

# 1024 zadania w Pythonie

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## 1 Wstęp

Zgromadzone zadania z wielu źródeł, m.in.:

- 100+ Python challenging programming exercises
- Konkurs informatyczny Logia i Minilogia
- Olimpiada Informatyczna Gimnazjalistów oraz Olimpiada Informatyczna
- Project Euler

## 2 Instrukcje print i input

### 2.1 Wstęp

### 2.2 Zadania

**Zadanie 1.** Stwórz program przyjmujący na wejściu dane zdanie i zwracający na standardowe wyjście zdanie zapisane:

- a) dużymi literami (użyj metody `.upper()`),
- b) małymi literami (użyj metody `.lower()`).

**Zadanie 2.** Korzystając z funkcji `int` napisz program przyjmujący na standardowe wejście liczbę całkowitą i zwracający na wyjściu:

- a) kwadrat tej liczby,
- b) pierwiastek tej liczby,
- c) logarytm tej liczby.

**Zadanie 3.** Korzystając z metody `.reverse()`, odwróć kolejność słów w zdaniu podanym na standardowym wejściu, i wypisz je na standardowym wyjściu.

**Zadanie 4.** Napisz program który oblicza i wyświetla wartość  $a + aa + aaa + aaaa$ , gdzie  $a$  jest cyfrą podaną na standardowym wejściu.

Przykład: założmy, że podaną wartością jest cyfra 9. Wtedy wyświetlana wartość jest równa:

11106

## 3 Funkcje

### 3.1 Wstęp teoretyczny

### 3.2 Zadania

**Zadanie 5.** Stwórz funkcję zwracającą sumę dwóch liczb podanych jako argumenty.

**Zadanie 6.** Napisz program obliczający i wyświetlający na ekranie wartość wyliczaną na podstawie podanego wzoru:

$$Q = \sqrt{(2 \cdot C \cdot D)/H}$$

Poniżej podane są ustalone wartości  $C$  oraz  $H$ :

- C ma wartość 50.
- H ma wartość 30.
- D jest wartością podawaną przez użytkownika poprzez standardowe wejście.

**Zadanie 7.** Napisz funkcję zwracającą objętość kuli o danym promieniu R. Następnie zwróć na standardowe wyjście wartość objętości kuli o promieniu 6.

## 4 Pętla for, instrukcje warunkowe if, else

### 4.1 Wstęp teoretyczny

### 4.2 Zadania

**Zadanie 8.** Napisz program, który znajdzie wszystkie liczby z przedziału 2000 oraz 3200, które są podzielne przez 7, jednocześnie nie będą wielokrotnościami 5. Następnie program powinien wyświetlić sumę tych wartości na ekranie.

**Zadanie 9.** Stwórz funkcję `silnia(n)` która zwraca wartość silni z danej liczby naturalnej `n`. Następnie nakaż programowi wypisać na ekranie wartość silni z 8. Program powinien wyświetlić wartość 40320.

**Zadanie 10.** Napisz program wyświetlający kolejne liczby naturalne, razem z ich kwadratami i sześcianami w tej samej linii. Podczas wykonania program powinien wyświetlić następującą wiadomość:

```
1 1 1
2 4 8
3 9 27
4 16 64
5 25 125
6 36 216
```

**Zadanie 11.** Napisz program który przyjmuje słowa oddzielone przecinkami na standardowym wejściu i drukuje te same słowa po sortowaniu w kolejności alfabetycznej. Przykład: założmy, że następujące dane zostały przekazane do programu:

```
without,hello,bag,world
```

Wtedy, dane wyjściowe powinny być następujące:

```
bag,hello,without,world
```

**Zadanie 12.** Napisz program który przyjmuje ciąg linii na wejściu i drukuje je z powrotem po zmianie wszystkich znaków na wielkie litery. Przykład:

```
Hello world  
Practice makes perfect
```

Wtedy, zwrócona wiadomość powinna być następująca:

```
HELLO WORLD  
PRACTICE MAKES PERFECT
```

**Zadanie 13.** Stwórz klasę posiadającą przynajmniej dwie metody:

- `get_string`- metoda uzyskująca ciąg znaków ze standardowego wejścia,
- `print_string`- metoda drukująca dany ciąg znaków wielkimi literami.

Dodatkowo, przygotuj prostą funkcję testową sprawdzającą obydwie metody klasy.

**Zadanie 14.** Napisz program który przyjmuje dwie cyfry,  $x$ ,  $y$  ze standardowego wejścia i tworzy dwuwymiarową tablicę. Wartość elementu w  $i$ -tym wierszu i  $j$ -tej kolumnie powinna być równa  $i*j$ . Uwaga:  $i = 0, 1, 2, \dots, x-1$ ,  $j = 0, 1, 2, \dots, y-1$ . Przykład: założmy że do programu podano następujące dane wejściowe:

```
3,5
```

Wtedy, program powinien wyświetlić następującą wiadomość:

```
[[0, 0, 0, 0, 0], [0, 1, 2, 3, 4], [0, 2, 4, 6, 8]]
```

**Zadanie 15.** Napisz program który przyjmuje ciąg słów rozdzielonych spacjami na wejściu i zwraca słowa z usuniętymi powtórzeniami, posortowane alfabetycznie. Przykład: założmy, że następujące dane wejściowe zostały dostarczone do programu:

```
hello world and practice makes perfect and hello world again
```

Wtedy, na wyjściu powinna być wyświetlona wiadomość:

again and hello makes perfect practice world

**Zadanie 16.** Napisz program który przyjmuje ciąg 4-cyfrowych liczb binarnych oddzielonych przecinkami, a następnie sprawdza czy są podzielne przez 5. Liczby podzielne przez 5, oddzielone przecinkami, są wyświetlane na ekranie.

**Zadanie 17.** Napisz program który znajdzie wszystkie liczby pomiędzy 1000 i 3000 (włączając) takie, że każda cyfra jest liczbą parzystą. Uzyskane liczby rozdzielone przecinkami powinny być wydrukowane na ekranie jako informacja zwrotna.

**Zadanie 18.** Stwórz funkcje `expand(s)` oraz `shorten(s)` które działają w następujący sposób:

- `expand(s)` przekształca każdy ciąg znaków postaci `'a2b3c1'` do rozszerzonej postaci: `'aabbbc'`,
- `shorten(s)` przekształca dowolny ciąg znaków do postaci skróconej. Przykład: `'aaabbccc'` jest przekształcane do postaci `'a3b2c3'`.

**Zadanie 19.** Napisz program który przyjmuje cyfry i litery na standardowe wejście i wypisuje dokładną liczbę cyfr i liter.

Przykład: założmy, że na wejściu podano następującą wiadomość:

```
hello world! 123
```

Wtedy, na wyjściu powinna być zwrócona wiadomość:

```
LETTERS 10
DIGITS 3
```

**Zadanie 20.** Napisz program który przyjmuje i znajduje liczbę dużych i małych liter w wiadomości.

Przykład: założmy że podano następującą wiadomość na wejściu:

```
Hello world!
```

Wtedy, wiadomość wyjściowa powinna być następująca:

```
UPPER CASE 1
LOWER CASE 9
```

## 5 Pozostałe

**Zadanie 21.** Use a list comprehension to square each odd number in a list. The list is input by a sequence of comma-separated numbers. Suppose the following input is supplied to the program: 1,2,3,4,5,6,7,8,9 Then, the output should be: 1,3,5,7,9

**Zadanie 22.** Write a program that computes the net amount of a bank account based a transaction log from console input. The transaction log format is shown as following: D 100 W 200 D means deposit while W means withdrawal. Suppose the following input is supplied to the program: D 300 D 300 W 200 D 100 Then, the output should be: 500

**Zadanie 23.** A website requires the users to input username and password to register. Write a program to check the validity of password input by users. Following are the criteria for checking the password: 1. At least 1 letter between [a-z] 2. At least 1 number between [0-9] 1. At least 1 letter between [A-Z] 3. At least 1 character from [#@] 4. Minimum length of transaction password: 6 5. Maximum length of transaction password: 12 Your program should accept a sequence of comma separated passwords and will check them according to the above criteria. Passwords that match the criteria are to be printed, each separated by a comma. Example If the following passwords are given as input to the program: ABd1234@1,a F#,2w3E\*,2We3345 Then, the output of the program should be: ABd1234@1

**Zadanie 24.** You are required to write a program to sort the (name, age, height) tuples by ascending order where name is string, age and height are numbers. The tuples are input by console. The sort criteria is: 1: Sort based on name; 2: Then sort based on age; 3: Then sort by score. The priority is that name < age < score. If the following tuples are given as input to the program: Tom,19,80 John,20,90 Jony,17,91 Jony,17,93 Json,21,85 Then, the output of the program should be:

```
[('John', '20', '90'), ('Jony', '17', '91'), ('Jony', '17', '93'), ('Json', '21', '85')]
```

**Zadanie 25.** Define a class with a generator which can iterate the numbers, which are divisible by 7, between a given range 0 and n.

**Zadanie 26.** 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

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.

**Zadanie 27.** Question 22 Level 3 Question: Write a program to compute the frequency of the words from the input. The output should output after sorting the key alphanumerically. Suppose the following input is supplied to the program: New to Python or choosing between Python 2 and Python 3? Read Python 2 or Python 3. Then, the output should be:

2:2  
3.:1  
3?:1  
New:1  
Python:5  
Read:1  
and:1  
between:1  
choosing:1  
or:2  
to:1

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

**Zadanie 28.** Write a method which can calculate square value of number

**Zadanie 29.** 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

**Zadanie 30.** Define a class, which have a class parameter and have a same instance parameter.

**Zadanie 31.** Define a function that can convert a integer into a string and print it in console.

**Zadanie 32.** Define a function that can convert a integer into a string and print it in console.

**Zadanie 33.** Define a function that can receive two integral numbers in string form and compute their sum and then print it in console.

**Zadanie 34.** Define a function that can accept two strings as input and concatenate them and then print it in console.

**Zadanie 35.** 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.

**Zadanie 36.** Define a function that can accept an integer number as input and print the "It is an even number" if the number is even, otherwise print "It is an odd number".

**Zadanie 37.** 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.

**Zadanie 38.** 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.

**Zadanie 39.** 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.

**Zadanie 40.** 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 keys only.

**Zadanie 41.** Define a function which can generate and print a list where the values are square of numbers between 1 and 20 (both included).



**Zadanie 42.** 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.

**Zadanie 43.** 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 last 5 elements in the list.

**Zadanie 44.** 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 all values except the first 5 elements in the list.

**Zadanie 45.** Define a function which can generate and print a tuple where the value are square of numbers between 1 and 20 (both included).

**Zadanie 46.** 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.

**Zadanie 47.** Write a program to generate and print another tuple whose values are even numbers in the given tuple (1,2,3,4,5,6,7,8,9,10).

**Zadanie 48.** Write a program which accepts a string as input to print "Yes" if the string is "yes" or "YES" or "Yes", otherwise print "No".

**Zadanie 49.** Write a program which can filter even numbers in a list by using filter function. The list is: [1,2,3,4,5,6,7,8,9,10].

**Zadanie 50.** Write a program which can map() to make a list whose elements are square of elements in [1,2,3,4,5,6,7,8,9,10].

