PYTHON ASSIGNMENT 24

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

   The **def** keyword is used to define normal functions, while the **lambda** keyword is used to define anonymous functions. They are, however, limited to a single line of expression. They, like regular functions, can accept several parameters.

2. What is the benefit of lambda?

   Lambda enables you to use functions with pre-trained machine learning (ML) models to inject artificial intelligence into applications more easily. A single application programming interface (API) request can classify images, analyze videos, convert speech to text, perform natural language processing, and more.

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

   In Python, filter(), map(), and reduce() are three built-in functions used for iterable manipulation.
   filter() creates a new iterable by applying a filtering function to each element of the input iterable, returning only the elements that satisfy a given condition.
   map() applies a transformation function to each element of the input iterable, creating a new iterable with the transformed values.
   reduce() combines elements of the input iterable using a specified function, progressively reducing it to a single value by applying the function to pairs of elements.
   In summary, filter() filters elements, map() transforms elements, and reduce() aggregates elements to a single value.

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

   Function annotations are some random expressions which are written with the functions, and they are evaluated at compile time. They do not exist at run time, and there is no meaning of these expressions to python.

They are used and interpreted by a third party or external python libraries.

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

   A recursive function is a function in code that refers to itself for execution. Recursive functions can be simple or elaborate. They allow for more efficient code writing, for instance, in the listing or compiling of sets of numbers, strings or other variables through a single reiterated process.

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

   Coding rules and guidelines ensure that software is:

- **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.