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

Def :Can consists of any number of execution statements inside the function definition

Lambda: The limited operation can be performed using lambda functions

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1. **What is the benefit of lambda?**

The execution time of the program is fast for the same operation

1. **Compare and contrast map, filter, and reduce.**

**Map()**: Perform the same operation on all elements in an iterable. An example is performing a log transformation on each element.

**Filter()**: Filters a subset of elements that meets a certain (set of) condition(s). An example is to filter out sentences that contain a specific string.

**Reduce()**: Performs an operation on an iterable, yielding a single-valued outcome. A common example is to sum all elements in a list, yielding a single number as output.

1. **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.

1. **What are recursive functions, and how are they used?**

Recursion is a technique used to solve computer problems by creating a function that calls itself until your program achieves the desired result.

1. **What are some general design guidelines for coding functions?**

* Safe: It can be used without causing harm.
* Secure: It can't be hacked.
* Reliable: It functions as it should, every time.
* Testable: It can be tested at the code level.
* Maintainable: It can be maintained, even as your codebase grows.
* Portable: It works the same in every environment.

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