**Zadanie 51.** Write a program which can map() and filter() to make a list whose elements are square of even number in [1,2,3,4,5,6,7,8,9,10].

**Zadanie 52.** Write a program which can filter() to make a list whose elements are even number between 1 and 20 (both included).

**Zadanie 53.** Write a program which can map() to make a list whose elements are square of numbers between 1 and 20 (both included).

**Zadanie 54.** Define a class named American which has a static method called printNationality.

**Zadanie 55.** Define a class named American and its subclass NewYorker.

**Zadanie 56.** Define a class named Circle which can be constructed by a radius. The Circle class has a method which can compute the area.

**Zadanie 57.** Define a class named Rectangle which can be constructed by a length and width. The Rectangle class has a method which can compute the area. Hints: Use `def methodName(self)` to define a method.

**Zadanie 58.** 7.2 Define a class named Shape and its subclass Square. The Square class has an `init` function which takes a length as argument. Both classes have a `area` function which can print the area of the shape where Shape's area is 0 by default. Hints: To override a method in super class, we can define a method with the same name in the super class.

**Zadanie 59.** Please raise a `RuntimeError` exception. Hints: Use `raise()` to raise an exception. Solution: `raise RuntimeError('something wrong')`

**Zadanie 60.** Write a function to compute  $5/0$  and use `try/except` to catch the exceptions. Hints: Use `try/except` to catch exceptions.

**Zadanie 61.** Define a custom exception class which takes a string message as attribute. Hints: To define a custom exception, we need to define a class inherited from `Exception`.

**Zadanie 62.** Assuming that we have some email addresses in the "username@companyname.com" format, please write program to print the user name of a given email address. Both user names and company names are composed of letters only.

**Zadanie 63.** Assuming that we have some email addresses in the "username@companyname.com" format, please write program to print the company name of a given email address. Both user names and company names are composed of letters only.

**Zadanie 64.** Write a program which accepts a sequence of words separated by whitespace as input to print the words composed of digits only.

**Zadanie 65.** Print a unicode string "hello world".

**Zadanie 66.** Write a program to read an ASCII string and to convert it to a unicode string encoded by utf-8. Hints: Use `unicode()` function to convert.  
`print u`

**Zadanie 67.** Write a special comment to indicate a Python source code file is in unicode.

**Zadanie 68.** Write a program to compute  $1/2+2/3+3/4+...+n/n+1$  with a given `n` input by console (`n<0`).

**Zadanie 69.** 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 ( $n \geq 0$ ).

**Zadanie 70.** The Fibonacci Sequence is computed based on the following formula:

$f(n) = 0$  if  $n = 0$   
 $f(n) = 1$  if  $n = 1$   
 $f(n) = f(n-1) + f(n-2)$  if  $n > 1$

Please write a program to compute the value of  $f(n)$  with a given  $n$  input by console.

**Zadanie 71.** The Fibonacci Sequence is computed based on the following formula:

$f(n) = 0$  if  $n = 0$   
 $f(n) = 1$  if  $n = 1$   
 $f(n) = f(n-1) + f(n-2)$  if  $n > 1$

Please write a program using list comprehension to print the Fibonacci Sequence in comma separated form with a given  $n$  input by console.

**Zadanie 72.** Please write a program using generator to print the even numbers between 0 and  $n$  in comma separated form while  $n$  is input by console.

**Zadanie 73.** Please write a program using generator to print the numbers which can be divisible by 5 and 7 between 0 and  $n$  in comma separated form while  $n$  is input by console.

**Zadanie 74.** Please write assert statements to verify that every number in the list  $[2, 4, 6, 8]$  is even.

**Zadanie 75.** Please write a program which accepts basic mathematic expression from console and print the evaluation result.

**Zadanie 76.** 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.

**Zadanie 77.** 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.

**Zadanie 78.** Please generate a random float where the value is between 10 and 100 using Python math module.

**Zadanie 79.** Please generate a random float where the value is between 5 and 95 using Python math module.

**Zadanie 80.** Please write a program to output a random even number between 0 and 10 inclusive using random module and list comprehension.

**Zadanie 81.** Please write a program to output a random number, which is divisible by 5 and 7, between 0 and 10 inclusive using random module and list comprehension.

**Zadanie 82.** Please write a program to generate a list with 5 random numbers between 100 and 200 inclusive.

**Zadanie 83.** Please write a program to randomly generate a list with 5 even numbers between 100 and 200 inclusive.

**Zadanie 84.** Please write a program to randomly generate a list with 5 numbers, which are divisible by 5 and 7, between 1 and 1000 inclusive.

**Zadanie 85.** Please write a program to randomly print a integer number between 7 and 15 inclusive.

**Zadanie 86.** Please write a program to compress and decompress the string "hello world!hello world!hello world!hello world!".

**Zadanie 87.** Please write a program to print the running time of execution of "1+1" for 100 times.

**Zadanie 88.** Please write a program to shuffle and print the list [3,6,7,8].

**Zadanie 89.** Please write a program to shuffle and print the list [3,6,7,8].

**Zadanie 90.** 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"].

**Zadanie 91.** Please write a program to print the list after removing delete even numbers in [5,6,77,45,22,12,24]. Hints: Use list comprehension to delete a bunch of element from a list.

**Zadanie 92.** By using list comprehension, please write a program to print the list after removing delete numbers which are divisible by 5 and 7 in [12,24,35,70,88,120,155].

**Zadanie 93.** By using list comprehension, please write a program to print the list after removing the 0th, 2nd, 4th,6th numbers in [12,24,35,70,88,120,155].

**Zadanie 94.** By using list comprehension, please write a program generate a 3\*5\*8 3D array whose each element is 0.

**Zadanie 95.** By using list comprehension, please write a program to print the list after removing the 0th,4th,5th numbers in [12,24,35,70,88,120,155].

**Zadanie 96.** By using list comprehension, please write a program to print the list after removing the value 24 in [12,24,35,24,88,120,155].

**Zadanie 97.** With two given lists [1,3,6,78,35,55] and [12,24,35,24,88,120,155], write a program to make a list whose elements are intersection of the above given lists.

**Zadanie 98.** 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.

**Zadanie 99.** Define a class Person and its two child classes: Male and Female. All classes have a method "getGender" which can print "Male" for Male class and "Female" for Female class.

**Zadanie 100.** Please write a program which count and print the numbers of each character in a string input by console.

**Zadanie 101.** Please write a program which accepts a string from console and print it in reverse order.

**Zadanie 102.** Please write a program which accepts a string from console and print the characters that have even indexes.

**Zadanie 103.** Please write a program which prints all permutations of [1,2,3]

**Zadanie 104.** 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.

**Zadanie 105** (An editor is available at the bottom of the page to write and execute the scripts.). 1. Write a Python program to print the following string in a specific format (see the output). Sample String : "Twinkle, twinkle, little star, How I wonder what you are! Up above the world so high, Like a diamond in the sky. Twinkle, twinkle, little star, How I wonder what you are" Output : Twinkle, twinkle, little star, How I wonder what you are! Up above the world so high, Like a diamond in the sky. Twinkle, twinkle, little star, How I wonder what you are

**Zadanie 106.** 2. Write a Python program to get the Python version you are using.

**Zadanie 107.** 3. Write a Python program to display the current date and time. Sample Output : Current date and time : 2014-07-05 14:34:14

**Zadanie 108.** 4. Write a Python program which accepts the radius of a circle from the user and compute the area. Sample Output : r = 1.1 Area = 3.8013271108436504

**Zadanie 109.** 5. Write a Python program which accepts the user's first and last name and print them in reverse order with a space between them.

**Zadanie 110.** 6. Write a Python program which accepts a sequence of comma-separated numbers from user and generate a list and a tuple with those numbers. Sample data : 3, 5, 7, 23 Output : List : ['3', ' 5', ' 7', ' 23'] Tuple : ('3', ' 5', ' 7', ' 23')

**Zadanie 111.** 7. Write a Python program to accept a filename from the user and print the extension of that. Sample filename : abc.java Output : java

**Zadanie 112.** 8. Write a Python program to display the first and last colors from the following list.

```
color_list = ["Red","Green","White" ,"Black"]
```

**Zadanie 113.** 9. Write a Python program to display the examination schedule. (extract the date from exam\_st\_date).

```
exam_st_date = (11, 12, 2014)
```

Sample Output : The examination will start from : 11 / 12 / 2014

**Zadanie 114.** 11. Write a Python program to print the documents (syntax, description etc.) of Python built-in function(s). Sample function : `abs()`  
Expected Result : `abs(number)` -> number Return the absolute value of the argument.

**Zadanie 115.** 12. Write a Python program to print the calendar of a given month and year. Note : Use 'calendar' module.

**Zadanie 116.** 13. Write a Python program to print the following here document. Sample string : a string that you "don't" have to escape This is a ..... multi-line heredoc string -----> example

**Zadanie 117.** 14. Write a Python program to calculate number of days between two dates. Sample dates : (2014, 7, 2), (2014, 7, 11) Expected output : 9 days

**Zadanie 118.** 16. Write a Python program to get the difference between a given number and 17, if the number is greater than 17 return double the absolute difference.

**Zadanie 119.** 17. Write a Python program to test whether a number is within 100 of 1000 or 2000.

**Zadanie 120.** 18. Write a Python program to calculate the sum of three given numbers, if the values are equal then return three times of their sum.

**Zadanie 121.** 19. Write a Python program to get a new string from a given string where "Is" has been added to the front. If the given string already begins with "Is" then return the string unchanged.

**Zadanie 122.** 20. Write a Python program to get a string which is n (non-negative integer) copies of a given string.

**Zadanie 123.** 21. Write a Python program to find whether a given number (accept from the user) is even or odd, print out an appropriate message to the user.

**Zadanie 124.** 22. Write a Python program to count the number 4 in a given list.

**Zadanie 125.** 23. Write a Python program to get the n (non-negative integer) copies of the first 2 characters of a given string. Return the n copies of the whole string if the length is less than 2.

**Zadanie 126.** 24. Write a Python program to test whether a passed letter is a vowel or not.

**Zadanie 127.** 25. Write a Python program to check whether a specified value is contained in a group of values. Test Data : 3 -> [1, 5, 8, 3] : True -1 -> [1, 5, 8, 3] : False

**Zadanie 128.** 26. Write a Python program to create a histogram from a given list of integers.

**Zadanie 129.** 27. Write a Python program to concatenate all elements in a list into a string and return it.

**Zadanie 130.** 28. Write a Python program to print all even numbers from a given numbers list in the same order and stop the printing if any numbers that come after 237 in the sequence. Sample numbers list : numbers = [ 386, 462, 47, 418, 907, 344, 236, 375, 823, 566, 597, 978, 328, 615, 953, 345, 399, 162, 758, 219, 918, 237, 412, 566, 826, 248, 866, 950, 626, 949, 687, 217, 815, 67, 104, 58, 512, 24, 892, 894, 767, 553, 81, 379, 843, 831, 445, 742, 717, 958, 743, 527 ]

**Zadanie 131.** 29. Write a Python program to print out a set containing all the colors from color\_list\_1 which are not present in color\_list\_2.

