

Python programs

1. Swap the contents of two memory locations

- using temporary variable.

- Without using temporary variable.

2. Write a Python Program to Read a Number n and Compute $n+nn+nnn$

1. Find roots of a quadratic equation - $ax^2 + bx + c$.

What if $a = 0$, $b^2 - 4ac \geq 0$, $b^2 - 4ac < 0$

(roots are real & distinct, roots are real & equal, roots are imaginary)

2. Write a program to display given n (say 4)

a) $1 + 2 + 3 + 4 = 10$

b) $1 * 2 * 3 * 4 = 24$

3. WAP to print the following pattern

A

B C D

E F G H I

J K L M N O P

Q R S T U V W X Y

4. Count the number of even and odd numbers from a series of numbers

5. Write a Python program to create the multiplication table (from 1 to 10) of a number

6. Write a Python program to construct the following pattern, using a nested loop number

Expected Output:

1

22

333

4444

55555

666666

7777777

88888888

999999999

1. Find all factors of a given number. Count the # of factors. Check whether a given number is a prime number.

2. Check whether a given number is a

a) perfect square

b) Fibonacci number

c) perfect power of 2

3. Generate all 3 digit palindrome numbers.

4. Check whether a number is a perfect number or not.

5. Generate snake & ladder board pattern.

1. Find cartesian product of sets.
2. Program to count number of characters (all), alphabets, digits & special characters in a given string & print the same.
3. Given a list of strings, count and print the number of strings where the string length is 2 or more & the 1st & last characters are same.
4. Write a Python program to check whether a string is pangram or not.
5. Program to reverse each word in a given sentence.
6. Write a python program to accept a sequence of whitespace separated words as input and prints the words after removing all duplicate words and sorting them alphanumerically.

1. Consider the following text for the problems below.

```
s = karnatakabangalorelalbagh
tamilnadkanyakumarivivekananda_rock
keralatiruvandapurampadmanabha_temple
karnatakamysorebrindavan_gardens
karnatakahassanshravanabelagola
tamilnadchennaiegmores_museum
tamilnadkanyakumarkaamaakshmi_temple
karnatakabangalorecubbon_park
karnatakahampimaharnavami_dibba
karnatakabangalore ISKCON
karnatakahassanhalebeedu
tamilnadchennaiashtalakshmi_temple
karnatakahampipurandara_mantapa
karnatakamysoreambavilas_palace
keralatiruvandapuram zoo
karnatakahassanbelur
tamilnadchennaivalluvar_kootam
karnatakahampivijaya_vittal_temple
each entry : state : city : place
```

- a) Find and print the # of state and their names (unique).
- b) Find and print the # of city and their names for each state.
- c) Find and print the # of places and their names for state-city combination.

2 Given a list : SRN, P_marks, C_marks, M_marks and B_marks.

- a) Create a dict with SRN as the key and marks in P, C, M, B as a list.
- b) Make another dict of srn and total marks. display in the order of marks.
- c) Make a dict with M_marks as the key and names of students with the same marks.

3. Find the mode of the given list using dictionary

4. Find the mean and standard deviation for the given list of elements

```
l=[1,2,3,4]
```

1. Given two lists as arguments (marks and names), write a function to return a tuple containing the highest marks and the corresponding name

2. Given a dict where values are not unique, write a function to create a new dict where the key is the value and the value is concatenated keys of the original dict and return it.

3. write function for

a)is_square(x) check whether a given number is a perfect square

b)is_even(x) check whether a given number is an even number

4. write function to code a string decode the coded string

-- strategy1 : change a to z, b to y ...

-- strategy2 : change a to b, b to c, z to a

5. write a python program that accepts hyphen separated values as input,write a function to sort them alphabetically

input: green-red-black-white

output: black-green-red-white

6. Generate and display Identity Matrix, Lower triangular & Upper triangular matrix

1. Solve the following using Recursion:

a) find the length of a string

b) find the smallest element in a list

c) reverse a string

2 Write functions to find factorial, factor, evenodd and prime by using callback technique

3. Given a list of strings,

a) find the longest string

b) find all strings ending with a given suffix

c) find all strings starting with a given prefix

d) find all strings having a given substring

e) find the average length of the string - use reduce to find the total length

4. Information of a student - srn, name, marks (highest 100) in P, C, M are stored in a tuple.

Information of a group of students is stored in a list of Tuple.

a) sort the list and display

b) sort the list based on the name and display

c) sort the list based on the total of P C M marks in descending order and display

1. Write a function mymap which takes a callback and an iterable, creates a list, applies the callback to each element of the iterable and puts the result into list and returns the list. mymap should mimic map.

Test this with the following calls.

a) Create a list of square of odd numbers from 1 to n.

b) Given a list of words, return a list of words with substring appended to it.

c) Given a list of words, return a list of tuples having the word and its length

2. Write a function to mimic filter - called myfilter.

Test this with the following calls.

- a) Given a list of strings, remove all strings having first character as digit.
- b) Given a list of tuples containing two integers, remove all tuples where second element in tuple is not a factor of first element.
- a) Given a list of strings, remove all strings having first character as digit.

3. Write a function to mimic reduce - called myreduce.

Test this with the following calls.

- a) Given a list of numbers, find maximum in the list.
- b) Given a list of integers, combine all integers to form a single integer.

4. By using list comprehension,

a) write a program to print the list after removing the 0th, 4th, 5th numbers in [12, 24, 35, 70, 88, 120, 155].

b) Write a program to print the list after removing the value 24 in [12, 24, 35, 24, 88, 120, 155].