For loop vs While loop

When we use while statement?

1. Handling Iterations with Variable or Unknown Conditions: When iterating over data or processes until meeting a specific condition, especially when the number of iterations or conditions isn't known initially.

2. Dealing with Real-Time or Ever-Changing Data: Situations involving constantly evolving data or events, where continuous monitoring or processing is required until certain conditions are met or changes are detected.

3. Dynamic Processing of User Inputs: Instances that require processing user inputs, such as waiting for particular input before proceeding or conducting verification.

When we use for statement?

1. Iterating Over Known Collections: When you have a predefined collection of items such as lists, tuples, dictionaries, or strings, and you want to perform an action on each item within that collection. (Like fetch data from database)

2. Performing Actions a Fixed Number of Times: When you need to perform an action or execute code a known or predetermined number of times.

Let's go through a few examples of each:

- Use a for loop to iterate over an array.

- Use a for loop when you know the loop should execute *n* times.

- Use a while loop for reading a file into a variable.

- Use a while loop when asking for user input.

- Use a while loop when the increment value is nonstandard.

Conclusion

In conclusion, after an comparison between for loops and while loops, it's evident that for loops generally exhibit superior speed compared to while loops in experiment scenarios.. For loops are optimized for iterating over known sequences or ranges, making them more efficient and preferable when the number of iterations is predetermined. While loops, on the other hand, offer flexibility for dynamic conditions but may incur slightly lower performance due to their inherent flexibility and potentially less optimized iteration handling.

Reference :

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https://stackoverflow.com/questions/68314464/python-performance-while-vs-for-loops