UNIT III & UNIT IV - CT2 QUESTION BANK

UNIT III

2 Marks :

1.What are the different ways to create a list?

Create Python Lists

In Python, a list is created by placing elements inside square brackets [], separated by commas.

 # list of integers

my_list = [1, 2, 3]

A list can have any number of items and they may be of different types (integer, float, string, etc.).

 # empty list

my_list = []

 # list with mixed data types

my_list = [1, "Hello", 3.4]

A list can also have another list as an item. This is called a nested list.

nested list

my_list = ["mouse", [8, 4, 6], ['a']]

2.State negative indexing in list with example.

The negative indexing is the act of indexing from the end of the list with indexing starting at -1 i.e. -1 gives the last element of list, -2 gives the second last element of list and so on.

The use of negative indexing can be done to use or display data from the end of the list and can also be used to reverse a number or string without using other functions.

>>> msg = "probe"

>>> msg[-3]

'o'

3. List out important characteristics of lists in Python.

The important characteristics of Python lists are as follows:

- Lists are ordered.
- Lists can contain any arbitrary objects.
- List elements can be accessed by index.
- Lists can be nested to arbitrary depth.

- Lists are mutable.
- Lists are dynamic.

4.What are the difference between append () and extend () build in functions used in list?

Append: Adds its argument as a single element to the end of a list. The length of the list increases by one.

extend(): Iterates over its argument and adding each element to the list and extending the list. The length of the list increases by number of elements in it's argument.

Syntax: list.append(obj)

5. Write a few methods that are used in Python Lists.

a) append()- add an element to end of list

b) insert()- insert an item at the defined index

c) remove()- removes an item from the list

d) clear()- removes all items from the list

e) reverse()- reverse the order of items in the list

6.What are the advantages of Tuple over List?

Tuples are fined size in nature i.e. we can't add/delete elements to/from a tuple. We can search any element in a tuple. Tuples are faster than lists, because they have a constant set of values. Tuples can be used as dictionary keys, because they contain immutable values like strings, numbers, etc.

7. What is meant by key-value pairs in a dictionary?

The elements of a dictionary appear in a comma-separated list. Each entry contains an index and a value separated by a colon. In a dictionary, the indices are called keys, so the elements are called key-value pairs.

Example

>>> print eng2sp {'one': 'uno', 'two': 'dos'}

One and two are keys and uno and dos are values

8.Explain how to create a dictionary in python?

Dictionaries are enclosed by curly braces ({ }) and values can be assigned and accessed using square braces ([]). The dictionary can be defined in any one of the following ways.

dict = {}

dict['one'] = "This is one"

dict[2] = "This is two"

tinydict = {'name': 'john','code':6734, 'dept': 'sales'}

9.What are Python's dictionaries?

Python's dictionaries are kind of hash table type. They work like associative arrays or hashes found in Perl and consist of key-value pairs. A dictionary key can be almost any Python type, but are usually numbers or strings. Values, on the other hand, can be any arbitrary Python object

10. List the python Built in functions.

Python has a set of built-in methods that you can use on dictionaries.

Method Description

clear() Removes all the elements from the dictionary

copy() Returns a copy of the dictionary

fromkeys() Returns a dictionary with the specified keys and value

get() Returns the value of the specified key

items() Returns a list containing a tuple for each key value pair

keys() Returns a list containing the dictionary's keys

pop() Removes the element with the specified key

popitem() Removes the last inserted key-value pair

setdefault() Returns the value of the specified key. If the key does not exist: insert the key, with the specified value

update() Updates the dictionary with the specified key-value pairs

values() Returns a list of all the values in the dictionary

11. How does del operation work on dictionaries? Give an example.

The del statement removes a key-value pair from a dictionary

>>>del inventory[‘pears‘]

>>> print inventory {‘oranges‘: 525, ‘apples‘: 430, ‘bananas‘: 312}

12.Difference between List and Dictionary

List	**Dictionary**
List is a collection of index values pairs as that of array in	Dictionary is a hashed structure of **key and value** pairs.

c++.	
List is created by placing elements in **[ ]** separated by commas “, “	Dictionary is created by placing elements in **{ }** as “key”:”value”, each key value pair is separated by commas “, “
The indices of list are integers starting from 0.	The keys of dictionary can be of any data type.
The elements are accessed via indices.	The elements are accessed via key-values.
The order of the elements entered are maintained.	There is no guarantee for maintaining order.

