraints**

* The size of the **square** matrix will be between **[2…10].**
* Santa's position will be marked with '**S**'.
* There will **always** be **at** **least** **1** **nice** kid.
* There **won't be a case** where the cookie is on the border of the matrix.

|  |  |  |
| --- | --- | --- |
| **Input** | **Output** | **Comments** |
| 5  4  - X V -  - S - V  - - - -  X - - -  up  right  down  right  Christmas morning | - - - -  - - - S  - - - -  X - - -  Good job, Santa! 2 happy nice kid/s. | Santa has 5 presents. The size of the matrix is 4. After we receive the matrix, we start reading commands. The first one is "up". The "X" means there is a naughty kid, so Santa moves on without dropping any presents. Next, he reaches a nice kid and drops a present. The "down" command moves Santa to an empty cell. The last command before the "Christmas morning" message is "right". Again we have a nice kid. The count of nice kids reached 2, and we don't have any nice kids without presents left. So we print the appropriate message. |
| 3  4  - - - -  V - X -  - V C V  - - - S  left  up | Santa ran out of presents!  - - - -  V - - -  - - S -  - - - -  No presents for 1 nice kid/s. | The commands send Santa to a cell with a cookie, so all of the kids around him receive presents. He runs out of presents because we have 3 kids there and only 3 presents. The program ends, and we have 1 nice kid that hasn't received a present. |

**Examples**

## Recursive Power – Functions advanced

1st\_Project\03\_Advanced\05\_Functions\_Advanced\Lab\06\_recursive\_power.py

**Recursive Power**

Create a **recursive** function called recursive\_power() which should receive a **number** and a **power**. Using **recursion,** **return** the result of **number \*\* power**. Submit only the function in the judge system.

**Examples**

|  |  |
| --- | --- |
| **Test Code** | **Output** |
| print(recursive\_power(2, 10)) | 1024 |
| print(recursive\_power(10, 100)) | 10000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000 |

## kkg