1. Define a variable.  
   An variable is the name that represents the value/object stored in the memory. The value stored in the variable can be varied.
2. What is type conversion?  
   Converting the object from one data type to another.  
   Example:  
   int(“9”) converts the string into integer.
3. Mention the data types in Python  
   int, string, float, Boolean, complex, list, tuple, set, dictionary.
4. What are the attributes of the complex datatype?  
   real, imag  
   Example: 5+4j
5. Mention a few escape sequences.  
   ‘\n’ - inserts new line  
   ‘\t’ - inserts tab space
6. Define an expression  
   An expression is the combination of constants, variables and operators.  
   Example:  
   5 + a - 7
7. What is the usage of \*\* operator in Python?  
   To find Exponentiation (power)  
   Example:  
   4 \*\* 2 🡺 16
8. Give the syntax of if else statement.  
   if condition:  
    statements # executed if condition is true  
   else:  
    statements # executed if condition is false
9. Give the syntax of for statement.  
   for i in range(N):  
    statements # to be iterated N times
10. How is range function used in for?  
    To create sequence between start and end limits  
    To iterate for loop
11. Give the syntax of while statement.  
    while condition:  
     statements # to be iterated while condition is true
12. What are multi way if statements?  
    if condition1:  
     statements # executed if condition1 is true  
    elif condition2:  
     statements # executed if condition2 is true  
    elif condition3:  
     statements # executed if condition2 is true
13. How is random numbers generated?  
    They are generated using random() function from random module.  
    Example:  
    import random  
    a = random.random(1, 10)  
    # assigns a with random number between 1 and 10  
    L = [random.random(1, 10) for d in range(5)]  
    # Generates the random list of size 5
14. Define a function.  
    A function receives arguments, performs a particular computing task on them and returns the output.
15. Give the syntax of function.  
    def funA(a, b):  
     c = a + b   
     return c
16. What are the types of arguments in function.?  
    default arguments, keyword arguments, arbitrary arguments.
17. What is a recursive function?  
    A function that calls itself.
18. What are anonymous functions?  
    A function without a name.  
    Anonymous functions are created by lambda definition.  
    Example:  
    >>> L = [1,2,3,4]  
    >>> L = list(map(lambda x: x\*2, L))
19. What are default arguments?  
    Default arguments have default values, if arguments are not passed.
20. What are variable length arguments?  
    Variable length or arbitrary arguments vary in number of arguments passed in each function call.  
    Example:  
    >>> def funA(\*args):  
     return len(args)  
      
    >>> funA(4, 5)  
    2  
    >>>funA(4,5,6)  
    3  
      
    Arbitrary arguments with keywords  
    >>> def funB(\*\*args):  
     return len(args)  
      
    >>> funB(a=4, b=5)  
    2  
    >>>funB(x=4,y=5,z=6)  
    3
21. What are keyword arguments?  
    An argument preceded by an identifier in the function call.  
    Example  
    >>> def funC(a=10,b=20):  
     return a+b  
    >>> funC(a=5, b=10)  
    15  
    >>>funC(b=5)  
    15  
      
