# №1 Python basic

**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

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

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

**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

**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.

**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')

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

**8.** Write a Python program to display the first and last colors from the following list.    
color\_list = ["Red","Green","White" ,"Black"]

**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

**10.**Write a Python program that accepts an integer (n) and computes the value of n+nn+nnn.   
*Sample value of n is*5*Expected Result :*615

**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.

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

**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

**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 

**15.** Write a Python program to get the volume of a sphere with radius 6.

**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.

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

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

**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.

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

**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.

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

**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.

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

**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

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

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

**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

]

**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'}

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

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

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

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

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

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

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

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

**38.**Write a Python program to solve (x + y) \* (x + y).    
*Test Data* : x = 4, y = 3  
*Expected Output* : (4 + 3) ^ 2) = 49

**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* : amt = 10000, int = 3.5, years = 7  
*Expected Output* : 12722.79

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

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

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

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

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

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

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

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

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

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

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

**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. 

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

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

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

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

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

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

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

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

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

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

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

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

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

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

**66.**Write a Python program to calculate body mass index.

**67.**Write a Python program to convert pressure in kilopascals to pounds per square inch, a millimeter of mercury (mmHg) and atmosphere pressure.

**68.**Write a Python program to calculate the sum of the digits in an integer.

**69.**Write a Python program to sort three integers without using conditional statements and loops.

**70.**Write a Python program to sort files by date.

**71.**Write a Python program to get a directory listing, sorted by creation date.

**72.**Write a Python program to get the details of math module.

**73.**Write a Python program to calculate midpoints of a line.

**74.**Write a Python program to hash a word.

**75.**Write a Python program to get the copyright information.

**76.**Write a Python program to get the command-line arguments (name of the script, the number of arguments, arguments) passed to a script.

