

PYTHON PROGRAMMING LAB

Practical List

- Write a program to print numbers from 1 to n using for loop and while loop. (Input consists of an integer n. The numbers in the output are separated by a single space. There is a trailing space at the end.)

Input	5
Output	1 2 3 4 5

- Write a program to generate the first n terms in the series --- 20,19,17,...,10,5

(Note: Input consists of a single integer which corresponds to n. Output consists of the terms in the series separated by a blank space.)

Input	6	4
Output	20 19 17 14 10 5	20 19 17 14

- Write a program to generate the given pattern. (Input consists of a single integer, n.)

CSK CCSSKK CCCSSSKKK CCCCSSSSKKKK	Input	4
	Output	CSK CCSSKK CCCSSSKKK CCCCSSSSKKKK

4. Check whether a given number is a Kaprekar number.

Kaprekar's number : Consider an n-digit number k. Square it and add the right n digits to the left n or n-1 digits. If the resultant sum is k, then k is called a Kaprekar number. (Input consists of a single integer)

Input	9	297	101
Process	$9^2 = 81$ $8+1=9$	$297^2 = 88209$ $88+209 = 297$	$101^2 = 10201$ $10 + 201 \neq 101$
Output	Kaprekar Number	Kaprekar Number	Not a Kaprekar Number

5. Write a program to remove special characters and numbers in the input string and returns a string made of the first 2 and the last 2 characters of the given string.

Conditions:

If the resultant string length is less than 2, return -1. If the string length is equal to 2, consider the 2 characters to be the first as well as the last two characters.

Input	3 P^&y2!#t50.h**on1 3	H1e2l3l4o5w6o7r8l9d	3 P^&2 3 4
Output	Python Pyon	Hello world Held	-1

6. Write a program to find whether the 2 given strings are anagrams or not. Anagrams are words or phrases made by mixing up the letters of other words or phrases (Note: Input consists of 2 string. Assume that all characters in the string are lowercase letters or spaces and the maximum length of the string is 100.)

Input1	Anitha	the eyes
Input2	Amphisoft	they see
Output	not anagrams	anagrams

7. Given a list of numbers, write a python function which returns true if one of the first 5 elements in the list is 11. Otherwise it should return false. (Note: The length of the list can be less than 5 also.)

Input		Output
List Size	Values	
6	3 11 8 9 4 11	True
3	9 4 10	False

8. Write a program to sort each list of student's marks and sort the whole mark list in ascending order. Use tuple() to store each student's marks.

Input format: The first line of input is the number of students (n). Second line consist number of subjects (m). Next line will be n*m subject marks

Output format: List of the subject marks in sorted order and sorted order of individual student marks. i.e List in sorted order of the marks of n students.)

Input (Assume each number in separate line)	Output
3 5 2 1 5 3 1 6 1 3 2 2 1 7 8 5 3	[(1, 1, 2, 3, 5), (1, 2, 2, 3, 6), (1, 3, 5, 7, 8)]
3 2 4 6 3 2 7 4	[(2, 3), (4, 6), (4, 7)]

9. Write a python function to create a dictionary from the input and return a new dictionary from the given dictionary based on some condition.

(**Note:** Input : The first line of input 'n' corresponds to the number of lists. The list consists of an item and price. The last line of input corresponds the value of 'M' .

Output : Contains a dictionary of items that contain items of price greater than 'M'.)

	n	M	Item	Price	Output
Input 1	4	200	ACME	45.23	{ 'IBM': 205.55, 'AAPL': 612.78 }
			AAPL	612.78	
			IBM	205.55	
			HPQ	37.20	
			FB	10.75	
Input 2	4	1000	AAPL	612.78	{ }
			IBM	205.55	
			HPQ	37.20	
			FB	10.75	

10. Write a program to find the Symmetric Difference between two sets.

The symmetric difference of two sets A and B is the set of elements that are in either of the sets A or B but not in both.

(Input: First line contains the elements of set1(integers). Second-line contains the elements of set2 (integers).

Output : Print the set consisting of Symmetric_Difference between set1 and set2. If both set elements are equal, print 'invalid set'.)

Input	Set 1	Set 2	Set 1	Set 2
	1,2,3,4,5,6	2,3,5,7,8,9	1,2,3	1,2,3
Output	{ 1, 4, 6, 7, 8, 9 }		Invalid set	

11. Mobile Apps: Write a python program to collect the required attributes from the user about apps installed in their mobile. Use Class/Object and print the data in neat format.

Create a class **Apps** with the following public attributes:

Data_Type	Attribute_name
int	appID
str	appName
str	lastAccessTime
int	powerConsumption
float	dataConsumption
float	appSize

[Note: **Strictly adhere to the object-oriented programming concepts.** Create an **init__()** method to initialize the values

Output **format:**
`print("%-15s %-15s %-15s %-15s %-15s %-15s" % ("AppID", "AppName", "LastAccessTime", "PowerConsumption(%)", "DataConsumption", "AppSize"))]`

	No. of Apps	App id	App Name	Last Access Time(24hrs) (HH:MM:SS)	Power Consumption	Data Consumption (MB)	App Size (MB)
Input1	2	1	ArogyaSethu	12:10:10	14	0.23	20.85
		2	DigiLocker	12:12:12	12	0.14	32.45
Input2	0	-	-	-	-	-	-

Output 1:

AppID	AppName	LastAccessTime	PowerConsumption(%)	DataConsumption	AppSize
1	ArogyaSethu	12:10:10	14	0.23	20.85
2	DigiLocker	12:12:12	12	0.14	32.45

Output

2:

No App installed

12. Write a python function to find out whether a number is divisible by the sum of its digits. If so return True, else return False. If the number is less than or equal to 0, the function returns "Invalid Input".

Input	42	66
Output	True	False

Web Resources

1. <https://www.w3resource.com/python-exercises/>
2. <https://pynative.com/python-basic-exercise-for-beginners/>