Test Data :  
color\_list\_1 = set(["White", "Black", "Red"])  
color\_list\_2 = set(["Red", "Green"])  
Expected Output :  
{'Black', 'White'}

**Zadanie 132.** 30. Write a Python program that will accept the base and height of a triangle and compute the area.

**Zadanie 133.** 31. Write a Python program to compute the greatest common divisor (GCD) of two positive integers.

**Zadanie 134.** 32. Write a Python program to get the least common multiple (LCM) of two positive integers.

**Zadanie 135.** 33. Write a Python program to sum of three given integers. However, if two values are equal sum will be zero.

**Zadanie 136.** 34. Write a Python program to sum of two given integers. However, if the sum is between 15 to 20 it will return 20.



**Zadanie 137.** 35. Write a Python program that will return true if the two given integer values are equal or their sum or difference is 5.

**Zadanie 138.** 36. Write a Python program to add two objects if both objects are an integer type.

**Zadanie 139.** 37. Write a Python program to display your details like name, age, address in three different lines.

**Zadanie 140.** 38. Write a Python program to solve  $(x + y) * (x + y)$ .

Test Data :  $x = 4, y = 3$

Expected Output :  $(4 + 3) ^ 2 = 49$

**Zadanie 141.** 39. Write a Python program to compute the future value of a specified principal amount, rate of interest, and a number of years. Test Data :  $\text{amt} = 10000, \text{int} = 3.5, \text{years} = 7$  Expected Output : 12722.79

**Zadanie 142.** 40. Write a Python program to compute the distance between the points  $(x1, y1)$  and  $(x2, y2)$ .

**Zadanie 143.** 41. Write a Python program to check whether a file exists.

**Zadanie 144.** 42. Write a Python program to determine if a Python shell is executing in 32bit or 64bit mode on OS.

**Zadanie 145.** 43. Write a Python program to get OS name, platform and release information.

**Zadanie 146.** 44. Write a Python program to locate Python site-packages.

**Zadanie 147.** 45. Write a python program to call an external command in Python.

**Zadanie 148.** 46. Write a python program to get the path and name of the file that is currently executing.

**Zadanie 149.** 47. Write a Python program to find out the number of CPUs using.

**Zadanie 150.** 48. Write a Python program to parse a string to Float or Integer.

**Zadanie 151.** 49. Write a Python program to list all files in a directory in Python.

**Zadanie 152.** 50. Write a Python program to print without newline or space.

**Zadanie 153.** 51. Write a Python program to determine profiling of Python programs. Note: A profile is a set of statistics that describes how often and for how long various parts of the program executed. These statistics can be formatted into reports via the pstats module.

**Zadanie 154.** 52. Write a Python program to print to stderr.

**Zadanie 155.** 53. Write a python program to access environment variables.

**Zadanie 156.** 54. Write a Python program to get the current username

**Zadanie 157.** 55. Write a Python to find local IP addresses using Python's stdlib

**Zadanie 158.** 56. Write a Python program to get height and width of the console window.

**Zadanie 159.** 57. Write a program to get execution time for a Python method.

**Zadanie 160.** 58. Write a python program to sum of the first n positive integers.

**Zadanie 161.** 59. Write a Python program to convert height (in feet and inches) to centimeters.

**Zadanie 162.** 60. Write a Python program to calculate the hypotenuse of a right angled triangle.

**Zadanie 163.** 61. Write a Python program to convert the distance (in feet) to inches, yards, and miles.

**Zadanie 164.** 62. Write a Python program to convert all units of time into seconds.

**Zadanie 165.** 63. Write a Python program to get an absolute file path.

**Zadanie 166.** 64. Write a Python program to get file creation and modification date/times.

**Zadanie 167.** 65. Write a Python program to convert seconds to day, hour, minutes and seconds.

- Zadanie 168.** 66. Write a Python program to calculate body mass index.
- Zadanie 169.** 67. Write a Python program to convert pressure in kilopascals to pounds per square inch, a millimeter of mercury (mmHg) and atmosphere pressure.
- Zadanie 170.** 68. Write a Python program to calculate the sum of the digits in an integer.
- Zadanie 171.** 69. Write a Python program to sort three integers without using conditional statements and loops.
- Zadanie 172.** 70. Write a Python program to sort files by date.
- Zadanie 173.** 71. Write a Python program to get a directory listing, sorted by creation date.
- Zadanie 174.** 72. Write a Python program to get the details of math module.
- Zadanie 175.** 73. Write a Python program to calculate midpoints of a line.
- Zadanie 176.** 74. Write a Python program to hash a word.
- Zadanie 177.** 75. Write a Python program to get the copyright information.
- Zadanie 178.** 76. Write a Python program to get the command-line arguments (name of the script, the number of arguments, arguments) passed to a script.
- Zadanie 179.** 77. Write a Python program to test whether the system is a big-endian platform or little-endian platform.
- Zadanie 180.** 78. Write a Python program to find the available built-in modules.
- Zadanie 181.** 79. Write a Python program to get the size of an object in bytes.
- Zadanie 182.** 80. Write a Python program to get the current value of the recursion limit.
- Zadanie 183.** 81. Write a Python program to concatenate N strings.
- Zadanie 184.** 82. Write a Python program to calculate the sum over a container.

**Zadanie 185.** 83. Write a Python program to test whether all numbers of a list is greater than a certain number.

**Zadanie 186.** 84. Write a Python program to count the number occurrence of a specific character in a string.

**Zadanie 187.** 85. Write a Python program to check if a file path is a file or a directory.

**Zadanie 188.** 86. Write a Python program to get the ASCII value of a character.

**Zadanie 189.** 87. Write a Python program to get the size of a file.

**Zadanie 190.** 88. Given variables  $x=30$  and  $y=20$ , write a Python program to print `t "30+20=50"`.

**Zadanie 191.** 89. Write a Python program to perform an action if a condition is true. Given a variable name, if the value is 1, display the string "First day of a Month!" and do nothing if the value is not equal.

**Zadanie 192.** 90. Write a Python program to create a copy of its own source code.

**Zadanie 193.** 91. Write a Python program to swap two variables.

**Zadanie 194.** 92. Write a Python program to define a string containing special characters in various forms.

**Zadanie 195.** 93. Write a Python program to get the identity of an object.

**Zadanie 196.** 94. Write a Python program to convert a byte string to a list of integers.

**Zadanie 197.** 95. Write a Python program to check if a string is numeric.

**Zadanie 198.** 96. Write a Python program to print the current call stack.

**Zadanie 199.** 97. Write a Python program to list the special variables used within the language.

**Zadanie 200.** 98. Write a Python program to get the system time. Note : The system time is important for debugging, network information, random number seeds, or something as simple as program performance.

**Zadanie 201.** 99. Write a Python program to clear the screen or terminal.

**Zadanie 202.** 100. Write a Python program to get the name of the host on which the routine is running.

**Zadanie 203.** 101. Write a Python program to access and print a URL's content to the console.

**Zadanie 204.** 102. Write a Python program to get system command output.

**Zadanie 205.** 103. Write a Python program to extract the filename from a given path.

**Zadanie 206.** 104. Write a Python program to get the effective group id, effective user id, real group id, a list of supplemental group ids associated with the current process. Note: Availability: Unix.

**Zadanie 207.** 105. Write a Python program to get the users environment.

**Zadanie 208.** 106. Write a Python program to divide a path on the extension separator.

**Zadanie 209.** 107. Write a Python program to retrieve file properties.

**Zadanie 210.** 108. Write a Python program to find path refers to a file or directory when you encounter a path name.

**Zadanie 211.** 109. Write a Python program to check if a number is positive, negative or zero.

**Zadanie 212.** 110. Write a Python program to get numbers divisible by fifteen from a list using an anonymous function.

**Zadanie 213.** 111. Write a Python program to make file lists from current directory using a wildcard.

**Zadanie 214.** 112. Write a Python program to remove the first item from a specified list.

**Zadanie 215.** 113. Write a Python program to input a number, if it is not a number generate an error message.

**Zadanie 216.** 114. Write a Python program to filter the positive numbers from a list.

**Zadanie 217.** 115. Write a Python program to compute the product of a list of integers (without using for loop).

- Zadanie 218.** 116. Write a Python program to print Unicode characters.
- Zadanie 219.** 117. Write a Python program to prove that two string variables of same value point same memory location.
- Zadanie 220.** 118. Write a Python program to create a bytearray from a list.
- Zadanie 221.** 119. Write a Python program to display a floating number in specified numbers.
- Zadanie 222.** 120. Write a Python program to format a specified string to limit the number of characters to 6.
- Zadanie 223.** 121. Write a Python program to determine if variable is defined or not.
- Zadanie 224.** 122. Write a Python program to empty a variable without destroying it. Sample data: n=20 d = "x":200 Expected Output : 0
- Zadanie 225.** 123. Write a Python program to determine the largest and smallest integers, longs, floats.
- Zadanie 226.** 124. Write a Python program to check if multiple variables have the same value.
- Zadanie 227.** 125. Write a Python program to sum of all counts in a collections?
- Zadanie 228.** 126. Write a Python program to get the actual module object for a given object.
- Zadanie 229.** 127. Write a Python program to check if an integer fits in 64 bits.
- Zadanie 230.** 128. Write a Python program to check if lowercase letters exist in a string.
- Zadanie 231.** 129. Write a Python program to add leading zeroes to a string.
- Zadanie 232.** 130. Write a Python program to use double quotes to display strings.
- Zadanie 233.** 131. Write a Python program to split a variable length string into variables.

**Zadanie 234.** 132. Write a Python program to list home directory without absolute path.

**Zadanie 235.** 133. Write a Python program to calculate the time runs (difference between start and current time) of a program.

**Zadanie 236.** 134. Write a Python program to input two integers in a single line.

**Zadanie 237.** 135. Write a Python program to print a variable without spaces between values. Sample value : x =30 Expected output : Value of x is "30"

**Zadanie 238.** 136. Write a Python program to find files and skip directories of a given directory.

**Zadanie 239.** 137. Write a Python program to extract single key-value pair of a dictionary in variables.

**Zadanie 240.** 138. Write a Python program to convert true to 1 and false to 0.

**Zadanie 241.** 139. Write a Python program to valid a IP address.

**Zadanie 242.** 140. Write a Python program to convert an integer to binary keep leading zeros. Sample data : 50 Expected output : 00001100, 0000001100

**Zadanie 243.** 141. Write a python program to convert decimal to hexadecimal. Sample decimal number: 30, 4 Expected output: 1e, 04

**Zadanie 244.** 142. Write a Python program to find the operating system name, platform and platform release date. Operating system name: posix Platform name: Linux Platform release: 4.4.0-47-generic

**Zadanie 245.** 143. Write a Python program to determine if the python shell is executing in 32bit or 64bit mode on operating system.

**Zadanie 246.** 144. Write a Python program to check if variable is of integer or string.

**Zadanie 247.** 145. Write a Python program to test if a variable is a list or tuple or a set.

**Zadanie 248.** 146. Write a Python program to find the location of Python module sources. Operating system name: posix Platform name: Linux Platform release: 4.4.0-47-generic

**Zadanie 249.** 147. Write a Python function to check whether a number is divisible by another number. Accept two integers values from the user.