    (Note: It is also the example for default argument,   
    where `a` and `b` are assigned with default values 10 and 20 respectively)
22. Mention the use of map().  
    It maps a function to each element in the list (or any other iterator)  
    Example:  
    >>> L = [1,2,3,4]  
    >>> L = list(map(lambda x: x\*2, L))
23. Mention the use of filter().  
    It filters the elements from the list(or any other iterator) based on the condition defined.  
    Example:  
    >>> L = [1,2,3,4]  
    >>> list(filter(lambda x: x > 2, L))  
    [3, 4]
24. Mention the use of reduce().  
    It continuously applies a function to the list (or any other sequence) and returns the result.  
    Example:  
    >>> L = [1,2,3,4]  
    >>> from functools import reduce  
    >>> reduce(lambda x, y: x + y, L)  
    10
25. Define a string.  
    A sequence of characters (A string of characters)
26. How is string slicing done?  
    Using start and end index values.  
    Example:  
    >>> str = "Python is great"  
    >>> str[2:4]  
    ‘th’
27. What is the usage of repetition operator (\*)?  
    To repeat the string N times  
    >>> str = ‘python’  
    >>> str\*2  
    ‘pythonpython’
28. How is string concatenation done using + operator>  
    >>>str1 = ‘python’  
    >>>str2 = ‘language’  
    >>>str1 + str2  
    ‘pythonlanguage’
29. Mention some string methods  
    upper(), lower(), split(), isdigit(), isalpha()  
    >>>str1 = ‘python’  
    >>>str1.upper()  
    ‘PYTHON’
30. How is length of a string found?  
    >>>len(str1)  
    6
31. How is a string converted to its upper case?  
    Using upper() method.
32. Differentiate isalpha() and isdigit().  
    isalpha() - returns True if all characters in S are alphabetic  
    isdigit() - return True if all characters in S are digits
33. What is the use of split()?  
    Splits the string into words  
    Example  
    >>> S = 'python is good to learn'  
    >>> S.split()  
    ['python', 'is', 'good', 'to', 'learn']
34. Define a file.  
    A file is the permanent object in the memory, stored with data/ information.  
    Example: text file
35. Give the syntax for opening a file.  
    f = open(filename,’r’)
36. Give the syntax for closing a file.  
    f.close()
37. How is reading of file done?  
    f.read()
38. How is writing of file done?  
    f.write(S)
39. What is a list?  
    A List is the built-in ordered sequence.  
    Example:  
    >>> L = [12, ‘python’, 32.1]  
    >>> L[1]  
    ‘python’
40. Lists are mutable-Justify.  
    Its elements can be changed, without changing the id of the list.  
    >>> L = [1, 2, 3, 4]  
    >>> L[1] = 10  
    >>>L  
    [1, 10, 3, 4]
41. How is a list created?  
    Using square brackets, separating items with commas:   
    >>> L = [1, 2, 3, 4]
42. How can a list be sorted?  
    Using sort() method  
    Example:  
    >>> L = [ 5, 2, 1, 3]  
    >>> L.sort()  
    >>> L  
    [1, 2, 3, 5]
43. How are elements appended to the list?  
    Using append() or extend() method  
    >>> L.append(6)
44. How is insert() used in list?  
    Inserts the element at the specified index
45. What is the usage of pop() in list?  
    Removes and returns the element (last element by default) from the list
46. Define a tuple.  
    Tuple is the immutable sequence. Its values can’t be altered, once the tuple is created.
47. Are tuples mutable or immutable?  
    Immutable
48. Mention the use of return statement.  
    returns the result from the function
49. What is a Boolean function?  
    The function that returns the Boolean value  
    Example:  
    def isOdd(a):  
     return a % 2 != 0
50. How is main function defined?  
    In Python "if\_\_name\_\_== "\_\_main\_\_" allows you to run the Python files either as reusable modules or standalone programs.  
    Example:  
    def greet():  
     print(“welcome”)  
      
    if \_\_name\_\_ == “\_\_main\_\_”:  
     greet()
51. What is a dictionary?  
    Dictionary is the unordered sequence. The elements are accessed using key
52. How are tuples created?  
    Using parenthesis, with items separated by comma.  
    >>> T = (1, 3, 4, 5)
53. How is a dictionary created?  
    Using curly braces

>>> days = {'jan':31, 'feb':28, 'mar':31}

>>> days['jan']

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1. How to print the keys of a dictionary?  
   Using keys() method of the dictionary  
   >>> days.keys()
2. How to print the values of a dictionary?  
   Using the values() method of the dictionary  
   >>> days.values()
3. How is del statement used?  
   Used to remove an element from the list  
   >>> L = [1,2,3,4]  
   >>> del L[1]  
   >>> L  
   [1,3,4]
4. Can tuple elements be deleted?  
   No. Tuple is immutable.
5. What is Python interpreter?  
   Python has an interactive interpreter which means you can enter statements and expressions at the interpreter prompt, immediately execute them and see their results
6. Why is Python called an interpreted language?  
   Python is an interpreted language, as the source files can be run directly, without explicitly compiling and creating executable files (like in C).
7. Mention some features of Python  
    - Elegant syntax, easy to read  
   - Runs in all platforms (unix, windows, Mac OS)  
   - Open source software  
   - supports large standard library  
   - Python supports object-oriented programming with classes and multiple inheritance.  
   - Data types are strongly and dynamically typed.  
   - Python's automatic memory management frees you from having to manually allocate and free memory in your code.
8. What is Python IDLE?  
   An Integrated DeveLopment Environment for Python
9. Mention some rules for naming an identifier in Python.

* The start character can be the underscore "\_" or a capital or lower case letter.
* The letters following the start character can be anything which is permitted as a start character plus the digits.
* Just a warning for Windows-spoilt users: Identifiers are case-sensitive!
* Python keywords are not allowed as identifier names!