**77.**Write a Python program to test whether the system is a big-endian platform or little-endian platform.

**78.**Write a Python program to find the available built-in modules.

**79.**Write a Python program to get the size of an object in bytes.

**80.**Write a Python program to get the current value of the recursion limit.

**81.**Write a Python program to concatenate N strings.

**82.**Write a Python program to calculate the sum over a container.

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

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

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

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

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

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

**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.

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

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

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

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

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

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

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

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

**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.

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

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

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

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

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

**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.

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

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

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

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

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

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

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

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

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

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

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

**116.**Write a Python program to print Unicode characters.

**117.**Write a Python program to prove that two string variables of same value point same memory location.

**118.**Write a Python program to create a bytearray from a list.

**119.**Write a Python program to display a floating number in specified numbers.

**120.**Write a Python program to format a specified string to limit the number of characters to 6.

**121.**Write a Python program to determine if variable is defined or not.

**122.**Write a Python program to empty a variable without destroying it.

Sample data: n=20  
d = {"x":200}  
Expected Output : 0  
{}

**123.**Write a Python program to determine the largest and smallest integers, longs, floats.

**124.**Write a Python program to check if multiple variables have the same value.

**125.**Write a Python program to sum of all counts in a collections?

**126.**Write a Python program to get the actual module object for a given object.

**127.**Write a Python program to check if an integer fits in 64 bits.

**128.**Write a Python program to check if lowercase letters exist in a string.

**129.**Write a Python program to add leading zeroes to a string.

**130.**Write a Python program to use double quotes to display strings.

**131.**Write a Python program to split a variable length string into variables.

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

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

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

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

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

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

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

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

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

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

**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 

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

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

**145.**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 

**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 

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

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

**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.

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

№2 Data Types

1. Write a Python program to calculate the length of a string
2. Write a Python program to sum all the items in a list.
3. Write a Python program to multiplies all the items in a list.
4. Write a Python program to get the largest number from a list
5. Write a Python program to get the smallest number from a list
6. Write a Python program to count the number of characters in a string.    
   Sample String : 'google.com'  
   Expected Result : {'o': 3, 'g': 2, '.': 1, 'e': 1, 'l': 1, 'm': 1, 'c': 1}
7. 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}
8. 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.   
   Sample List : ['abc', 'xyz', 'aba', '1221']  
   Expected Result : 2
9. 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.   
   Sample List : [(2, 5), (1, 2), (4, 4), (2, 3), (2, 1)]  
   Expected Result : [(2, 1), (1, 2), (2, 3), (4, 4), (2, 5)]
10. 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 the empty string.    
    Sample String : 'w3resource'  
    Expected Result : 'w3ce'  
    Sample String : 'w3'  
    Expected Result : 'w3w3'  
    Sample String : ' w'  
    Expected Result : Empty String
11. Write a Python program to get a string from a given string where all occurrences of its first char have been changed to '$', except the first char itself.    
    Sample String : 'restart'  
    Expected Result : 'resta$t'
12. 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'
13. Write a Python program to add 'ing' at the end of a given string (length should be at least 3). If the given string is 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'
14. Write a Python program to find the first appearance of the substring 'not' and 'poor' from a given string, if 'bad' follows the 'poor', replace the whole 'not'...'poor' substring with 'good'. Return the resulting string.    
    Sample String : 'The lyrics is not that poor!'  
    Expected Result : 'The lyrics is good!'
15. Write a Python function that takes a list of words and returns the length of the longest one.
16. Write a Python program to test whether an input is an integer.
17. Write a Python program to sort (ascending and descending) a dictionary by value.
18. Write a Python program to sort (ascending and descending) a dictionary by key value
19. Write a Python program to add key to a dictionary.
20. Sample Dictionary : {0: 10, 1: 20}  
    Expected Result : {0: 10, 1: 20, 2: 30}
21. Write a Python program to concatenate following dictionaries to create a new one.
22. Sample Dictionary :   
    dic1={1:10, 2:20}   
    dic2={3:30, 4:40}   
    dic3={5:50,6:60}  
    Expected Result : {1: 10, 2: 20, 3: 30, 4: 40, 5: 50, 6: 60}
23. Write a Python program to check if a given key already exists in a dictionary.
24. Write a Python program to remove duplicates from a list.
25. Write a Python program to check a list is empty or not
26. Write a Python program to clone or copy a list.
27. Write a Python program to remove the nth index character from a non empty string.
28. Write a Python program to change a given string to a new string where the first and last chars have been exchanged
29. Write a Python program to remove the characters which have odd index values of a given string.
30. Write a Python program to find the list of words that are longer than n from a given list of words.
31. Write a Python program to count the occurrences of each word in a given sentence
32. Write a Python function that takes two lists and returns True if they have at least one common member

## № 3 Python String

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

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}

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

4. Write a Python program to get a string from a given string where all occurrences of its first char have been changed to '$', except the first char itself.    
Sample String : 'restart'  
Expected Result : 'resta$t'

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'

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'

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!'

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

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

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

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

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

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

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

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>'

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}}

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

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

19. Write a Python program to get the last part of a string before a specified character.    
https://www.w3resource.com/python-exercises  
https://www.w3resource.com/python

20. Write a Python function to reverses a string if it's length is a multiple of 4.

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.

22.Write a Python program to sort a string lexicographically.

23. Write a Python program to remove a newline in Python.

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

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.

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

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

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

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

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

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

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

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

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

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

36. Write a Python program to format a number with a percentage.

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

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

39. Write a Python program to reverse a string.

40. Write a Python program to reverse words in a string.

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

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

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 1256.66cm2  
The volume of the cylinder is 1254.725cm3

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 c position at 8  
Current character e position at 9

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

46. Write a Python program to convert a string in a list.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

## № 4 Python Dictionary

1. Write a Python script to sort (ascending and descending) a dictionary by value.

2. Write a Python script to add a key to a dictionary.

Sample Dictionary : {0: 10, 1: 20}  
Expected Result : {0: 10, 1: 20, 2: 30}

3. Write a Python script to concatenate following dictionaries to create a new one.

Sample Dictionary :   
dic1={1:10, 2:20}   
dic2={3:30, 4:40}   
dic3={5:50,6:60}  
Expected Result : {1: 10, 2: 20, 3: 30, 4: 40, 5: 50, 6: 60}