**Zadanie 250.** 148. Write a Python function to find the maximum and minimum numbers from a sequence of numbers. Note: Do not use built-in functions.

**Zadanie 251.** 149. Write a Python function that takes a positive integer and returns the sum of the cube of all the positive integers smaller than the specified number.

**Zadanie 252.** 150. Write a Python function to find a distinct pair of numbers whose product is odd from a sequence of integer values.

**Zadanie 253.** 1. Write a Python function that takes a sequence of numbers and determines if all the numbers are different from each other.

**Zadanie 254.** 2. Write a Python program to create all possible strings by using 'a', 'e', 'i', 'o', 'u'. Use the characters exactly once.

**Zadanie 255.** 3. Write a Python program to remove and print every third number from a list of numbers until the list becomes empty.

**Zadanie 256.** 4. Write a Python program to find unique triplets whose three elements gives the sum of zero from an array of n integers.

**Zadanie 257.** 5. Write a Python program to create the combinations of 3 digit combo.

**Zadanie 258.** 6. Write a Python program to print a long text, convert the string to a list and print all the words and their frequencies.

**Zadanie 259.** 7. Write a Python program to count the number of each character of a given text of a text file.

**Zadanie 260.** 8. Write a Python program to get the top stories from Google news.

**Zadanie 261.** 9. Write a Python program to get a list of locally installed Python modules.



**Zadanie 262.** 10. Write a Python program to display some information about the OS where the script is running.

**Zadanie 263.** 11. Write a Python program to check the sum of three elements (each from an array) from three arrays is equal to a target value. Print all those three-element combinations. Sample data: /\* X = [10, 20, 20, 20] Y = [10, 20, 30, 40] Z = [10, 30, 40, 20] target = 70 \*/

**Zadanie 264.** 12. Write a Python program to create all possible permutations from a given collection of distinct numbers.

**Zadanie 265.** 13. Write a Python program to get all possible two digit letter combinations from a digit (1 to 9) string.

```
string_maps = {  
    "1": "abc",  
    "2": "def",  
    "3": "ghi",  
    "4": "jkl",  
    "5": "mno",  
    "6": "pqrs",  
    "7": "tuv",  
    "8": "wxy",  
    "9": "z"  
}
```

**Zadanie 266.** 14. Write a Python program to add two positive integers without using the '+' operator. Note: Use bit wise operations to add two numbers.

**Zadanie 267.** 15. Write a Python program to check the priority of the four operators (+, -, \*, /).

**Zadanie 268.** 16. Write a Python program to get the third side of right angled triangle from two given sides.

**Zadanie 269.** 17. Write a Python program to get all strobogrammatic numbers that are of length n. A strobogrammatic number is a number whose numeral is rotationally symmetric, so that it appears the same when rotated 180 degrees. In other words, the numeral looks the same right-side up and upside down (e.g., 69, 96, 1001). For example, Given n = 2, return ["11", "69", "88", "96"]. Given n = 3, return ['818', '111', '916', '619', '808', '101', '906', '609', '888', '181', '986', '689']

**Zadanie 270.** 18. Write a Python program to find the median among three given numbers.

**Zadanie 271.** 19. Write a Python program to find the value of  $n$  where  $n$  degrees of number 2 are written sequentially in a line without spaces.

**Zadanie 272.** 20. Write a Python program to find the number of zeros at the end of a factorial of a given positive number. Range of the number( $n$ ): ( $1 \leq n \leq 2 \cdot 10^9$ ).

**Zadanie 273.** 21. Write a Python program to find the number of notes (Sample of notes: 10, 20, 50, 100, 200 and 500 ) against an given amount. Range - Number of notes( $n$ ) :  $n$  ( $1 \leq n \leq 1000000$ ).

**Zadanie 274.** 22. Write a Python program to create a sequence where the first four members of the sequence are equal to one, and each successive term of the sequence is equal to the sum of the four previous ones. Find the  $N$ th member of the sequence.

**Zadanie 275.** 23. Write a Python program that accept a positive number and subtract from this number the sum of its digits and so on. Continues this operation until the number is positive.

**Zadanie 276.** 24. Write a Python program to find the number of divisors of a given integer is even or odd.

**Zadanie 277.** 25. Write a Python program to find the digits which are absent in a given mobile number.

**Zadanie 278.** 26. Write a Python program to compute the summation of the absolute difference of all distinct pairs in an given array (non-decreasing order). Sample array: [1, 2, 3] Then all the distinct pairs will be: 1 2 1 3 2 3

**Zadanie 279.** 27. Write a Python program to find the type of the progression (arithmetic progression/geometric progression) and the next successive member of a given three successive members of a sequence. According to Wikipedia, an arithmetic progression (AP) is a sequence of numbers such that the difference of any two successive members of the sequence is a constant. For instance, the sequence 3, 5, 7, 9, 11, 13, . . . is an arithmetic progression with common difference 2. For this problem, we will limit ourselves to arithmetic progression whose common difference is a non-zero integer. On the other hand, a geometric progression (GP) is a sequence of numbers where each term after the first is found by multiplying the previous one by a fixed

non-zero number called the common ratio. For example, the sequence 2, 6, 18, 54, . . . is a geometric progression with common ratio 3. For this problem, we will limit ourselves to geometric progression whose common ratio is a non-zero integer.

**Zadanie 280.** 28. Write a Python program to print the length of the series and the series from the given 3rd term, 3rd last term and the sum of a series. Input data: 3rd term - 3 3rd last term - 118 55 Sum of the series - 91

**Zadanie 281.** 29. Write a Python program to find common divisors between two numbers in a given pair.

**Zadanie 282.** 30. Write a Python program to reverse the digits of a given number and add it to the original, If the sum is not a palindrome repeat this procedure. Note: A palindrome is a word, number, or other sequence of characters which reads the same backward as forward, such as madam or racecar.

**Zadanie 283.** 31. Write a Python program to count the number of carry operations for each of a set of addition problems. According to Wikipedia " In elementary arithmetic, a carry is a digit that is transferred from one column of digits to another column of more significant digits. It is part of the standard algorithm to add numbers together by starting with the rightmost digits and working to the left. For example, when 6 and 7 are added to make 13, the "3" is written to the same column and the "1" is carried to the left".

**Zadanie 284.** 32. Write a python program to find heights of the top three building in descending order from eight given buildings. Input: 0 = height of building (integer) = 10,000 Input the heights of eight buildings: 25 35 15 16 30 45 37 39 Heights of the top three buildings: 45 39 37

**Zadanie 285.** 33. Write a Python program to compute the digit number of sum of two given integers. Input: Each test case consists of two non-negative integers x and y which are separated by a space in a line. 0 = x, y = 1,000,000 Input two integers(a b): 5 7 Sum of two integers a and b.: 2

**Zadanie 286.** 34. Write a Python program to check whether three given lengths (integers) of three sides form a right triangle. Print "Yes" if the given sides form a right triangle otherwise print "No". Input: Integers separated by a single space. 1 = length of the side = 1,000 Input three integers(sides of a triangle) 8 6 7 No

**Zadanie 287.** 35. Write a Python program which solve the equation:  $ax+by=c$   
 $dx+ey=f$  Print the values of x, y where a, b, c, d, e and f are given. Input:  
a,b,c,d,e,f separated by a single space. (-1,000 = a,b,c,d,e,f = 1,000) Input  
the value of a, b, c, d, e, f: 5 8 6 7 9 4 Values of x and y: -2.000 2.000

**Zadanie 288.** 36. Write a Python program to compute the amount of the  
debt in n months. The borrowing amount is 100,000 and the loan adds 5% Input :  
An integern(0 = n = 100) Input number of months : 7 Amount of debt : 144000

**Zadanie 289.** 37. Write a Python program which reads an integer n and  
find the number of combinations of a,b,c and d (0 = a,b,c,d = 9) where (a  
+ b + c + d) will be equal to n. Input: n (1 = n = 50) Input the number(n):  
15 Number of combinations: 592

**Zadanie 290.** 38. Write a Python program to print the number of prime  
numbers which are less than or equal to an given integer. Input: n (1 = n =  
999,999) Input the number(n): 35 Number of prime numbers which are less  
than or equal to n.: 11

**Zadanie 291.** 39. Write a program to compute the radius and the central  
coordinate (x, y) of a circle which is constructed by three given points on  
the plane surface. Input: x1, y1, x2, y2, x3, y3 separated by a single space.  
Input three coordinate of the circle: 9 3 6 8 3 6 Radius of the said circle:  
3.358 Central coordinate (x, y) of the circle: 6.071 4.643

**Zadanie 292.** 40. Write a Python program to check if a point (x,y) is  
in a triangle or not. There is a triangle formed by three points. Input:  
x1,y1,x2,y2,x3,y3, xp,yp separated by a single space. Input three coordinate  
of the circle: 9 3 6 8 3 6 Radius of the said circle: 3.358 Central coordinate  
(x, y) of the circle: 6.071 4.643

**Zadanie 293.** 41. Write a Python program to compute and print sum of  
two given integers (more than or equal to zero). If given integers or the  
sum have more than 80 digits, print "overflow". Input first integer: 25 Input  
second integer: 22 Sum of the two integers: 47

**Zadanie 294.** 42. Write a Python program that accepts six numbers as  
input and sorts them in descending order. Input: Input consists of six num-  
bers n1, n2, n3, n4, n5, n6 (-100000 = n1, n2, n3, n4, n5, n6 = 100000). The  
six numbers are separated by a space. Input six integers: 15 30 25 14 35 40  
After sorting the said integers: 40 35 30 25 15 14

**Zadanie 295.** 43. Write a Python program to test whether two lines PQ and RS are parallel. The four points are P(x1, y1), Q(x2, y2), R(x3, y3), S(x4, y4). Input: x1,y1,x2,y2,x3,y3,xp,yp separated by a single space Input x1,y1,x2,y2,x3,y3,xp,yp: 2 5 6 4 8 3 9 7 PQ and RS are not parallel

**Zadanie 296.** 44. Write a Python program to find the maximum sum of a contiguous subsequence from a given sequence of numbers a1, a2, a3, ... an. A subsequence of one element is also a continuous subsequence. Input: You can assume that  $1 = n = 5000$  and  $-100000 = a_i = 100000$ . Input numbers are separated by a space. Input 0 to exit. Input number of sequence of numbers you want to input (0 to exit): 3 Input numbers: 2 4 6 Maximum sum of the said contiguous subsequence: 12 Input number of sequence of numbers you want to input (0 to exit): 0

**Zadanie 297.** 45. There are two circles C1 with radius r1, central coordinate (x1, y1) and C2 with radius r2 and central coordinate (x2, y2). Write a Python program to test the followings - "C2 is in C1" if C2 is in C1 "C1 is in C2" if C1 is in C2 "Circumference of C1 and C2 intersect" if circumference of C1 and C2 intersect, and "C1 and C2 do not overlap" if C1 and C2 do not overlap. Input: Input numbers (real numbers) are separated by a space. Input x1, y1, r1, x2, y2, r2: 5 6 4 8 7 9 C1 is in C2

**Zadanie 298.** 46. Write a Python program to that reads a date (from 2016/1/1 to 2016/12/31) and prints the day of the date. Jan. 1, 2016, is Friday. Note that 2016 is a leap year. Input: Two integers m and d separated by a single space in a line, m ,d represent the month and the day. Input month and date (separated by a single space): 5 15 Name of the date: Sunday

**Zadanie 299.** 47. Write a Python program which reads a text (only alphabetical characters and spaces.) and prints two words. The first one is the word which is arise most frequently in the text. The second one is the word which has the maximum number of letters. Note: A word is a sequence of letters which is separated by the spaces. Input: A text is given in a line with following condition: a. The number of letters in the text is less than or equal to 1000. b. The number of letters in a word is less than or equal to 32. c. There is only one word which is arise most frequently in given text. d. There is only one word which has the maximum number of letters in given text. Input text: Thank you for your comment and your participation. Output: your participation.

