Python Interview Q&A Series

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Day 2 – Python Interview Questions

11. Q: What is the difference between append(), extend(), and insert() in lists?

A:

- `append(x)`: Adds one element x to the end of the list.
- `extend(iterable)`: Adds multiple elements from an iterable to the list.
- `insert(index, x)`: Inserts x at the specified index.

Example:

```
lst = [1, 2]
lst.append(3)       # [1, 2, 3]
lst.extend([4, 5])  # [1, 2, 3, 4, 5]
lst.insert(2, 99)   # [1, 2, 99, 3, 4, 5]
```

12. Q: What is the difference between break, continue, and pass?

A:

- `break`: Terminates the loop entirely.
- `continue`: Skips the current iteration and moves to the next.
- `pass`: A null statement, used as a placeholder with no effect.

Example:

```
for i in range(5):
    if i == 3:
        break
    print(i)
```

13. Q: How is memory managed in Python?

A:

- Automatic memory management using the Garbage Collector
- Reference counting for object deallocation
- Private heap for storing objects and data structures
- Developers can use the `gc` module for manual garbage collection

14. Q: What are Python's built-in data structures?

A:

- `List`: ordered, mutable collection
- `Tuple`: ordered, immutable collection
- `Set`: unordered, mutable collection of unique items
- `Dictionary`: unordered, mutable collection of key-value pairs

15. Q: What is type casting in Python?

A:
Type casting means converting one data type into another.

Example:

```
x = "10"
y = int(x)
print(y + 5)  # Output: 15
```

Day 1 – Python Interview Questions (Part 4)

16. Q: What is the difference between range() and xrange()?

A:

- In Python 3, only `range()` exists.

- In Python 2, `range()` returns a list, while `xrange()` returns a generator-like object.

Example:

```
for i in range(5):
    print(i)  # Outputs 0 to 4
```

17. Q: Explain Python's pass-by-object-reference model.

A:
Python uses "pass-by-object-reference" or "pass-by-assignment".

- Mutable objects can be changed inside functions.
- Immutable objects cannot be changed inside functions.

Example:

```
def modify_list(lst):
    lst.append(4)

my_list = [1, 2, 3]
modify_list(my_list)
print(my_list)  # Output: [1, 2, 3, 4]
```

18. Q: What is list comprehension? Provide an example.

A:
List comprehension is a concise way to create lists.

Example:

```
squares = [x**2 for x in range(5)]  # [0, 1, 4, 9, 16]
even_squares = [x**2 for x in range(10) if x % 2 == 0]  # [0, 4, 16, 36, 64]
```

19. Q: What are lambda functions in Python?

A:
A lambda function is a small anonymous function defined using `lambda`.

Example:

```
square = lambda x: x ** 2
print(square(5))  # Output: 25
```

20. Q: What is the use of map(), filter(), and reduce()?

A:

- `map(func, iterable)` – applies a function to each element.
- `filter(func, iterable)` – keeps elements where the function returns True.
- `reduce(func, iterable)` – reduces to a single value (requires `from functools import reduce`).

Example:

```
from functools import reduce
nums = [1, 2, 3]
squares = list(map(lambda x: x**2, nums))  # [1, 4, 9]
evens = list(filter(lambda x: x % 2 == 0, nums))  # [2]
product = reduce(lambda x, y: x * y, nums)  # 6
```

Stay tuned for Day 3 – Intermediate Concepts 🚀