4. Write a Python script to check if a given key already exists in a dictionary.

5. Write a Python program to iterate over dictionaries using for loops.

6.Write a Python script to generate and print a dictionary that contains a number (between 1 and n) in the form (x, x\*x).    
Sample Dictionary ( n = 5) :   
Expected Output : {1: 1, 2: 4, 3: 9, 4: 16, 5: 25}

7. Write a Python script to print a dictionary where the keys are numbers between 1 and 15 (both included) and the values are square of keys.    
Sample Dictionary   
{1: 1, 2: 4, 3: 9, 4: 16, 5: 25, 6: 36, 7: 49, 8: 64, 9: 81, 10: 100, 11: 121, 12: 144, 13: 169, 14: 196, 15: 225}

8. Write a Python script to merge two Python dictionaries.

9. Write a Python program to iterate over dictionaries using for loops.

10. Write a Python program to sum all the items in a dictionary.

11. Write a Python program to multiply all the items in a dictionary.

12. Write a Python program to remove a key from a dictionary.

13. Write a Python program to map two lists into a dictionary.

14. Write a Python program to sort a dictionary by key.

15. Write a Python program to get the maximum and minimum value in a dictionary.

16.Write a Python program to get a dictionary from an object's fields.

17. Write a Python program to remove duplicates from Dictionary.

18. Write a Python program to check a dictionary is empty or not.

19. Write a Python program to combine two dictionary adding values for common keys.    
d1 = {'a': 100, 'b': 200, 'c':300}  
d2 = {'a': 300, 'b': 200, 'd':400}  
Sample output: Counter({'a': 400, 'b': 400, 'd': 400, 'c': 300})

20. Write a Python program to print all unique values in a dictionary.    
Sample Data : [{"V":"S001"}, {"V": "S002"}, {"VI": "S001"}, {"VI": "S005"}, {"VII":"S005"}, {"V":"S009"},{"VIII":"S007"}]  
Expected Output : Unique Values: {'S005', 'S002', 'S007', 'S001', 'S009'}

21. Write a Python program to create and display all combinations of letters, selecting each letter from a different key in a dictionary.    
Sample data : {'1':['a','b'], '2':['c','d']}  
Expected Output:   
ac  
ad  
bc  
bd

22. Write a Python program to find the highest 3 values in a dictionary.

23. Write a Python program to combine values in python list of dictionaries.    
Sample data: [{'item': 'item1', 'amount': 400}, {'item': 'item2', 'amount': 300}, {'item': 'item1', 'amount': 750}]  
Expected Output: Counter({'item1': 1150, 'item2': 300})

24. Write a Python program to create a dictionary from a string.    
Note: Track the count of the letters from the string.  
Sample string : 'w3resource'  
Expected output: {'3': 1, 's': 1, 'r': 2, 'u': 1, 'w': 1, 'c': 1, 'e': 2, 'o': 1}

25. Write a Python program to print a dictionary in table format.

26. Write a Python program to count the values associated with key in a dictionary.    
Sample data: = [{'id': 1, 'success': True, 'name': 'Lary'}, {'id': 2, 'success': False, 'name': 'Rabi'}, {'id': 3, 'success': True, 'name': 'Alex'}]  
Expected result: Count of how many dictionaries have success as True

27. Write a Python program to convert a list into a nested dictionary of keys.

28. Write a Python program to sort a list alphabetically in a dictionary.

29. Write a Python program to remove spaces from dictionary keys.

30. Write a Python program to get the top three items in a shop.    
Sample data: {'item1': 45.50, 'item2':35, 'item3': 41.30, 'item4':55, 'item5': 24}  
Expected Output:   
item4 55  
item1 45.5  
item3 41.3

