

1. What is the relationship between def statements and lambda expressions?

**Def can hold multiple expressions while lambda is a uni-expression function. Def generates a function and designates a name to call it later. Lambda forms a function object and returns it. ... Lambda supports to get used inside a list and dictionary.**

2. What is the benefit of lambda?

**The lambda function in python provides a shortcut for declaring small anonymous functions. Lambda functions behave just like regular functions defined with the def keyword. They can be used whenever functions object required.**

3. Compare and contrast map, filter, and reduce.

**The map() function iterates through all items in the given iterable and executes the function we passed as an argument on each of them.**

**Similar to map(), filter() takes a function object and an iterable and creates a new list.**

**reduce() works differently than map() and filter(). It does not return a new list based on the function and iterable we've passed. Instead, it returns a single value. Also, in python reduce() isn't a built-in function anymore, and it can be found in the func tools module.**

4. What are function annotations, and how are they used?

**Function annotations are arbitrary python expressions that are associated with various part of functions. These expressions are evaluated at compile time and have no life in python's runtime environment. Python does not attach any meaning to these annotations.**

5. What are recursive functions, and how are they used?

**A recursive function is a function that calls itself during its execution. The process may repeat several times, outputting the result and the end of each iteration.**

6. What are some general design guidelines for coding functions?

**Use the function naming rules: lowercase with words separated by underscores as necessary to improve readability. Use one leading underscore only for non-public methods and instance variables. To avoid name clashes with subclasses, use two leading underscores to invoke Python's name mangling rules.**

7. Name three or more ways that functions can communicate results to a caller.

**return(), map(), filter(), reduce() are the some of the ways that functions can communicate results to a caller.**