**Zadanie 300.** 48. Write a Python program that reads n digits (given) chosen from 0 to 9 and prints the number of combinations where the sum of the

digits equals to another given number (s). Do not use the same digits in a combination. Input: Two integers as number of combinations and their sum by a single space in a line. Input 0 0 to exit. Input number of combinations and sum, input 0 0 to exit: 5 6 2 4 0 0 2

**Zadanie 301.** 49. Write a Python program which reads the two adjoined sides and the diagonal of a parallelogram and check whether the parallelogram is a rectangle or a rhombus. According to Wikipedia- parallelograms: In Euclidean geometry, a parallelogram is a simple (non-self-intersecting) quadrilateral with two pairs of parallel sides. The opposite or facing sides of a parallelogram are of equal length and the opposite angles of a parallelogram are of equal measure. rectangles: In Euclidean plane geometry, a rectangle is a quadrilateral with four right angles. It can also be defined as an equiangular quadrilateral, since equiangular means that all of its angles are equal ( $360^\circ/4 = 90^\circ$ ). It can also be defined as a parallelogram containing a right angle. rhombus: In plane Euclidean geometry, a rhombus (plural rhombi or rhombuses) is a simple (non-self-intersecting) quadrilateral whose four sides all have the same length. Another name is equilateral quadrilateral, since equilateral means that all of its sides are equal in length. The rhombus is often called a diamond, after the diamonds suit in playing cards which resembles the projection of an octahedral diamond, or a lozenge, though the former sometimes refers specifically to a rhombus with a  $60^\circ$  angle, and the latter sometimes refers specifically to a rhombus with a  $45^\circ$  angle. Input: Two adjoined sides and the diagonal. 1 = ai, bi, ci = 1000, ai + bi < ci Input two adjoined sides and the diagonal of a parallelogram (comma separated): 3,4,5 This is a rectangle.

**Zadanie 302.** 50. Write a Python program to replace a string "Python" with "Java" and "Java" with "Python" in a given string. Input: English letters (including single byte alphanumeric characters, blanks, symbols) are given on one line. The length of the input character string is 1000 or less. Input a text with two words 'Python' and 'Java' Python is popular than Java Java is popular than Python

**Zadanie 303.** 51. Write a Python program to find the difference between the largest integer and the smallest integer which are created by 8 numbers from 0 to 9. The number that can be rearranged shall start with 0 as in 00135668. Input: Input an integer created by 8 numbers from 0 to 9.: 2345 Difference between the largest and the smallest integer from the given integer: 3087

**Zadanie 304.** 52. Write a Python program to compute the sum of first  $n$  given prime numbers. Input:  $n$  ( $n = 10000$ ). Input 0 to exit the program. Input a number ( $n=10000$ ) to compute the sum:(0 to exit) 25 Sum of first 25 prime numbers: 1060

**Zadanie 305.** 53. Write a Python program that accept a even number ( $i=4$ , Goldbach number) from the user and create a combinations that express the given number as a sum of two prime numbers. Print the number of combinations. Goldbach number: A Goldbach number is a positive even integer that can be expressed as the sum of two odd primes.[4] Since four is the only even number greater than two that requires the even prime 2 in order to be written as the sum of two primes, another form of the statement of Goldbach's conjecture is that all even integers greater than 4 are Goldbach numbers. The expression of a given even number as a sum of two primes is called a Goldbach partition of that number. The following are examples of Goldbach partitions for some even numbers:  $6 = 3 + 3$   $8 = 3 + 5$   $10 = 3 + 7 = 5 + 5$   $12 = 7 + 5$  ...  $100 = 3 + 97 = 11 + 89 = 17 + 83 = 29 + 71 = 41 + 59 = 47 + 53$  Input an even number (0 to exit): 100 Number of combinations: 6

**Zadanie 306.** 54. if you draw a straight line on a plane, the plane is divided into two regions. For example, if you pull two straight lines in parallel, you get three areas, and if you draw vertically one to the other you get 4 areas. Write a Python program to create maximum number of regions obtained by drawing  $n$  given straight lines. Input: ( $1 = n = 10,000$ ) Input number of straight lines (o to exit): 5 Number of regions: 16

**Zadanie 307.** 55. There are four different points on a plane,  $P(x_p, y_p)$ ,  $Q(x_q, y_q)$ ,  $R(x_r, y_r)$  and  $S(x_s, y_s)$ . Write a Python program to test AB and CD are orthogonal or not. Input:  $x_p, y_p, x_q, y_q, x_r, y_r, x_s$  and  $y_s$  are -100 to 100 respectively and each value can be up to 5 digits after the decimal point It is given as a real number including the number of. Output: Output AB and CD are not orthogonal! or AB and CD are orthogonal!.

**Zadanie 308.** 56. Write a Python program to sum of all numerical values (positive integers) embedded in a sentence. Write a Python program to create maximum number of regions obtained by drawing  $n$  given straight lines. Input: Sentences with positive integers are given over multiple lines. Each line is a character string containing one-byte alphanumeric characters, symbols, spaces, or an empty line. However the input is 80 characters or less per line and the sum is 10,000 or less. Input some text and numeric values (

to exit): Sum of the numeric values: 80 None Input some text and numeric values ( to exit): Sum of the numeric values: 17 None Input some text and numeric values ( to exit): Sum of the numeric values: 10 None

**Zadanie 309.** 57. There are 10 vertical and horizontal squares on a plane. Each square is painted blue and green. Blue represents the sea, and green represents the land. When two green squares are in contact with the top and bottom, or right and left, they are said to be ground. The area created by only one green square is called "island". For example, there are five islands in the figure below. Write a Python program to read the mass data and find the number of islands. Input: Input 10 rows of 10 numbers representing green squares (island) as 1 and blue squares (sea) as zeros 1100000111 1000000111 0000000111 0010001000 0000011100 0000111110 0001111111 1000111110 1100011100 1110001000 Number of islands: 5

**Zadanie 310.** 58. When character are consecutive in a string , it is possible to shorten the character string by replacing the character with a certain rule. For example, in the case of the character string YYYYYY, if it is expressed as # 5 Y, it is compressed by one character. Write a Python program to restore the original string by entering the compressed string with this rule. However, the # character does not appear in the restored character string. Note: The original sentences are uppercase letters, lowercase letters, numbers, symbols, less than 100 letters, and consecutive letters are not more than 9 letters. Input: The restored character string for each character on one line.

Original text: XY#6Z1#4023  
 XYZZZZZZ1000023  
 Original text: #39+1=1#30  
 999+1=1000

**Zadanie 311.** 59. A convex polygon is a simple polygon in which no line segment between two points on the boundary ever goes outside the polygon. Equivalently, it is a simple polygon whose interior is a convex set. In a convex polygon, all interior angles are less than or equal to 180 degrees, while in a strictly convex polygon all interior angles are strictly less than 180 degrees. Write a Python program that compute the area of the polygon . The vertices have the names vertex 1, vertex 2, vertex 3, ... vertex n according to the order of edge connections Note: The original sentences are uppercase letters, lowercase letters, numbers, symbols, less than 100 letters, and consecutive letters are not more than 9 letters. Input: Input is given in the following format. x1 , y1 x2 , y2 : xn , yn xi , yi are real numbers representing the



x and y coordinates of vertex i , respectively. Input the coordinates (ctrl+d to exit): 1.0, 0.0 0.0, 0.0 1.0, 1.0 2.0, 0.0 -1.0, 1.0 Area of the polygon; 1.50000000.

**Zadanie 312.** 60. Internet search engine giant, such as Google accepts web pages around the world and classify them, creating a huge database. The search engines also analyze the search keywords entered by the user and create inquiries for database search. In both cases, complicated processing is carried out in order to realize efficient retrieval, but basics are all cutting out words from sentences. Write a Python program to cut out words of 3 to 6 characters length from a given sentence not more than 1024 characters. Input: English sentences consisting of delimiters and alphanumeric characters are given on one line. Input a sentence (1024 characters. max.) The quick brown fox 3 to 6 characters length of words: The quick brown fox

**Zadanie 313.** 61. Arrange integers (0 to 99) as narrow hilltop, as illustrated in Figure 1. Reading such data representing huge, when starting from the top and proceeding according to the next rule to the bottom. Write a Python program that compute the maximum value of the sum of the passing integers. Input: A series of integers separated by commas are given in diamonds. No spaces are included in each line. The input example corresponds to Figure 1. The number of lines of data is less than 100 lines. Output: The maximum value of the sum of integers passing according to the rule on one line. Input the numbers (ctrl+d to exit): 8 4, 9 9, 2, 1 3, 8, 5, 5 5, 6, 3, 7, 6 3, 8, 5, 5 9, 2, 1 4, 9 8 Maximum value of the sum of integers passing according to the rule on one line. 64

**Zadanie 314.** 62. Write a Python program to find the number of combinations that satisfy  $p + q + r + s = n$  where n is a given number  $n \leq 4000$  and p, q, r, s in the range of 0 to 1000. Input a positive integer: (ctrl+d to exit) 252 Number of combinations of a,b,c,d: 2731135

**Zadanie 315.** 63. Write a Python program which adds up columns and rows of given table as shown in the specified figure. Input number of rows/columns (0 to exit) 4 Input cell value: 25 69 51 26 68 35 29 54 54 57 45 63 61 68 47 59 Result: 25 69 51 26 171 68 35 29 54 186 54 57 45 63 219 61 68 47 59 235 208 229 172 202 811 Input number of rows/columns (0 to exit)

**Zadanie 316.** 1. Write a Python program to calculate the length of a string.

**Zadanie 317.** 2. Write a Python program to count the number of characters (character frequency) in a string. Sample String : google.com' Expected Result :

{'o': 3, 'g': 2, '.': 1, 'e': 1, 'l': 1, 'm': 1, 'c': 1}

**Zadanie 318.** 3. Write a Python program to get a string made of the first 2 and the last 2 chars from a given a string. If the string length is less than 2, return instead of the empty string. Sample String : 'w3resource' Expected Result : 'w3ce' Sample String : 'w3' Expected Result : 'w3w3' Sample String : ' w' Expected Result : Empty String

**Zadanie 319.** 4. Write a Python program to get a string from a given string where all occurrences of its first char have been changed to '*'*, *except the first char itself*. Sample String : '*restart*' Expected Result : '*' restat*'

**Zadanie 320.** 5. Write a Python program to get a single string from two given strings, separated by a space and swap the first two characters of each string. Sample String : 'abc', 'xyz' Expected Result : 'xyc abz'

**Zadanie 321.** 6. Write a Python program to add 'ing' at the end of a given string (length should be at least 3). If the given string already ends with 'ing' then add 'ly' instead. If the string length of the given string is less than 3, leave it unchanged. Sample String : 'abc' Expected Result : 'abcing' Sample String : 'string' Expected Result : 'stringly'

**Zadanie 322.** 7. Write a Python program to find the first appearance of the substring 'not' and 'poor' from a given string, if 'not' follows the 'poor', replace the whole 'not...'poor' substring with 'good'. Return the resulting string. Sample String : 'The lyrics is not that poor!' 'The lyrics is poor!' Expected Result : 'The lyrics is good!' 'The lyrics is poor!'