1. What is bool datatype?  
   A special integer datatype which can have only two values (True or False)
2. Give examples of mathematical functions.  
   >>>import math  
   >>> math.sqrt(4)  
   2.0  
   >>>math.pow(4, 2)  
   16
3. What is string formatting operator (%)?  
   the modulo operator "%" is overloaded by the string class to perform string formatting.  
   >>> "Price: Rs %8.2f"% (356.08977)  
   'Price: Rs 356.09'
4. Mention about membership operators in Python.  
   Membership operator ‘in’ is used to check whether an element is present in the list, string or other sequence.  
   >>> L = [1,2,3,4]  
   >>> 2 in L  
   True  
   >>> 20 in L  
   False
5. How is expression evaluated in Python?  
   Using operator precedence
6. What are the loop control statements in Python?  
   break, continue
7. What is the use of break statement?  
   It breaks the loop. Further iterations never occur, after break statement is executed.
8. What is the use of continue statement?  
   It skips the current iteration and goes to the next iteration. The statements following the continue statement will not be executed for that iteration.
9. What is the use of pass statement?  
   It does nothing. It is used as the placeholder to create a new function (in high level design phase), without any code.  
   def funA(a):  
    pass
10. What is assert statement?  
    It asserts whether the function returns the expected output.
11. Differentiate fruitful function s and void functions.  
    Fruitful function always returns an output.  
    Void functions never return any output.
12. What are required arguments?  
    If a function parameter does not have default value, it is the required argument to be passed during the function call.  
    Example:  
    def add(a, b):  
     return a + b  
      
    Both ‘a’ and ‘b’ are required to be passed during the function call.
13. Differentiate pass by value and pass by reference.  
    pass by reference: Both arguments (passed in the function call) and parameters refer to the same object. The change in parameters affects the objects referred by arguments.  
    Example: List is passed by reference  
    pass by value: Values of arguments are copied to parameters before used in the function. The change in parameters won’t affect the objects referred by arguments.  
    Example: String is passed by value.
14. Mention few advantages of function.  
    - Reducing duplication of code.   
    - Decomposing complex problems into simpler pieces.
15. How is lambda function used?  
    Anonymous functions are created by lambda definition.  
    Example:  
    >>> L = [1,2,3,4]  
    >>> L = list(map(lambda x: x\*2, L))
16. What is a local variable?  
    It is visible only within the function block or inner block in which it is defined.
17. What are global variables?  
    Global variables are the one that are declared outside a function and we need to use them inside a function  
    Example:  
    def f():  
     global S  
     print S  
    # main   
    S = ‘python’
18. What are Python decorators?  
    a decorator is a function that takes another function and extends the behavior of the latter function without explicitly modifying it.
19. Are strings mutable or immutable?  
    immutable
20. What is join()?  
    Return a string which is the concatenation of the strings in the iterable. The separator between elements is S.  
    >>> S = '-'  
    >>> S.join('abcd')  
    'a-b-c-d'
21. What is replace() method?  
    Return a copy of S with all occurrences of substring old replaced by new.  
    >>> S = 'abcd'  
    >>> S.replace('a','c')  
    'cbcd'
22. What is list comprehension?  
    List comprehension is the pythonic way (one liner) to write the list loop. It gives the shorter and cleaner code.  
    Example: Find the sum of odd numbers in the list.

>>> mylist = [1, 2, 3, 4, 5, 6, 7, 8]  
>>> sumval = sum([d for d in mylist if d % 2 != 0])  
>>> sumval  
16

1. Define multidimensional list.  
    >>> L = [[1,2],[3,4] ] # 2D
2. How to create lists using range()?  
   >>>list(range(10))
3. What is swapcase() method?  
   Changes uppercase to lowercase and vice versa in the string.  
   >>>S = ‘tHiS’  
   >>>S.swapcase()  
   ‘ThIs’
4. What is linear search?  
   Search happens in linear fashion.   
   ie, the key is compared with elements in the list sequentially, until the match is found.
5. How is binary search done?  
   Binary search is done on the sorted list.  
   Compare key with the middle element.   
   If x matches with middle element, we return the mid index.   
   Else If x is greater than the mid element, then remaining search happens on right half of the list.   
   Else search recurs for the left half.
6. How is merge sort performed?  
   Merge Sort is a Divide and Conquer algorithm. It divides input array in two halves, calls itself for the two halves and then merges the two sorted halves.
7. What is sorting?  
   Sorting is arranging the elements in the list in ascending order.
8. How is insertion sort done?  
   Take an item from the unsorted portion of the list, and insert it in the right position in the sorted portion of the list.
9. How is selection sort done?  
   Select the ith smallest element from the unsorted list and swap it with the element in the ith position.
10. What are command line arguments?  
    sys.argv is a list in Python, which contains the command-line arguments passed to the script.
11. Name some built in functions with dictionary.  
    keys(), values(), get(),
12. What is an exception?   
    An exception is an error that happens during execution of a program. When that error occurs, Python generate an exception that can be handled, which avoids your program to crash.
13. How is exception handled in python?  
    Using try..except block  
      
    **try:**  
     f = open(filename, ‘r’)

**except IOError:**

print('An error occurred trying to read the file.')