31. Write a Python program to get the key, value and item in a dictionary.

32. Write a Python program to print a dictionary line by line.

33. Write a Python program to check multiple keys exists in a dictionary.

34. Write a Python program to count number of items in a dictionary value that is a list.

35. Write a Python program to sort Counter by value.    
Sample data : {'Math':81, 'Physics':83, 'Chemistry':87}  
Expected data: [('Chemistry', 87), ('Physics', 83), ('Math', 81)]

36. Write a Python program to create a dictionary from two lists without losing duplicate values.   
Sample lists: ['Class-V', 'Class-VI', 'Class-VII', 'Class-VIII'], [1, 2, 2, 3]  
Expected Output: defaultdict(<class 'set'>, {'Class-VII': {2}, 'Class-VI': {2}, 'Class-VIII': {3}, 'Class-V': {1}})

37. Write a Python program to replace dictionary values with their sum.

38. Write a Python program to match key values in two dictionaries.    
Sample dictionary: {'key1': 1, 'key2': 3, 'key3': 2}, {'key1': 1, 'key2': 2}  
Expected output: key1: 1 is present in both x and y

## № 5 Python Tuple

1. Write a Python program to create a tuple.

2. Write a Python program to create a tuple with different data types.

3. Write a Python program to create a tuple with numbers and print one item.

4. Write a Python program to unpack a tuple in several variables.

5. Write a Python program to add an item in a tuple.

6. Write a Python program to convert a tuple to a string.

7. Write a Python program to get the 4th element and 4th element from last of a tuple.

8. Write a Python program to create the colon of a tuple.

9. Write a Python program to find the repeated items of a tuple.

10. Write a Python program to check whether an element exists within a tuple.

11. Write a Python program to convert a list to a tuple.

12. Write a Python program to remove an item from a tuple.

13. Write a Python program to slice a tuple.

14. Write a Python program to find the index of an item of a tuple.

15. Write a Python program to find the length of a tuple.

16. Write a Python program to convert a tuple to a dictionary.

17. Write a Python program to unzip a list of tuples into individual lists.

18. Write a Python program to reverse a tuple.

19. Write a Python program to convert a list of tuples into a dictionary.

20. Write a Python program to print a tuple with string formatting.    
Sample tuple : (100, 200, 300)  
Output : This is a tuple (100, 200, 300)

21. Write a Python program to replace last value of tuples in a list.    
Sample list: [(10, 20, 40), (40, 50, 60), (70, 80, 90)]  
Expected Output: [(10, 20, 100), (40, 50, 100), (70, 80, 100)]

22. Write a Python program to replace last value of tuples in a list.    
Sample data: [(), (), ('',), ('a', 'b'), ('a', 'b', 'c'), ('d')]  
Expected output: [('',), ('a', 'b'), ('a', 'b', 'c'), 'd']

23. Write a Python program to sort a tuple by its float element.    
Sample data: [('item1', '12.20'), ('item2', '15.10'), ('item3', '24.5')]  
Expected Output: [('item3', '24.5'), ('item2', '15.10'), ('item1', '12.20')]

24. Write a Python program to count the elements in a list until an element is a tuple.

## № 6 Python Sets

1. Write a Python program to create a set.

2. Write a Python program to iteration over sets.

3. Write a Python program to add member(s) in a set.

4. Write a Python program to remove item(s) from set

5. Write a Python program to remove an item from a set if it is present in the set.

6. Write a Python program to create an intersection of sets.

7. Write a Python program to create a union of sets.

8. Write a Python program to create set difference.

9. Write a Python program to create a symmetric difference.

10. Write a Python program to issubset and issuperset.

11. Write a Python program to create a shallow copy of sets.

Note : Shallow copy is a bit-wise copy of an object. A new object is created that has an exact copy of the values in the original object.

12. Write a Python program to clear a set.

13. Write a Python program to use of frozensets.

14. Write a Python program to find maximum and the minimum value in a set.

15. Write a Python program to find the length of a set.