**Zadanie 323.** 8. Write a Python function that takes a list of words and returns the length of the longest one.

**Zadanie 324.** 9. Write a Python program to remove the nth index character from a nonempty string.

**Zadanie 325.** 10. Write a Python program to change a given string to a new string where the first and last chars have been exchanged.

**Zadanie 326.** 11. Write a Python program to remove the characters which have odd index values of a given string.

**Zadanie 327.** 12. Write a Python program to count the occurrences of each word in a given sentence.

**Zadanie 328.** 13. Write a Python script that takes input from the user and displays that input back in upper and lower cases.

**Zadanie 329.** 14. Write a Python program that accepts a comma separated sequence of words as input and prints the unique words in sorted form (alphanumerically). Sample Words : red, white, black, red, green, black  
Expected Result : black, green, red, white, red

**Zadanie 330.** 15. Write a Python function to create the HTML string with tags around the word(s). Sample function and result :

```
add_tags('i', 'Python') -> '<i>Python</i>'
add_tags('b', 'Python Tutorial') -> '<b>Python Tutorial </b>'
```

**Zadanie 331.** 16. Write a Python function to insert a string in the middle of a string. Sample function and result :

```
insert_sting_middle('[]<>>', 'Python') -> '[]Python[]'
insert_sting_middle('{{}}', 'PHP') -> '{{PHP}}'
```

**Zadanie 332.** 17. Write a Python function to get a string made of 4 copies of the last two characters of a specified string (length must be at least 2). Sample function and result :

```
insert_end('Python') -> 'onononon'
insert_end('Exercises') -> 'eseseses'
```

**Zadanie 333.** 18. Write a Python function to get a string made of its first three characters of a specified string. If the length of the string is less than 3 then return the original string. Sample function and result :

```
first_three('ipy') -> 'ipy'
first_three('python') -> 'pyt'
```

**Zadanie 334.** 19. Write a Python program to get the last part of a string before a specified character.

**Zadanie 335.** 20. Write a Python function to reverse a string if its length is a multiple of 4.

**Zadanie 336.** 21. Write a Python function to convert a given string to all uppercase if it contains at least 2 uppercase characters in the first 4 characters.

**Zadanie 337.** 22. Write a Python program to sort a string lexicographically.

**Zadanie 338.** 23. Write a Python program to remove a newline in Python.

**Zadanie 339.** 24. Write a Python program to check whether a string starts with specified characters.

**Zadanie 340.** 25. Write a Python program to create a Caesar encryption. Note : In cryptography, a Caesar cipher, also known as Caesar's cipher, the shift cipher, Caesar's code or Caesar shift, is one of the simplest and most widely known encryption techniques. It is a type of substitution cipher in which each letter in the plaintext is replaced by a letter some fixed number of positions down the alphabet. For example, with a left shift of 3, D would be replaced by A, E would become B, and so on. The method is named after Julius Caesar, who used it in his private correspondence.

**Zadanie 341.** 26. Write a Python program to display formatted text (width=50) as output.

**Zadanie 342.** 27. Write a Python program to remove existing indentation from all of the lines in a given text.

**Zadanie 343.** 28. Write a Python program to add a prefix text to all of the lines in a string.

**Zadanie 344.** 29. Write a Python program to set the indentation of the first line.

**Zadanie 345.** 30. Write a Python program to print the following floating numbers upto 2 decimal places.

**Zadanie 346.** 31. Write a Python program to print the following floating numbers upto 2 decimal places with a sign.

**Zadanie 347.** 32. Write a Python program to print the following floating numbers with no decimal places.

**Zadanie 348.** 33. Write a Python program to print the following integers with zeros on the left of specified width.

**Zadanie 349.** 34. Write a Python program to print the following integers with '\*' on the right of specified width.

**Zadanie 350.** 35. Write a Python program to display a number with a comma separator.

**Zadanie 351.** 36. Write a Python program to format a number with a percentage.

**Zadanie 352.** 37. Write a Python program to display a number in left, right and center aligned of width 10.

**Zadanie 353.** 38. Write a Python program to count occurrences of a substring in a string.

**Zadanie 354.** 39. Write a Python program to reverse a string.

**Zadanie 355.** 40. Write a Python program to reverse words in a string.

**Zadanie 356.** 41. Write a Python program to strip a set of characters from a string.

**Zadanie 357.** 42. Write a Python program to count repeated characters in a string. Sample string: 'thequickbrownfoxjumpsoverthelazydog' Expected output : o 4 e 3 u 2 h 2 r 2 t 2

**Zadanie 358.** 43. Write a Python program to print the square and cube symbol in the area of a rectangle and volume of a cylinder. Sample output: The area of the rectangle is 1256.66cm<sup>2</sup> The volume of the cylinder is 1254.725cm<sup>3</sup>

**Zadanie 359.** 44. Write a Python program to print the index of the character in a string. Sample string: w3resource Expected output: Current character w position at 0 Current character 3 position at 1 Current character r position at 2 - - - - - Current character e position at 8 Current character s position at 9

**Zadanie 360.** 45. Write a Python program to check if a string contains all letters of the alphabet.

**Zadanie 361.** 46. Write a Python program to convert a string in a list.

**Zadanie 362.** 47. Write a Python program to lowercase first n characters in a string.

**Zadanie 363.** 48. Write a Python program to swap comma and dot in a string. Sample string: "32.054,23" Expected Output: "32,054.23"

**Zadanie 364.** 49. Write a Python program to count and display the vowels of a given text.

**Zadanie 365.** 50. Write a Python program to split a string on the last occurrence of the delimiter.

**Zadanie 366.** 51. Write a Python program to find the first non-repeating character in given string.

**Zadanie 367.** 52. Write a Python program to print all permutations with given repetition number of characters of a given string.

**Zadanie 368.** 53. Write a Python program to find the first repeated character in a given string.

**Zadanie 369.** 54. Write a Python program to find the first repeated character of a given string where the index of first occurrence is smallest.

**Zadanie 370.** 55. Write a Python program to find the first repeated word in a given string.

**Zadanie 371.** 56. Write a Python program to find the second most repeated word in a given string.

**Zadanie 372.** 57. Write a Python program to remove spaces from a given string.

**Zadanie 373.** 58. Write a Python program to move spaces to the front of a given string.

**Zadanie 374.** 59. Write a Python program to find the maximum occurring character in a given string.

**Zadanie 375.** 60. Write a Python program to capitalize first and last letters of each word of a given string.

**Zadanie 376.** 61. Write a Python program to remove duplicate characters of a given string.

**Zadanie 377.** 62. Write a Python program to compute sum of digits of a given string.

**Zadanie 378.** 63. Write a Python program to remove leading zeros from an IP address.

**Zadanie 379.** 64. Write a Python program to find maximum length of consecutive 0's in a given binary string.

**Zadanie 380.** 65. Write a Python program to find all the common characters in lexicographical order from two given lower case strings. If there are no common letters print "No common characters".

**Zadanie 381.** 66. Write a Python program to make two given strings (lower case, may or may not be of the same length) anagrams removing any characters from any of the strings.

**Zadanie 382.** 67. Write a Python program to remove all consecutive duplicates of a given string.

**Zadanie 383.** 68. Write a Python program to create two strings from a given string. Create the first string using those character which occurs only once and create the second string which consists of multi-time occurring characters in the said string.

**Zadanie 384.** 69. Write a Python program to find the longest common sub-string from two given strings.

**Zadanie 385.** 70. Write a Python program to create a string from two given strings concatenating uncommon characters of the said strings.

**Zadanie 386.** 71. Write a Python program to move all spaces to the front of a given string in single traversal.

**Zadanie 387.** 72. Write a Python program to remove all consecutive duplicates from a given string.

**Zadanie 388.** 73. Write a Python program to count Uppercase, Lowercase, special character and numeric values in a given string.

**Zadanie 389.** 74. Write a Python program to find the minimum window in a given string which will contain all the characters of another given string. Example 1 Input : str1 = " PRWSOERIUSFK " str2 = " OSU " Output: Minimum window is "OERIUS"

**Zadanie 390.** 75. Write a Python program to find smallest window that contains all characters of a given string.

**Zadanie 391.** 76. Write a Python program to count number of substrings from a given string of lowercase alphabets with exactly k distinct (given) characters.

**Zadanie 392.** 77. Write a Python program to count number of non-empty substrings of a given string.

**Zadanie 393.** 78. Write a Python program to count characters at same position in a given string (lower and uppercase characters) as in English alphabet.

**Zadanie 394.** 79. Write a Python program to find smallest and largest word in a given string.

**Zadanie 395.** 80. Write a Python program to count number of substrings with same first and last characters of a given string.

**Zadanie 396.** 1. Write a Python program to sum all the items in a list. Go to the editor

**Zadanie 397.** 2. Write a Python program to multiplies all the items in a list. Go to the editor

**Zadanie 398.** 3. Write a Python program to get the largest number from a list. Go to the editor

**Zadanie 399.** 4. Write a Python program to get the smallest number from a list. Go to the editor

**Zadanie 400.** 5. Write a Python program to count the number of strings where the string length is 2 or more and the first and last character are same from a given list of strings. Go to the editor Sample List : ['abc', 'xyz', 'aba', '1221'] Expected Result : 2

**Zadanie 401.** 6. Write a Python program to get a list, sorted in increasing order by the last element in each tuple from a given list of non-empty tuples. Go to the editor Sample List : [(2, 5), (1, 2), (4, 4), (2, 3), (2, 1)] Expected Result : [(2, 1), (1, 2), (2, 3), (4, 4), (2, 5)]

**Zadanie 402.** 7. Write a Python program to remove duplicates from a list. Go to the editor

**Zadanie 403.** 8. Write a Python program to check a list is empty or not. Go to the editor

**Zadanie 404.** 9. Write a Python program to clone or copy a list. Go to the editor

**Zadanie 405.** 10. Write a Python program to find the list of words that are longer than n from a given list of words. Go to the editor

**Zadanie 406.** 11. Write a Python function that takes two lists and returns True if they have at least one common member. Go to the editor

**Zadanie 407.** 12. Write a Python program to print a specified list after removing the 0th, 4th and 5th elements. Go to the editor Sample List : ['Red', 'Green', 'White', 'Black', 'Pink', 'Yellow'] Expected Output : ['Green', 'White', 'Black']



**Zadanie 408.** 13. Write a Python program to generate a 3\*4\*6 3D array whose each element is \*. Go to the editor

**Zadanie 409.** 14. Write a Python program to print the numbers of a specified list after removing even numbers from it. Go to the editor

