

1. What is the difference between a function and a method in Python?

> **Function:** A block of code that performs a task, defined using `def`,

Method: A function that is associated with an object

```
ex.add(a,b):  
    Return a+b
```

```
Text ="hello"  
print(text.upper())
```

2. Explain the concept of function arguments and parameters in Python

Parameters A variable that is defined within the definition of a function.

Value: The value to which the function is actually called.

3. What are the different ways to define and call a function in Python?

Normal func

```
Def square(x):  
    Return x*x  
print(square(4))
```

```
Lambda fun  
square=lam x:x*x  
Print (square(4))
```

```
Recursive fun  
Def factorial(n):  
Return 1 if n==0 else n* factorial (n-1)
```

4.. What is the purpose of the `return` statement in a Python function?

> It sends the result of a function back to the caller. Without `return`, a function outputs

```
Def add(a,b):  
    Return a+b  
Print (add(3,5))
```

5.What are iterators in Python and how do they differ from iterables?

>iterable:an object you can loop over (list,tuple,string).

Iterator: an objectwith__iter__() and __next __() that gives elements one at a time

Example

```
Nums =[1,2,3]
it=iter(nums)
print(next(it))
```

6.Explain the concept of generators in Python and how they are defined.

>A generator is a special-purpose method, which returns yield rather than return, generated values one at a time (lazy evaluation).

7.What are the advantages of using generators over regular functions?

>Memory efficient (don't store whole data in memory).

Lazy evaluation (produce values on demand).

Useful for large data/files.

8.. What is a lambda function in Python and when is it typically used?

>an anonymous function defined in one line using lambda

```
double=lambda x:x*2
print(double(5))
```

9. Explain the purpose and usage of the `map()`` function in Python.

>applies a funciation to each item of an iterable

```
nums=[1,2,34]
squares=list (map(lambda x:x*x<nums))
Print (squares)
```

10.What is the difference between `map()`, `reduce()`, and `filter()`` functions in Python?

> map()-> uses a function on every element.

filter() → conditions on the elements.

reduce() → returns only one value in a list (requires functools).

```
Print (list(map(lambda x :x*2,nums)))  
print(list (filters(lambda x:x%2==0,nums)))  
print(reduced(lambda a,b: a+b,nums))
```

11. Using pen & Paper write the internal mechanism for sum operation using reduce function on this given list[47,11,42,13];

[Pic](#) link