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

Answer:

Lambda returns a value that can optionally be assigned a name.whereas the def statement always assigns the new function to the name in the header, instead of returning value. lambda's body is a single expression, not a block of statements.

2. What is the benefit of lambda?

Answer:

Reduces the lines of code, majorly used when a function is needed for a short period of time

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

Answer:

Map creates a new array by transforming every element in an array.

Filter creates a new array by removing elements that don't belong.

Reduce takes all of the elements in an array and reduces them into a single value.

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

Answer:

Function annotations provide a way of associating various parts of a function with arbitrary python expressions at compile time.

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

Answer:

Recursive functions is a process in which a function calls itself directly or indirectly.it is used to solving problems that can be broken down into smaller problems.

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

Answer:

The some guidelines for coding functions are:

* Keep functions focused and concise.
* Use clear and meaningful names.
* Document functions for clarity.
* Avoid repetition by using functions for reusable code.
* Test functions with different inputs.
* Handle errors gracefully.
* Consider performance, but prioritize readability and maintainability.

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

Answer:

Functions can communicate results to a caller in several ways:

1. **Return statement:** Functions can use the `return` statement to send a value back to the caller.
2. **Output parameters:** Functions can modify the value of parameters passed by reference, allowing the caller to access the updated value.
3. **Exceptions:** Functions can raise exceptions to indicate errors or exceptional conditions to the caller.
4. **Global variables:** Functions can modify global variables to communicate results to the caller, although this approach is generally discouraged for clarity and maintainability.