**Quiz - Function**

**1.What is the purpose of the Python Map function?**

* To filter out elements from a list based on a given condition
* To join elements of a list into a single string
* To apply a function to every item in an iterable and return a new list
* To reduce the elements of a list to a single value

**Explanation**

The Map function in Python is used to apply a specific function to every item in an iterable, such as a list. It returns a new list containing the results of applying the given function to each item of the iterable.

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**2.What does the Python Reduce function do?**

* Applies a function to every item in an iterable and returns a new list
* Filters out elements from a list based on a given condition
* Applies a function to the elements of an iterable, progressively reducing them to a single value
* Joins elements of a list into a single string

**Explanation**

The Reduce function in Python is used to apply a specific function to the elements of an iterable, progressively reducing them to a single value. It returns a single value.

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**3.What is the output of the following Python code? def square(x): return x \* x result = list(map(square, [1, 2, 3, 4])) print(result)**

* [1, 4, 9, 16]
* [1, 2, 3, 4]
* [2, 4, 6, 8]
* [0, 1, 4, 9]

**Explanation**

[Explanation Here]

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**4.What is the purpose of the Python Filter function?**

* To apply a function to every item in an iterable and return a new list
* To perform an element-wise multiplication of two iterables
* To construct a new iterable from the elements of an existing iterable for which a function returns true
* To sort the elements of a list in descending order

**Explanation**

The Filter function in Python is used to construct a new iterable from the elements of an existing iterable for which a function returns true.

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**5.What is the purpose of Python lambda functions?**

* To perform complex mathematical operations
* To create named functions
* To create small, anonymous functions
* To validate user input

**Explanation**

Lambda functions in Python are small, anonymous functions that can have any number of arguments but can only have one expression. They are often used as an argument to higher-order functions like map, filter, and reduce.

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**6.Which of the following is not a valid use case for a generator function in Python?**

* Generating an infinite sequence of Fibonacci numbers
* Reading a large file line by line
* Performing complex mathematical operations
* Iterating over a large, dynamically generated dataset

**Explanation**

Generator functions are used to create iterators that can be paused and resumed on the fly, producing a sequence of values. They are useful when dealing with a large amount of data or for handling data streams.

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**7.Which of the following statements about the map function in Python is true?**

* The map function modifies the original iterable in place
* The map function returns a new iterable without modifying the original one
* The map function can only be applied to lists
* The map function can only apply built-in functions

**Explanation**

The map function applies a given function to each item of an iterable and returns a list of the results. It executes the function passed as a parameter once for each item in the iterable.

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**8.What is the primary purpose of using the filter function in Python?**

* To apply a function to every item in an iterable and return a new list
* To construct a new iterator from elements in an iterable for which a function returns true
* To concatenate two iterables into a single list
* To sort the elements of a list in ascending order

**Explanation**

The filter function in Python is used to construct a new iterator from elements in an iterable for which a function returns true. It filters elements based on a given condition or function.

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**9.Which of the following best describes the reduce function in Python?**

* Applies a function to every item in an iterable and returns a new list
* Filters out elements from a list based on a given condition
* Applies a function to the elements of an iterable, progressively combining them to a single value
* Joins elements of a list into a single string

**Explanation**

The reduce function in Python is used to apply a specific function to the elements of an iterable, progressively combining them to a single value. It repeatedly applies the function to the elements, accumulating the result.

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**10.Which of the following is not a valid use of lambda functions in Python?**

* As a key function for sorting elements in a list
* As a function to modify a global variable
* As a function to apply to elements in a map operation
* As a filtering function for an iterable

**Explanation**

Lambda functions are used primarily to create small, anonymous functions that can be passed as arguments to higher-order functions. They are suitable for simple, one-line expressions.

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**11.What will be the output of the following Python code? def sum\_squares(n): return sum(x\*x for x in range(1, n+1)) result = sum\_squares(3) print(result)**

* 6
* 9
* 14
* 10

**Explanation**

The function sum\_squares calculates the sum of the squares of the numbers from 1 to the given input n. So, for n=3, the output will be 1\*1 + 2\*2 + 3\*3 = 14.

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**12.What is the main difference between a regular function and a generator function in Python?**

* A regular function supports recursion, while a generator function does not
* A regular function can only be used with higher-order functions like map and filter, while a generator function can be used standalone
* A regular function returns a single value, while a generator function yields a sequence of values
* A regular function can return an iterator, while a generator function cannot

**Explanation**

A regular function returns a single value, while a generator function yields a sequence of values using the yield keyword. This allows the generator function to generate values on the fly, conserving memory and improving performance.