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1. What is the difference between enclosing a list comprehension in square brackets and parentheses?

the main difference between using square brackets and parentheses in a list comprehension is that square brackets create a new list, while parentheses create a generator object. Lists are eagerly evaluated, meaning they are fully constructed in memory when the list comprehension is executed, while generators are lazily evaluated, meaning they produce values on-demand as they are iterated over.

1. What is the relationship between generators and iterators?

generators are a type of iterator that are defined using functions with yield statements, while iterators are objects that implement the iterator protocol with \_\_iter\_\_() and \_\_next\_\_() methods.

1. What are the signs that a function is a generator function?

a function is a generator function if it contains yield statements, returns a generator object when called, and allows for the retention of state across iterations. These are the key signs that indicate a function is a generator function.

1. What is the purpose of a yield statement?

the yield statement in a generator function serves the purpose of producing values in a sequence, suspending the execution of the function, enabling lazy evaluation, and allowing for the retention of internal state across iterations.

1. What is the relationship between map calls and list comprehensions? Make a comparison and contrast between the two.

map calls and list comprehensions are both techniques used for transforming elements in a collection, but they have some differences in terms of syntax, readability, flexibility, and behaviour related to evaluation and output type.

Comparison :

Map calls and list comprehensions have different syntax. A map call typically involves passing a function and an iterable as arguments to the map() function, which returns an iterator that produces the transformed values. List comprehensions, on the other hand, use a compact syntax to define a new list by specifying the transformation directly within square brackets, using a concise expression with an optional condition.

Contrast :

Function vs. Expression: Map calls involve passing a function as an argument, which can be a pre-defined function or a lambda function, to specify the transformation logic. List comprehensions, on the other hand, use expressions directly to specify the transformation logic, without the need for a separate function.