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

Both are used to define functions in Python

2. What is the benefit of lambda?

The benefit of lambda is creating short functions without the need for a full def statement or assigning a name. It offers simplicity .

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

Map takes a function and applies it to each item in a collection, returning the results. Filter takes a function and filters out items from a collection based on a conditionReduce combines items in a collection by applying a function to pairs of items until they are reduced to a single value.

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

Function annotations are optional notes about the types of inputs and outputs of a function. They help with documentation and more useful many times, but they not force specific type requirements.

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

Recursive functions are functions that call themselves to solve problems by repeatedly breaking them into smaller parts until they can be solved directly. They are useful for tackling repetitive or nested problems.

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

When coding functions, it's helpful to stick to specific problem , use clear names, Handling errors and exceptions appropriately, and think about reusability. Testing and readability should be considered

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

Functions can communicate results by returning a value using the return statement, modifying arguments passed to them, or accessing and modifying global variables (excessive use of this practise not recommended )