**Q1. What is the difference between list and tuples?**

|  |  |
| --- | --- |
| **LIST** | **TUPLES** |
| Lists are mutable i.e they can be edited. | Tuples are immutable (tuples are lists which can’t be edited). |
| Lists are slower than tuples. | Tuples are faster than list. |
| Syntax: list\_1 = [10, ‘Chelsea’, 20] | Syntax: tup\_1 = (10, ‘Chelsea’ , 20) |

### ****Q2. What are the key features of Python?****

* Python is an **interpreted** language. That means that, unlike languages like *C* and its variants, Python does not need to be compiled before it is run. Other interpreted languages include *PHP* and *Ruby*.
* Python is **dynamically typed**, this means that you don’t need to state the types of variables when you declare them or anything like that. You can do things like x=111 and then x="I'm a string" without error
* Python is well suited to **object orientated programming** in that it allows the definition of classes along with composition and inheritance. Python does not have access specifiers (like C++’s public,private), the justification for this point is given as “we are all adults here”
* In Python, **functions** are**first-class objects**. This means that they can be assigned to variables, returned from other functions and passed into functions. Classes are also first class objects
* **Writing Python code is quick** but running it is often slower than compiled languages. Fortunately，Python allows the inclusion of C based extensions so bottlenecks can be optimized away and often are. The numpy package is a good example of this, it’s really quite quick because a lot of the number crunching it does isn’t actually done by Python
* Python finds **use in many spheres** – web applications, automation, scientific modelling, big data applications and many more. It’s also often used as “glue” code to get other languages and components to play nice.

**Q3. What is the usage of help() and dir() function in Python?**

**Ans:** Help() and dir() both functions are accessible from the Python interpreter and used for viewing a consolidated dump of built-in functions.

1. Help() function: The help() function is used to display the documentation string and also facilitates you to see the help related to modules, keywords, attributes, etc.
2. Dir() function: The dir() function is used to display the defined symbols.

**Q4. What is dictionary in Python?**

**Ans:** The built-in datatypes in Python is called dictionary. It defines one-to-one relationship between keys and values. Dictionaries contain pair of keys and their corresponding values. Dictionaries are indexed by keys.

Let’s take an example:

The following example contains some keys. Country, Capital & PM. Their corresponding values are India, Delhi and Modi respectively.

dict={'Country':'India','Capital':'Delhi','PM':'Modi'}

print dict[Country]

India

**Q5. Write a one-liner that will count the number of capital letters in a file. Your code should work even if the file is too big to fit in memory.**

**Ans:** Let us first write a multiple line solution and then convert it to one liner code.

with open(SOME\_LARGE\_FILE) as fh:

count = 0

text = fh.read()

for character in text:

if character.isupper():

count += 1

We will now try to transform this into a single line.

count sum(1 for line in fh for character in line if character.isupper())

### ****Q6. What are negative indexes and why are they used?****

**Ans:** The sequences in Python are indexed and it consists of the positive as well as negative numbers. The numbers that are positive uses ‘0’ that is uses as first index and ‘1’ as the second index and the process goes on like that.

The index for the negative number starts from ‘-1’ that represents the last index in the sequence and ‘-2’ as the penultimate index and the sequence carries forward like the positive number.

The negative index is used to remove any new-line spaces from the string and allow the string to except the last character that is given as S[:-1]. The negative index is also used to show the index to represent the string in correct order.

**Q7. How can you randomize the items of a list in place in Python?**

**Ans:** Consider the example shown below:

|  |  |
| --- | --- |
| 1  2  3  4 | from random import shuffle  x = ['Keep', 'The', 'Blue', 'Flag', 'Flying', 'High']  shuffle(x)  print(x) |

The output of the following code is as below.

['Flying', 'Keep', 'Blue', 'High', 'The', 'Flag']

### Q8.  A = 10, 20, 30

### In the above assignment operation, what is the data type of ‘A’ that Python appreciates as?

**Ans:** Unlike other languages, Python appreciates ‘A’ as a tuple. When you print ‘A’, the output is (10,20,30). This type of assignment is called “**Tuple Packing**”.

### Q9. How do you programmatically know the version of Python you are using?

**Ans:** The version property under sys module will give the version of Python that we are using.

>>> import sys

>>> sys.version

'2.7.12 (v2.7.12:d33e0cf91556, June 27 2016, 15:19:22) [MSC v.1500 32 bit (Intel)]'

### Q10. What are the generator functions in Python?

**Ans:** Any function that contains at least one yield statement is called a generator function instead of a return statement.  The difference between return and yield is, return statement terminates the function, and yield statement saving all its states pauses and later continues from there on successive calls.

### Q11. What is a module in Python?

**Ans:** A module is a .py file in Python in which variables, functions, and classes can be defined. It can also have a runnable code.

### Q12. When do you choose a list over a tuple?

**Ans:** When there is an immutable ordered list of elements we choose tuple. Because we cannot add/remove an element from the tuple. On the other hand, we can add elements to a list using append () or extend() or insert(), etc., and delete elements from a list using remove() or pop().

### Q13. What is the difference between Python append () and extend () functions?

**Ans:** The extend() function takes an iterable (list or tuple or set) and adds each element of the iterable to the list. Whereas append takes a value and adds to the list as a single object.

### Q14. What is a set?

**Ans:** A Set is an unordered collection of unique objects.

### Q15. Name some standard Python errors you know?

**Ans:** **TypeError:** Occurs when the expected type doesn’t match with the given type of a variable.

**ValueError:** When an expected value is not given- if you are expecting 4 elements in a list and you gave 2.

**NameError:** When trying to access a variable or a function that is not defined.

**IOError:** When trying to access a file that does not exist.

**IndexError:** Accessing an invalid index of a sequence will throw an IndexError.

**KeyError:** When an invalid key is used to access a value in the dictionary.

We can use **dir(\_\_builtin\_\_)** will list all the errors in Python.