Source: https://github.com/darkprinx/100-plus-Python-programming-exercises-extended/blob/master/README.md

**1.Write a program which will find all such numbers which are divisible by 7 but are not a multiple of 5, between 2000 and 3200 (both included).The numbers obtained should be printed in a comma-separated sequence on a single line.**

**2. Write a program which can compute the factorial of a given numbers. The results should be printed in a comma-separated sequence on a single line. Suppose the following input is supplied to the program: 8 Then, the output should be:40320**

**3. With a given integral number n, write a program to generate a dictionary that contains (i, i x i) such that is an integral number between 1 and n (both included). and then the program should print the dictionary. Suppose the following input is supplied to the program: 8**

**4. Write a program which accepts a sequence of comma-separated numbers from console and generate a list and a tuple which contains every number. Suppose the following input is supplied to the program:**

**5. Define a class which has at least two methods:**

* **getString: to get a string from console input**
* **printString: to print the string in upper case.**

**Also please include simple test function to test the class methods.**

**6. Write a program that calculates and prints the value according to the given formula:**

**Q = Square root of [(2 \_ C \_ D)/H]**

**Following are the fixed values of C and H:**

**C is 50. H is 30.**

**D is the variable whose values should be input to your program in a comma-separated sequence. For example Let us assume the following comma separated input sequence is given to the program:**

**input: 100,150,180 output: 18,22,24**

**7. \_Write a program which takes 2 digits, X,Y as input and generates a 2-dimensional array. The element value in the i-th row and j-th column of the array should be i \_ j.\***

**Note: i=0,1.., X-1; j=0,1,¡­Y-1. Suppose the following inputs are given to the program: 3,5**

**Then, the output of the program should be:**

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

**8.** Write a program that accepts a comma separated sequence of words as input and prints the words in a comma-separated sequence after sorting them alphabetically.

Suppose the following input is supplied to the program:

**without,hello,bag,world → bag,hello,without,world**

**9.** Write a program that accepts sequence of lines as input and prints the lines after making all characters in the sentence capitalized.

Suppose the following input is supplied to the program:

**Hello world**

**Practice makes perfect**

**output: HELLO WORLD**

**PRACTICE MAKES PERFECT**

**10.** Write a program that accepts a sequence of whitespace separated words as input and prints the words after removing all duplicate words and sorting them alphanumerically.

Suppose the following input is supplied to the program:

**input: hello world and practice makes perfect and hello world again**

**output: again and hello makes perfect practice world**

**11.** Write a program which accepts a sequence of comma separated 4 digit binary numbers as its input and then check whether they are divisible by 5 or not. The numbers that are divisible by 5 are to be printed in a comma separated sequence.

**Input: 0100,0011,1010,1001**

**output: 1010**

**12.** Write a program, which will find all such numbers between 1000 and 3000 (both included) such that each digit of the number is an even number. The numbers obtained should be printed in a comma-separated sequence on a single line.

**13.** Write a program that accepts a sentence and calculate the number of letters and digits.

Suppose the following input is supplied to the program:

**input:hello world! 123**

**output: LETTERS 10** DIGITS 3

**14.** Write a program that accepts a sentence and calculate the number of upper case letters and lower case letters.

Suppose the following input is supplied to the program:

**Hello world! → UPPER CASE 1**

LOWER CASE 9

15. Write a program that computes the value of a+aa+aaa+aaaa with a given digit as the value of a.

Suppose the following input is supplied to the program:

9 → 11106 [ (9 + 99 + 999 + 9999) ]

**16.** 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 → 1,9,25,49,81**

**17.** 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 300**

D 300

W 200 → 500

D 100

**18.** 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:

* At least 1 letter between [a-z]
* At least 1 number between [0-9]
* At least 1 letter between [A-Z]
* At least 1 character from [$#@]
* Minimum length of transaction password: 6
* 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 F1#,2w3E\*,2We3345 →** [**ABd1234@1**](mailto:ABd1234@1)

**19.** You are required to write a program to sort the (name, age, score) tuples by ascending order where name is string, age and score 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

**output: [('John', '20', '90'), ('Jony', '17', '91'), ('Jony', '17', '93'), ('Json', '21', '85'), ('Tom', '19', '80')]**

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

Suppose the following input is supplied to the program:

**7 →** 0

7

14

21. 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:

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 → 2

LEFT 3

RIGHT 2

22. 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:

input→ New to Python or choosing between Python 2 and Python 3? Read Python 2 or Python 3.

output→ 2:2

3.:1

3?:1

New:1

Python:5

Read:1

and:1

between:1

choosing:1

or:2

to:1

23. Write a method which can calculate square value of number . 7 → 49

**24.** 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

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

**26.** Define a function which can compute the sum of two numbers.

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

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

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

**30.** 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.

31. 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.

32. 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.

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

34. 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.

35. 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.

36. 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.

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