**Zadanie 410.** 15. Write a Python program to shuffle and print a specified list. Go to the editor

**Zadanie 411.** 16. Write a Python program to generate and print a list of first and last 5 elements where the values are square of numbers between 1 and 30 (both included). Go to the editor

**Zadanie 412.** 17. Write a Python program to generate and print a list except for the first 5 elements, where the values are square of numbers between 1 and 30 (both included). Go to the editor

**Zadanie 413.** 18. Write a Python program to generate all permutations of a list in Python. Go to the editor

**Zadanie 414.** 19. Write a Python program to get the difference between the two lists. Go to the editor

**Zadanie 415.** 20. Write a Python program access the index of a list. Go to the editor

**Zadanie 416.** 21. Write a Python program to convert a list of characters into a string. Go to the editor

**Zadanie 417.** 22. Write a Python program to find the index of an item in a specified list. Go to the editor

**Zadanie 418.** 23. Write a Python program to flatten a shallow list. Go to the editor

**Zadanie 419.** 24. Write a Python program to append a list to the second list. Go to the editor

**Zadanie 420.** 25. Write a Python program to select an item randomly from a list. Go to the editor

**Zadanie 421.** 26. Write a python program to check whether two lists are circularly identical. Go to the editor

**Zadanie 422.** 27. Write a Python program to find the second smallest number in a list. Go to the editor

**Zadanie 423.** 28. Write a Python program to find the second largest number in a list. Go to the editor

**Zadanie 424.** 29. Write a Python program to get unique values from a list. Go to the editor

**Zadanie 425.** 30. Write a Python program to get the frequency of the elements in a list. Go to the editor

**Zadanie 426.** 31. Write a Python program to count the number of elements in a list within a specified range. Go to the editor

**Zadanie 427.** 32. Write a Python program to check whether a list contains a sublist. Go to the editor

**Zadanie 428.** 33. Write a Python program to generate all sublists of a list. Go to the editor

**Zadanie 429.** 34. Write a Python program using Sieve of Eratosthenes method for computing primes upto a specified number. Go to the editor  
Note: In mathematics, the sieve of Eratosthenes, one of a number of prime number sieves, is a simple, ancient algorithm for finding all prime numbers up to any given limit.

**Zadanie 430.** 35. Write a Python program to create a list by concatenating a given list which range goes from 1 to n. Go to the editor Sample list : ['p', 'q'] n =5 Sample Output : ['p1', 'q1', 'p2', 'q2', 'p3', 'q3', 'p4', 'q4', 'p5', 'q5']

**Zadanie 431.** 36. Write a Python program to get variable unique identification number or string. Go to the editor

**Zadanie 432.** 37. Write a Python program to find common items from two lists. Go to the editor

**Zadanie 433.** 38. Write a Python program to change the position of every n-th value with the (n+1)th in a list. Go to the editor Sample list: [0,1,2,3,4,5] Expected Output: [1, 0, 3, 2, 5, 4]

**Zadanie 434.** 39. Write a Python program to convert a list of multiple integers into a single integer. Go to the editor Sample list: [11, 33, 50] Expected Output: 113350

**Zadanie 435.** 40. Write a Python program to split a list based on first character of word. Go to the editor

**Zadanie 436.** 41. Write a Python program to create multiple lists. Go to the editor

**Zadanie 437.** 42. Write a Python program to find missing and additional values in two lists. Go to the editor Sample data : Missing values in second list: b,a,c Additional values in second list: g,h

**Zadanie 438.** 43. Write a Python program to split a list into different variables. Go to the editor

**Zadanie 439.** 44. Write a Python program to generate groups of five consecutive numbers in a list. Go to the editor

**Zadanie 440.** 45. Write a Python program to convert a pair of values into a sorted unique array. Go to the editor

**Zadanie 441.** 46. Write a Python program to select the odd items of a list. Go to the editor

**Zadanie 442.** 47. Write a Python program to insert an element before each element of a list. Go to the editor

**Zadanie 443.** 48. Write a Python program to print a nested lists (each list on a new line) using the print() function. Go to the editor

**Zadanie 444.** 49. Write a Python program to convert list to list of dictionaries. Go to the editor

Sample lists: ["Black", "Red", "Maroon", "Yellow"], ["#000000", "#FF0000", "#800000"],  
Expected Output: [{'color\_name': 'Black', 'color\_code': '#000000'}, {'color\_name': 'Red', 'color\_code': '#FF0000'}, {'color\_name': 'Maroon', 'color\_code': '#800000'}, {'color\_name': 'Yellow', 'color\_code': '#FFFF00'}]

**Zadanie 445.** 50. Write a Python program to sort a list of nested dictionaries. Go to the editor

**Zadanie 446.** 51. Write a Python program to split a list every Nth element. Go to the editor Sample list: ['a', 'b', 'c', 'd', 'e', 'f', 'g', 'h', 'i', 'j', 'k', 'l', 'm', 'n'] Expected Output: [['a', 'd', 'g', 'j', 'm'], ['b', 'e', 'h', 'k', 'n'], ['c', 'f', 'i', 'l']]

**Zadanie 447.** 52. Write a Python program to compute the similarity between two lists. Go to the editor Sample data: ["red", "orange", "green", "blue", "white"], ["black", "yellow", "green", "blue"] Expected Output: Color1-Color2: ['white', 'orange', 'red'] Color2-Color1: ['black', 'yellow']

**Zadanie 448.** 53. Write a Python program to create a list with infinite elements. Go to the editor

**Zadanie 449.** 54. Write a Python program to concatenate elements of a list. Go to the editor

**Zadanie 450.** 55. Write a Python program to remove key values pairs from a list of dictionaries. Go to the editor

**Zadanie 451.** 56. Write a Python program to convert a string to a list. Go to the editor

**Zadanie 452.** 57. Write a Python program to check if all items of a list is equal to a given string. Go to the editor

**Zadanie 453.** 58. Write a Python program to replace the last element in a list with another list. Go to the editor Sample data : [1, 3, 5, 7, 9, 10], [2, 4, 6, 8] Expected Output: [1, 3, 5, 7, 9, 2, 4, 6, 8]

**Zadanie 454.** 59. Write a Python program to check if the n-th element exists in a given list. Go to the editor

**Zadanie 455.** 60. Write a Python program to find a tuple, the smallest second index value from a list of tuples. Go to the editor

**Zadanie 456.** 61. Write a Python program to create a list of empty dictionaries. Go to the editor

**Zadanie 457.** 62. Write a Python program to print a list of space-separated elements. Go to the editor

**Zadanie 458.** 63. Write a Python program to insert a given string at the beginning of all items in a list. Go to the editor Sample list : [1,2,3,4], string : emp Expected output : ['emp1', 'emp2', 'emp3', 'emp4']

**Zadanie 459.** 64. Write a Python program to iterate over two lists simultaneously. Go to the editor

**Zadanie 460.** 65. Write a Python program to access dictionary keys element by index. Go to the editor

**Zadanie 461.** 66. Write a Python program to find the list in a list of lists whose sum of elements is the highest. Go to the editor Sample lists: [1,2,3], [4,5,6], [10,11,12], [7,8,9] Expected Output: [10, 11, 12]

**Zadanie 462.** 67. Write a Python program to find all the values in a list are greater than a specified number. Go to the editor

**Zadanie 463.** 68. Write a Python program to extend a list without append. Go to the editor Sample data: [10, 20, 30] [40, 50, 60] Expected output : [40, 50, 60, 10, 20, 30]

**Zadanie 464.** 69. Write a Python program to remove duplicates from a list of lists. Go to the editor Sample list : [[10, 20], [40], [30, 56, 25], [10, 20], [33], [40]] New List : [[10, 20], [30, 56, 25], [33], [40]]

**Zadanie 465.** 70. Write a Python program to get the depth of a dictionary. Go to the editor

**Zadanie 466.** 71. Write a Python program to check if all dictionaries in a list are empty or not. Go to the editor Sample list : [,,] Return value : True Sample list : [1,2,,] Return value : False

**Zadanie 467.** 1. Write a Python program to find those numbers which are divisible by 7 and multiple of 5, between 1500 and 2700 (both included). Go to the editor

**Zadanie 468.** 2. Write a Python program to convert temperatures to and from celsius, fahrenheit. Go to the editor [ Formula :  $c/5 = f-32/9$  [ where  $c$  = temperature in celsius and  $f$  = temperature in fahrenheit ] Expected Output :  $60^{\circ}C$  is 140 in Fahrenheit  $45^{\circ}F$  is 7 in Celsius

**Zadanie 469.** 3. Write a Python program to guess a number between 1 to 9. Go to the editor Note : User is prompted to enter a guess. If the user guesses wrong then the prompt appears again until the guess is correct, on successful guess, user will get a "Well guessed!" message, and the program will exit.

**Zadanie 470.** 4. Write a Python program to construct the following pattern, using a nested for loop. \* \* \* \* \*

**Zadanie 471.** 5. Write a Python program that accepts a word from the user and reverse it. Go to the editor

**Zadanie 472.** 6. Write a Python program to count the number of even and odd numbers from a series of numbers. Go to the editor Sample numbers : numbers = (1, 2, 3, 4, 5, 6, 7, 8, 9) Expected Output : Number of even numbers : 5 Number of odd numbers : 4

**Zadanie 473.** 7. Write a Python program that prints each item and its corresponding type from the following list. Sample List : `datalist = [1452, 11.23, 1+2j, True, 'w3resource', (0, -1), [5, 12], "class":'V', "section":'A']`

**Zadanie 474.** 8. Write a Python program that prints all the numbers from 0 to 6 except 3 and 6. Note : Use 'continue' statement. Expected Output :  
0 1 2 4 5

**Zadanie 475.** 9. Write a Python program to get the Fibonacci series between 0 to 50. Go to the editor Note : The Fibonacci Sequence is the series of numbers : 0, 1, 1, 2, 3, 5, 8, 13, 21, .... Every next number is found by adding up the two numbers before it. Expected Output : 1 1 2 3 5 8 13 21 34

**Zadanie 476.** 10. Write a Python program which iterates the integers from 1 to 50. For multiples of three print "Fizz" instead of the number and for the multiples of five print "Buzz". For numbers which are multiples of both three and five print "FizzBuzz". Sample Output : fizzbuzz 1 2 fizz 4 buzz

**Zadanie 477.** 11. Write a Python program which takes two digits m (row) and n (column) as input and generates a two-dimensional array. The element value in the i-th row and j-th column of the array should be  $i*j$ . Go to the editor Note :  $i = 0,1.., m-1$   $j = 0,1, n-1$ . Test Data : Rows = 3, Columns = 4 Expected Result : `[[0, 0, 0, 0], [0, 1, 2, 3], [0, 2, 4, 6]]`

**Zadanie 478.** 12. Write a Python program that accepts a sequence of lines (blank line to terminate) as input and prints the lines as output (all characters in lower case). Go to the editor

**Zadanie 479.** 13. Write a Python program which accepts a sequence of comma separated 4 digit binary numbers as its input and print the numbers that are divisible by 5 in a comma separated sequence. Go to the editor Sample Data : 0100,0011,1010,1001,1100,1001 Expected Output : 1010

**Zadanie 480.** 14. Write a Python program that accepts a string and calculate the number of digits and letters. Go to the editor Sample Data : Python 3.2 Expected Output : Letters 6 Digits 2

**Zadanie 481.** 15. Write a Python program to check the validity of password input by users. Go to the editor Validation : At least 1 letter between [a-z] and 1 letter between [A-Z]. At least 1 number between [0-9]. At least 1 character from [\$#@]. Minimum length 6 characters. Maximum length 16 characters.