13.Difference between List and tuple

NO.	LIST	TUPLE
1	Lists are mutable	Tuples are immutable
2	Implication of iterations is Time-consuming	The implication of iterations is comparatively Faster
3	The list is better for performing operations, such as insertion and deletion.	Tuple data type is appropriate for accessing the elements
4	Lists consume more memory	Tuple consume less memory as compared to the list
5	Lists have several built-in methods	Tuple does not have many built-in methods.
6	The unexpected changes and errors are more likely to occur	In tuple, it is hard to take place.

14. What are tuples in Python?

A tuple is another sequence data type that is similar to the list. A tuple consists of number of values separated by commas. Unlike lists, however, tuples are enclosed within parentheses.

15. What are the methods that are used in Python Tuple?

Tuple functions in Python | Tuple methods in Python

len() method. This method returns number of elements in a tuple.

max() This method returns largest element of a tuple.

min() This method returns smallest element of a tuple.

index() This method is used to find first index position of value in a tuple.

count() This function is used to count and return number of times a value exists in a tuple. If the given value is not in the tuple, it returns zero.

PART-B

1.What are the basic list operations that can be performed in Python? Explain each operation with its syntax and example.

2.What is Dictionary? Explain Python dictionaries in detail discussing its operations and methods.

3. What are the basic tuple operations that can be performed in Python? Explain each operation with its syntax and example.

4. Explain the process of updating and deleting a item from a list in Python

5. Explain in detail about the various built in functions of a tuple.

6. Write a program for List operations(Use Minimimu10 functions)

7. Write a program for Dictionary operations(Use Minimimu10 functions)

8 Write a python program to concatenate two lists.(4)

9. Write a Python program to multiply two Matrices.(8)

UNIT IV

PART- A - 2 Marks :

1.Define function.

In Python, a function is a group of related statements that performs a specific task. Functions help break our program into smaller and modular chunks.

2. What is default argument?

If the value of any of the arguments is not provided at the time of function call, then that argument can be initialized with the value given in the definition even if the argument is not specified at the function call.

3. What is Python Arbitrary Arguments?

Sometimes, we do not know in advance the number of arguments that will be passed into a function. Python allows us to handle this kind of situation through function calls with an arbitrary number of arguments

4.What are the Advantages of Recursion?

- Recursive functions make the code look clean and elegant.
- A complex task can be broken down into simpler sub-problems using recursion.
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5. Define Formal arguments

Formal arguments are identifiers used in the function definition to represent corresponding actual arguments.

6.Define a class in python.

A Class in Python is a logical grouping of data and functions. It gives the freedom to create data structures that contains arbitrary content and hence easily accessible.

7.Write the basic principles of OOP

In Python, the concept of OOP follows some basic principles:

- Class
- Object
- Methods
- Encapsulation
- Inheritance
- Polymorphism

8.List the types of arguments.

- Referred or Positional arguments.
- Default arguments.
- Keyword arguments.
- Variable length arguments

9.Define self Parameter

The self parameter is a reference to the current instance(object) of a class, and is used to access variables that belongs to the class.

10.Give example for a class in python

```
class car:
    def __init__(self,modelname, year):
        self.modelname = modelname
        self.year = year
    def display(self):
         print(self.modelname,self.year)
```

11.What are the differences between formal and actual parameter.?

Actual parameters are those parameters that are specified in the calling function. While on the other hand, formal parameters are those parameters that are declared in the called function.

12.State about keyword arguments.

Keyword arguments (or named arguments) are values that, when passed into a function, are identifiable by specific parameter names. A keyword argument is preceded by a parameter and the assignment operator, = .

13.State about default arguments.

Python has a different way of representing syntax and default values for function arguments. Default values indicate that the function argument will take that value if no argument value is passed during the function call. The default value is assigned by using the assignment(=) operator of the form keywordname=value.

14. Define Positional arguments.

Positional argument means that the argument must be provided in a correct position in a function call.

15.What is range() function and how it is used in lists?.

The range() function is used to generate a sequence of numbers over time. At its simplest, it accepts an integer and returns a range object (a type of iterable). In Python 2, the range() returns a list which is not very efficient to handle large data.

Syntax:

range([start,] stop [, step]) -> range object

PARAMETER	**DESCRIPTION**
start	(optional) Starting point of the sequence. It defaults to 0.
stop	(required)Endpoint of the sequence. This item will not be included in the sequence.
step	(optional) Step size of the sequence. It defaults to 1.

PART-B

1.Explain the types of function arguments in python. (10)

2.Explain call by value and call by reference in python

3.Define function and its syntax.(4)

4. Write an algorithm and program to design simple calculator performing arithmetic functions like addition, subtraction, multiplication and division with the input given by user. (12)

3.Briefly explain about function prototypes

4.What is recursive function? Find a factorial of a given number using recursive function.(6)

5.Explain with an example about how to create a class and its objects and methods in python (16)