**Zadanie 482.** 16. Write a Python program to find numbers between 100 and 400 (both included) where each digit of a number is an even number. The numbers obtained should be printed in a comma-separated sequence. Go to the editor

**Zadanie 483.** 17. Write a Python program to print alphabet pattern 'A'. Go to the editor Expected Output: \*\*\* \* \* \* \* \*\*\*\*\* \* \* \* \* \*

**Zadanie 484.** 18. Write a Python program to print alphabet pattern 'D'. Go to the editor Expected Output: \*\*\*\*\* \* \* \* \* \* \* \* \* \* \*\*\*\*\*

**Zadanie 485.** 19. Write a Python program to print alphabet pattern 'E'. Go to the editor Expected Output: \*\*\*\*\* \* \* \*\*\*\*\* \* \* \*\*\*\*\*

**Zadanie 486.** 20. Write a Python program to print alphabet pattern 'G'. Go to the editor Expected Output: \*\*\* \* \* \* \* \*\*\* \* \* \* \* \*\*\*

**Zadanie 487.** 21. Write a Python program to print alphabet pattern 'L'. Go to the editor Expected Output: \* \* \* \* \* \* \* \*\*\*\*\*

**Zadanie 488.** 22. Write a Python program to print alphabet pattern 'M'. Go to the editor Expected Output: \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \*

**Zadanie 489.** 23. Write a Python program to print alphabet pattern 'O'. Go to the editor Expected Output: \*\*\* \* \* \* \* \* \* \* \* \* \* \* \* \* \*

**Zadanie 490.** 24. Write a Python program to print alphabet pattern 'P'. Go to the editor Expected Output: \*\*\*\*\* \* \* \* \* \*\*\*\*\* \* \* \*

**Zadanie 491.** 25. Write a Python program to print alphabet pattern 'R'. Go to the editor Expected Output: \*\*\*\*\* \* \* \* \* \*\*\*\*\* \* \* \* \* \*

**Zadanie 492.** 26. Write a Python program to print the following patterns. Go to the editor Expected Output: \*\*\*\*\* oooooooooooooooooo  
ooooooooooooooooooooo oooooooooooooooooooooo oooo oooo oooo oooooooooooooooooooooo  
ooooooooooooooooooooo oooooooooooooooooooooo oooo oooo oooo oooooooooooooooooooooo  
ooooooooooooooooooooo oooooooooooooooooooooo

**Zadanie 493.** 27. Write a Python program to print alphabet pattern 'T'. Go to the editor Expected Output: \*\*\*\*\* \* \* \* \* \*

**Zadanie 494.** 28. Write a Python program to print alphabet pattern 'U'. Go to the editor Expected Output: \* \* \* \* \* \* \* \* \* \* \* \* \* \* \*

**Zadanie 495.** 29. Write a Python program to print alphabet pattern 'X'.  
Go to the editor Expected Output: \* \* \* \* \*

**Zadanie 496.** 30. Write a Python program to print alphabet pattern 'Z'.  
Go to the editor Expected Output: \*\*\*\*\*

**Zadanie 497.** 31. Write a Python program to calculate a dog's age in dog's years. Go to the editor Note: For the first two years, a dog year is equal to 10.5 human years. After that, each dog year equals 4 human years. Expected Output: Input a dog's age in human years: 15 The dog's age in dog's years is 73

**Zadanie 498.** 32. Write a Python program to check whether an alphabet is a vowel or consonant. Go to the editor Expected Output: Input a letter of the alphabet: k k is a consonant.

**Zadanie 499.** 33. Write a Python program to convert month name to a number of days. Go to the editor Expected Output: List of months: January, February, March, April, May, June, July, August , September, October, November, December Input the name of Month: February No. of days: 28/29 days

**Zadanie 500.** 34. Write a Python program to sum of two given integers. However, if the sum is between 15 to 20 it will return 20. Go to the editor

**Zadanie 501.** 35. Write a Python program to check a string represent an integer or not. Go to the editor Expected Output: Input a string: Python The string is not an integer.

**Zadanie 502.** 36. Write a Python program to check a triangle is equilateral, isosceles or scalene. Go to the editor Note : An equilateral triangle is a triangle in which all three sides are equal. A scalene triangle is a triangle that has three unequal sides. An isosceles triangle is a triangle with (at least) two equal sides. Expected Output: Input lengths of the triangle sides: x: 6 y: 8 z: 12 Scalene triangle

**Zadanie 503.** 37. Write a Python program that reads two integers representing a month and day and prints the season for that month and day. Go to the editor Expected Output: Input the month (e.g. January, February etc.): july Input the day: 31 Season is autumn

**Zadanie 504.** 38. Write a Python program to display astrological sign for given date of birth. Go to the editor Expected Output: Input birthday: 15 Input month of birth (e.g. march, july etc): may Your Astrological sign is : Taurus



**Zadanie 505.** 39. Write a Python program to display the sign of the Chinese Zodiac for given year in which you were born. Go to the editor Expected Output: Input your birth year: 1973 Your Zodiac sign : Ox

**Zadanie 506.** 40. Write a Python program to find the median of three values. Go to the editor Expected Output: Input first number: 15 Input second number: 26 Input third number: 29 The median is 26.0

**Zadanie 507.** 41. Write a Python program to get next day of a given date. Go to the editor Expected Output: Input a year: 2016 Input a month [1-12]: 08 Input a day [1-31]: 23 The next date is [yyyy-mm-dd] 2016-8-24

**Zadanie 508.** 42. Write a Python program to calculate the sum and average of n integer numbers (input from the user). Input 0 to finish. Go to the editor

**Zadanie 509.** 43. Write a Python program to create the multiplication table (from 1 to 10) of a number. Go to the editor Expected Output: Input a number: 6 6 x 1 = 6 6 x 2 = 12 6 x 3 = 18 6 x 4 = 24 6 x 5 = 30 6 x 6 = 36 6 x 7 = 42 6 x 8 = 48 6 x 9 = 54 6 x 10 = 60

**Zadanie 510.** 44. Write a Python program to construct the following pattern, using a nested loop number. Go to the editor Expected Output: 1 22 333 4444 55555 666666 7777777 88888888 999999999

**Zadanie 511.** 1. Write a Python function to find the Max of three numbers. Go to the editor

**Zadanie 512.** 2. Write a Python function to sum all the numbers in a list. Go to the editor Sample List : (8, 2, 3, 0, 7) Expected Output : 20

**Zadanie 513.** 3. Write a Python function to multiply all the numbers in a list. Go to the editor Sample List : (8, 2, 3, -1, 7) Expected Output : -336

**Zadanie 514.** 4. Write a Python program to reverse a string. Go to the editor Sample String : "1234abcd" Expected Output : "dcba4321"

**Zadanie 515.** 5. Write a Python function to calculate the factorial of a number (a non-negative integer). The function accepts the number as an argument. Go to the editor

**Zadanie 516.** 6. Write a Python function to check whether a number is in a given range. Go to the editor

**Zadanie 517.** 7. Write a Python function that accepts a string and calculate the number of upper case letters and lower case letters. Go to the editor Sample String : 'The quick Brow Fox' Expected Output : No. of Upper case characters : 3 No. of Lower case Characters : 12

**Zadanie 518.** 8. Write a Python function that takes a list and returns a new list with unique elements of the first list. Go to the editor Sample List : [1,2,3,3,3,3,4,5] Unique List : [1, 2, 3, 4, 5]

**Zadanie 519.** 9. Write a Python function that takes a number as a parameter and check the number is prime or not. Go to the editor Note : A prime number (or a prime) is a natural number greater than 1 and that has no positive divisors other than 1 and itself.

**Zadanie 520.** 10. Write a Python program to print the even numbers from a given list. Go to the editor Sample List : [1, 2, 3, 4, 5, 6, 7, 8, 9] Expected Result : [2, 4, 6, 8]

**Zadanie 521.** 11. Write a Python function to check whether a number is perfect or not. Go to the editor According to Wikipedia : In number theory, a perfect number is a positive integer that is equal to the sum of its proper positive divisors, that is, the sum of its positive divisors excluding the number itself (also known as its aliquot sum). Equivalently, a perfect number is a number that is half the sum of all of its positive divisors (including itself). Example : The first perfect number is 6, because 1, 2, and 3 are its proper positive divisors, and  $1 + 2 + 3 = 6$ . Equivalently, the number 6 is equal to half the sum of all its positive divisors:  $(1 + 2 + 3 + 6) / 2 = 6$ . The next perfect number is  $28 = 1 + 2 + 4 + 7 + 14$ . This is followed by the perfect numbers 496 and 8128.

**Zadanie 522.** 12. Write a Python function that checks whether a passed string is palindrome or not. Go to the editor Note: A palindrome is a word, phrase, or sequence that reads the same backward as forward, e.g., madam or nurses run.

**Zadanie 523.** 13. Write a Python function that prints out the first n rows of Pascal's triangle. Go to the editor Note : Pascal's triangle is an arithmetic and geometric figure first imagined by Blaise Pascal. Sample Pascal's triangle : Pascal's triangle Each number is the two numbers above it added together Go to the editor

**Zadanie 524.** 14. Write a Python function to check whether a string is a pangram or not. Go to the editor Note : Pangrams are words or sentences

containing every letter of the alphabet at least once. For example : "The quick brown fox jumps over the lazy dog"

**Zadanie 525.** 15. Write a Python program that accepts a hyphen-separated sequence of words as input and prints the words in a hyphen-separated sequence after sorting them alphabetically. Go to the editor Sample Items : green-red-yellow-black-white Expected Result : black-green-red-white-yellow

**Zadanie 526.** 16. Write a Python function to create and print a list where the values are square of numbers between 1 and 30 (both included). Go to the editor

**Zadanie 527.** 17. Write a Python program to make a chain of function decorators (bold, italic, underline etc.) in Python. Go to the editor

**Zadanie 528.** 18. Write a Python program to execute a string containing Python code. Go to the editor

**Zadanie 529.** 19. Write a Python program to access a function inside a function. Go to the editor

**Zadanie 530.** 20. Write a Python program to detect the number of local variables declared in a function. Go to the editor

**Zadanie 531.** Wiedząc, że pierwiastek  $n$ -tego stopnia z  $x$  równa się  $x$  do potęgi  $1/n$  i wykorzystując wiedzę o użyciu liczb zespolonych w Pythonie, wylicz wartość pierwiastka drugiego stopnia z  $-7$ .

**Zadanie 532.** Używając instrukcji Pythona oblicz resztę z dzielenia 11 przez 7 i zapamiętaj wynik w zmiennej o nazwie Z. Następnie, pojedynczym poleceniem Pythona i bez użycia nawiasów, przemnoż zmienną Z przez Z+1.

## 6 Bibliografia

### Literatura

- [1] 100+ Python challenging programming exercises
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